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NYSEG and RG&E

Five-Year Capital Investment Plan (2024-2028)

Avangrid Iberdrola Group

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Chapter 1 Executive Summary

This document presents a comprehensive five-year Capital Investment Plan for the electric transmission, distribution, generation, and natural gas businesses of AVANGRID Networks' New York operating companies, New York State Electric & Gas Corporation ("NYSEG") and Rochester Gas and Electric Corporation ("RG&E"), for the period 2024 through 2028 (the "Plan"). This Plan is intended to reflect a subset of prioritized needs/projects based on rate case JP settlement funding levels rather than the full needs, of the Companies' systems over the next five years for NYSEG and RG&E (the "Companies") to continue to provide safe, secure, reliable, and resilient service to customers and help New York State reach its environmental and clean energy goals. The Companies' plan reflects needed investments of $9.0 billion in the electric and generation systems and $0.9 billion in the gas system over the five-year period 2024-2028. These investments will allow the Companies to continue efforts on improving their overall service to customers. They are also intended to mitigate the potential for continued future negative reliability impacts. Finally, they will help achieve the State's clean energy goals; especially, the target of 70% renewable generation by 2030 through the Companies' Phase 1 and Phase 2 CLCPA projects.

	2024 Forecast	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast	Total 2024-2028
NYSEG Electric	973.2	1,159.0	1,203.5	1,543.9	2.089.3	6,968.9
NYSEG Gas	109.7	98.7	94.2	95.0	106.0	503.5
Subtotal NYSEG	**1,082.9**	**1,257.7**	**1,297.6**	1,638.8	**2,195.4**	**7,472.4**
RG&E Electric	348.8	382.7	349.9	405.6	538.2	2,025.2
RG&E Gas	**73.4**	77.3	78.2	88.6	69.9	387.5
Subtotal RG&E	**422.2**	**460.0**	**428.1**	**494.2**	**608.0**	**2,412.6**
Total	**1,505.2**	**1,717.6**	**1,725.8**	**2,133.0**	**2,803.4**	**9,885.0**

The Companies use a rigorous and structured investment planning process to determine the overall level of need and govern the eventual plan to implement, which includes consideration of benefits and costs of through the use of a new prioritization approach described in Chapter 2, below. This includes a capital investment planning, prioritization and approval process that assesses the system needs and introduces projects and programs to address those needs in relation to the strategic objectives of the Companies.

The result is a comprehensive capital investment plan that includes projects and programs related to (1) asset condition replacement, (2) reliability improvements, (3) resiliency, (4) compliance requirements, (5) clean energy transformation, (6) customer focus, (7) modernization, (8) mandatory, and (9) innovation. In addition, the Companies also review the capital investments needed to support functions such as information technology, fleet, facilities, security, operational smart grids, and training.

The Plan contains projects and programs categorized by their main driver of the investment as follows, listed in no particular order. A project or program may have aspects that could be assigned to several different categories; however, the plan has assigned each project or program to one and only one category that reflects the most predominant underlying system need being addressed.

- Asset Condition: This category includes those projects and programs that are needed to address assets deemed to be beyond their useful operating life expectancy. These projects / programs are identified as a result of various Planning studies, ongoing Maintenance programs, and immediate needs brought forth by System Operations. For Gas, this group includes Regulator and gate station improvements, distribution and transmission main replacement projects, pressure reliability projects, and other asset condition projects.
- Reliability: This category includes those projects and programs that are needed to address immediate and longer-term system needs such as thermal / capacity overloads, voltage, and loss-of-load violations. For Gas, this group includes the Leak Prone Main Replacement program and regulator station upgrades not related to asset condition.
- Resiliency: This category includes those projects and programs that are needed to strengthen existing facilities to withstand extreme weather events and improve system restoration capabilities following any number of unplanned transmission and distribution contingency events. These projects/programs seek to improve overall system flexibility and provide system operators with the appropriate visibility and

field infrastructure to quickly restore power and minimize customer exposure following a contingency event.

- Compliance (Electric Only): This category includes those projects and programs that are needed to address compliance requirements/criteria, mandates, orders, or other regulatory / governmental direction such as the NERC BES Program (TPL-001-4) or the NERC Alert Program.
- Clean Energy Transformation: This category includes those projects and programs that are needed to enhance system capabilities and accommodate an increased level of renewable resource penetration and/or support proposed local municipality grid modification initiatives (e.g., “electrification”). This category includes projects such as the CLCPA Transmission Projects that were recently developed in support of NY’s Climate Leadership and Community Protection Act (CLCPA).
- Customer Focus: This category includes those projects and programs that are needed to meet the needs of our customers. This category of projects / programs includes initiatives such as new connections, state and municipal projects, customer lighting, etc.
- Modernization: This category includes those projects and programs that are needed to enhance the Companies’ ability to operate the system in a more effective and efficient manner. This category of projects / programs includes those which are designed to address outdated business systems, metering infrastructure, etc.
- Mandatory (gas only): This category includes projects and program that are required by tariff, regulatory order, or law and/or related to the safety of employees and/or the general public.
- Innovation: This category includes projects that introduce a new or significantly improved product or process, a new business practice or development of external relations.

- Generation: This category provides the capital requirements for Hydro Generation facilities to replace obsolete and aged infrastructure, addresses other generating station updates, and minor capital expenditures to maintain these assets
- Common: This category includes expenditures grouped into Buildings and Facilities, Customer Service, Fleet, Information Technology, Operational Smart Grids, Physical and Cyber Security, and Training.

The proposed capital expenditures in this plan are designed to allow the Companies to meet business objectives, including the provision to its customers of safe, reliable service while meeting future system needs, improving reliability and accommodating the increased proliferation of clean energy resources in support of NY's CLCPA initiative and local municipality decarbonization initiatives.

Make Ready is affected by new and expanded government initiatives. In 2022, Governor Hochul announced the start of the $1 billion ConnectALL initiative, which is intended to deliver affordable broadband to millions of New Yorkers statewide. As a result of this initiative, the Companies have begun to see significant increases in pole attachment applications by broadband companies impacting the Companies' infrastructure. As a result of these applications, the Companies may experience extraordinary increases in the level of pole attachment requests, which would have a corresponding material increase in the Companies' Make Ready costs to accommodate broadband expansion initiatives.

New government obligations to pay prevailing wages will affect an increase in the Capital portfolio. On August 16, 2023, Governor Hochul signed the Roadway Excavation Quality Assurance Act. The law went into effect on September 15, 2023. The law subjects utility construction work within permitted rights of way to prevailing wage requirements. The law applies to contractors and subcontractors performing such work and is also applicable any time a permit is required to be obtained from the state, a county, or a municipality to use, excavate, or open a street.

The contractors that NYSEG and RG&E utilize to perform the majority of our capital work use non-union labor and the requirement to pay a prevailing wage will increase the hourly wage, supplemental benefits and the required taxes, and thus, significantly increase the cost of capital gas projects. These costs were not contemplated in the Companies' latest rate filing and are not reflected in the costs in this document as we continue to work with our contractors to update the costs associated to comply with the law and the agreements with our contractors.

Chapter 2 Introduction / Objective

The objective of this document is to present a comprehensive five-year Capital Investment Plan for the electric and natural gas transmission, distribution, and hydro generation businesses of AVANGRID Networks' New York operating companies, New York State Electric & Gas Corporation ("NYSEG") and Rochester Gas and Electric Corporation ("RG&E", and collectively with NYSEG, the "Companies"), for the period 2024 through 2028.

This investment plan includes those projects and programs that are most critical in the continued improvement / enhancement of system performance, focusing on key factors such as system reliability, resiliency, renewal of aged assets, and grid enhancements to accommodate an increased level of clean energy source penetration.

This proposed capital investment plan relies heavily on the prioritization of projects and programs based on a benefit cost analysis for each electric investment. The investments are evaluated to identify their contribution related to the improvement of 5 factors; system reliability and resiliency metrics, operational efficiencies and reduction of risk of non-supplied energy, in addition to the deployment status of the project.

This plan also considers the replacement of aged / deteriorated assets beyond their useful life, enhancing remote control (SCADA[1]) / automation capabilities, and mitigating system violations such as transmission thermal/voltage violations and distribution system capacity needs.

The contents of this document are organized as follows:

- Executive Summary (Chapter 1): Offers an Executive Summary of the contents within this document.
- Introduction / Objective (Chapter 2): Introduces the document and its content.

[1] Supervisory Control and Data Acquisition

- Planning Process (Chapter 3): Provides an overview of the Planning and Approval Processes including strategic objectives of the Companies. Also included in this chapter is a brief investment summary of electric and gas for each of the Companies.
- Project / Program Categorization (Chapter 4): Provides a list of categories and associated definitions that were developed as part of this plan. All projects and programs described herein have been categorized in accordance with these definitions.
- Capital Investment Plan (Chapter 5): Provides and describes the Capital Investment Forecast required to meet the Companies' strategic objectives, consistent with NY State energy and climate goals. The forecast has been grouped into categories which describe the main drivers for the investments presented.
- Electric and Generation Capital Investment Forecast (Chapter 6) Provides and describes the Electric and Generation Capital Investment Forecast required to meet the Companies' strategic objectives, consistent with NY State energy and climate goals. The forecast has been grouped into categories which describe the main drivers for the investments presented.
- Gas Capital Investment Forecast (Chapter 7): describes the Natural Gas Capital Investment Forecast required to meet the Companies' strategic objectives, consistent with NY State energy and climate goals. Likewise, the plan has been grouped into categories which describe the main drivers for the investments.
- Common Capital Investment Forecast (Chapter 8): Outlines the Common Capital Investment Forecast to meet the strategic objectives of the Companies, consistent with NY State energy and climate goals. These projects and programs support more than one of the businesses and are categorized, by the most predominant area driving the investment.

Chapter 3 Planning Process

The process for planning and executing the Companies' capital investments is critical to the overall success of the Plan. The process is a rigorous approach that addresses selection, prioritization, approval, execution, and governance of the capital portfolio of projects and programs. The Plan is refreshed annually by reviewing and updating the projects and programs, aligning functional needs, and synchronizing resources, costs, and schedules.

Section 3.1 Planning Process

The following is a description of the annual capital investment planning process for NYSEG and RG&E. Details of each of the Company's investment forecasts are included in the chapters following this one.

Section 3.2 Planning Objectives

In identifying projects / programs included in a capital investment plan, each Company considers the following strategic objectives:

- Maintaining safety and improving, where needed, security.
- Meeting customers' electric and gas needs.
- Achieving service reliability and quality targets.
- Replacing assets and facilities based on underlying condition assessment and obsolescence.
- Improving the network's overall performance, effectiveness, and efficiency.
- Sustaining the environment and transforming the grid, including enhancing system robustness to accommodate the increased proliferation of clean energy resources in support of NY's Climate Leadership and Community Protection Act (CLCPA) initiative, and local municipality decarbonization initiatives (e.g., "electrification").

During the planning process, each Company selects projects aimed at achieving one or more of these objectives in a cost-effective and timely manner.

Section 3.3 Contributors

The contributors to the plan include both operational business areas as well as those areas that support the operation of the business. Each group is responsible for a sector of the business and coordination and communication occurs between each as the system needs are assessed and the investment plan is developed and refined. The business and support areas that contribute to each Company plan are as follows:

- Operational Business Areas: Customer Service, Electric Operations, Energy Services, Gas Operations, Generation, Operational Smart Grids, Planning & Coordination, Process & Technology, Projects, and Smart Grid Innovation.
- Support Business Areas: General Services and Fleet, Information Technology, Training, and Physical and Cyber Security.

Section 3.4 Plan Overview

The investment plan is developed to meet the needs of customers, improve reliability, strengthen the system against the adverse effects of major storms, provide assurance that cyber and physical aspects of the system are secure, support grid enhancement to accommodate NY's aggressive CLCPA objectives, and achieve the long-term business objectives of the Company. The projects and programs proposed in the plan are those that have been analyzed and determined to be necessary to support the delivery of safe and reliable service to customers.

The Companies endeavor to develop a prioritized plan as part of the annual planning process but reprioritizes as necessary based on emergent needs, examples that can involve reprioritization include, but are not limited to, storms, equipment failure, and customer reactive work. Therefore, at any single point in time, the plan is a current snapshot of the portfolio of projects and overall system needs, which will likely change

as a result of ongoing re-evaluation and re-prioritization processes embedded within the investment planning process.

For example, many of the electric projects reduce the risk of service outages in the event of contingency situations while other projects address mandates issued by state and federal regulators. We also anticipate that new regulations and requirements will be forthcoming during the term of this Plan. In addition, there are several projects that continue the process of bringing the electric delivery system up to present day standards by modernizing equipment, employing software and IT platforms, and expanding system automation. These standards are reviewed regularly and reassessed to identify the solutions tailored to meet the needs of our customers. The phases of the planning process are described in Section 3.5. While the plan phases are defined, the process is fluid and the re-iteration through the phases occurs many times throughout the year as new factors are introduced and other factors change such as regulatory requirements, customer needs, and system conditions.

Section 3.5 Phases of the Planning Process

Phase I – Initiation and Planning: During this initial phase, the business areas focus on the Companies' strategic objectives to meet the needs of the systems and of its customers effectively and efficiently. A description of each of those objectives are as follows:

- **Objective 1 – Maintain and Improve System Safety**: Safety is each Company's number one priority, and each Company accordingly places significant emphasis on the safety of its employees and the public. The Companies operate a "no harm" culture and will continue to make investments to assure the safe and reliable operation of the system.

  No aspect of the Companies' operations is more important than accident prevention. Safety is a value that does not change. There is no job so

important that established safety rules should ever be compromised. Management strives to provide a hazard-free work environment that complies with all applicable health and safety laws and regulations, and educates employees, customers and the public about health and safety hazards associated with our operations. Further, management is committed to the recognition, assessment, and control of health and safety hazards related to each of the Company's facilities and operations.

Each Company continues to upgrade the physical security at and around the NYSEG and RG&E facilities as well as the overall cyber security infrastructure to keep the Companies' employees and the public safe, to help ensure the integrity of the Companies' systems and provide reliable service to customers. These upgrades include improved access control, video surveillance and alarming capabilities. More stringent NERC standards require the Companies to improve and expand its security capabilities to protect critical electric system infrastructure. Further, the challenges that each Company faces to ensure data protection, privacy and ensuring compliance with regulatory and legal mandates continue to grow as threats evolve and grow increasingly more sophisticated.

- **Objective 2 – Meet the Electric Needs of our Customers**: Each Company needs to provide reliable and dependable electric service to large commercial and industrial customers as well as residential customers. Often large commercial and industrial customers require an upgrade to a Company's electric facilities to meet their needs, and the Companies strive to make these upgrades in a timely manner. In certain cases, all, or a portion of the costs of these upgrades may be offset by contributions from the specifically affected customers. The Companies are working to enhance the process through which customer contributions in aid of construction ("CIAC") are determined. Additionally, with the increased proliferation of distributed energy resources

(DER) on the electric system, the Companies must interconnect large and small generation projects to its transmission and distribution system, as requested by customers and in accordance with applicable regulatory requirements.

- **Objective 3 – Achieve Service Reliability and Quality Targets**: The Electric Plan supports this strategic objective by the following actions:
  - Prevent or minimize system violations on lines and transformers and other electrical elements under normal operating conditions (N-0) at peak demand.
  - Prevent or minimize system adverse impacts caused by contingency situations (N-1) and (N-1-1); and
  - Enhance operation and restoration of the system through replacement and modernization of end–of-life equipment.

- **Objective 4 – Replace Assets and Facilities Based on Condition and Obsolescence**: Each Company continuously reviews equipment and facilities to determine which assets may be in need of replacement. Typically, those assets are identified due to one of the following conditions:
  - Equipment and facilities with high failure rates.
  - Technological obsolescence (e.g. inability to obtain spare parts).
  - Facilities that are determined to be beyond their useful operating life and the maintenance of such equipment is no longer cost effective.
  - Equipment with high maintenance costs for reasons other than their deteriorating condition.
  - Risk of not meeting safety, reliability, and environmental objectives; and
  - Other indicators of asset health.

- **Objective 5 – Improve Effectiveness and Efficiency Through Modernization**: Each Company continually looks for ways to make operations more effective and efficient. One of those ways is through network automation. The Companies continue to modernize the operations of its systems, enhancing the effectiveness with which NYSEG and RG&E serves customers, and enhancing reliability and efficiency. On the electric system, the primary customer benefit of automation is more efficient and effective response to distribution circuit outages thereby limiting the number of customers impacted by an outage event. The crews restoring service will receive notification of an outage sooner than they would have absent an automated system of notification. Adding reclosers on distribution lines reduces the potential number of customers whose service is impacted during an outage and reclosers can quickly relay the location of an outage to the Companies' energy control centers (ECCs). Additionally, the Companies project an increase in crew efficiency due to the reduction of travel time to assess an outage. Investment in automation will also be compatible with technologies required for the development of a smart grid.

- **Objective 6 – Enable Clean Energy Transformation**: Advance New York State's CLCPA goals and other clean energy / decarbonization ("electrification") initiatives being proposed by the state and local municipalities.

Phase II – Data Gathering and Analysis: Given the objectives of the Companies, the business areas analyze data to determine whether the objectives are being met. The data is collected and provided through several different methods such as asset condition health assessments, inspection programs, failed equipment information, and asset replacement practices.

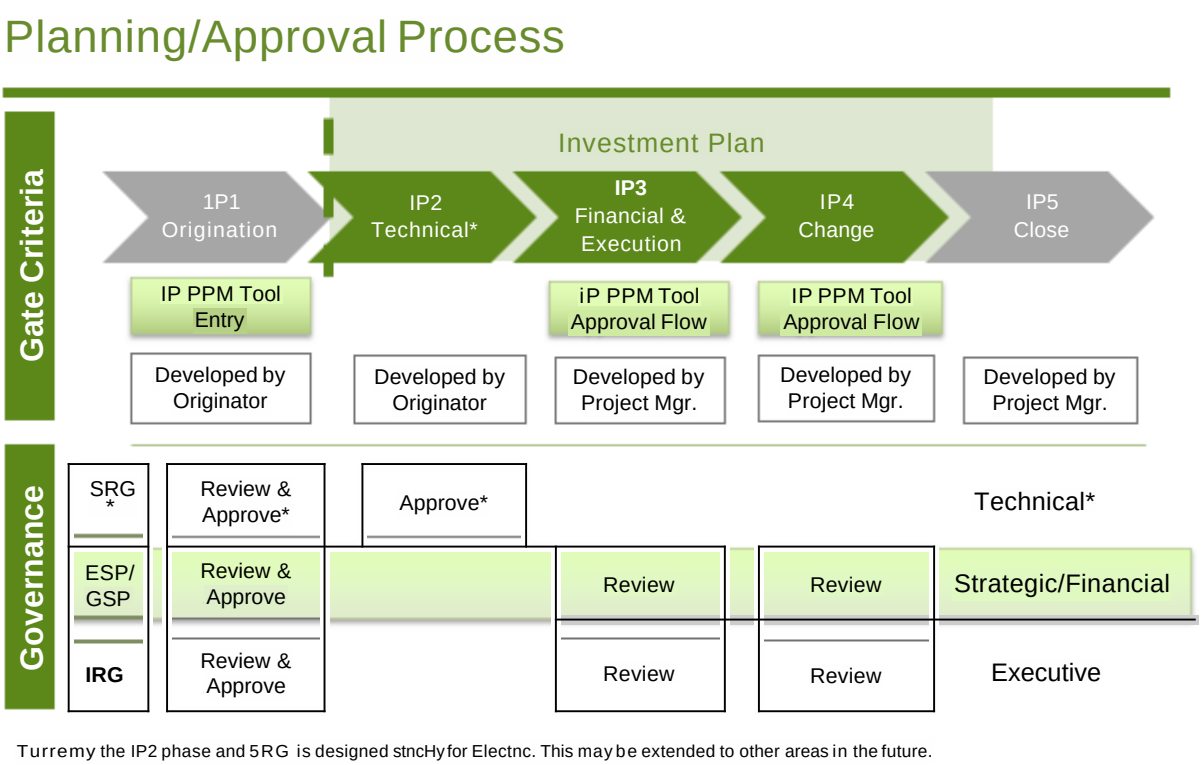
The business areas determine the data that needs to be collected and reviewed to assess the system needs. For instance, fleet replacement is determined by application of the established fleet replacement procedure which contains specific criteria for replacement including age, maintenance, and condition. With electric and gas equipment, there are many factors which contribute to the inclusion of projects in the plan, including customer and capacity needs, the overall obligation to serve, reliability indices, asset health, system hardening needs, adherence to operating standards, and support of normal operations. New projects are initiated, and current projects may be adjusted, based on the information that has been collected and analyzed.

Phase III – Individual Budget and Plan Development: Upon the completion of the analysis and data gathering efforts, the business areas then develop and/or modify the individual project forecasts. These individual project forecasts comprise a business area's forecast which in turn becomes a component of the Companies total capital plan. Business area plans can-and-do change based on a variety of factors, including system conditions, customer needs, regulatory requirements, supply chain lead times, and material costs. These conditions are reviewed and addressed by the business areas.

Phase IV – Plan Review and Alignment: Utilizing the information and budget data from each area's individual plans, the Companies' capital investment plan is compiled. The plan is reviewed for alignment across the business areas and may be adjusted during the review process.

Section 3.6 Capital Investment Planning Approval Process

The Companies' have designed the Planning and Investment Approval Process to be in alignment with the Companies' planning objectives as described above. The process includes Governance oversight, and project review and approval stage gates with an overall focus on project justification, review, and prioritization. A graphic representation of the planning processes is shown below.



Turremy the IP2 phase and 5RG is designed stncHy for Electnc. This may be extended to other areas in the future.

Figure 1 – Investment Planning and Approval Process

Governance:

Depending on the value, complexity and nature of the investment, proposed projects and previously identified projects are reviewed by one or more of the following governance review groups through the approval process.

- System Review Group (SRG) – This group reviews the technical and engineering aspects of certain electric system investments.

- Electric/Gas Strategic Planning Group (ESP/GSP) – This group provides for the review and approval of investments for inclusion in the plan, as well as providing financial authorization. This group reviews projects across all electric, gas, and common business areas and provides both initial financial approval as well as approval for changes.
- Investment Review Group (IRG) – This group is comprised of executives and provides them the opportunity to review investments to move forward as suggested.

Stages in the Investment Planning Approval Process:

The approval process consists of a staged approach. This staged approach to investment approval where investments are approved at distinct points (gates, noted as IP1, IP2, etc. in Figure 1) throughout the process provides for:

- Separate concept and technical/engineering approval stages that ensure only those projects that have viable solutions have resources allocated to develop full technical specifications.
- Separate governance reviews and approvals for financial/execution before expending funds.
- Re-approval of investments while not necessary for all projects does allow for Governance Teams to challenge the underlaying reasons for those that do propose a change to the scope, schedule, or cost of a project. This also has the advantage in that it tends to draw out lessons learned for application to future projects.

The five-stage Investment Planning Approval gates are described in detail below and illustrated in Figure 2.

- **Conceptual Approval (IP1)**: An IP1 is required to initiate a new project/program for its inclusion into the capital investment plan. All projects not currently in the capital investment plan begin with this phase. IP1's are presented to the appropriate governance groups for approval or further action based on the level and complexity of the projects.

- **Technical/Engineering Approval (IP2)**: The approval is facilitated by the SRG governance group to review the need and technical aspects of certain electric projects including proposed solution design, alternatives considered, capital expenditure levels, project timeline, environmental concerns, and other pertinent information deemed necessary.

- **Financial/Execution Approval (IP3)**: This stage represents the approval to expend funds on the execution of the project. For those projects requiring IP2 approval, this stage follows that approval. This is done by submitting an IP3 for review and approval. They are presented to appropriate governance groups for approval or further action based on the level and complexity of the projects and then flows through the required grants of signing authority. Discussions at governance groups include level of the budget, regulatory position, alternative options, project risks, and other project details.

- **Change Approval (IP4)**: An IP4 is required for all project changes that fall outside allowed project tolerance parameters. Project changes are presented to the governance review groups based on the complexity and level of the investment. The discussions include reason for the change to scope, schedule and/or cost, nature of the expenditure, impact on current budget/forecast/plan, and regulatory considerations.

- **Project Close (IP5)**: When a project is materially, technically, and financially complete, the project manager follows through with closure procedures.

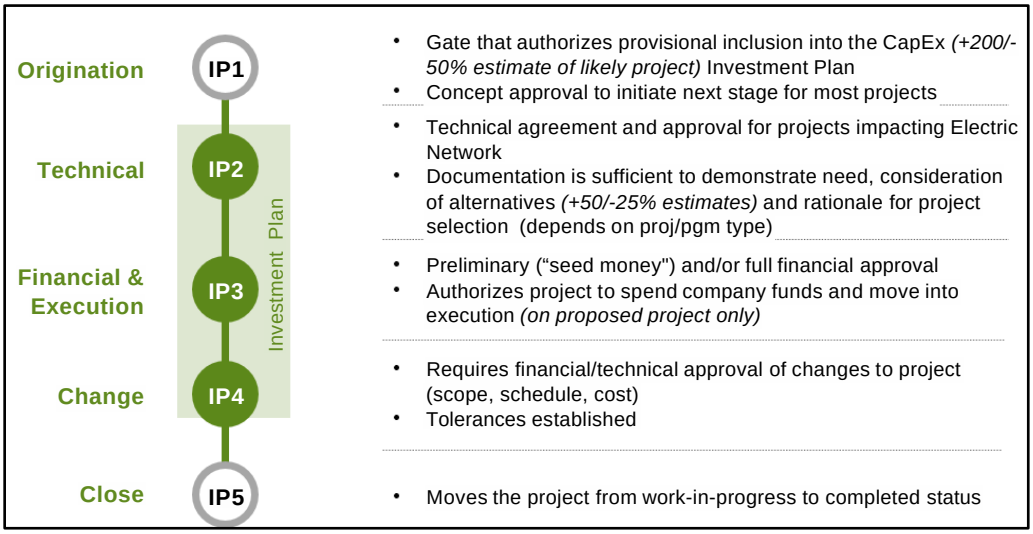


Figure 2 – Investment Planning Gates

Chapter 4 Project / Program Categorization

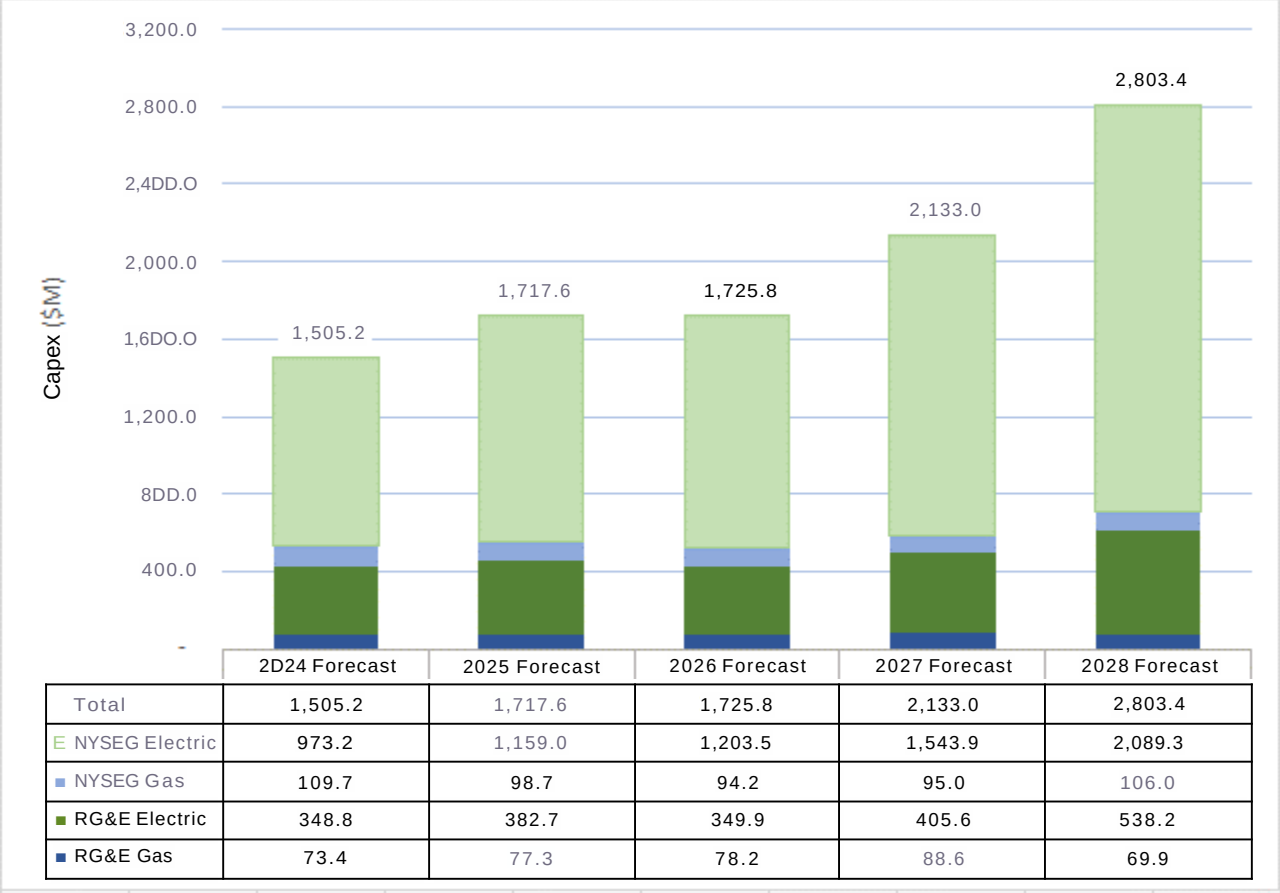
The following is a list of principal categories that were applied across the portfolio of projects / programs with associated descriptions for each. *It should be noted that these categories are not listed in any particular order*.

- Asset Condition: This category includes those projects and programs that are needed to address assets deemed to be beyond their useful operating life expectancy. These projects / programs are identified as a result of various Planning studies, ongoing Maintenance programs, and immediate needs brought forth by System Operations. For Gas, this group includes Regulator and gate station improvements, distribution and transmission main replacement projects, pressure reliability projects, and other asset condition projects.
- Reliability: This category includes those projects and programs that are needed to address immediate and longer-term system needs such as thermal / capacity overloads, voltage, and loss-of-load violations. For Gas, this group includes the Leak Prone Main Replacement program and regulator station upgrades not related to asset condition.
- Resiliency: This category includes those projects and programs that are needed to strengthen existing facilities to withstand extreme weather events and improve system restoration capabilities following any number of unplanned transmission and distribution contingency events. These projects/programs seek to improve overall system flexibility and provide system operators with the appropriate visibility and field infrastructure to quickly restore power and minimize customer exposure following a contingency event.
- Compliance (Electric Only): This category includes those projects and programs that are needed to address compliance requirements/criteria, mandates, orders, or other regulatory / governmental direction such as the NERC BES Program (TPL-001-4) or the NERC Alert Program.

- Clean Energy Transformation: This category includes those projects and programs that are needed to enhance system capabilities and accommodate an increased level of renewable resource penetration and/or support proposed local municipality grid modification initiatives (e.g., “electrification”). This category includes projects such as the CLCPA Transmission Projects that were recently developed in support of NY’s CLCPA.
- Customer Focus: This category includes those projects and programs that are needed to meet the needs of our customers. This category of projects / programs includes initiatives such as new connections, state and municipal projects and customer lighting.
- Modernization: This category includes those projects and programs that are needed to enhance the companies’ ability to operate the system in a more effective and efficient manner. This category of projects / programs includes those which are designed to address outdated business systems and metering infrastructure.
- Mandatory (gas only): This category includes projects and programs that are required by tariff, regulatory order, or law and/or related to the safety of employees and/or the public.
- Innovation: This category includes projects that introduce a new or significantly improved product or process, a new business practice or development of external relations.

Chapter 5 Capital Investment Plan

The Capital Investment Plan, summarized by Company and Line of Business for the five-years, 2024-2028, is presented below:



	2D24 Forecast	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast
Total	1,505.2	1,717.6	1,725.8	2,133.0	2,803.4
NYSEG Electric	973.2	1,159.0	1,203.5	1,543.9	2,089.3
NYSEG Gas	109.7	98.7	94.2	95.0	106.0
RG&E Electric	348.8	382.7	349.9	405.6	538.2
RG&E Gas	73.4	77.3	78.2	88.6	69.9

Figure 3 – NYSEG and RG&E Capital Investment Plan

Chapter 6 Electric and Generation Capital Investment Forecast

This section will further detail by major investment category the overall Electric and Generation capital investments. The categorization of the Plan is grouped into Asset Condition, Reliability, Resiliency, Compliance, Clean Energy Transformation, Customer Focus, Modernization, Innovation, and Hydro Generation. The sub sections below summarize the major investment categories for the five years 2024-2028.

Section 6.1 Electric and Generation Capital Investment Requirements

The Capital Investment Forecast for the five-year period 2024-2028 for NYSEG Electric and Generation[2] Table 1 and for RG&E Electric and Generation[3] Table 2 are shown below.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Asset Condition**	**$ 114,834**	**$ 119,740**	**$ 155,451**	**$ 311,520**	**$ 427,398**	**$ 1,128,943**
2	**Reliability**	100,958	51,455	13,036	53,935	106,648	326,032
3	**Resiliency**	118,903	152,894	115,330	75,845	94,807	557,779
4	**Compliance**	64,215	56,861	55,193	67,303	163,735	407,307
5	**Clean Energy Transformation**	96,282	166,646	372,074	362,703	197,733	1,195,438
6	**Customer Focus**	184,322	191,939	187,880	236,380	292,203	1,092,725
7	**Modernization**	7,348	7,485	3,563	8,959	3,684	31,038
8	**Innovation**	9,915	6,813	-	1,743	3,010	21,481
9	**Hydro-Generation**	20,268	23,376	28,031	26,128	18,549	116,352
10	**AMI**	57,974	36,043	5,296	6,619	8,274	114,206
11	**Subtotal Electric Capital**	**775,018**	**813,250**	**935,854**	**1,151,136**	**1,316,041**	**4,991,299**
12							
13	**Common Allocation to Electric Business**	97,802	92,861	83,036	123,590	135,574	532,863
14	**Subtotal Electric Capital**	**872,820**	**906,111**	**1,018,890**	**1,274,726**	**1,451,616**	**5,524,162**
15							
16	CLCPA Phase 2	96,681	249,550	181,194	269,130	637,710	1,434,265
17	IEDR Phase 1 and 2	3,729	3,326	3,386	-	-	10,442
18	**Subtotal NYSEG CLCPA Ph2, IEDR Ph1 and 2**	**100,410**	**252,876**	**184,581**	**269,130**	**637,710**	**1,444,707**
19							
20	**Total NYSEG Electric Capital**	**$ 973,230**	**$ 1,158,987**	**$ 1,203,470**	**$ 1,543,856**	**$ 2,089,326**	**$ 6,968,869**

Table 1 – NYSEG Electric and Generation Capital Investment Forecast

[2] Note: NYSEG Common allocation to the Electric Line of Business is 80.26%.
[3] Note: RG&E Common allocation to the Electric Line of Business is 71.39%.

	A	B	C	D	E	F	G
	$ in thousands	2024	2025	2026	2027	2028	Total 2024-2028
1	Asset Condition	$ 53,486	$ 66,119	$ 55,386	$ 61,084	$ 103,553	$ 339,628
2	Reliability	60,257	46,904	38,431	63,531	81,561	290,683
3	Resiliency	16,157	22,170	23,040	29,338	26,066	116,772
4	Compliance	40,188	47,323	41,903	23,215	20,040	172,671
5	Clean Energy Transformation	-	-	-	-	-	-
6	Customer Focus	90,125	109,281	117,990	128,904	158,341	604,640
7	Modernization	3,787	4,266	2,248	3,010	1,272	14,583
8	Innovation	4.764	4,667	-	759	1,510	11,700
9	Hydro-Generation	11,061	16,779	29,478	44,704	29,161	131,182
10	AMI	27,962	21,057	-	-	-	49,018
11	Subtotal Electric Capital	307,786	338,565	308,477	354,544	421,505	1,730,877
12							
13	Common Allocation to Electric Business	35,720	34,186	33,048	44,418	44,341	191,713
14	Subtotal RG&E Electric Capital	343,506	372,750	341,525	398,963	465,846	1,922,590
15							
16	CLCPA Phase 2	3,300	8,119	6,579	6,641	72,316	96,955
17	IEDR Phase 1 and 2	2,008	1,791	1,823	-	-	5,623
18	Subtotal RG&E CLCPA Ph2, IEDR Ph1 and 2	5,308	9,910	8,402	6,641	72,316	102,578
19							
20	Total RG&E Electric Capital	$ 348,814	$ 382,661	$ 349,927	$ 405,604	$ 538,162	$ 2,025,167

Table 2 – RG&E Electric and Generation Capital Investment Forecast

Section 6.2 Electric Asset Condition Capital Investment Forecast

This category provides a further breakdown of expenditures required to accommodate projects and programs related to asset condition improvements. The Electric Asset Condition Capital Investment Forecast is summarized for NYSEG Electric in Table 3 and for RG&E Electric in Table 4.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Asset Condition**	**$ 114,834**	**$ 119,740**	**$ 155,451**	**$ 311,520**	**$ 427,398**	**$ 1,128,943**
2	Battery Program	600	722	394	826	1,000	3,542
3	Distribution Line Deficiencies	18,193	16,000	18,000	22,500	28,125	102,818
4	Electric Betterments	15,484	15,403	8,113	14,318	15,213	68,531
5	Gardenville Substation Rebuild	2,080	654	695	5,961	26,559	35,949
6	General Equipment - Ops-SO	942	214	219	273	342	1,990
7	General Equipment - Ops-T&D	3,145	472	590	738	922	5,866
8	Line 803 - Croton to Tilly Foster Rebuild	-	-	-	-	5,000	5,000
9	Line 880 Rebuild	311	302	327	15,202	8,737	24,880
10	Line 890 Rebuild	175	178	189	15,394	13,769	29,705
11	Meyer Substation Rebuild	11,283	11,092	1,560	6,500	50,000	80,435
12	Oneonta Roxbury Run URD Rebuild	395	176	-	-	-	571
13	PCB Transformer Replacements	-	(0)	1,600	1,180	3,016	5,796
14	Pole Replace (WPIT) Program	22,618	18,893	8,500	29,858	31,612	111,481
15	South Perry New Sub & Trans Line Upgrade	1,000	272	260	7,476	30,276	39,285
16	Substation Major Program	9,161	756	771	964	21,204	32,856
17	Substation Minor Capital	6,475	2,077	2,197	2,747	3,433	16,930
18	Substation Modernization - Clark Street	-	-	1,362	5,770	2,427	9,559
19	Substation Modernization - Noyes Island	-	-	11,145	31,304	22,009	64,458
20	Substation Modernization - South Owego	-	-	-	10,917	3,353	14,269
21	Substation Modernization - Wright Avenue	-	-	37,262	21,023	4,745	63,031
22	T&S Asset Condition Replacement Program	-	-	-	-	10,000	10,000
23	TLD Replacements	22,971	51,448	61,705	117,794	144,833	398,752
24	URD Replacement Program	-	1,080	563	776	821	3,239
25	**Total**	**$ 114,834**	**$ 119,740**	**$ 155,451**	**$ 311,520**	**$ 427,398**	**$ 1,128,943**

Table 3 – NYSEG Electric Asset Condition Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Asset Condition**	**$ 53,486**	**$ 66,119**	**$ 55,386**	**$ 61,084**	**$ 103,553**	**$ 339,628**
2	Battery Program	501	696	737	773	-	2,707
3	Distribution Line Deficiencies	1,241	1,399	1,277	1,596	1,995	7,508
4	Electric Betterments	2,466	2,748	2,349	5,380	5,981	18,924
5	General Equipment - Ops-SO	323	321	327	409	511	1,891
6	General Equipment - Ops-T&D	824	849	875	1,094	1,367	5,009
7	PCB Transformer Replacements	-	-	5,000	6,250	7,813	19,063
8	Pole Replace (WPIT) Program	5,116	4,797	4,101	5,842	6,429	26,285
9	Station 156 Circuit Upgrades	2,290	2,006	36	-	-	4,332
10	Station 156 Transf. Facilities Upgrade	2,778	1,147	679	-	-	4,605
11	Station 192 Circuit Upgrades	5,454	-	-	-	-	5,454
12	Station 192 Trans Facilities Upgrade	1,180	6,834	5,366	650	-	14,029
13	Station 29 Modernization Project	-	77	82	103	1,831	2,092
14	Station 34 Modernization Project	-	68	73	2,078	5,083	7,302
15	Station 37 Modernization Project	99	107	115	123	4,455	4,899
16	Station 43 Circuit Upgrades	9,531	8,471	5,519	43	-	23,564
17	Station 43 Modernization Project	-	-	903	-	-	903
18	Station 5 Substation Mod	10,580	12,316	-	-	-	22,896
19	Station 51	1,022	5,572	4,755	-	-	11,349
20	Station 82 Upgrades	-	539	578	2,629	10,962	14,708
21	Substation Major Program	1,223	1,193	1,240	11,550	24,438	39,643
22	Substation Minor Program	873	793	817	1,021	1,277	4,781
23	TLD Replacements	2,035	2,686	2,653	1,248	1,277	9,899
24	UG Cable Replacements	3,787	3,500	2,905	1,546	6,696	18,434
25	**URD** Replacement Program	2,164	10,000	15,000	18,750	23,438	69,351
26	**Total**	**$ 53,486**	**$ 66,119**	**$ 55,386**	**$ 61,084**	**$ 103,553**	**$ 339,628**

Table 4 – RG&E Electric Asset Condition Capital Investment Forecast

The following describes some of the key program investments which are forecasted under the Electric Asset Condition category:

- Transmission Line Deficiency (TLD) Replacement Program: The Transmission Line Deficiencies (TLD) Replacement program focuses on an "in-kind[4]" structure replacement strategy on transmission lines with known structural / equipment needs. Line segments requiring upgrades are based on needs identified through various inspection programs (crossarm inspections, aerial inspections, infrared inspections, Transmission Line Inspection program and Wood Pole Inspect and Treat Program). The order in which this work is executed is informed by a prioritization tool/algorithm and individual line intervention scopes are determined following a detailed review of facility need(s).
- Wood Pole Inspect and Treat (WPIT) Program: The Wood Pole Inspect and Treat (WPIT) program is a program focused on the inspection and refurbishment

[4] The "in-kind" replacement approach is aimed at replacing single facilities that do not meet minimum structural loading criteria. Facilities identified for replacement are designed in accordance with the most current NYSEG and RGE structural standard requirements.

of wooden poles across the distribution system. The inspection uses specialized contractors to inspect wood poles at ground line for wood decay and insect damage. The inspection also consists of excavation and boring into the pole to identify decay at and below ground line. When a pole is deemed insufficient, it is rejected and identified as requiring a pole replacement generating a notification.

- Distribution Line Deficiencies (DLD) Program: The Distribution Line Deficiencies (DLD) program (previously Distribution Line Inspection DLI) seeks to perform permanent repairs on all existing open notifications resulting from distribution line inspections. The program strategy on completing this work is in a "circuit sweep" methodology. By prioritizing circuits based on their impact to customer reliability and SAIFI/CAIDI scores, permanent repairs on will be performed on all open DLD notifications of the selected circuit. The intention is to complete work on the backlog while simultaneously working to become current on all due dates, meeting the inspection priority requirements.
- Electric Betterment Program: The Betterments Program focuses on the replacement of various transmission and distribution system elements that contribute to high SAIFI measures. Electric Betterment projects are aimed at improving the reliability of worst performing circuits and maintaining the safe and reliable delivery of electricity to our customers. These projects focus on the reliability, operability, and flexibility of the electric distribution system. This program allows divisions to respond to smaller identified jobs to better improve reliability metrics and reduce the frequency and duration of customer outages.
- Substation Minor Program: The Substation Minors Program covers work at substations under $500K which is the lower threshold for any major project. This program includes the replacement of substation components such us: (1) transformer CCVT/CT/PT's, (2) transformer component replacements, (3) substation fences, (4) insulators, (5) relays, (6) arresters, etc. The scheduled replacement of the above elements contributes to the reduction of outages as a

result of substation equipment failures, which that has been identified as the main root cause of substation outages. The Substation Minors Program is expected to contribute to a reduction in SAIFI due to reasons listed above.

- RG&E UG Cable Replacement Program (URD): The objective of the program is to replace aged / obsolete underground cables proactively and preventatively at RG&E, predominantly in the Rochester Region (City of Rochester). Approximately 510 sections of aged and obsolete cable were identified, with the oldest installation being 101 years old as of 2021. Priority One; is to address the '4-core' cable as identified in our records. These cable sections will be prioritized first by the total number of downstream customers connected. In addition to the obsolete cable, any 'pump-log' duct (i.e., wooden ducts) that are encountered will be replaced in conjunction with any cable replacements. Likewise, any collapsed ducts will be replaced as encountered. External vendors will be utilized for camera inspections to help predetermine scope, i.e., cable replacement or total rebuild of the ducted system. While the mainlines with the highest customer counts will be done first, any 'side taps', i.e., smaller laterals off the mainline will also be replaced at that time. This is both for the obvious synergistic efficiencies gained, as well as to avoid negative impacts from stakeholders such as customers, public officials, or the media, if we were to revisit and disturb an area twice. One caveat to the priority noted in #1 above; if a given street is on the City of Rochester's Moratorium List, then it will be deferred until the city will allow any Utility work to commence. Similarly, if there are repeat and/or frequent outages to a section of cable already identified per this program, that section will be moved up the priority list accordingly. Lastly, pending cable replacements will be reviewed regarding any planned Highway Reconstruction or Relocations. The timing can be advanced or delayed, to align our schedules.

Section 6.3 Electric Reliability Capital Investment Forecast

This category provides a further breakdown of expenditures required to accommodate projects and programs related to reliability. The Electric Reliability Capital Investment Forecast is summarized for NYSEG Electric in Table 5 and for RG&E Electric in Table 6.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Reliability**	**$ 100,958**	**$ 51,455**	**$ 13,036**	**$ 53,935**	**$ 106,648**	**$ 326,032**
2	Animal Guard Program	3,395	2,755	999	1,293	1,364	9,808
3	Breaker Replacement Program	22,703	21,121	6,000	42,569	53,212	145,605
4	Circuit Sensor Implementation	6,232	977	36	72	72	7,389
5	Cobble Hill Transformer Replacement	6,376	3,000	-	-	-	9,376
6	Craryville New Substation Breaker And Circuit Upgrade	2,528	-	-	-	-	2,528
7	Dingle Ridge -2nd Bank and 13.2 kVConv	10,424	-	-	-	-	10,424
8	Distribution Load Relief Program	10,893	10,073	3,001	3,000	30,000	56,967
9	Hillcrest Transformer Replacement	5,180	-	-	-	-	5,180
10	Homer City Capital Breakers & Upgrades	1,000	-	-	-	-	1,000
11	Line 620 Rebuild- 34.5 kV	-	-	-	-	5,000	5,000
12	Milo Substation Rebuild	7,777	5,641	-	-	-	13,418
13	Mobile #2 Replacement	2,778	661	-	-	-	3,438
14	Mobile #4 Replacement	2,970	757	-	-	-	3,727
15	North Brewster Reinforcement	5,987	4,813	3,000	7,000	7,000	27,800
16	Sackett Lake Replace Transformer	1,465	-	-	-	-	1,465
17	Sloan Substation Load Relief	246	-	-	-	-	246
18	Substation Modernization - Raquette Lake	3,500	-	-	-	-	3,500
19	Swift Street - Stryker Avenue Load Transfer	306	-	-	-	-	306
20	Transmission Reinforcement Program	1,000	-	-	-	10,000	11,000
21	Wood Street New 3rd 345 115 kV Trans	6,199	1,658	-	-	-	7,857
22	**Total**	**$ 100,958**	**$ 51,455**	**$ 13,036**	**$ 53,935**	**$ 106,648**	**$ 326,032**

Table 5 – NYSEG Electric Reliability Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Reliability**	**$ 60,257**	**$ 46,904**	**$ 38,431**	**$ 63,531**	**$ 81,561**	**$ 290,683**
2	Animal Guard Program	1,656	1,108	988	912	1,005	5,669
3	Breaker Replacement Program	11,658	9,290	10,630	12,892	12,892	57,362
4	Circuit Sensor Implementation	2,882	2,353	-	-	-	5,236
5	Comprehensive Area Studies	-	-	-	-	10,000	10,000
6	Distribution Load Relief Program	4,234	600	-	10,000	10,000	24,834
7	GMI-Station 168 Service Area Reinforcements	11,165	5,015	-	-	-	16,181
8	iTOA Implementation	33	32	-	-	-	65
9	Replace DC Pilot Wire System	3,903	2,347	2,107	-	-	8,357
10	Station -Circuit 261	61	3,189	1,294	-	-	4,543
11	Station 117	269	291	312	335	176	1,383
12	Station 210 -Circuit 207	2,098	-	-	-	-	2,098
13	Station 210 Modernization	7.418	897	-	-	-	8,315
14	Station 46 - Replace #1 #3 Transf. Banks	4,939	1,435	-	-	-	6,374
15	Station 49 4KV to 12KV Upgrade	-	-	-	-	5,000	5,000
16	Transmission Reinforcement Program	1,000	-	-	7,000	15,000	23,000
17	Webster Area Projects	2,662	8,735	5,192	17,638	12,487	46,714
18	Webster Area Substation	6,278	11,611	17,910	14,753	15,000	65,552
19	**Total**	**$ 60,257**	**$ 46,904**	**$ 38,431**	**$ 63,531**	**$ 81,561**	**$ 290,683**

Table 6 – RG&E Electric Reliability Capital Investment Forecast

The following describes some of the key program investments which are forecasted under the Electric Reliability category:

- Breaker Replacement Program: The Substation Circuit Breaker Replacement program prioritizes the substation circuit breakers in need of upgrades based on the latest health and risk assessment conducted by T&S planning. The assessment lists candidate units to be evaluated for replacement by investigating specific needs including operational and maintenance issues identified for each unit, and coordinating with system operations, maintenance engineering, and the project teams.
- Comprehensive Area Studies (Distribution-Planning): The Distribution Comprehensive Area Improvement Program will consist of several projects that will be identified by the Electric Distribution Planning management team through a process of identifying needs and performance issues that exist under current and future (10 year) loading/topology projections that will negatively impact the ability to provide reliable and consistent power to our customers. Comprehensive area studies are performed on substations and distribution feeders, analyzing present and future conditions related to distribution system capacity loading, common operating voltage conditions, load balancing, reliability and resiliency, loss of load, voltage and power factor quality, distributed generation, hosting capacity and distribution automation and SCADA needs.
- Animal Guard Program: This program will target the worst performing circuits for animal guard installation with the goal of increasing service reliability through minimizing animal contact on distribution transformers. Guards are to be installed on distribution transformer bushings, arresters, and LA brackets, if applicable.
- Distribution Load Relief Program: The objective of the Distribution Load Relief Program is to conduct system-wide facility analyses on substations and distribution circuits that are overloaded and/or start to exceed 90% capacity and to develop a mitigation strategy (projects) to enhance the condition of these

assets so they don't exceed their associated system normal thermal ratings. These comprehensive analyses will include an electrical assessments and asset condition screening assessments which will include an assessment of age of equipment, resiliency/flooding impacts, substation P&C assessment, substation reliability performance, etc. The Companies are first prioritizing substation transformer needs and will later focus on addressing distribution circuit overloads.

- Transmission Reinforcement Program: In 2021 AVANGRID Transmission Planning completed a needs assessment on the local transmission system and identified over 170 loss of load, thermal, and voltage criteria violations that can directly affect our customers. Based on the quantity of identified needs NYSEG and RGE expect that a significant investment is needed to reinforce the local transmission systems so that they meet the NYSEG/RGE Transmission Planning loss of load, thermal, and voltage criteria. Development of comprehensive solutions for the identified needs, coupled with asset condition assessments will begin in 2022 with many solution designs expected to be finalized by 2025. Solution development and project execution will be prioritized based on several factors such as customer benefit, asset health, and solution complexity. This Program is to address needs identified on the NYSEG and RGE Transmission System.

Section 6.4 Electric Resiliency Capital Investment Forecast

This category provides a further breakdown of expenditures required to accommodate projects and programs related to resiliency. The Electric Resiliency Capital Investment Forecast is summarized for NYSEG Electric in Table 7 and for RG&E Electric in Table 8.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Resiliency**	**$ 118,903**	**$ 152,894**	**$ 115,330**	**$ 75,845**	**$ 94,807**	**$ 557,779**
2	DSIP - Grid Automation	25,311	30,310	15,848	19,810	24,762	116,041
3	New York 21st Century Grid Plan (Cheektowaga)	59,728	86,976	66,297	-	-	213,000
4	Resiliency Automation, Hardening And Topology	26,929	28,006	28,006	35,008	43,760	161,709
5	SCADA Automation	3,579	7,601	5,179	16,832	21,039	54,230
6	Trip Saver	3,357	-	-	4,196	5,245	12,798
7	**Total**	**$ 118,903**	**$ 152,894**	**$ 115,330**	**$ 75,845**	**$ 94,807**	**$ 557,779**

Table 7 – NYSEG Electric Resiliency Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Resiliency**	**$ 16,157**	**$ 22,170**	**$ 23,040**	**$ 29,338**	**$ 26,066**	**$ 116,772**
2	DSIP - Grid Automation	1,903	2,495	2,545	5,145	5,125	17,212
3	Resiliency Automation, Hardening And Topology	9,700	10,194	10,984	13,234	13,129	57,241
4	SCADA Automation	3,328	4,482	4,511	4,709	-	17,030
5	Trip Saver	1,226	5,000	5,000	6,250	7,813	25,289
6	**Total**	**$ 16,157**	**$ 22,170**	**$ 23,040**	**$ 29,338**	**$ 26,066**	**$ 116,772**

Table 8 – RG&E Electric Resiliency Capital Investment Forecast

The following describes some of the key project and program investments which are forecasted under the Electric Resiliency category:

- Resiliency Program: NYSEG/RG&E's Distribution Resiliency Plan ("Resiliency Plan") will enhance resiliency and reliability on the worst performing circuits across the NYSEG and RG&E service territories. These circuits were identified by the Electric Distribution Planning management team as having deficiencies and performance issues that negatively impact service reliability to our customers. The Resiliency Plan is designed to enhance the resiliency of our electric distribution system in response to more intense and more frequent storms. This is driven by a consensus among our Companies, our customers, state policy makers, and regulators, about the importance of grid resiliency given the number and severity of storms over the past several years. NYSEG/RG&E

resiliency programs sit alongside numerous other capital and O&M programs that our Companies use to ensure the reliable operation of the transmission and distribution systems. These include betterments, grid modernization programs such as distribution automation and smart grid, and vegetation management. The Resiliency Plan focuses on three critical program components: (1) enhanced vegetation management, (2) hardening, and (3) topology, with automation.

- New York 21st Century Grid Plan (Cheektowaga): The NY 21st Century "Cheektowaga" Project is an emergent project that was informed by an integrated T&D Planning Study that was performed in 2023. NYSEG is piloting a new all-in-one study approach to include all area needs and propose cost-effective solution alternatives to mitigate existing and future needs. NYSEG believes that this new pilot approach is more efficient and can be used to demonstrate our preferred planning strategy going forward. This project is intended to improve T&D reliability, resiliency, increase capacity, address asset condition needs, and increase field tie switching capabilities through the standardization of voltage levels in the area.
- Distribution System Implementation Plan (DSIP) Grid Automation Program: The Distribution Automation program is intended to provide smart devices on all parts of the electric distribution system. A system fully metered, monitored, and controlled provides integrated system operations, access for competing providers, and enhanced customer services that maximize benefits. This program will include only the purchase and installation of devices that have full communications and control capabilities. All new distribution equipment will be "smart." NYSEG/RG&E also has a strategic plan to deploy digital Remote Terminal Units (RTUs) to provide for status and control of smart devices within substations and on the distribution system. In short, NYSEG/RG&E will continue to automate its entire system, consistent with all applicable standards and requirements.

- SCADA/Automation Program: The goal of this program is to install a remote terminal unit (RTU) in all substations that do not currently have an RTU, as well as integrate all the bays into our master supervisory control and data acquisition (SCADA) system of those stations where there is an RTU is already in service. This program covers the replacement of electromechanical relays with digital relay to make the bays digitalized. The addition of supervisory control and data acquisition in the substations injunction with the installation of digital relays will allow for improved visibility and remote control, proper system protection coordination and outage assessment which in turn will result in quicker response and improved CAIDI and can also improve SAIFI performance over the longer term. Providing remote control capabilities will contribute to increasing the safety of workers while operating the switchgear, preventing them from performing manual commands.

Section 6.5 Electric Compliance Capital Investment Forecast

This category provides a further breakdown of expenditures required to accommodate projects and programs related to compliance. The Electric Compliance Capital Investment Forecast is summarized for NYSEG Electric in Table 9 and for RG&E Electric in Table 10.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Compliance**	**$ 64,215**	**$ 56,861**	**$ 55,193**	**$ 67,303**	**$ 163,735**	**$ 407,307**
2	BES - Baker Hill	131	139	147	401	2,114	2,931
3	BES- Big Tree Road	66	-	-	-	-	66
4	BES - Border City	27	29	31	33	50,323	50,443
5	BES - Colliers	152	161	171	2,120	2,042	4,647
6	BES - Coopers Corners	**4**	**4**	5	4,475	22,906	27,394
7	BES - East Norwich	234	248	263	576	1,312	2,633
8	BES - Erie St	1,973	2,128	2,237	2,962	41,296	50,596
9	BES - Frag Valley	30	31	33	35	1,412	1,542
10	BES - Fuller Hollow / Langdon Rd	157	166	176	2,827	5,024	8,350
11	BES - Klinekill	-	-	-	99	110	209
12	BES-L981	274	291	309	328	1,287	2,489
13	BES - Sleight Rd	20	21	22	24	2,705	2,792
14	BES - South Oneonta Area - Fraser	26,555	37,316	36,508	25,247	-	125,626
15	BES - Ten Mile River to	48	50	54	729	1,753	2,633
16	Cost Sharing	6,368	5,000	5,000	5,000	5,000	26,368
17	DER-ICCP connection to NYISO	-	115	20	-	-	135
18	FERC 881 Regulatory Compliance	3,752	-	-	-	-	3,752
19	FERC Order 2222	4,000	-	-	-	-	4,000
20	NERC Alert Priority III	10,458	11,161	10,217	22,446	26,450	80,731
21	NERC CIP Asset Transition	7,767	-	-	-	-	7,767
22	NERC Compliance Projects	2,200	-	-	-	-	2,200
23	**Total**	**$ 64,215**	**$ 56,861**	**$ 55,193**	**$ 67,303**	**$ 163,735**	**$ 407,307**

Table 9 – NYSEG Electric Compliance Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Compliance**	**$ 40,188**	**$ 47,323**	**$ 41,903**	**$ 23,215**	**$ 20,040**	**$ 172,671**
2	BES -Hook Rd Upgrades (ST 127)	14,856	811	-	-	-	15,667
3	BES-L947	1,290	1,308	654	745	11,193	15,191
4	BES -Line 949 115 kV Line Addition	7,623	36,663	34,017	14,855	79	93,237
5	BES - Station 056 Reconfiguration	4,233	0	-	-	-	4,233
6	Cost Sharing	4,008	3,000	3,000	3,000	3,000	16,008
7	DER-ICCP connection to NYISO	-	120	40	-	-	160
8	FERC 881 Regulatory Compliance	2,519	1,419	-	-	-	3,938
9	FERC Order 2222	2,000	500	500	-	-	3,000
10	NERC CIP Asset Transition	3,660	3,502	3,692	4,615	5,769	21,238
11	**Total**	**$ 40,188**	**$ 47,323**	**$ 41,903**	**$ 23,215**	**$ 20,040**	**$ 172,671**

Table 10 – RG&E Electric Compliance Capital Investment Forecast

The following describes some of the key project and program investments which are forecasted under the Electric Compliance category:

- BES Program NERC Compliance: The objective of the NYSEG/RG&E Bulk Electric System (BES) Program is to identify and address system deficiencies on

the portion of the BES of NYSEG and RG&E in accordance with mandatory North American Electric Reliability Corporation (NERC) reliability standards. The criteria and system performance requirements for the BES are provided in NERC's TPL-001-4 standard. Each transmission owner has an obligation to demonstrate through planning studies that its portion of the BES meets all mandatory NERC requirements. In cases where unacceptable reliability performance is detected, a documented Corrective Action Plan (project) showing how these deficiencies will be mitigated must be developed. To be compliant with NERC TPL requirements a comprehensive planning assessment was performed, initially in 2014, and again in 2018 to incorporate several changes with the most significant being a decline in forecasted load levels. Although the primary focus of this program is to address BES reliability deficiencies, some of the recommended solutions have also been designed to mitigate asset condition and local reliability deficiencies at the same substation locations where significant BES upgrades are being recommended. This approach supports that a comprehensive and cost-effective solution is developed. It should be noted that 14 previously identified BES projects are now included in the CLCPA Transmission Projects Phase 1 suite of projects in support NY's CLCPA objectives. As a result, the portfolio of BES Projects has been adjusted and the remaining projects have been re-prioritized and updated schedules / cost estimate projections have been developed.

- NERC Alert Priority III Program: NERC Alert Phase III scope is to primarily identify asset(s) that are in critical condition to ensure the safety and reliability of the bulk power system mandated by FERC. The program provides concise and actionable information to update the delivery system of our service areas; those upgrades include structure replacements and/or the amendment of structures that are deemed to be in direct violation with the NESC Code or very poor condition and ground clearances that affects the safety & reliability to our customers.

Section 6.6 Electric Clean Energy Transformation Capital Investment Forecast

This category provides a further breakdown of expenditures required to accommodate projects and programs related to Clean Energy Transformation. The Electric Clean Energy Transformation Capital Investment Forecast is summarized for NYSEG Electric in Table 11 and RG&E Electric in Table 12.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Clean Energy Transformation**	**$ 192,963**	**$ 416,196**	**$ 553,268**	**$ 631,833**	**$ 835,443**	**$ 2,629,703**
2	CLCPA Phase 1 - 115 kV Line 961 Rebuild	2,008	1,041	11,315	21,643	36,152	72,159
3	CLCPA Phase 1 - Clarks Corners	4,042	8,637	17,226	1,368	-	31,272
4	CLCPA Phase 1 - Coddington 115/34.5 kV Substation Upgrades	-	-	-	700	3,700	4,400
5	CLCPA Phase 1 - Etna 115/34.5/4.8 kV Substation Full Rebuild	-	-	-	2,900	5,700	8,600
6	CLCPA Phase 1 - Jennison 115 46 kV Substation Upgrades	23,745	34,160	49,081	31,224	-	138,210
7	CLCPA Phase 1 - Lounsberry 115 12.5 kV Substation Full Rebuild	1,398	2,496	10,457	23,544	3,441	41,336
8	CLCPA Phase 1 - Oakdale Westover Solution	53,237	99,930	154,847	112,133	7,529	427,676
9	CLCPA Phase 1 - Robinson Road 230/115/34.5 kV Substation Upgrades	31	33	35	2,077	13,371	15,546
10	CLCPA Phase 1 - Stolle Road 345/230/115/34.5 kV Substation Upgrades	-	-	-	20,000	39,400	59,400
11	CLCPA Phase 1 - Trans Line - 946 Rebuild	1,666	1,693	24,000	10,827	11,469	49,655
12	CLCPA Phase 1 - Trans Line - 949 Rebuild	1,807	1,739	30,339	31,628	19,908	85,420
13	CLCPA Phase 1 - Trans Line - 982 Rebuild	1,703	937	22,849	29,908	11,232	66,629
14	CLCPA Phase 1 - Trans Line 115kv - 962 Rebuild	2,088	1,880	18,566	31,224	26,448	80,206
15	CLCPA Phase 2 - Hickling RR	1,319	10,424	13,828	1,671	704	27,946
18	CLCPA Phase 2 - SS - Bath	8,168	49,339	26,212	61,506	49,544	194,769
17	CLCPA Phase 2 - SS - Bennett	701	2,945	763	5,935	5,521	15,864
18	CLCPA Phase 2 - SS - Eelpot	1,132	31,043	10,498	27,317	31,964	101,954
19	CLCPA Phase 2 - SS - Greenidge	843	1,391	2,668	2,613	4.560	12,076
20	CLCPA Phase 2 - SS - Hickling	2,604	13,876	13,085	25,252	19,598	74,415
21	CLCPA Phase 2 - SS - Hillside	65	3,133	2,963	2,705	312	9,178
22	CLCPA Phase 2 - SS - Montour Falls	9,812	14,175	22,056	2,596	122,401	171,040
23	CLCPA Phase 2 - SS - Stoney Ridge	2,710	12,040	1,828	7,120	7,842	31,538
24	CLCPA Phase 2 - SS - Terminal Upgrades	818	3,690	2,735	-	-	7,243
25	CLCPA Phase 2 - SS - Watercure	8,787	6,624	5,389	19,561	6,762	47,124
26	CLCPA Phase 2 Lines - Line 539	711	852	5,796	7	-	7,366
27	CLCPA Phase 2 Lines - Line 542	1,713	1,850	16,568	21	-	20,153
28	CLCPA Phase 2 Lines - Line 546	2,697	3,985	18,320	13,704	5	38,712
29	CLCPA Phase 2 Lines - Line 565	2,039	2,994	14,594	8,184	-	27,811
30	CLCPA Phase 2 Lines - Line 67	1,040	5,869	3,571	17,013	15,276	42,769
31	CLCPA Phase 2 Lines - Line 68	8,665	5,507	1,050	2,646	27,555	45,423
32	CLCPA Phase 2 Lines - Line 69	192	1,925	1,601	4,199	24,886	32,803
33	CLCPA Phase 2 Lines - Line 711	649	943	701	1,864	4.416	8,573
34	CLCPA Phase 2 Lines - Line 712	212	3,584	2,555	4,295	14,735	25,381
35	CLCPA Phase 2 Lines - Line 72	9,225	6,712	1,510	4,309	40,046	61,802
36	CLCPA Phase 2 Lines - Line 722	4.150	10,545	2,984	975	49,509	68,163
37	CLCPA Phase 2 Lines - Line 723	3,445	4,329	834	9,109	22,025	39,742
38	CLCPA Phase 2 Lines - Line 724	2,557	7,030	813	507	16,317	27,224
39	CLCPA Phase 2 Lines - Line 932	692	1,143	760	11,378	16,225	30,198
40	CLCPA Phase 2 Lines - Line 934	7,179	12,748	1,385	18,374	47,731	87,417
41	CLCPA Phase 2 Lines - Line 935	231	2,697	2,249	685	6,394	12,255
42	CLCPA Phase 2 Lines - Line 953	1,192	1,154	335	5,134	8,682	16,497
43	CLCPA Phase 2 Lines - Line 963	4,703	6,442	425	430	15,211	27,210
44	CLCPA Phase 2 Lines - Line 965	4,464	5,392	1,309	1,530	30,539	43,234
45	CLCPA Phase 2 Lines - Line 968	792	1,507	696	161	3,668	6,824
46	CLCPA Phase 2 Lines - Line 978	799	12,040	485	**484**	17,569	31,378
47	CLCPA Phase 2 Lines - Willis-Malone -Line 910	2,374	1,622	627	7,845	27,714	40,181
48	Ithaca Electrification Project Phase 1	4,274	13,033	23,288	1,542	-	42,136
49	Ithaca Reliability Projects Phase 2 (Electrification)	-	1,000	10,000	10,000	10,000	31,000
50	Java SS Microgrid BESS	283	69	73	31,984	9,383	41,792
51	**Total**	**$ 192,963**	**$ 416,196**	**$ 553,268**	**$ 631,833**	**$ 835,443**	**$ 2,629,703**

Table 11 – NYSEG Electric Clean Energy Transformation Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Clean Energy Transformation**	**$ 3,300**	**$ 8,119**	**$ 6,579**	**$ 6,641**	**$ 72,316**	**$ 96,955**
2	CLCPA Phase 2 - Transmission Projects	158	-	-	-	-	158
3	CLCPA Phase 2 - Lines - Line 906 CAPEX	2,980	7,823	6,279	6,641	72,316	96,039
4	CLCPA Phase 2 - SS - Terminal Upgrades	162	296	300	-	-	758
5	**Total**	**$ 3,300**	**$ 8,119**	**$ 6,579**	**$ 6,641**	**$ 72,316**	**$ 96,955**

Table 12 - RG&E Electric Clean Energy Transformation Capital Investment Forecast

The following describes some of the key project and program investments which are forecasted under the Electric Clean Energy Transformation category:

- CLCPA Transmission Projects Phase I: The portfolio of Phase I CLCPA Transmission Projects originally consisted of 23 projects which were all included in the CLCPA Phase 1 report which was filed on December 23rd. The NYPSC responded on 12/15/2022 with an order granting approval for continued investment in nine of these projects, approval for continued investment with scope reduction for four projects, and the removal of ten projects from the group of CLCPA Phase 1 projects. The projects that were rejected have been removed from the Phase 1 program. These projects will serve a dual purpose of mitigating both asset condition and reliability needs (including NERC BES compliance requirements) and increasing transmission system headroom to accommodate existing and planned transmission-connected renewable resources. The projects are spread throughout the Binghamton, Ithaca, Lancaster, Lockport, and Oneonta areas within NYSEG's territory. The projects are not truly incremental, but rather an acceleration of projects for CLCPA purposes that would be needed anyway to address traditional reliability and asset condition needs.
- CLCPA Transmission Projects Phase 2 "Areas of Concern": The portfolio of Phase 2 CLCPA Transmission Projects consists of 35 projects for the purpose of unlocking an incremental amount of transmission-connected renewable resources and to increase headroom on the system. The 35 projects are spread throughout the Elmira, Geneva, Hornell, Lancaster, and Rochester areas within NYSEG's and RG&E's territory. These projects were submitted in the form of a

petition to the NY PSC on March 8, 2021 (Case 20-E-0197). The Phase 2 projects were developed with a goal of removing transmission bottlenecks for renewable energy, but will have numerous added benefits by helping to address traditional reliability and asset condition needs now and in future years. The CLCPA Phase 2 Projects are described in this report and part of the Companies' capital expenditure plans, but capitalization and cost recovery for these projects will be treated separately from other investments in accordance with the requirements of the Commission's CLCPA Phase 2 orders.

- Ithaca Electrification Projects Phase 1: These local transmission and distribution projects are needed to solve existing reliability needs and will help to support timely execution of the City of Ithaca's electrification initiative. Voltage and thermal violations exist under a range of contingency conditions in the transmission and distribution network between Coddington and Etna Substations in NYSEG's Ithaca Division. To resolve the voltage violations, three shunt capacitors are proposed at (1) West Hill, (2) Trumansburg, and (3) Cayuga Heights. There is a plan to rebuild Coddington substation as part of the CLCPA Transmission Projects Phase 1 effort, which will resolve the thermal violations in the long term (2026-2027), but in the short term a mobile 115/34.5 kV transformer will be installed at Coddington. Two transformers at Fourth Street will be replaced with larger units, and the 8.3 kV distribution network (which is islanded from the 12.5 kV surrounding network) will be upgraded to 12.5 kV.
- Ithaca Electrification Projects Phase 2: The load growth projected due to the City of Ithaca's Electrification initiative is expected to result in new thermal needs on the transmission and distribution systems, which will require mitigation. As a result, NYSEG expects that five projects would be needed to support the full extent of load growth projected by 2030: (1) The West Hill 34.5/12.5 kV transformer will be replaced with a larger unit. (2) Both 34.5/12.5 kV transformers at South Hill will be replaced with larger units. (3) A new 12.5 kV distribution

circuit will be routed out of East Ithaca. (4) 34.5 kV Line 526 between Coddington and South Hill Substations, 2.7 miles, will be upgraded. (5) 34.5 kV Line 532 between Coddington and West Hill Substations, 4.5 miles, will be upgraded.

Section 6.7 Electric Customer Focus Capital Investment Forecast

This category provides a further breakdown of expenditures required to accommodate projects and programs related to customer focus. The Electric Customer Focus Investment Forecast is summarized for NYSEG Electric in Table 13 and for RG&E Electric in Table 14.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Customer Focus**	**$ 184,322**	**$ 191,939**	**$ 187,880**	**$ 236,380**	**$ 292,203**	**$ 1,092,725**
2	Distribution Line	36,365	37,014	39,364	49,205	61,506	223,453
3	Electric Meters	1,071	1,597	2,491	2,451	2,786	10,395
4	Government Highway	3,773	4,902	5,049	6,312	7,890	27,926
5	Industrial and Commercial Service Connections	8,284	7,783	8,016	10,020	12,525	46,628
6	LED Streetlighting	3,932	-	-	4,915	6,144	14,992
7	Make Ready	70,000	80,884	70,450	88,063	110,078	419,475
8	Residential Line	16,616	13,552	13,958	17,448	21,810	83,384
9	Service Connect	10,308	11,973	12,362	15,452	19,315	69,410
10	Storms Electric	15,000	16,500	18,150	19,965	21,962	91,577
11	Street Light	1,867	2,500	2,500	3,125	3,906	13,898
12	Transmission Line	17,106	15,236	15,540	19,425	24,281	91,588
13	**Total**	**$ 184,322**	**$ 191,939**	**$ 187,880**	**$ 236,380**	**$ 292,203**	**$ 1,092,725**

Table 13 – NYSEG Electric Customer Focus Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Customer Focus**	**$ 90,125**	**$ 109,281**	**$ 117,990**	**$ 128,904**	**$ 158,341**	**$ 604,640**
2	Agueduct Re-Imagined	1,618	721	16,064	-	-	18,402
3	Distribution Line	16,470	15,775	16,249	20,311	25,389	94,194
4	Electric Meters Program	230	505	918	804	1,020	3,477
5	Genesee Street	3,009	-	-	-	-	3,009
6	Government Highway	7,162	9,319	8,452	10,565	13,206	48,704
7	Government Highway Majors Cap	1,829	1,695	1,812	2,265	2,831	10,432
8	Industrial and Commercial Service Connections	4,554	3,930	3,360	4,200	5,250	21,293
9	LED Streetlighting	1,190	-	-	-	-	1,190
10	Make Ready	32,540	57,189	52,476	65,595	81,994	289,794
11	Residential Line	5,797	5,264	4,499	5,624	7,030	28,215
12	Service Connect	3,992	3,670	3,137	3,922	4,902	19,623
13	Storm Electric	4,000	4,400	4,840	5,324	5,856	24,420
14	Street Light	1,266	1,118	955	1,194	1,493	6,026
15	Town Of Brighton Arc Light Conversion	4,401	3,790	3,246	6,624	6,275	24,335
16	Transmission Line	2,068	1,905	1,981	2,476	3,095	11,526
17	**Total**	**$ 90,125**	**$ 109,281**	**$ 117,990**	**$ 128,904**	**$ 158,341**	**$ 604,640**

Table 14 – RG&E Electric Customer Focus Capital Investment Forecast

The following describes some of the key project and program investments which are forecasted under the Electric Customer Focus category:

- Make Ready: The Make Ready program is working to make our infrastructure available to meet the broadband communication needs of our customers in response to programs like New NY Broadband Program & ConnectALL. As this work has evolved, we have developed, with input from NYDPS Staff and other stakeholders, guidelines for the cost treatment of the different situations encountered in the field that more closely align with those used by other New York utilities.

  In 2022, Governor Hochul announced the start of the $1 billion ConnectALL initiative, which is intended to deliver affordable broadband to millions of New Yorkers statewide. As a result of this initiative, the Companies have begun to see significant increases in pole attachment applications by broadband companies impacting the Companies' infrastructure. As a result of these applications, the Companies may experience extraordinary increases in the level of pole attachment requests, which would have a corresponding material increase in the Companies' costs to accommodate broadband expansion initiatives.
- Distribution (Dist.) Line Program: The Distribution Line program consists of replacing infrastructure due to emergency situations causing interruptions in service. This program is for unplanned, reactive work on the electric distribution system such as car hit poles, damaged conductors, transformers, and poles. This program is budgeted each year based on the cost that has occurred in previous years. It is difficult to predict what may break and/or be damaged by others, so a historical-based estimate is used.
- Transmission (Trans.) Line Program: The Transmission Line program consists of addressing safety concerns by replacing reject poles, car hit poles, damaged

conductors, and similar unplanned, reactive work on the electric transmission system 34.5kv or higher. Work is also performed to replace individual units of property identified as emergent from the transmission line inspection program in addition to addressing CAIDI/SAIFI hot spots in the same calendar year.

- Residential (Res.) Line Program: This program provides distribution line extensions and necessary facilities (poles, transformers, conductors, conduit, hand holds, manholes, etc.) to provide service to both large scale residential development projects and individual residential units or meters. The requirement for each project is unique based on the requirements of development projects, the project locations, and the existing electric system infrastructure. This program is budgeted based on historical spend and any added increase or decrease from various residential customers if communicated in advance. If a project is greater than $200K a separate tracking order is created.
- Service Connection (Serv. Conn.) Program: This program installs or upgrades new electric service to individual residential units at the customer's request. Included within the program is anything required for constructing, expanding, replacing, or relocating electric infrastructure assets to connect residential customers. Meters required as part of customer projects are also included on this line item. The cost of the service is comprised of tariff portions as well as customer payments for the amounts above the tariff required provision.
- Government (Gov't) Highway Program: This program relocates electric facilities that conflict with highway, road, and street projects being undertaken by municipalities and other government agencies. This program is budgeted based on historical spend while considering any added increase or decrease based on information received from various government agencies, if communicated in advance. Many of these requests are made in-year by the government agencies and are therefore unplanned.

- Industrial Commercial (Ind/Comm) Program: This program provides service connections for industrial and commercial customers. Included within the program is anything required for constructing, expanding, replacing, or relocating electric infrastructure assets to connect commercial customers. The cost of the service is comprised of tariff portions as well as customer payments for the amounts above the tariff required provision. This program is budgeted based on historical spend and any added increase or decrease from the various commercial customers if communicated in advance.

Section 6.8 Electric Modernization Capital Investment Forecast

This category provides a further breakdown of expenditures required to accommodate projects and programs related to modernization. The Electric Modernization Investment Forecast is summarized for NYSEG Electric in Table 15 and for RG&E Electric in Table 16 respectively.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Modernization**	**$ 7,348**	**$ 7,485**	**$ 3,563**	**$ 8,959**	**$ 3,684**	**$ 31,038**
2	Siemens Spectrum Upgrade to V7	-	192	3,000	3,000	2,250	8,442
3	AMI Integration for ISO	-	-	-	4,848	893	5,741
4	New Scheduler	3,240	78	-	570	-	3,888
5	REV- Electric Vehicles	1,100	3,415	-	-	-	4,515
6	IEE Service Mode	1,584	1,626	-	-	-	3,211
7	Distribution Automation	-	445	458	-	-	903
8	DSIP - Enterprise Analytics	-	-	-	541	541	1,082
9	DSIP-ADMS	-	960	-	-	-	960
10	SMSI Field Deployment	207	**414**	-	-	-	621
11	Capital Automation NAT	545	-	-	-	-	545
12	Spectrum Planned Work Module	237	88	**44**	-	-	369
13	iTOA Implementation	73	74	-	-	-	147
14	DSIP -Advanced Planning Tools	132	-	-	-	-	132
15	Application Interface Upgrades	-	45	0	-	-	45
16	Electric Reliability Application (ERA) Integration	84	32	-	-	-	116
17	CDG Billing Automation SAP	25	-	-	-	-	25
18	NYSEG Transmission GIS and GIS Interface optimization	120	115	60	-	-	295
19	**Total**	**$ 7,348**	**$ 7,485**	**$ 3,563**	**$ 8,959**	**$ 3,684**	**$ 31,038**

Table 15 – NYSEG Electric Modernization Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Modernization**	**$ 3,787**	**$ 4,266**	**$ 2,248**	**$ 3,010**	**$ 1,272**	**$ 14,583**
2	AMI Integration for ISO	-	-	-	1,382	246	1,628
3	Application Interface Upgrades	-	20	0	-	-	20
4	Capital Automation NAT	206	-	-	-	-	206
5	CDG Billing Automation SAP	25	-	-	-	-	25
6	DSIP-ADMS	-	1,275	100	-	-	1,375
7	DSIP - Advanced Planning Tools	132	-	-	-	-	132
8	DSIP - Enterprise Analytics	-	-	-	275	275	551
9	Electric Reliability Application (ERA) Integration	24	15	-	-	-	39
10	IEE Service Mode	853	876	-	-	-	1,729
11	New Scheduler	1,755	41	0	353	-	2,149
12	REV - Electric Vehicles	**494**	1,586	-	-	-	2,080
13	Siemens Spectrum Upgrade To V7	-	100	2,000	1,000	750	3,850
14	SMSI Field Deployment	104	207	-	-	-	311
15	Spectrum Planned Work Module	75	26	28	-	-	129
16	Transmission GIS and GIS Interface optimization	120	120	120	-	-	360
17	Total	**$ 3,787**	**$ 4,266**	**$ 2,248**	**$ 3,010**	**$ 1,272**	**$ 14,583**

Table 16 – RG&E Electric Modernization Capital Investment Forecast

The following describes some of the key project and program investments which are forecasted under the Electric Modernization category:

- Siemens Spectrum Upgrade to V7: The Siemens Spectrum system provides Energy Management System (EMS)/ Supervisory Control and Data Acquisition (SCADA)/ Advanced Distribution Management System ADMS/Outage Management System (OMS) functionalities to operate the electric transmission and distribution systems in New York State. Spectrum 7 is the latest software version including operating system, database, and applications security patch. In addition, Spectrum 7 works on Linux which will allow the Company to expand the hardware options.
- REV - Electric Vehicles: The EV Make-Ready Program (MRP) supports the development of electric infrastructure and equipment necessary to accommodate an increased deployment of EVs within the service area by reducing the upfront costs of building charging stations for light-duty EVs.
- New Scheduler: The implementation of New Scheduling and Dispatching Solution, replacing the actual Click, evolving to a unified and integrated solution where the different corporate and business applications could be accessed from the field with a new user experience and enabling an improved communication and collaboration between the Field Workforce.

Section 6.9 Electric Innovation Capital Investment Forecast

This category provides a further breakdown of expenditures required to accommodate projects and programs related to innovation. The Electric Innovation Investment Forecast is summarized for NYSEG Electric in Table 17 and for RG&E Electric in Table 18.

	A	B	C	D	E	F	G
	$ in thousands	2024	2025	2026	2027	2028	Total 2024-2028
1	Innovation	$ 13,644	$ 10,139	$ 3,386	$ 1,743	$ 3,010	$ 31,923
2	CYME Server - Hardware & Software NYSEG	250	-	-	-	-	250
3	DSIP- GIS Enhancements GMEP	8,334	6,813	-	-	-	15,147
4	PICS Scalability Plan	-	-	-	1,743	-	1,743
5	IEDR Phase 2	3,199	3,326	3,386	-	-	9,912
6	IEDR Phase I	530	-	-	-	-	530
7	Microgrid Management System	-	-	-	-	2,250	2,250
8	NY Energy Storage RFP	-	-	-	-	760	760
9	Stephentown BESS	666	-	-	-	-	666
10	Wales Center Energy Storage	666	-	-	-	-	666
11	Total	$ 13,644	$ 10,139	$ 3,386	$ 1,743	$ 3,010	$ 31,923

Table 17 – NYSEG Electric Innovation Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	2024	2025	2026	2027	2028	Total 2024-2028
1	Innovation	$ 6,772	$ 6,458	$ 1,823	$ 759	$ 1,510	$ 17,322
2	CYME Server - Hardware & Software RG&E	250	-	-	-	-	250
3	DSIP- GIS Enhancements GMEP	4,514	4,667	-	-	-	9,180
4	FICS Scalability Plan	-	-	-	759	-	759
5	IEDR Phase 2	1,722	1,791	1,823	-	-	5,337
6	IEDR Phase I	286	-	-	-	-	286
7	Microgrid Management System	-	-	-	-	750	750
8	NY Energy Storage RFP	-	-	-	-	760	760
9	Total	$ 6,772	$ 6,458	$ 1,823	$ 759	$ 1,510	$ 17,322

Table 18 – RG&E Electric Innovation Capital Investment Forecast

The Innovation category focuses on new or improved products, processes, and/or organizational methods in business practices or external relations. Projects may have various aspects that could overlap product, process and/or organizational method descriptors.

Many of the projects in this category support CLCPA in a wide variety of ways – from developing Energy Storage projects to expanding analytical capabilities through grid modelling enhancements; to developing new or strengthening existing relationships with academic institutions to explore and develop new concepts and approaches related to more sustainable generation, distribution, and usage of energy. Additional areas within

Innovation that are supporting CLCPA include integrated energy data resources and the development of a geothermal energy district.

Product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics. Projects that support this aspect of Innovation and are being advanced at both NYSEG and RG&E include Grid Automation and Management, Grid Modelling Enhancement Project (GMEP) and Integrated Energy Data Resource (IEDR) projects and installation of energy storage facilities at various substations. Projects in this category also support and encourage the use of electric vehicles (EV) and include the Medium and Heavy-Duty EV Make-Ready Program that supports the utility side infrastructure for new chargers serving medium and heavy-duty vehicles. Additional projects that introduce new products and support CLCPA, include, an EV Charging Hub at NYSEG, and an Integrated EV and ES Controller Project at RG&E.

Process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. Projects that support this aspect of innovation include the installation of a CYME server to support load and DER forecasting, Advanced Load and DER Forecasting to improve the granularity of load and DER forecasting in terms of time and location, a Hosting Capacity project that entails evolving the current DG and EV Hosting Capacity Maps.

Organizational innovation is the implementation of a new organizational method in the firm's business practices, workplace organization or external relations. Several projects support this portion of innovation include Low Income Clean Generation that the Companies' would own, operate, utility scale solar PV facilities with the purpose of allocating the revenues to low-income customers, advancing relationships with academic institutions to explore and develop new concepts and approaches related to

more sustainable generation, distribution and usage of energy and developing a Demand Side LMI HVAC Management Pilot that would involve certain members of the LMI community to pilot HVAC management device implementation to enable and evaluate energy and cost savings, carbon reduction, smart control and energy usage insights.

Section 6.10 Hydro Generation Capital Investment Forecast

The Companies own and operate hydroelectric and fossil fuel generating facilities. The NYSEG generating facilities currently include six active hydroelectric generating facilities and 4 four small fossil-fuel facilities having a total nameplate capacity of approximately 69.5MW (61.4MW hydro and 8.1MW fossil). The active hydroelectric and fossil-fuel generating facilities are located from Plattsburgh (northeast New York) to Rochester. The RG&E facilities include three active hydroelectric facilities having a total nameplate capacity of 57.1MW; all facilities are located within the City of Rochester. All active hydroelectric facilities are under the Federal Energy Regulatory Commission ("FERC") jurisdiction with three retired NYSEG and RG&E hydroelectric facilities, NYSEG Keuka, RG&E Station 160 and Station 170, located in the southern tier region. The water retaining structures that remain at the retired hydroelectric facilities are operational and under jurisdiction of the New York State Department of Environmental Conservation. All active hydroelectric generating facilities are operated as run-of-river, meaning that water that enters the facility impoundment cannot be stored, but produce energy from the river flow that is available at a given time in the respective watershed.

NYSEG presently has four fossil-fuel standby diesel generators, with a total combined capacity of 8.1MW. The diesel generators are located at Harris Lake (two generators), Blue Mountain, and Long Lake substations in the Adirondack region. The diesel generators are dispatched to generate electric energy to serve local customers upon loss of the transmission lines that serve these stations. RG&E does not have any fossil-fuel generating facilities.

This category provides a further breakdown of the expenditures required to accommodate projects and programs related to the Hydro Generation facilities owned by the Companies. The Hydro Generation Investment Forecast is summarized for NYSEG and RG&E in Table 19 and Table 20, respectively.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Hydro-Generation**	**$ 20,268**	**$ 23,376**	**$ 28,031**	**$ 26,128**	**$ 18,549**	**$ 116,352**
2	Bradford Concrete Spillway And Toe Resurfacing Improvement Project	333	393	2,186	100	-	3,011
3	Bradford Dam Automation Project	-	-	-	349	295	643
4	Cadyville and Kents Falls Facility and Window Upgrades	363	335	-	-	-	697
5	Cadyville and Mill C Penstock Vent Valve House Upgrade Project	1,373	1,293	-	-	-	2,666
6	Cadyville Right Abutment Spillway Improvements Project	1,271	-	-	-	-	1,271
7	Cadyville Switchgear And Generator Protection Upgrade Project	-	-	-	503	101	603
8	Cadyville Unit 1 Turbine Major Overhaul	2	370	785	2,205	45	3,407
9	Cadyville Upgrade Unit 1 & Unit 2 Turbine-Generator Cooling Water System	-	-	-	385	490	875
10	High Falls Intake Upgrade Project	5,584	5,048	139	-	-	10,771
11	High Falls Unit 2 Generator Rewind	345	36	1,991	69	-	2,441
12	High Falls Unit 3Turbine Rebuild & DraftTube Upgrade Project	-	-	-	712	1,265	1,977
13	Kents Falls - Capital Project	492	6,726	13,701	6,309	-	27,228
14	Kents Falls Dam Low Level Floodgate Project	281	336	1,491	100	-	2,208
15	Kents Falls Internal Riser Shaft and Tank Project	129	3,114	3,128	224	98	6,693
16	Kents Falls Unit 1 Generator Rewind Project	-	-	-	379	590	970
17	Kents Falls Unit 2 Turbine-Generator Major Rebuild	3	3	**4**	366	683	1,059
18	Kents Falls Unit 3 Turbine Major Rebuild with a New Turbine Runner	-	-	-	290	773	1,064
19	Kents Falls Upstream Training Wall Extension Project	2,529	24	-	-	-	2,553
20	Mechanicville Upstream Eel Ladder Project	351	1,004	-	-	-	1,356
21	Mill C Powerhouse A Crane Upgrade Project	-	-	375	515	1,515	2,405
22	Mill C Spillway Concrete Improvements Project	5	184	307	1,572	-	2,068
23	Minor Capital Program	3,230	2,872	1,672	2,821	1,544	12,139
24	Overhead Crane Upgrades Project (Cadyville, Rainbow Falls)	431	399	-	-	-	830
25	Rainbow Falls Low Level Floodgate Upgrades & Downstream Abutment Re	-	-	-	254	341	596
26	Rainbow Falls Penstock Replacement Project	-	-	-	827	2,357	3,184
27	Rainbow Falls Power Canal and Gatehouse Upgrade Project	-	-	-	-	177	177
28	Rainbow Falls Powerhouse Entrance Hill Stabilization	2,987	46	-	-	-	3,033
29	Roof Upgrades (Cadyville, Rainbow Falls)	325	297	-	-	-	622
30	Saranac Plant Control Systems Upgrade Project	216	246	1,126	75	-	1,662
31	Upper Mechanicville Generator Protection and Controls Upgrade Project	-	202	240	596	69	1,107
32	Upper Mechanicville Intake Upgrades And Downstream Passage Project	17	**447**	647	6,871	7,340	15,322
33	Upper Mechanicville Plant Control System Upgrade Project	-	-	240	606	69	915
34	Upper Mechanicville Unit 1 Turbine-Generator Major Overhaul / Rebuild Proj	-	-	-	-	177	177
35	Upper Mechanicville Unit 2 Generator Rewind	-	-	-	-	622	622
36	**Total**	**$ 20,268**	**$ 23,376**	**$ 28,031**	**$ 26,128**	**$ 18,549**	**$ 116,352**

Table 19 – NYSEG Hydro Generation Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	2027	**2028**	**Total 2024-2028**
1	**Hydro-Generation**	**$ 11,061**	**$ 16,779**	**$ 29,478**	**$ 44,704**	**$ 29,161**	**$ 131,182**
2	Hydro Generation Station 2 Modernization Project	2,967	8,872	20,042	21,553	6,190	59,625
3	Minor Capital Program	1,615	4,008	2,329	6,096	3,480	17,528
4	Station 2 Central Ave Dam Superstructure Modernization	294	469	825	5,148	-	6,737
5	Station 5 Surge Tank Expansion Project	-	-	639	674	2,591	3,904
6	Station 5 Gate 5 Rubplate. Bottom Seal, Hinge Upgrade and Rock Stabiliza	-	-	678	91	2,981	3,750
7	Station 5 Gate 3 Rubplate, Rubplate Seal And Breastwall Seal Upgrade Pre	3,319	140	-	-	-	3,460
8	Station 5 Unit 3 Turbine-Generator New Turbine Isolation Valve	-	-	466	824	2,070	3,361
9	Station 160 Toe Scour Upgrade Project	-	399	425	2,341	112	3,278
10	Station 5 Water Conveyance (Tunnel) System Project	-	-	623	589	955	2,167
11	Station 5 Intake Stop Log Gantry Upgrade Project	1,860	47	-	-	-	1,907
12	Station 2 Unit 1 Turbine Wicket Gate Bushing Upgrade	217	209	1,045	44	-	1,516
13	Station 26 Intake Deck Upgrades and Resurfacing	-	-	-	439	733	1,172
14	Station 2 Generator Protection and Controls Upgrade Project	200	209	614	44	-	1,068
15	Station 26 Generator Protection and Controls Upgrade Project	-	188	222	578	47	1,036
16	Station 170 Dam Resurfacing Project	-	-	-	722	152	874
17	Station 5 Generation Protection and Controls Upgrade Project	-	209	614	44	-	868
18	Station 5 Penstock Lining and Coating Upgrade Project	-	-	-	275	566	841
19	Station 5 Powerhouse Backup Generator Upgrade	-	-	-	275	566	841
20	Station 5 Old House Stabilization Project	-	729	-	-	-	729
21	Station 5 Unit 1, Unit 2 & Unit 3 Turbine-Generator Guide Bearing Water Flit	-	-	-	208	172	379
22	Roof Upgrades (Station 5, Station 26, Station 160)	-	353	-	-	-	353
23	Station 5 Powerhouse Rock Scaling and Stabilization Project	-	347	-	-	-	347
24	Station 5 Powerhouse Turbine-Generator Rotating Equipment Guard Projec	312	-	-	-	-	312
25	Station 5 Headgates / Dam Project	276	-	-	-	-	276
26	Station 26 Overhead Crane Upgrades Project	-	132	-	-	-	132
27	Station 5 Powerhouse Access Road Soldier Wall Installation Project	-	-	375	455	8,070	8,900
28	Station 5 Brewer Street Water Line and Paving Upgrade	-	-	-	-	229	229
29	Station 5 Gate 2 Rubplate, Bottom Seal, Hinge Upgrade and Rock Stabiliza	-	467	580	4,300	247	5,594
30	**Total**	**$ 11,061**	**$ 16,779**	**$ 29,478**	**$ 44,704**	**$ 29,161**	**$ 131,182**

Table 20 – RG&E Hydro Generation Capital Investment Forecast

The following describes some of the key project and program investments which are forecasted under the Hydro Generation category:

- Station 2 Modernization: Project involves deepening the area in front of and under the facility's water intake to allow the installation of a new and larger penstock that will allow increased water conveyance, improved conveyance of aquatic species downstream of the intake structure to comply with the FERC License Amendment and the installation of a new turbine isolation valve for the Unit 1 turbine-generator. Sections of the existing penstock are at end-of-life (circa 1900's) and do not allow for potential future expansion of the hydroelectric facility. The investment will restore reliable operation of the 8.5MW facility and further supports the New York State Clean Energy Goal initiatives for generation of clean, renewable energy.

- Mechanicville Intake Upgrades And Downstream Passage: Project is required as an outcome of the 50-year operating license issued by the FERC, effective April 1, 2021. NYSEG is required to comply with the Settlement Agreement that requires modification of the facility's intake to protect aquatic species, specifically the American eel, that are upstream of the water intake structure for the hydroelectric facility and an alternative path for downstream passage of American eels will be installed.
- Kent Falls Capital: Project involves the installation of new ring girders that will replace the end-of-life penstock saddles, the installation of new penstock section trifurcation, and the installation of new penstocks from the outlet of the existing penstock trifurcation to each turbine-generator.
- High Falls Intake Upgrades: Project is being undertaken by NYSEG as a part of the current FERC license for the Facility, The Company is required to upgrade the existing intake trash racks from 2-inch clear space opening to 1-inch openings for fish protection per the License and per the New York State Department of Environmental Conservation (NYSDEC) 401 Water Quality Certification. Installation of the new intake trash racks at High Falls is required to be completed by no later than January 19, 2026, as outlined in the Settlement Agreement and FERC License.

Section 6.11 Electric AMI Capital Investment Forecast

This category is the Advanced Metering Infrastructure (AMI). The Electric AMI Investment Forecast is summarized for NYSEG Electric in Table 21 and for RG&E Electric in Table 22 respectively.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**AMI**	**$ 57,974**	**$ 36,043**	**$ 5,296**	**$ 6,619**	**$ 8,274**	**$ 114,206**
2	AMI Project	57,974	36,043	5,296	6,619	8,274	114,206
3	**Total**	**$ 57,974**	**$ 36,043**	**$ 5,296**	**$ 6,619**	**$ 8,274**	**$ 114,206**

Table 21 – NYSEG AMI Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**AMI**	**$ 27,962**	**$ 21,057**	**$ -**	**$ -**	**$ -**	**$ 49,018**
2	AMI Project	27,962	21,057	-	-	-	49,018
3	**Total**	**$ 27,962**	**$ 21,057**	**$ -**	**$ -**	**$ -**	**$ 49,018**

Table 22 –RG&E AMI Capital Investment Forecast

This category is the on-going installation of the (AMI) in NYSEG and RG&E service territories. NY AMI is an essential foundational system in realizing Reforming the Energy Vision (REV) goals to empower customers through new tools and information to effectively manage and reduce usage, establish, and animate new markets to promote the implementation of Distributed Energy Resources (DER's), and minimize environmental impacts of power generation and energy consumption. NYSEG and RG&E will gain early outage detection to assist with restoration efforts as well as streamline internal business processes.

Chapter 7 Gas Capital Investment Forecast

This section will further detail, by major investment category, the overall Gas capital investments. The categorization of the Plan is grouped into, in no particular order, Asset Condition, Mandatory, Modernization, Reliability, Resiliency, Compliance, Clean Energy Transformation, Customer Focus and Modernization. The sub sections below summarize the major investment categories for the five years 2024-2028.

Section 7.1 Gas Capital Investment Requirements

The Capital Investment Forecast for five-year period 2024-2028 for NYSEG[5] and RG&E[6] Gas Lines of Business are shown in Table 23 and Table 24, respectively.

	A	B	C	D	E	F	G
	$ in thousands	2024	2025	2026	2027	2028	Total 2024-2028
1	Asset Condition	$ 7,449	$ 7,472	$ 13,515	$ 8,977	$ 9,962	$ 47,375
2	Mandatory	15,043	15,176	15,835	17,171	19,459	82,684
3	Modernization	-	-	1,787	275	-	2,062
4	Reliability	48,728	42,318	42,600	38,149	43,275	215,071
5	AMI	14,416	10,867	-	-	-	25,283
6	Subtotal Gas Capital	85,636	75,834	73,737	64,573	72,695	372,475
7							
8	Common Allocation to Gas Business	24,054	22,839	20,423	30,397	33,345	131,058
9	Total NYSEG Gas Capital	$ 109,690	$ 98,673	$ 94,160	$ 94,970	$ 106,040	$ 503,533

Table 23 – NYSEG Gas Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	2024	2025	2026	2027	2028	Total 2024-2028
1	Asset Condition	$ 9,762	$ 18,532	$ 23,793	$ 32,760	$ 9,346	$ 94,192
2	Mandatory	11,581	11,383	12,632	13,428	15,732	64,756
3	Modernization	-	-	555	923	-	1,478
4	Reliability	27,701	26,121	27,980	23,705	27,026	132,533
5	AMI	10,075	7,587	-	-	-	17,661
6	Subtotal Gas Capital	59,118	63,622	64,960	70,816	52,104	310,621
7							
8	Common Allocation to Gas Business	14,315	13,700	13,244	17,801	17,770	76,830
9	Total RG8.E Gas Capital	$ 73,433	$ 77,322	$ 78,205	$ 88,616	$ 69,874	$ 387,451

Table 24 – RG&E Gas Capital Investment Forecast

[5] Note: NYSEG Common allocation to the Gas Line of Business is 19.74%.
[6] Note: RG&E Common allocation to the Gas Line of Business is 28.61%.

Section 7.2 Gas Asset Condition Capital Investment Forecast

The Asset Condition Capital Investment Forecast for NYSEG Gas are shown in Table 24 and for RG&E in Table 26.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Asset Condition**	**$ 7,449**	**$ 7,472**	**$ 13,515**	**$ 8,977**	**$ 9,962**	**$ 47,375**
2	CGI Standardization Program	255	144	141	140	-	681
3	Distribution Main Replacement	3,573	3,766	4,096	4,578	5,196	21,209
4	Gas Operations Departmental	965	939	945	968	1,031	4,848
5	Regulator Modernization And Automation Program	2,656	2,623	2,638	3,291	3,735	14,943
6	Vienna Road Regulator Station	-	-	5,694	-	-	5,694
7	**Total**	**$ 7,449**	**$ 7,472**	**$ 13,515**	**$ 8,977**	**$ 9,962**	**$ 47,375**

Table 25 – NYSEG Gas Asset Condition Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Asset Condition**	**$ 9,762**	**$ 18,532**	**$ 23,793**	**$ 32,760**	**$ 9,346**	**$ 94,192**
2	Caledonia Station Rebuild	-	-	-	24,417	-	24,417
3	CGI Standardization Program	**144**	133	141	133	**-**	551
4	CM-1 Pipeline Section 4 Chili GS To Ballantyne Road	-	-	16,717	-	-	16,717
5	Distribution Main Replacement	1,708	1,660	1,763	1,942	2,214	9,287
6	Gas Operations Departmental	342	324	355	344	378	1,742
7	Mendon Gate Station	2,484	11,759	-	-	-	14,243
8	Regulator Modernization And Automation Program	5,084	4,657	4,817	5,924	6,753	27,235
9	**Total**	**$ 9,762**	**$ 18,532**	**$ 23,793**	**$ 32,760**	**$ 9,346**	**$ 94,192**

Table 26 – RG&E Gas Asset Condition Investment Forecast

The Gas asset condition category can be separated into three broad groups – Equipment, Main Replacement and Regulator Station Modernization.

The Equipment group is related to the purchase of tools and equipment needed and used by gas field employees to inspect, operate, maintain, or repair the gas system.

The Main Replacement group is related to replacing mains (defined as non-leak prone) due to condition, damage caused by third parties, conflicts with existing or proposed construction (other than highway work) and other miscellaneous field conditions. Major projects that are undertaken by the Companies also fall within this group. These major projects are in response to mains that are in poor condition and need to be replaced to maintain a safe and reliable system. The major programs and projects in this group are:

- Distribution Main Replacement: This is a program to replace gas mains as required due to several factors including, but not limited to, poor asset conditions, conflicts with existing or proposed structures, and other miscellaneous field conditions discovered as part of normal operations or other construction and inspection activities.
- CM-1 Pipeline Section 4 Chili GS to Ballantyne Rd: This project addresses asset condition by replacing transmission pipe installed in the 1950s. The new pipeline will be designed to operate at less than 20% SMYS. Replacement of the pipeline will maintain gas supply to the Rochester area and improve transmission system and distribution system reliability by replacing existing 22 1/2-inch gas main parallel to CM-5 pipeline (Chili Gate Station (GS) to Ballantyne Road) with 23,400 linear feet of 16-inch wrapped steel pipe.

The Gate Station Modernization group is included in this category if the primary reason for upgrading or rebuilding a gate station is due to asset condition. The key projects in this group are:

- Vienna Road Regulator Station: Vienna Road Regulator Station is critical for NYSEG Gas Control to balance daily nominations between National Fuel and DETI. The station has been in operation for over 60 years, with much of the equipment at or beyond its service life. The overpressure protection relief valves and regulators are obsolete. Replacement parts are no longer available. The existing heater experiences operational issues multiple times in the coldest points during the heating season, requiring manual restart of the equipment. The flow meter measuring the gas coming from the Arcadia Gate Station is located in a vault below grade that is prone to filling with water, leading to intermittent signal loss. The majority of gas into the northern part of the NYSEG Geneva franchise passes through this station and the station is a critical system component that ensures reliable service to approximately 27,000 customers.

- Caledonia Station Rebuild: The Caledonia Gate Station is a primary gas supply source to the RG&E system and supplies gas to the western portions of the franchise and also serves as a redundant source of gas for the eastern portions of the franchise. The RG&E franchise requires upgrades to this gate station for safe, reliable, and efficient operation and to address facilities and equipment that are at end of life. The upgrades and replacements associated with this project are necessary to avoid potentially significant future maintenance cost.
- Mendon Gate Station: The Mendon Gate Station is a primary gas supply source to the RG&E system and supplies gas to the eastern portions of the franchise and also serves as a redundant source of gas for the western portions of the franchise. This project will upgrade equipment that is at end of life, modernize facilities, increase operational efficiencies, eliminate potential environmental concerns, install additional Gas Control/ECC remote control equipment and increase safety and security at the primary gate station feeding the eastern portion of the RG&E Rochester franchise. Approximately 150,000 customers in the eastern portion of Rochester area are served downstream of this station. These improvements will help to continue to provide a safe and reliable natural gas supply to customers.

Section 7.3 Gas Mandatory Capital Investment Forecast

The Mandatory Capital Investment Forecast for NYSEG and RG&E are shown in Table 27 and Table 28, respectively.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Mandatory**	**$ 15,043**	**$ 15,176**	**$ 15,835**	**$ 17,171**	**$ 19,459**	**$ 82,684**
2	Distribution Mains **New** Business	3,214	3,191	3,224	3,604	4,090	17,323
3	Gas Meters	2,946	3,062	3,203	3,319	3,763	16,292
4	Government Jobs	898	891	901	1,007	1,143	4,840
5	Large Government Jobs	1,019	567	679	846	970	4,081
6	**New** Services	3,434	3,409	3,445	3,851	4,370	18,510
7	Non Leak Prone Service Replacement Program	3,132	3,631	3,932	4,095	4,648	19,438
8	Regulators	400	425	450	450	475	2,200
9	**Total**	**$ 15,043**	**$ 15,176**	**$ 15,835**	**$ 17,171**	**$ 19,459**	**$ 82,684**

Table 27 – NYSEG Gas Mandatory Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Mandatory**	**$ 11,581**	**$ 11,383**	**$ 12,632**	**$ 13,428**	**$ 15,732**	**$ 64,756**
2	Distribution Mains New Business	1,946	1,787	1,854	2,042	2,328	9,957
3	Gas Meters	2,575	2,764	3,342	3,152	3,755	15,587
4	Government Jobs	1,055	967	1,003	1,105	1,260	5,392
5	Large Government Jobs	2,319	2,324	2,703	3,017	3,710	14,073
6	New Services	1,838	1,688	1,751	1,929	2,199	9,405
7	Non Leak Prone Service Replacement Program	1,709	1,693	1,799	1,982	2,259	9,442
8	Regulators	140	160	180	200	220	900
9	**Total**	**$ 11,581**	**$ 11,383**	**$ 12,632**	**$ 13,428**	**$ 15,732**	**$ 64,756**

Table 28 – RG&E Gas Mandatory Capital Investment Forecast

The projects and programs in the Mandatory category are required by tariff, law, or safety. Below are some of the major projects and programs in this category:

- Distribution Mains – New Business: This program installs new gas mains to customers in accordance with the tariff. This program extends new gas mains to new customers to comply with our obligation to provide service.
- New Services: This program installs gas services to new customers (residential, commercial, or business customers) in accordance with the tariff. This program extends new gas service lines to new customers to comply with our obligation to serve.

- Non-Leak Prone (LP) Service Replacements: This program replaces any service associated with a gas main replacement project that does not qualify as a leak prone service in accordance with the Distribution Integrity Management Plan (DIMP), replaces gas services in conflict with street reconstruction projects in accordance with terms and conditions to occupy public rights-of-way.
- Government Jobs: This program addresses work related to moving facilities that are located in a public right-of-way and are in conflict with proposed highway or road work being done by various municipalities. The Large Government Job program is reserved for projects that will be equal to or exceed $500K. Each project of this type will be tracked with a unique project structure. The Government Job program is a blanket program that contains all projects that are less than $500K.
- Gas Meters: This program is for the purchase and installation of gas meters to replace existing, aged meters as they are removed from service as well as for new installations. Gas meters are exchanged for annual PSC required programs including statistical sampling, remediation programs and for other various reasons including relocation, load increases, meter damaged and special testing. The programs help to ensure accurate recording of customers usage and results in accurate customer billing. The costs included in this program do not include the installation of AMI equipment on existing meters.

Section 7.4 Gas Modernization Capital Investment Forecast

The Gas Modernization Capital Investment Forecast for NYSEG is shown in Table 29 and for RG&E is shown in Table 30, respectively.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Modernization**	**$ -**	**$ -**	**$ 1,787**	**$ 275**	**$ -**	**$ 2,062**
2	Track and Trace	-	-	1,787	275	-	2,062
3	**Total**	**$ -**	**$ -**	**$ 1,787**	**$ 275**	**$ -**	**$ 2,062**

Table 29 – NYSEG Gas Modernization Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Modernization**	**$ -**	**$ -**	**$ 555**	**$ 923**	**$ -**	**$ 1,478**
2	Track and Trace	-	-	555	923	-	1,478
3	**Total**	**$ -**	**$ -**	**$ 555**	**$ 923**	**$ -**	**$ 1,478**

Table 30 – RG&E Gas Modernization Capital Investment Forecast

The project in the Gas Modernization category is Track and Trace that allows for geospatial location and specification data to be collected and added to the GIS during the installation process thus allowing for on demand retrieval of this data for a variety of needs. Having a reliable historically accurate record of piping and related components facilitates not only system maintenance activities but is well suited to support organizational asset management efforts

Section 7.5 Gas Reliability Capital Investment Forecast

The Gas Reliability Capital Investment Forecast for NYSEG is shown in Table 31 and Table 32 for RG&E, respectively.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Reliability**	**$ 48,728**	**$ 42,318**	**$ 42,600**	**$ 38,149**	**$ 43,275**	**$ 215,071**
2	Boswell Hill 124 Psig Bare Steel Leak Prone Main	3,274	3,637	-	-	-	6,911
3	Canandaigua Feeder Main Reinforcement Project	2,912	-	-	-	-	2,912
4	Critical Valve Installations, Binghamton	74	73	74	75	78	374
5	Hebron Station Line J Retirement	-	6,162	-	-	-	6,162
6	Leak Prone Main Replacement Program	28,210	26,206	35,751	30,518	34,637	155,322
7	Leak Prone Service Replacement Program	5,717	6,025	6,554	7,324	8,313	33,932
8	Low Pressure Relief Vatve Program	204	215	222	232	247	1,121
9	Pleasant Grove Road Leak Prone Main	930	-	-	-	-	930
10	State Route 90 Leak Prone Main	344	-	-	-	-	**344**
11	Winney Hill Leak Prone Main 45#	1,859	-	-	-	-	1,859
12	Winney Hill Leak Prone Main 60#	859	-	-	-	-	859
13	Winney Hill Regulator Station Rebuild	4.345	-	-	-	-	4,345
14	**Total**	**$ 48,728**	**$ 42,318**	**$ 42,600**	**$ 38,149**	**$ 43,275**	**$ 215,071**

Table 31 – NYSEG Gas Reliability Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Reliability**	**$ 27,701**	**$ 26,121**	**$ 27,980**	**$ 23,705**	**$ 27,026**	**$ 132,533**
2	Leak Prone Main Replacement Program	21,414	22,801	24,455	19,821	22,598	111,089
3	Leak Prone Service Replacement Program	3,419	3,319	3,526	3,884	4.429	18,576
4	Paul Road Leak Prone Main	2,868	-	-	-	-	2,868
5	**Total**	**$ 27,701**	**$ 26,121**	**$ 27,980**	**$ 23,705**	**$ 27,026**	**$ 132,533**

Table 32 – RG&E Gas Reliability Capital Investment Forecast

The projects in this category include work being performed on mains and at regulator stations. Projects addressing Leak Prone Main (LPM) replacement at both the program (projects costing less than $500K each) and major LPM projects (projects costing $500K or greater). Projects to increase the automation at regulator station and to upgrade regulator stations (not due to asset condition) are included in this category. Regulator station work that costs less than $500K per project is included in the Regulator Modernization and Automation Program. The major projects and program in this category are described below. The Companies also apply a screen to determine if LPM projects could be candidates for Non-Pipe Alternatives.

- Leak Prone Main Replacement Program: This program replaces leak prone gas mains identified as leak prone and includes mains replaced due to condition (Distribution Integrity Management Plan, DIMP, and leaks) and municipal projects. This work includes, but is not limited to, replacing gas services in conflict with street reconstruction projects in accordance with terms and conditions to occupy public right-of-way where the main being replaced also qualifies as leak prone; leak prone gas main replacements; tariff or code requirements; and actively leaking services. The leak prone main replacement program improves distribution safety and reliability by replacing gas mains in poor asset condition at high risk for failure. The gas mains are prioritized for replacement in accordance with DIMP regulations and leak information. The gas main replacements result in a distribution system that is safer and more reliable. Projects that are included in the program have costs less than $500K.
- Leak Prone Service Program: This program replaces services that are classified as Leak Prone and are required by various regulations to be replaced. This work includes, but is not limited to, replacing gas services in conflict with street reconstruction projects in accordance with terms and conditions to occupy public right-of-way; leak prone gas main replacements; tariff or code requirements; and actively leaking services.

Section 7.6 Gas AMI Capital Investment Forecast

The Gas Advanced Metering Infrastructure (AMI) Capital Investment Forecast for NYSEG is shown in Table 33 and for RG&E is shown in Table 34, respectively.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**AMI Project**	**$ 14,416**	**$ 10,867**	**$ -**	**$ -**	**$ -**	**$ 25,283**
2	AMI Project	14,416	10,867	-	-	-	25,283
3	**Total**	**$ 14,416**	**$ 10,867**	**$ -**	**$ -**	**$ -**	**$ 25,283**

Table 33 – NYSEG Gas AMI Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**AMI**	**$ 10,075**	**$ 7,587**	**$ -**	**$ -**	**$ -**	**$ 17,661**
2	AMI Project	10,075	7,587	-	-	-	17,661
3	**Total**	**$ 10,075**	**$ 7,587**	**$ -**	**$ -**	**$ -**	**$ 17,661**

Table 34 – RG&E Gas AMI Capital Investment Forecast

The AMI category is the on-going installation of the AMI in NYSEG and RG&E service territories. AMI will be an essential foundational system in realizing CLCPA goals to empower customers, through new tools and information, to effectively manage and reduce usage and minimize environmental impacts of energy consumption.

Chapter 8 Common Capital Investment Forecast

The common classification is for projects and programs which are applicable to both the electric and the gas lines of business. For projects that are applicable to both NYSEG and REG&E, the costs are first allocated to each Company based on factors that can vary by project. Once the amount has been established for each Company, an allocation factor is used to allocate the costs to the electric and gas lines of business. The lines of business allocation factors for common costs for NYSEG and RG&E reflect those from the currently approved Joint Proposal and are shown in Figure 4.

Company	Allocation to Electric Line of Business	Allocation to Gas Line of Business
NYSEG	80.26%	19.74%
RG&E	71.39%	28.61%

Figure 4 – NYSEG and RG&E Common Allocation Factors

The amounts shown in all tables of this Chapter are unallocated amounts. The allocation to each line of business is shown below each table. Table 35 and Table 36 show the unallocated capital investments for each of the areas within Common at each Company. The Sections that follow detail the specific projects within each of the seven areas.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	Buildings and Facilities	**$ 29,675**	**$ 19,225**	**$ 13,110**	**$ 9,775**	**$ 9,970**	**$ 81,755**
2	Customer Service	9,530	17,338	18,685	19,180	9,664	74,397
3	Fleet	18,875	18,875	18,875	19,382	21,000	97,007
4	Information Technology	10,858	11,197	10,460	15,368	13,835	61,718
5	Operational Smart Grids	29,810	30,114	25,149	63,713	87,365	236,151
6	Security	22,597	18,417	16,517	25,580	26,515	109,626
7	Training	510	536	663	989	570	3,268
8	Total	**$ 121,856**	**$ 115,701**	**$ 103,459**	**$ 153,987**	**$ 168,919**	**$ 663,921**
9							
10	Allocation to Electric Business	$ 97,802	$ 92,861	$ 83,036	$ 123,590	$ 135,574	$ 532,863
11	Allocation to Gas Business	$ 24,054	$ 22,839	$ 20,423	$ 30,397	$ 33,345	$ 131,058

Table 35 – NYSEG Common Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	Buildings and Facilities	**$ 6,186**	**$ 4,390**	**$ 2,750**	**$ 1,400**	**$ 1,650**	**$ 16,376**
2	Customer Service	4,424	8,747	9,491	9,773	5,104	37,539
3	Fleet	7,287	5,500	5,592	10,444	7,305	36,129
4	Information Technology	5,781	6,151	4,989	8,919	8,245	34,085
5	Operational Smart Grids	15,901	14,081	15,027	26,503	35,713	107,226
6	Security	10,408	8,915	8,441	4,975	4,014	36,753
7	Training	47	101	2	205	80	435
8	Total	**$ 50,035**	**$ 47,886**	**$ 46,293**	**$ 62,219**	**$ 62,111**	**$ 268,543**
9							
10	Allocation to Electric Business	$ 35,720	$ 34,186	$ 33,048	$ 44,418	$ 44,341	$ 191,713
11	Allocation to Gas Business	$ 14,315	$ 13,700	$ 13,244	$ 17,801	$ 17,770	$ 76,830

Table 36 – RG&E Common Capital Investment Forecast

Section 8.1 Buildings and Facilities Capital Forecast

The Building and Facilities area is responsible for maintaining and improving the Companies owned and leased facilities, which include office buildings, service centers, and training centers, ensuring they meet health and safety standards, code compliance and required upgrades to maximize asset life cycles.

The capital investments of the Building and Facilities area are needed to maintain, upgrade, or replace the Companies' facilities or equipment, due to asset condition, age, risk mitigation, efficiency loss, functional obsolescence, code compliance requirements, safety and/or environmental considerations. Project improvements typically include mechanical, electrical, building structure and envelope, and control systems. The facilities projects are aimed at providing safe working conditions, greater efficiencies and maximizing asset life cycles at all the Company's locations – office buildings, operation service centers and training facilities.

The projects in this area typically include upgrading HVAC systems to energy efficient models, (BMS) Building Management Systems upgrades/installations, LED lighting with controls, building envelope upgrades, environmental and site improvements (tanks, spill containment, etc.), back-up systems, UPS systems, generators, solar panels, installation of EV charges and consolidation projects to optimize our space utilization at Company facilities.

Building and Facilities collaborates with internal departments, to address requests for additional space, improvements to existing locations, expansion requests for new locations, and site-specific upgrades for operational benefits, which examples include new structures for covered parking or equipment storage.

Other types of projects include equipment replacement due to day to day wear and tear, roof replacements due to end of life or to mitigate cumulative repair costs, general replacement of material, systems and equipment required to keep the facilities in proper

working order. The facility amounts for NYSEG and RG&E are shown in Table 37 and Table 38, respectively.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Buildings and Facilities**	**$ 29,675**	**$ 19,225**	**$ 13,110**	**$ 9,775**	**$ 9,970**	**$ 81,755**
2	Auburn HVAC Upgrades	100	-	-	-	-	100
3	Auburn Service Center Projects	1,050	-	2,775	150	1,000	4,975
4	BMS System	750	750	500	-	-	2,000
5	Brewster Generator	150	-	-	-	-	150
6	Brewster HVAC	1,000	-	-	-	-	1,000
7	Brewster Service Center Projects	2,500	500	-	1,350	-	4,350
8	Brewster Truck Garage	800	-	-	-	-	800
9	Chatham Chiller	250	-	-	-	-	250
10	Consolidation Ithaca	1,500	500	-	-	-	2,000
11	Consolidation KGO	1,500	-	-	-	-	1,500
12	ECC Projects	570	325	-	800	-	1,695
13	Elmira Service Center Projects	425	100	-	700	-	1,225
14	EV Chargers	-	3,250	1,000	-	-	4,250
15	Geneva HVAC and Lighting Upgrades	100	-	-	-	-	100
16	Geneva Service Center East Projects	1,500	1,500	-	-	-	3,000
17	Geneva Service Center West Projects	100	-	-	-	-	100
18	Gowanda Site Improvements	100	-	-	-	-	100
19	Hamburg Operations Center Projects	1,750	750	-	100	1,000	3,600
20	Hornell Service Center Projects	100	300	-	-	-	400
21	KGO Projects	1,610	100	50	-	-	1,760
22	Lancaster Service Center Garage Projects	100	350	75	100	1,765	2,390
23	Lancaster Service Center Projects	150	1,500	-	400	525	2,575
24	Liberty Service Center Projects	3,000	-	-	-	-	3,000
25	Lockport Service Center Projects	100	-	-	1,695	-	1,795
26	Long Lake Building Expansion	200	250	1,250	-	-	1,700
27	Low Risk Buildings Projects	820	250	250	80	80	1,480
28	Mechanicville Service Center Projects	1,497	600	300	-	1,600	3,997
29	Minor Projects	3,548	3,500	3,500	4,000	4,000	18,548
30	Norwich Operations Center Projects	-	50	-	400	-	450
31	Norwich Truck Storage	600	-	-	-	-	600
32	Oneonta Service Center Projects	1,500	1,500	-	-	-	3,000
33	Plattsburgh Service Center	450	-	410	-	-	860
34	Plattsburgh Site Upgrades	100	-	-	-	-	100
35	Solar Panels	-	3,000	3,000	-	-	6,000
36	Stamford Operations Center Projects	455	150	-	-	-	605
37	Vestal Energy Control Center Upgrade	100	-	-	-	-	100
38	Walton Service Center Projects	500	-	-	-	-	500
39	Waterville Roof	700	-	-	-	-	700
40	**Total**	**$ 29,675**	**$ 19,225**	**$ 13,110**	**$ 9,775**	**$ 9,970**	**$ 81,755**
41							
42	**Allocation to Electric Business**	**$ 23,817**	$ 15,430	$ 10,522	$ 7,845	$ 8,002	$ 65,617
43	**Allocation to Gas Business**	**$ 5,858**	$ 3,795	$ 2,588	$ 1,930	$ 1,968	$ 16,139

Table 37 – NYSEG Building and Facilities Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	2024	2025	2026	2027	2028	Total 2024-2028
1	Buildings and Facilities	$ 6,186	$ 4,390	$ 2,750	$ 1,400	$ 1,650	$ 16,376
2	3 City Center	136	50	50	50	50	336
3	50 Airpark Drive	3,500	-	-	-	-	3,500
4	BMS System	300	300	100	-	-	700
5	Canandaigua Truck Garage Projects	-	-	100	-	-	100
6	Eastern Monroe Operations Center Projects	-	105	-	50	-	155
7	EV Chargers	-	1,250	-	-	-	1,250
8	Fillmore Operations Center Projects	-	75	-	-	-	75
9	Low Risk Building Projects	100	100	100	100	100	500
10	Minor Projects	1,150	1,150	1,150	1,200	1,200	5,850
11	Mushroom Blvd Projects	-	-	750	-	150	900
12	Scottsville Rd Service Center Projects	1,000	-	-	-	-	1,000
13	Sodus Service Center Projects	-	110	-	-	150	260
14	Solar Panels	-	1,250	500	-	-	1,750
15	Total	$ 6,186	$ 4,390	$ 2,750	$ 1,400	$ 1,650	$ 16,376
10							
17	Allocation to Electric Business	$ 4.416	$ 3,134	$ 1,963	$ 999	$ 1,178	$ 11,691
18	Allocation to Gas Business	$ 1,770	$ 1,256	$ 787	$ 401	$ 472	$ 4,685

Table 38 – RG&E Building and Facilities Capital Investment Forecast

Building and Facilities some of the major projects being undertaken are:

- Minor Projects: The Minor Projects program is made up of many small projects that make improvements or upgrade systems in any facility due to end of life, failures associated with mechanical, electrical, control systems, efficiency improvements, energy efficiency improvements, deduction of greenhouse emissions or addressing security and safety issues. These projects may create reliability, extend end of life of systems, avoid disruption to Operations, support green and sustainable initiatives, and/or create safer buildings and facilities.
- Solar Panels: This project will install solar panels at Company facilities for use at the facilities. The solar panels will reduce system demand and are in alignment with Company sustainability goals and NY State energy objectives.
- EV Chargers: This is a comprehensive program to install approximately 600 electric vehicle chargers at Company facilities (approximately 450 at NYSEG and 150 at RG&E). These chargers will support the electrification of fleet vehicles.

Section 8.2 Customer Service Capital Forecast

The Customer Service investments focus on providing customers the systems and information they request, when requested. These investments also help doing business with the Companies easy and efficient for the customer. The investments planned in the next five years are shown below in Table 39 for NYSEG and Table 40 for RG&E.

	A	B	C	D	E	F	G
	$ in thousands	2024	2025	2026	2027	2028	Total 2024-2028
1	Customer Service	$ 9,530	$ 17,338	$ 18,685	$ 19,180	$ 9,664	$ 74,397
2	Distributed Generation Billing Program	1,226	2,376	1,801	1,801	1,801	9,005
3	Energy Manager Enhancements	100	100	100	100	-	400
4	Lab Equipment	250	250	250	300	300	1,350
5	CX Digital Journey	3,421	1,525	1,550	1,618	-	8,115
6	Orchestration Platform - Customer Journey	-	-	-	515	-	515
7	Regulatory Driven Efforts	827	912	764	886	913	4,302
8	S4 HANA Implementation	3,705	12,175	14,220	13,960	6,650	50,710
9	Total	$ 9,530	$ 17,338	$ 18,685	$ 19,180	$ 9,664	$ 74,397
10							
11	Allocation to Electric Business	$ 7,648	$ 13,915	$ 14,997	$ 15,394	$ 7,756	$ 59,711
12	Allocation to Gas Business	$ 1,881	$ 3,422	$ 3,688	$ 3,786	$ 1,908	$ 14,686

Table 39 – NYSEG Customer Service Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	2028	Total 2024-2028
1	Customer Service	**$ 4,424**	**$ 8,747**	**$ 9,491**	**$ 9,773**	$ 5,104	$ 37,539
2	Distributed Generation Billing Program	612	1,191	901	901	901	4,506
3	CX Digital Journey	315	685	696	727	-	2,422
4	Energy Manager Enhancements	500	500	500	450	-	1,950
5	Lab Equipment	250	250	250	300	300	1,350
6	Orchestration Platform - Customer Journey	-	-	-	239	-	239
7	Regulatory Driven Efforts	827	912	764	886	913	4,302
8	S4 HANA Implementation	1,920	5,210	6,380	6,270	2,990	22,770
9	Total	**$ 4,424**	**$ 8,747**	**$ 9,491**	**$ 9,773**	$ 5,104	$ 37,539
10							
11	Allocation to Electric Business	$ 3,158	$ 6,245	$ 6,776	$ 6,977	$ 3,644	$ 26,799
12	Allocation to Gas Business	$ 1,266	$ 2,503	$ 2,715	$ 2,796	$ 1,460	$ 10,740

Table 40 – RG&E Customer Service Capital Investment Forecast

Customer Service some of the major projects being undertaken are:

- Regulatory Driven Efforts: 'This program covers software system upgrades and enhancements that are required by New York regulatory mandates and rate case initiatives. On an annual basis, there are anticipated regulatory requirements that require resources to develop and implement the necessary system changes. The work is anticipated to include system impacts to the areas of Billing, Retail Access, FICA/Credit and Collections.

- Energy Manager Enhancements: The program will enable the Companies to utilize the data obtained from the AMI system and provide real time insights to our customers about their energy usage and associated costs. The first object of the project will enable the Companies to integrate the data from the AMI system so we can send mid-cycle bill alerts to those customers who are forecasted to have higher than expected bills. The second aspect of the project will enhance the mobile device capabilities and "widgets" to allow customers to have the same full, rich energy manager and usage experience that they experience on the website. These widgets will include usage and comparison graphs, home surveys, energy efficiency advice, usage alerts, bill comparisons, near real-time interval data, and rates comparisons.

Section 8.3 Fleet Capital Forecast

Fleet Services' overall objective is to provide a safe, reliable, regulatory compliant and cost-effective fleet of vehicles and equipment for the Companies. The capital expenditures for Fleet are for the replacement of vehicles and equipment and are based on established life cycle criteria (years, mileage, and/or hours). Fleet Services supports noted objectives through the use of the following:

1. Cost-effective and timely processes for the acquisition, maintenance and disposal of fleet vehicles and equipment including light-, medium- and heavy-duty vehicles and equipment (e.g. trailers, backhoes, ATVs, etc.).
2. Replacements are based on established life cycle criteria (years, mileage, and/or hours). Each year the Companies review the existing fleet according to the established criteria and identify those vehicles that meet or exceed the replacement criteria. These are the units that are proposed for replacement.
3. Model year advancements by the vehicle and equipment manufacturers are factored into the acquisition process to ensure that the latest technical and safety features are included. Changes in operational requirements are also considered, based on feedback form the end-users of the fleet.
4. Supports sustainability efforts through the purchase of alternatively fueled vehicles.

The capital investment for Fleet at NYSEG and RG&E are shown in Table 41 and Table 42, respectively.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Fleet**	**$ 18,875**	**$ 18,875**	**$ 18,875**	**$ 19,382**	**$ 21,000**	**$ 97,007**
2	Fleet Replacement Program	18,875	18,875	18,875	18,633	21,000	96,257
3	Global Telematics Solution	-	-	-	749	-	749
4	**Total**	**$ 18,875**	**$ 18,875**	**$ 18,875**	**$ 19,382**	**$ 21,000**	**$ 97,007**
5							
6	**Allocation to Electric Business**	$ 15,149	$ 15,149	$ 15,149	$ 15,556	$ 16,854	$ 77,858
7	**Allocation to Gas Business**	$ 3,726	$ 3,726	$ 3,726	$ 3,826	$ 4,145	$ 19,149

Table 41 – NYSEG Fleet Capital Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Fleet**	**$ 7,287**	**$ 5,500**	**$ 5,592**	**$ 10,444**	**$ 7,305**	**$ 36,129**
2	Fleet Replacement Program	7,287	5,500	5,592	10,188	7,305	35,873
3	Global Telematics Solution	-	-	-	256	-	256
4	**Total**	**$ 7,287**	**$ 5,500**	**$ 5,592**	**$ 10,444**	**$ 7,305**	**$ 36,129**
5							
6	**Allocation to Electric Business**	$ 5,202	$ 3,927	$ 3,992	$ 7,456	$ 5,215	$ 25,792
7	**Allocation to Gas Business**	$ 2,085	$ 1,574	$ 1,600	$ 2,988	$ 2,090	$ 10,336

Table 42 – RG&E Fleet Capital Investment Forecast

Section 8.4 Information Technology Capital Forecast

As technology advances, NYSEG and RG&E's goal is to implement solutions that enable the business to implement solutions that deliver value to the business and to our customers. The projects and programs included in this area are upgrades and updates to hardware, software applications, new digital applications and platforms, as well as asset condition-based replacements. The capital investments for Information Technology are shown in Table 43 and Table 44 for NYSEG and RG&E, respectively.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	2025	2026	2027	2028	Total 2024-2028
1	Information Technology	**$ 10,858**	$ 11,197	$ 10,460	$ 15,368	$ 13,835	$ 61,718
2	Client Project Requests And Integration Projects	2,044	3,579	-	7,207	9,190	22,021
3	CYBER-SIEM	75	-	-	-	-	75
4	End User Life Cycle	1,705	1,238	2,263	1,891	1,265	8,362
5	Esri UN Deployment	1,822	1,822	1,822	-	-	5,465
6	Infrastructure Security	390	388	396	405	413	1,993
7	Mobility Apps Enhancement	239	252	-	-	-	492
8	NETENG Life Cycle	591	588	600	612	624	3,014
9	NETSEC Life Cycle	278	280	283	286	293	1,421
10	NY Gas Inspections	262	-	-	-	-	262
11	S4 HANA Global SAP	-	-	2,363	2,363	-	4,727
12	Storage Life Cycle	709	724	739	755	771	3,698
13	Supply Chain Digitization	473	561	-	-	-	1,034
14	Unix Life Cycle	916	925	1,140	980	396	4,358
15	Virtualization Evolution	290	-	-	-	-	290
16	Wifi Site Enhancement	230	-	-	-	-	230
17	Wintel Life Cycle	835	839	853	868	882	4,277
18	Total	**$ 10,858**	$ 11,197	$ 10,460	$ 15,368	$ 13,835	$ 61,718
19							
20	Allocation to Electric Business	$ 8,715	$ 8,987	$ 8,395	$ 12,334	$ 11,104	$ 49,535
21	Allocation to Gas Business	$ 2,143	$ 2,210	$ 2,065	$ 3,034	$ 2,731	$ 12,183

Table 43 – NYSEG Information Technology Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	Total 2024-2028
1	Information Technology	**$ 5,781**	**$ 6,151**	**$ 4,989**	**$ 8,919**	**$ 8,245**	**$ 34,085**
2	Client Project Requests And Integration Projects	1,183	1,905	-	3,808	4,856	11,753
3	CYBER-SIEM	38	-	-	-	-	38
4	DER Market Management System	-	-	-	750	750	1,500
5	End User Life Cycle	1,124	923	738	953	700	4,437
6	Esri UN Deployment	801	801	801	-	-	2,404
7	Infrastructure Security	217	222	227	231	236	1,133
8	Mobility Apps Enhancement	13	128	-	-	-	141
9	NETENG Life Cycle	146	220	225	229	234	1,054
10	NETSEC Life Cycle	344	347	363	367	375	1,795
11	NY Gas Inspections	130	-	-	-	-	130
12	S4 HANA Global SAP	-	-	1,202	1,202	-	2,404
13	Storage Life Cycle	383	392	400	408	417	2,000
14	Supply Chain Digitization	240	285	-	-	-	526
15	Unix Life Cycle	466	471	569	499	198	2,203
16	Virtualization Evolution	113	-	-	-	-	113
17	Wifi Site Enhancement	123	-	-	-	-	123
18	Wintel Life Cycle	459	456	464	472	480	2,332
19	Total	**$ 5,781**	**$ 6,151**	**$ 4,989**	**$ 8,919**	**$ 8,245**	**$ 34,085**
20							
21	Allocation to Electric Business	$ 4,127	$ 4,391	$ 3,561	$ 6,367	$ 5,886	$ 24,333
22	Allocation to Gas Business	$ 1,654	$ 1,760	$ 1,427	$ 2,552	$ 2,359	$ 9,752

Table 44 – RG&E Information Technology Investment Forecast

Information Technology some of the major projects being undertaken are:

- Client Projects Requests and Integration Projects: This program is for business initiatives identified by the various business areas for future efficiency projects. The Company has a rigorous process of identifying the technology needs of the business, gathering information, vetting the project list and prioritizing based on need, business value and resource availability. The Project Demand Planning cycle runs annually and involves collating the requirements across all business areas for projects requiring IT expenditure. This process runs from the beginning of May through the end of August each year. The final portfolio is then presented back to senior management at the end of August for acceptance. Given the above timetable the final project list for 2023 and beyond does not exist at the time of this filing.
- IOC-NET-End User Life Cycle (LC): The program refreshes the computing devices issued to employees by the Company. Computing devices refresh lifecycle defined by the Companies is four years. This project also provides computing devices for new hires. Replacing aged equipment with new equipment will avoid service disruptions due to devices not working properly due to their age. New computers will provide higher computing capabilities.
- IOC-WINTEL LC: The purpose of this program is to refresh the Companies' Wintel infrastructure following the defined four-year refresh lifecycle. Wintel infrastructure includes primarily servers, chassis, and server blades. This infrastructure is primarily hosting applications and SQL databases and will provide Wintel Infrastructure that supports the company's organic growth. Hardware running beyond four years is more likely to have performance issues that may affect the applications hosted on it. Replace aged equipment with new Wintel equipment will avoid application performance issues or service disruptions due to hardware not working properly. New devices also provide higher

performance and capabilities for better application and data management performance.

Section 8.5 Operational Smart Grids Capital Forecast

Projects in this category are aimed at building the backbone necessary to enable the Companies to effectively plan, monitor and control the electric distribution and transmission systems and the gas systems. These projects are intended to increase the efficiency in accessing critical systems and information and ensure that communication between various devices on the networks and the Energy Control Center (ECC) is always available, efficient, and secure. The capital investments needed to ensure these aspects of the business are shown for NYSEG in Table 45 and for RG&E in Table 46.

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Operational Smart Grids**	**$ 29,810**	**$ 30,114**	**$ 25,149**	**$ 63,713**	**$ 87,365**	**$ 236,151**
2	Communications Tower, Shelter Facility Improvements (Com)	-	576	900	1,125	1,406	4,007
3	Data Center Consolidation	1,471	7,558	548	16,510	29,966	56,053
4	ECC Life cycle	1,100	1,250	1,320	1,650	2,063	7,383
5	Energy Control Systems Infrastructure	6,593	2,142	5,053	10,112	17,386	41,285
6	FAN + mobile technology refresh and expansion	1,200	1,800	1,800	2,250	2,813	9,863
7	FCC License Radio Spectrum purchase	-	-	600	500	500	1,600
8	Historian And Analytic Upgrades Program	3,232	481	353	192	151	4,409
9	Microsoft Licensing	746	-	-	-	-	746
10	NMC Solar Winds	220	335	175	379	379	1,489
11	NY AMI Lifecycle	-	-	6,928	8,660	10,825	26,412
12	CMS Alignment ABB-Spectrum	-	240	-	-	-	240
13	QMS Enhancements	375	360	188	375	375	1,673
14	Rochester Consolidation	53	-	-	-	-	53
15	Telecomm Fiber	3,439	2,520	1,171	4,576	4,118	15,824
16	Telecomm Infrastructure	4,062	6,702	3,028	9,425	9,425	32,641
17	Telecomm Vertical Builds	1,870	1,305	730	2,459	2,459	8,822
18	Telecomm WAN Expansion	5,450	4,846	2,356	5,500	5,500	23,651
19	**Total**	**$ 29,810**	**$ 30,114**	**$ 25,149**	**$ 63,713**	**$ 87,365**	**$ 236,151**
20							
21	**Allocation to Electric Business**	**$** 23,926	$ 24,169	$ 20,184	$ 51,136	$ 70,119	$ 189,535
22	**Allocation to Gas Business**	**$** 5,885	$ 5,944	$ 4,964	$ 12,577	$ 17,246	$ 46,616

Table 45 – NYSEG Operational Smart Grids Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**Total 2024-2028**
1	**Operational Smart Grids**	**$ 15,901**	**$ 14,081**	**$ 15,027**	**$ 26,503**	**$ 35,713**	**$ 107,226**
2	Communications Tower, shelter Facility Improvements (Com)	-	400	700	750	-	1,850
3	Data Center Consolidation	985	4,715	656	9,850	17,878	34,084
4	ECC Life cycle	160	200	700	875	1,094	3,029
5	Energy Control Systems Infrastructure	3,575	1,749	384	480	600	6,789
6	FAN + mobile technology refresh and expansion	1,500	425	1,425	1,781	2,227	7,358
7	FCC License Radio Spectrum purchase	-	-	1,000	-	-	1,000
8	Historian And Analytic Upgrades Program	1,691	290	384	93	75	2,533
9	Microsoft Licensing	**446**	**446**	-	-	-	893
10	NMC Solar Winds	156	229	229	229	229	1,072
11	NY AMI Lifecycle	-	-	4,059	5,074	6,343	15,477
12	CMS Alignment ABB-Spectrum	-	83	-	-	-	83
13	QMS Enhancements	125	125	125	125	125	625
14	Rochester Consolidation	32	-	-	-	-	32
15	Telecomm Fiber	1,226	1,098	984	1,034	930	5,272
16	Telecomm Infrastructure	2,222	2,063	2,092	3,553	3,553	13,483
17	Telecomm Vertical Builds	959	934	959	459	459	3,770
18	Telecomm WAN Expansion	2,824	1,323	1,330	2,200	2,200	9,877
19	**Total**	**$ 15,901**	**$ 14,081**	**$ 15,027**	**$ 26,503**	**$ 35,713**	**$ 107,226**
20							
21	**Allocation to Electric Business**	**$** 11,352	$ 10,053	$ 10,728	$ 18,921	$ 25,495	$ 76,549
22	**Allocation to Gas Business**	**$** 4,549	$ 4,029	$ 4,299	$ 7,583	$ 10,217	$ 30,677

Table 46 – RG&E Operational Smart Grids Investment Forecast

Operational Smart Grids some of the major projects being undertaken are:

- Data Center Consolidation: This project will standardized hardware, software, and applications for all the Operational Smart Grids (OSG) data centers and will consolidate and reduce the overall total number of data centers across the New York Companies. Resources can be utilized across the Companies to provide additional support capabilities when needed. The overall cost to operate will be reduced with fewer data centers and facilities that need to be supported.
- Telecomm Infrastructure: This project will continue to deploy and expand telecom infrastructure to enhance communications capabilities and connectivity throughout the Companies' territories for distribution automation and monitoring activity. Routers and ethernet switches will be deployed utilizing a mix of fiber, copper and wireless technologies for interconnections with redundancy and diversity. Various protocols will be implemented to support dynamic rerouting of traffic in the event of a transport or circuit failure. This project will also support the deployment of a lifecycle replace of the existing Private Land Mobile Radio Systems (LMR) with a new Digital Mobile Radio solution (DMR). The current LMR systems are at or beyond end-of-life.

- Telecomm NY WAN Buildout: This program will continue to deploy WiMAX to support automation activities. NY WAN (Wide Area Network) Expansion involves WiMAX (Worldwide Interoperability of Microwave Access) or future broadband microwave technologies deployments to support automation activities at the Companies. These will primarily involve a point-to-multipoint setup which includes the deployment of a Base Station (with associated network backhaul) and multiple end point devices to provide service for SCADA and AMI data.
- Telecomm Fiber: This project will continue to purchase fiber optic cable to enhance our connectivity and create high bandwidth communications and backhaul points. New fiber will be constructed, or existing dark fiber pairs will be purchased through local carriers to provide connectivity for substations and service centers across the Companies' service territories. Wherever viable, the fiber will be deployed in redundant rings with unique entrances into our facilities. This will allow for connectivity with routers and ethernet switching equipment to dynamically reroute traffic in the event of a fiber failure.
- Energy Control Systems Infrastructure: This project will continue to purchase fiber optic cable to enhance our connectivity and create high bandwidth communications and backhaul points. New fiber will be constructed, or existing dark fiber pairs will be purchased through local carriers to provide connectivity for substations and service centers across the Companies' service territories. Wherever viable, the fiber will be deployed in redundant rings with unique entrances into our facilities. This will allow for connectivity with routers and ethernet switching equipment to dynamically reroute traffic in the event of a fiber failure.

Section 8.6 Security Capital Forecast

Security capital investments are required for both the physical safety and security of employees and Company assets as well to ensure that computer and communication systems are secure from cyber threats. These investments are required to meet various security mandates and regulations, such as the NERC Critical Infrastructure Protection (CIP) Standards as well as Executive Orders. The investments in both physical and cyber security are shown below in Table 47 for NYSEG and Table 48 for RG&E.

	A	B	C	D	E	F	G
	$ in thousands	2024	2025	2026	2027	2028	Total 2024-2028
1	Security	$ 22,597	$ 18,417	$ 16,517	$ 25,580	$ 26,515	$ 109,626
2	ASD Security System Installation	6,986	-	-	-	-	6,986
3	AVANGRID Security Domain Infrastructure	2,488	-	3,107	3,884	4,855	14,333
4	AVANGRID Security Domain Telecommunications	3,562	2,940	1,531	1,914	2,392	12,340
5	DRAGOS	-	222	116	2,502	512	3,352
6	Fire Protection	2,300	2,300	2,300	2,875	3,019	12,794
7	Global Cybersecurity Directors Plan	6,468	4,868	2,872	3,589	4,487	22,284
8	Security Operations Center	792	-	-	-	-	792
9	Security Operations Center Program	-	6	11	23	45	84
10	Security Program Planning	-	8,081	5,262	9,146	9,146	31,634
11	Tripwire Implementation	-	-	1,318	1,648	2,059	5,025
12	Total	$ 22,597	$ 18,417	$ 16,517	$ 25,580	$ 26,515	$ 109,626
13							
14	Allocation to Electric Business	$ 18,137	$ 14,781	$ 13,256	$ 20,530	$ 21,281	$ 87,986
15	Allocation to Gas Business	$ 4,461	$ 3,635	$ 3,260	$ 5,049	$ 5,234	$ 21,640

Table 47 – NYSEG Security Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	2024	2025	2026	2027	2028	Total 2024-2028
1	Security	$ 10,408	$ 8,915	$ 8,441	$ 4,975	$ 4,014	$ 36,753
2	ASD Security System Installation	994	-	-	-	-	994
3	AVANGRID Security Domain Infrastructure	2,688	1,344	246	307	384	4,969
4	AVANGRID Security Domain Telecommunications	1,677	1,377	1,142	-	-	4,195
5	DRAGOS	-	140	140	1,175	58	1,512
6	Fire Protection	690	690	690	1,363	1,431	4,864
7	Global Cybersecurity Directors Plan	3,959	3,037	3,440	-	-	10,435
8	Security Operations Center	400	-	-	-	-	400
9	Security Operations Center Program	-	3	6	11	23	43
10	Security Program Planning	-	2,325	2,778	2,118	2,118	9,339
11	Total	$ 10,408	$ 8,915	$ 8,441	$ 4,975	$ 4,014	$ 36,753
12							
13	Allocation to Electric Business	$ 7,431	$ 6,364	$ 6,026	$ 3,551	$ 2,866	$ 26,238
14	Allocation to Gas Business	$ 2,978	$ 2,550	$ 2,415	$ 1,423	$ 1,148	$ 10,515

Table 48 – RG&E Security Investment Forecast

Physical and Cyber Security some of the major projects being undertaken are:

- Security Program Planning: This program, formerly known as System Cutover or AVANGRID Security Domain (ASD) Security System Installation, relates to security work on various facilities to continue implementing the five-year Security Deployment plan. Systems to be installed are based on a security tier for each facility that is based on risk. Tier 1 and 2 facilities (e.g., bulk substation) receive card access control systems, Public Address (PA) systems, video surveillance, video analytics and thermal cameras (Tier 1 also receives additional physical hardening due to critical nature). Tier 3 facilities (e.g., large office/service center, cash office, hydro) receive card access control systems, video surveillance and video analytics. Tier 4 facilities (e.g., small offices, store yards) receive card access control systems and video surveillance. Additional work includes the enhancement of communication networks to allow for the transport of video back to the Security Operations Center (SOC) for remote monitoring of security network, access control and video monitoring systems. to allow for the transport of video back to the SOC for remote monitoring of security network, access control and video monitoring systems.
- AVANGRID Security Domain (ASD) OSG Telecommunications: This project continues to the installation of telecommunications infrastructure including fiber, Wi-MAX, network architecture design telecommunications infrastructure, implementation of switching and routing within transport backbone for DWDM IP/MPLS.
- AVANGRID Security Domain (ASD) OSG Infrastructure: This project will continue the development of tools and capabilities with cyber security for the Companies. This includes the professional services and hardware/software lifecycle of all direct and auxiliary systems that include advanced cybersecurity technologies and capabilities.

- Global Cybersecurity Directors Plan: This program will improve all aspects of cybersecurity on all Operational Smart Grids assets and systems related to both the electric and gas systems. The program will increase the cybersecurity alignment with and conformity to the National Institute of Standards and Technology – Cyber Security Framework (NIST-CSF).
- Fire Protection: This program addresses fire protection system projects to ensure the safety of our facilities as well as ensuring our systems are up to date and in compliance with local and federal requirements as well as the National Fire Protection Association (NFPA) Standards, the Fire Code of New York State and OSHA Regulations. Fire protection projects include the design and installation and/or replacement of smoke detector/fire alarm systems, mass notification systems, automated extinguisher monitoring systems and fire suppression systems. Compliance with local and federal laws as well as applicable NFPA Standards reduces fire risk and loss to Company infrastructure by increasing resiliency to maintain operations.

Section 8.7 Training Capital Forecast

The Companies' existing training facilities are outdated, are not technologically current and do not have enough capacity to safely provide increasing training needs. To address the training needs, the Companies are improving the facilities, program and methodologies of training. The capital projects needed to improve these facilities are shown below in Table 49 and Table 50 for NYSEG and RG&E, respectively.

	A	B	C	D	E	F	G
	$ in thousands	2024	2025	2026	2027	2028	Total 2024-2028
1	Training	$ 510	$ 536	$ 663	$ 989	$ 570	$ 3,268
2	Training - Fleet	78	78	78	419	-	653
3	Training Equipment And Tools	150	188	188	250	250	1,025
4	Training Facility	263	263	375	-	-	900
5	Training Technology Projects	19	8	23	320	320	690
6	Total	$ 510	$ 536	$ 663	$ 989	$ 570	$ 3,268
7							
8	Allocation to Electric Business	$ 409	$ 430	$ 532	$ 794	$ 457	$ 2,623
9	Allocation to Gas Business	$ 101	$ 106	$ 131	$ 195	$ 113	$ 645

Table 49 – NYSEG Training Investment Forecast

	A	B	C	D	E	F	G
	$ in thousands	2024	2025	2026	2027	2028	Total 2024-2028
1	Training	$ 47	$ 101	$ 2	$ 205	$ 80	$ 435
2	Training Equipment And Tools	38	94	-	125	-	257
3	Training Technology Projects	10	7	2	80	80	179
4	Total	$ 47	$ 101	$ 2	$ 205	$ 80	$ 435
5							
6	Allocation to Electric Business	$ 34	$ 72	$ 1	$ 146	$ 57	$ 311
7	Allocation to Gas Business	$ 13	$ 29	$ 1	$ 59	$ 23	$ 124

Table 50 – RG&E Training Investment Forecast

Training some of the major projects being undertaken are:

- Training Equipment & Tools and Fleet: Equipment and tooling project will secure tools equivalent to those being used in the field by operational groups. The fleet project supplements the tooling project with the addition of fleet vehicles equivalent to those used in the field. Current training fleet is outdated with different controls and functionality than vehicles used in day to day operations. Acquisition of these tools and fleet will allow for replication real world scenarios within the training environment. Time to mastery is reduced through precise replication of field scenarios creating a safer more efficient workforce.

- Training Technology Projects: Emerging technologies such as Augmented Reality (AR) and Virtual Reality (VR) require capital investment for deployment. Hardware to execute initiatives include headsets, computing equipment, sensors, and other items to create a fully safe and immersive mixed reality experience.

Appendix A - Capital Investment Forecast

NYSEG Electric Projects 91
RG&E Electric Projects 97
NYSEG Gas Projects 101
RG&E Gas Projects 102
NYSEG Common Projects 103
RG&E Common Projects 106

NYSEG Electric Projects

NYSEG - Electric Projects ($000's)	2024	2025	2026	2027	2028	Total
Asset Condition	**114,834**	**119,740**	**155,451**	**311,520**	**427,398**	**1,128,943**
Battery Program	600	722	394	826	1,000	3,542
Distribution Line Deficiencies	18,193	16,000	18,000	22,500	28,125	102,818
Electric Betterments	15,484	15,403	8,113	14,318	15,213	68,531
Gardenville Substation Rebuild	2,080	654	695	5,961	26,559	35,949
General Equipment - Ops-SO	942	214	219	273	342	1,990
General Equipment - Ops-T&D	3,145	472	590	738	922	5,866
Line 803 - Croton to Tilly Foster Rebuild	-	-	-	-	5,000	5,000
Line 880 Rebuild	311	302	327	15,202	8,737	24,880
Line 890 Rebuild	175	178	189	15,394	13,769	29,705
Meyer Substation Rebuild	11,283	11,092	1,560	6,500	50,000	80,435
Oneonta Roxbury Run URD Rebuild	395	176	-	-	-	571
PCB Transformer Replacements	-	(0)	1,600	1,180	3,016	5,796
Pole Replace (WPIT) Program	22,618	18,893	8,500	29,858	31,612	111,481
South Perry New Sub & Trans Line Upgrade	1,000	272	260	7,476	30,276	39,285
Substation Major Program	9,161	756	771	964	21,204	32,856
Substation Minor Capital	6,475	2,077	2,197	2,747	3,433	16,930
Substation Modernization - Clark Street	-	-	1,362	5,770	2,427	9,559
Substation Modernization - Noyes Island	-	-	11,145	31,304	22,009	64,458
Substation Modernization - South Owego	-	-	-	10,917	3,353	14,269
Substation Modernization - Wright Avenue	-	-	37,262	21,023	4,745	63,031
T&S Asset Condition Replacement Program	-	-	-	-	10,000	10,000
TLD Replacements	22,971	51,448	61,705	117,794	144,833	398,752
URD Replacement Program	-	1,080	563	776	821	3,239
Reliability	**100,958**	**51,455**	**13,036**	**53,935**	**106,648**	**326,032**
Animal Guard Program	3,395	2,755	999	1,293	1,364	9,808
Breaker Replacement Program	22,703	21,121	6,000	42,569	53,212	145,605
Circuit Sensor Implementation	6,232	977	36	72	72	7,389
Cobble Hill Transformer Replacement	6,376	3,000	-	-	-	9,376
Craryville New Substation Breaker And Circuit Upgrade	2,528	-	-	-	-	2,528
Dingle Ridge - 2nd Bank and 13.2 kV Conv	10,424	-	-	-	-	10,424
Distribution Load Relief Program	10,893	10,073	3,001	3,000	30,000	56,967
Hillcrest Transformer Replacement	5,180	-	-	-	-	5,180
Homer City Capital Breakers & Upgrades	1,000	-	-	-	-	1,000
Line 620 Rebuild - 34.5 kV	-	-	-	-	5,000	5,000
Milo Substation Rebuild	7,777	5,641	-	-	-	13,418
Mobile #2 Replacement	2,778	661	-	-	-	3,438
Mobile #4 Replacement	2,970	757	-	-	-	3,727

NYSEG - Electric Projects ($000's)	2024	2025	2026	2027	2028	Total
North Brewster Reinforcement	5,987	4,813	3,000	7,000	7,000	27,800
Sackett Lake Replace Transformer	1,465	-	-	-	-	1,465
Sloan Substation Load Relief	246	-	-	-	-	246
Substation Modernization - Raquette Lake	3,500	-	-	-	-	3,500
Swift Street - Stryker Avenue Load Transfer	306	-	-	-	-	306
Transmission Reinforcement Program	1,000	-	-	-	10,000	11,000
Wood Street New 3rd 345 115 kV Trans	6,199	1,658	-	-	-	7,857
Resiliency	**118,903**	**152,894**	**115,330**	**75,845**	**94,807**	**557,779**
DSIP - Grid Automation	25,311	30,310	15,848	19,810	24,762	116,041
New York 21st Century Grid Plan (Cheektowaga)	59,728	86,976	66,297	-	-	213,000
Resiliency Automation, Hardening And Topology	26,929	28,006	28,006	35,008	43,760	161,709
SCADA Automation	3,579	7,601	5,179	16,832	21,039	54,230
Trip Saver	3,357	-	-	4,196	5,245	12,798
Compliance	**64,215**	**56,861**	**55,193**	**67,303**	**163,735**	**407,307**
BES - Baker Hill	131	139	147	401	2,114	2,931
BES - Big Tree Road	66	-	-	-	-	66
BES - Border City	27	29	31	33	50,323	50,443
BES - Colliers	152	161	171	2,120	2,042	4,647
BES - Coopers Corners	4	4	5	4,475	22,906	27,394
BES - East Norwich	234	248	263	576	1,312	2,633
BES - Erie St	1,973	2,128	2,237	2,962	41,296	50,596
BES - Frog Valley	30	31	33	35	1,412	1,542
BES - Fuller Hollow / Langdon Rd	157	166	176	2,827	5,024	8,350
BES - Klinekill	-	-	-	99	110	209
BES - L981	274	291	309	328	1,287	2,489
BES - Sleight Rd	20	21	22	24	2,705	2,792
BES - South Oneonta Area - Fraser	26,555	37,316	36,508	25,247	-	125,626
BES - Ten Mile River to	48	50	54	729	1,753	2,633
Cost Sharing	6,368	5,000	5,000	5,000	5,000	26,368
DER-ICCP connection to NYISO	-	115	20	-	-	135
FERC 881 Regulatory Compliance	3,752	-	-	-	-	3,752
FERC Order 2222	4,000	-	-	-	-	4,000
NERC Alert Priority III	10,458	11,161	10,217	22,446	26,450	80,731
NERC CIP Asset Transition	7,767	-	-	-	-	7,767
NERC Compliance Projects	2,200	-	-	-	-	2,200
Clean Energy Transformation	**192,963**	**416,196**	**553,268**	**631,833**	**835,443**	**2,629,703**
CLCPA Phase 1 - 115 kV Line 961 Rebuild	2,008	1,041	11,315	21,643	36,152	72,159
CLCPA Phase 1 - Clarks Corners	4,042	8,637	17,226	1,368	-	31,272

NYSEG - Electric Projects ($000's)	2024	2025	2026	2027	2028	Total
CLCPA Phase 1 - Coddington 115/34.5 kV Substation Upgrades	-	-	-	700	3,700	4,400
CLCPA Phase 1 - Etna 115/34.5/4.8 kV Substation Full Rebuild	-	-	-	2,900	5,700	8,600
CLCPA Phase 1 - Jennison 115 46 kV Substation Upgrades	23,745	34,160	49,081	31,224	-	138,210
CLCPA Phase 1 - Lounsberry 115 12.5 kV Substation Full Rebuild	1,398	2,496	10,457	23,544	3,441	41,336
CLCPA Phase 1 - Oakdale Westover Solution	53,237	99,930	154,847	112,133	7,529	427,676
CLCPA Phase 1 - Robinson Road 230/115/34.5 kV Substation	31	33	35	2,077	13,371	15,546
CLCPA Phase 1 - Stolle Road 345/230/115/34.5 kV Substation	-	-	-	20,000	39,400	59,400
CLCPA Phase 1 - Trans Line - 946 Rebuild	1,666	1,693	24,000	10,827	11,469	49,655
CLCPA Phase 1 - Trans Line - 949 Rebuild	1,807	1,739	30,339	31,628	19,908	85,420
CLCPA Phase 1 - Trans Line - 982 Rebuild	1,703	937	22,849	29,908	11,232	66,629
CLCPA Phase 1 - Trans Line 115kv - 962 Rebuild	2,088	1,880	18,566	31,224	26,448	80,206
CLCPA Phase 1 - Transmission Projects	-	-	-	-	-	-
CLCPA Phase 2 - Hickling RR	1,319	10,424	13,828	1,671	704	27,946
CLCPA Phase 2 - SS - Bath	8,168	49,339	26,212	61,506	49,544	194,769
CLCPA Phase 2 - SS - Bennett	701	2,945	763	5,935	5,521	15,864
CLCPA Phase 2 - SS - Eelpot	1,132	31,043	10,498	27,317	31,964	101,954
CLCPA Phase 2 - SS - Greenidge	843	1,391	2,668	2,613	4,560	12,076
CLCPA Phase 2 - SS - Hickling	2,604	13,876	13,085	25,252	19,598	74,415
CLCPA Phase 2 - SS - Hillside	65	3,133	2,963	2,705	312	9,178
CLCPA Phase 2 - SS - Montour Falls	9,812	14,175	22,056	2,596	122,401	171,040
CLCPA Phase 2 - SS - Stoney Ridge	2,710	12,040	1,828	7,120	7,842	31,538
CLCPA Phase 2 - SS - Terminal Upgrades	818	3,690	2,735	-	-	7,243
CLCPA Phase 2 - SS - Watercure	8,787	6,624	5,389	19,561	6,762	47,124
CLCPA Phase 2 Lines - Line 539	711	852	5,796	7	-	7,366
CLCPA Phase 2 Lines - Line 542	1,713	1,850	16,568	21	-	20,153
CLCPA Phase 2 Lines - Line 546	2,697	3,985	18,320	13,704	5	38,712
CLCPA Phase 2 Lines - Line 565	2,039	2,994	14,594	8,184	-	27,811
CLCPA Phase 2 Lines - Line 67	1,040	5,869	3,571	17,013	15,276	42,769
CLCPA Phase 2 Lines - Line 68	8,665	5,507	1,050	2,646	27,555	45,423
CLCPA Phase 2 Lines - Line 69	192	1,925	1,601	4,199	24,886	32,803
CLCPA Phase 2 Lines - Line 711	649	943	701	1,864	4,416	8,573
CLCPA Phase 2 Lines - Line 712	212	3,584	2,555	4,295	14,735	25,381
CLCPA Phase 2 Lines - Line 72	9,225	6,712	1,510	4,309	40,046	61,802
CLCPA Phase 2 Lines - Line 722	4,150	10,545	2,984	975	49,509	68,163
CLCPA Phase 2 Lines - Line 723	3,445	4,329	834	9,109	22,025	39,742
CLCPA Phase 2 Lines - Line 724	2,557	7,030	813	507	16,317	27,224
CLCPA Phase 2 Lines - Line 932	692	1,143	760	11,378	16,225	30,198
CLCPA Phase 2 Lines - Line 934	7,179	12,748	1,385	18,374	47,731	87,417
CLCPA Phase 2 Lines - Line 935	231	2,697	2,249	685	6,394	12,255
CLCPA Phase 2 Lines - Line 953	1,192	1,154	335	5,134	8,682	16,497
CLCPA Phase 2 Lines - Line 963	4,703	6,442	425	430	15,211	27,210

NYSEG - Electric Projects ($000's)	2024	2025	2026	2027	2028	Total
CLCPA Phase 2 Lines - Line 965	4,464	5,392	1,309	1,530	30,539	43,234
CLCPA Phase 2 Lines - Line 968	792	1,507	696	161	3,668	6,824
CLCPA Phase 2 Lines - Line 978	799	12,040	485	484	17,569	31,378
CLCPA Phase 2 Lines - Willis-Malone -Line 910	2,374	1,622	627	7,845	27,714	40,181
Ithaca Electrification Project Phase 1	4,274	13,033	23,288	1,542	-	42,136
Ithaca Reliability Projects Phase 2 (Electrification)	-	1,000	10,000	10,000	10,000	31,000
Java SS Microgrid BESS	283	69	73	31,984	9,383	41,792
Customer Focus	**184,322**	**191,939**	**187,880**	**236,380**	**292,203**	**1,092,725**
Distribution Line	36,365	37,014	39,364	49,205	61,506	223,453
Electric Meters	1,071	1,597	2,491	2,451	2,786	10,395
Government Highway	3,773	4,902	5,049	6,312	7,890	27,926
Industrial and Commercial Service Connections	8,284	7,783	8,016	10,020	12,525	46,628
LED Streetlighting	3,932	-	-	4,915	6,144	14,992
Make Ready	70,000	80,884	70,450	88,063	110,078	419,475
Residential Line	16,616	13,552	13,958	17,448	21,810	83,384
Service Connect	10,308	11,973	12,362	15,452	19,315	69,410
Storms Electric	15,000	16,500	18,150	19,965	21,962	91,577
Street Light	1,867	2,500	2,500	3,125	3,906	13,898
Transmission Line	17,106	15,236	15,540	19,425	24,281	91,588
Modernization	**7,348**	**7,485**	**3,563**	**8,959**	**3,684**	**31,038**
AMI Integration for ISO	-	-	-	4,848	893	5,741
Application Interface Upgrades	-	45	0	-	-	45
Capital Automation NAT	545	-	-	-	-	545
CDG Billing Automation SAP	25	-	-	-	-	25
Distribution Automation	-	445	458	-	-	903
DSIP - ADMS	-	960	-	-	-	960
DSIP - Advanced Planning Tools	132	-	-	-	-	132
DSIP - Enterprise Analytics	-	-	-	541	541	1,082
Electric Reliability Application (ERA) Integration	84	32	-	-	-	116
IEE Service Mode	1,584	1,626	-	-	-	3,211
iTOA Implementation	73	74	-	-	-	147
New Scheduler	3,240	78	-	570	-	3,888
NYSEG Transmission GIS and GIS Interface optimization	120	115	60	-	-	295
REV - Electric Vehicles	1,100	3,415	-	-	-	4,515
Siemens Spectrum Upgrade to V7	-	192	3,000	3,000	2,250	8,442
SMSI Field Deployment	207	414	-	-	-	621
Spectrum Planned Work Module	237	88	44	-	-	369
Innovation	**13,644**	**10,139**	**3,386**	**1,743**	**3,010**	**31,923**

NYSEG - Electric Projects ($000's)	2024	2025	2026	2027	2028	Total
CYME Server - Hardware & Software NYSEG	250	-	-	-	-	250
DSIP - GIS Enhancements GMEP	8,334	6,813	-	-	-	15,147
FICS Scalability Plan	-	-	-	1,743	-	1,743
IEDR Phase 2	3,199	3,326	3,386	-	-	9,912
IEDR Phase I	530	-	-	-	-	530
Microgrid Management System	-	-	-	-	2,250	2,250
NY Energy Storage RFP	-	-	-	-	760	760
Stephentown BESS	666	-	-	-	-	666
Wales Center Energy Storage	666	-	-	-	-	666
Hydro-Generation	**20,268**	**23,376**	**28,031**	**26,128**	**18,549**	**116,352**
Bradford Concrete Spillway And Toe Resurfacing Improvement Project	333	393	2,186	100	-	3,011
Bradford Dam Automation Project	-	-	-	349	295	643
Cadyville and Kents Falls Facility and Window Upgrades	363	335	-	-	-	697
Cadyville and Mill C Penstock Vent Valve House Upgrade Project	1,373	1,293	-	-	-	2,666
Cadyville Right Abutment Spillway Improvements Project	1,271	-	-	-	-	1,271
Cadyville Switchgear And Generator Protection Upgrade Project	-	-	-	503	101	603
Cadyville Unit 1 Turbine Major Overhaul	2	370	785	2,205	45	3,407
Cadyville Upgrade Unit 1 & Unit 2 Turbine-Generator Cooling Water System	-	-	-	385	490	875
High Falls Intake Upgrade Project	5,584	5,048	139	-	-	10,771
High Falls Unit 2 Generator Rewind	345	36	1,991	69	-	2,441
High Falls Unit 3 Turbine Rebuild & Draft Tube Upgrade Project	-	-	-	712	1,265	1,977
Kents Falls - Capital Project	492	6,726	13,701	6,309	-	27,228
Kents Falls Dam Low Level Floodgate Project	281	336	1,491	100	-	2,208
Kents Falls Internal Riser Shaft and Tank Project	129	3,114	3,128	224	98	6,693
Kents Falls Unit 1 Generator Rewind Project	-	-	-	379	590	970
Kents Falls Unit 2 Turbine-Generator Major Rebuild	3	3	4	366	683	1,059
Kents Falls Unit 3 Turbine Major Rebuild with a New Turbine Runner	-	-	-	290	773	1,064
Kents Falls Upstream Training Wall Extension Project	2,529	24	-	-	-	2,553
Mechanicville Upstream Eel Ladder Project	351	1,004	-	-	-	1,356
Mill C Powerhouse A Crane Upgrade Project	-	-	375	515	1,515	2,405
Mill C Spillway Concrete Improvements Project	5	184	307	1,572	-	2,068
Minor Capital Program	3,230	2,872	1,672	2,821	1,544	12,139
Overhead Crane Upgrades Project (Cadyville, Rainbow Falls)	431	399	-	-	-	830
Rainbow Falls Low Level Floodgate Upgrades & Downstream Abutment	-	-	-	254	341	596
Rainbow Falls Penstock Replacement Project	-	-	-	827	2,357	3,184
Rainbow Falls Power Canal and Gatehouse Upgrade Project	-	-	-	-	177	177
Rainbow Falls Powerhouse Entrance Hill Stabilization	2,987	46	-	-	-	3,033

NYSEG - Electric Projects ($000's)	2024	2025	2026	2027	2028	Total
Roof Upgrades (Cadyville, Rainbow Falls)	325	297	-	-	-	622
Saranac Plant Control Systems Upgrade Project	216	246	1,126	75	-	1,662
Upper Mechanicville Generator Protection and Controls Upgrade	-	202	240	596	69	1,107
Upper Mechanicville Intake Upgrades And Downstream Passage	17	447	647	6,871	7,340	15,322
Upper Mechanicville Plant Control System Upgrade Project	-	-	240	606	69	915
Upper Mechanicville Unit 1 Turbine-Generator Major Overhaul	-	-	-	-	177	177
Upper Mechanicville Unit 2 Generator Rewind	-	-	-	-	622	622
AMI	**57,974**	**36,043**	**5,296**	**6,619**	**8,274**	**114,206**
AMI Project	57,974	36,043	5,296	6,619	8,274	114,206
Total	**875,429**	**1,066,126**	**1,120,434**	**1,420,266**	**1,953,751**	**6,436,006**

RG&E Electric Projects

RG&E - Electric Projects ($000's)	2024	2025	2026	2027	2028	Total
Asset Condition	**53,486**	**66,119**	**55,386**	**61,084**	**103,553**	**339,628**
Battery Program	501	696	737	773	-	2,707
Distribution Line Deficiencies	1,241	1,399	1,277	1,596	1,995	7,508
Electric Betterments	2,466	2,748	2,349	5,380	5,981	18,924
General Equipment - Ops-SO	323	321	327	409	511	1,891
General Equipment - Ops-T&D	824	849	875	1,094	1,367	5,009
PCB Transformer Replacements	-	-	5,000	6,250	7,813	19,063
Pole Replace (WPIT) Program	5,116	4,797	4,101	5,842	6,429	26,285
Station 156 Circuit Upgrades	2,290	2,006	36	-	-	4,332
Station 156 Transf. Facilities Upgrade	2,778	1,147	679	-	-	4,605
Station 192 Circuit Upgrades	5,454	-	-	-	-	5,454
Station 192 Trans Facilities Upgrade	1,180	6,834	5,366	650	-	14,029
Station 29 Modernization Project	-	77	82	103	1,831	2,092
Station 34 Modernization Project	-	68	73	2,078	5,083	7,302
Station 37 Modernization Project	99	107	115	123	4,455	4,899
Station 43 Circuit Upgrades	9,531	8,471	5,519	43	-	23,564
Station 43 Modernization Project	-	-	903	-	-	903
Station 5 Substation Mod	10,580	12,316	-	-	-	22,896
Station 51	1,022	5,572	4,755	-	-	11,349
Station 82 Upgrades	-	539	578	2,629	10,962	14,708
Substation Major Program	1,223	1,193	1,240	11,550	24,438	39,643
Substation Minor Program	873	793	817	1,021	1,277	4,781
TLD Replacements	2,035	2,686	2,653	1,248	1,277	9,899
UG Cable Replacements	3,787	3,500	2,905	1,546	6,696	18,434
URD Replacement Program	2,164	10,000	15,000	18,750	23,438	69,351
Reliability	**60,257**	**46,904**	**38,431**	**63,531**	**81,561**	**290,683**
Animal Guard Program	1,656	1,108	988	912	1,005	5,669
Breaker Replacement Program	11,658	9,290	10,630	12,892	12,892	57,362
Circuit Sensor Implementation	2,882	2,353	-	-	-	5,236
Comprehensive Area Studies	-	-	-	-	10,000	10,000
Distribution Load Relief Program	4,234	600	-	10,000	10,000	24,834
GMI-Station 168 Service Area Reinforcements	11,165	5,015	-	-	-	16,181
iTOA Implementation	33	32	-	-	-	65
Replace DC Pilot Wire System	3,903	2,347	2,107	-	-	8,357
Station - Circuit 261	61	3,189	1,294	-	-	4,543
Station 117	269	291	312	335	176	1,383
Station 210 - Circuit 207	2,098	-	-	-	-	2,098
Station 210 Modernization	7,418	897	-	-	-	8,315

RG&E - Electric Projects ($000's)	2024	2025	2026	2027	2028	Total
Station 46 - Replace #1 #3 Transf. Banks	4,939	1,435	-	-	-	6,374
Station 49 4KV to 12KV Upgrade	-	-	-	-	5,000	5,000
Transmission Reinforcement Program	1,000	-	-	7,000	15,000	23,000
Webster Area Projects	2,662	8,735	5,192	17,638	12,487	46,714
Webster Area Substation	6,278	11,611	17,910	14,753	15,000	65,552
Resiliency	**16,157**	**22,170**	**23,040**	**29,338**	**26,066**	**116,772**
DSIP - Grid Automation	1,903	2,495	2,545	5,145	5,125	17,212
Resiliency Automation, Hardening And Topology	9,700	10,194	10,984	13,234	13,129	57,241
SCADA Automation	3,328	4,482	4,511	4,709	-	17,030
Trip Saver	1,226	5,000	5,000	6,250	7,813	25,289
Compliance	**40,188**	**47,323**	**41,903**	**23,215**	**20,040**	**172,671**
BES - Hook Rd Upgrades (ST 127)	14,856	811	-	-	-	15,667
BES - L947	1,290	1,308	654	745	11,193	15,191
BES - Line 949 115 kV Line Addition	7,623	36,663	34,017	14,855	79	93,237
BES - Station 056 Reconfiguration	4,233	0	-	-	-	4,233
Cost Sharing	4,008	3,000	3,000	3,000	3,000	16,008
DER-ICCP connection to NYISO	-	120	40	-	-	160
FERC 881 Regulatory Compliance	2,519	1,419	-	-	-	3,938
FERC Order 2222	2,000	500	500	-	-	3,000
NERC CIP Asset Transition	3,660	3,502	3,692	4,615	5,769	21,238
Clean Energy Transformation	**3,300**	**8,119**	**6,579**	**6,641**	**72,316**	**96,955**
CLCPA Phase 2 - Lines - Line 906 CAPEX	2,980	7,823	6,279	6,641	72,316	96,039
CLCPA Phase 2 - SS - Terminal Upgrades	162	296	300	-	-	758
CLCPA Phase 2 - Transmission Projects	158	-	-	-	-	158
Customer Focus	**90,125**	**109,281**	**117,990**	**128,904**	**158,341**	**604,640**
Aqueduct Re-Imagined	1,618	721	16,064	-	-	18,402
Distribution Line	16,470	15,775	16,249	20,311	25,389	94,194
Electric Meters Program	230	505	918	804	1,020	3,477
Genesee Street	3,009	-	-	-	-	3,009
Government Highway	7,162	9,319	8,452	10,565	13,206	48,704
Government Highway Majors Cap	1,829	1,695	1,812	2,265	2,831	10,432
Industrial and Commercial Service Connections	4,554	3,930	3,360	4,200	5,250	21,293
LED Streetlighting	1,190	-	-	-	-	1,190
Make Ready	32,540	57,189	52,476	65,595	81,994	289,794
Residential Line	5,797	5,264	4,499	5,624	7,030	28,215
Service Connect	3,992	3,670	3,137	3,922	4,902	19,623
Storm Electric	4,000	4,400	4,840	5,324	5,856	24,420

RG&E - Electric Projects ($000's)	2024	2025	2026	2027	2028	Total
Street Light	1,266	1,118	955	1,194	1,493	6,026
Town Of Brighton Arc Light Conversion	4,401	3,790	3,246	6,624	6,275	24,335
Transmission Line	2,068	1,905	1,981	2,476	3,095	11,526
Modernization	**3,787**	**4,266**	**2,248**	**3,010**	**1,272**	**14,583**
AMI Integration for ISO	-	-	-	1,382	246	1,628
Application Interface Upgrades	-	20	0	-	-	20
Capital Automation NAT	206	-	-	-	-	206
CDG Billing Automation SAP	25	-	-	-	-	25
DSIP - ADMS	-	1,275	100	-	-	1,375
DSIP - Advanced Planning Tools	132	-	-	-	-	132
DSIP - Enterprise Analytics	-	-	-	275	275	551
Electric Reliability Application (ERA) Integration	24	15	-	-	-	39
IEE Service Mode	853	876	-	-	-	1,729
New Scheduler	1,755	41	0	353	-	2,149
REV - Electric Vehicles	494	1,586	-	-	-	2,080
Siemens Spectrum Upgrade to V7	-	100	2,000	1,000	750	3,850
SMSI Field Deployment	104	207	-	-	-	311
Spectrum Planned Work Module	75	26	28	-	-	129
Transmission GIS and GIS Interface optimization	120	120	120	-	-	360
Innovation	**6,772**	**6,458**	**1,823**	**759**	**1,510**	**17,322**
CYME Server - Hardware & Software RG&E	250	-	-	-	-	250
DSIP - GIS Enhancements GMEP	4,514	4,667	-	-	-	9,180
FICS Scalability Plan	-	-	-	759	-	759
IEDR Phase 2	1,722	1,791	1,823	-	-	5,337
IEDR Phase I	286	-	-	-	-	286
Microgrid Management System	-	-	-	-	750	750
NY Energy Storage RFP	-	-	-	-	760	760
Hydro-Generation	**11,061**	**16,779**	**29,478**	**44,704**	**29,161**	**131,182**
Hydro Generation Station 2 Modernization Project	2,967	8,872	20,042	21,553	6,190	59,625
Minor Capital Program	1,615	4,008	2,329	6,096	3,480	17,528
Roof Upgrades (Station 5, Station 26, Station 160)	-	353	-	-	-	353
Station 160 Toe Scour Upgrade Project	-	399	425	2,341	112	3,278
Station 170 Dam Resurfacing Project	-	-	-	722	152	874
Station 2 Central Ave Dam Superstructure Modernization	294	469	825	5,148	-	6,737
Station 2 Generator Protection and Controls Upgrade Project	200	209	614	44	-	1,068
Station 2 Unit 1 Turbine Wicket Gate Bushing Upgrade	217	209	1,045	44	-	1,516
Station 26 Generator Protection and Controls Upgrade Project	-	188	222	578	47	1,036
Station 26 Intake Deck Upgrades and Resurfacing	-	-	-	439	733	1,172

RG&E - Electric Projects ($000's)	2024	2025	2026	2027	2028	Total
Station 26 Overhead Crane Upgrades Project	-	132	-	-	-	132
Station 5 Brewer Street Water Line and Paving Upgrade	-	-	-	-	229	229
Station 5 Gate 2 Rubplate, Bottom Seal, Hinge Upgrade and Rock	-	467	580	4,300	247	5,594
Station 5 Gate 3 Rubplate, Rubplate Seal And Breastwall Seal	3,319	140	-	-	-	3,460
Station 5 Gate 5 Rubplate, Bottom Seal, Hinge Upgrade and Rock	-	-	678	91	2,981	3,750
Station 5 Generation Protection and Controls Upgrade Project	-	209	614	44	-	868
Station 5 Headgates / Dam Project	276	-	-	-	-	276
Station 5 Intake Stop Log Gantry Upgrade Project	1,860	47	-	-	-	1,907
Station 5 Old House Stabilization Project	-	729	-	-	-	729
Station 5 Penstock Lining and Coating Upgrade Project	-	-	-	275	566	841
Station 5 Powerhouse Access Road Soldier Wall Installation	-	-	375	455	8,070	8,900
Station 5 Powerhouse Backup Generator Upgrade	-	-	-	275	566	841
Station 5 Powerhouse Rock Scaling and Stabilization Project	-	347	-	-	-	347
Station 5 Powerhouse Turbine-Generator Rotating Equipment	312	-	-	-	-	312
Station 5 Surge Tank Expansion Project	-	-	639	674	2,591	3,904
Station 5 Unit 1, Unit 2 & Unit 3 Turbine-Generator Guide Bearing	-	-	-	208	172	379
Station 5 Unit 3 Turbine-Generator New Turbine Isolation Valve	-	-	466	824	2,070	3,361
Station 5 Water Conveyance (Tunnel) System Project	-	-	623	589	955	2,167
AMI	**27,962**	**21,057**	**-**	**-**	**-**	**49,018**
AMI Project	27,962	21,057	-	-	-	49,018
Total	**313,094**	**348,475**	**316,879**	**361,186**	**493,821**	**1,833,455**

NYSEG Gas Projects

NYSEG - Gas Projects ($000's)	2024	2025	2026	2027	2028	Total
Asset Condition	**7,449**	**7,472**	**13,515**	**8,977**	**9,962**	**47,375**
Distribution Main Replacement	3,573	3,766	4,096	4,578	5,196	21,209
Regulator Modernization And Automation Program	2,656	2,623	2,638	3,291	3,735	14,943
Vienna Road Regulator Station	-	-	5,694	-	-	5,694
Gas Operations Departmental	965	939	945	968	1,031	4,848
CGI Standardization Program	255	144	141	140	-	681
Mandatory	**15,043**	**15,176**	**15,835**	**17,171**	**19,459**	**82,684**
Non Leak Prone Service Replacement Program	3,132	3,631	3,932	4,095	4,648	19,438
New Services	3,434	3,409	3,445	3,851	4,370	18,510
Distribution Mains New Business	3,214	3,191	3,224	3,604	4,090	17,323
Gas Meters	2,946	3,062	3,203	3,319	3,763	16,292
Government Jobs	898	891	901	1,007	1,143	4,840
Large Government Jobs	1,019	567	679	846	970	4,081
Regulators	400	425	450	450	475	2,200
Modernization	**-**	**-**	**1,787**	**275**	**-**	**2,062**
Track and Trace	-	-	1,787	275	-	2,062
Reliability	**48,728**	**42,318**	**42,600**	**38,149**	**43,275**	**215,071**
Leak Prone Main Replacement Program	28,210	26,206	35,751	30,518	34,637	155,322
Leak Prone Service Replacement Program	5,717	6,025	6,554	7,324	8,313	33,932
Boswell Hill 124 Psig Bare Steel Leak Prone Main	3,274	3,637	-	-	-	6,911
Hebron Station Line J Retirement	-	6,162	-	-	-	6,162
Winney Hill Regulator Station Rebuild	4,345	-	-	-	-	4,345
Canandaigua Feeder Main Reinforcement Project	2,912	-	-	-	-	2,912
Winney Hill Leak Prone Main 45#	1,859	-	-	-	-	1,859
Low Pressure Relief Valve Program	204	215	222	232	247	1,121
Pleasant Grove Road Leak Prone Main	930	-	-	-	-	930
Winney Hill Leak Prone Main 60#	859	-	-	-	-	859
Critical Valve Installations, Binghamton	74	73	74	75	78	374
State Route 90 Leak Prone Main	344	-	-	-	-	344
AMI	**14,416**	**10,867**	**-**	**-**	**-**	**25,283**
AMI Project	14,416	10,867	-	-	-	25,283
Total	**85,636**	**75,834**	**73,737**	**64,573**	**72,695**	**372,475**

RG&E Gas Projects

RG&E - Gas Projects ($000's)	2024	2025	2026	2027	2028	Total
Asset Condition	**9,762**	**18,532**	**23,793**	**32,760**	**9,346**	**94,192**
Regulator Modernization And Automation Program	5,084	4,657	4,817	5,924	6,753	27,235
Caledonia Station Rebuild	-	-	-	24,417	-	24,417
CM-1 Pipeline Section 4 Chili GS To Ballantyne Road	-	-	16,717	-	-	16,717
Mendon Gate Station	2,484	11,759	-	-	-	14,243
Distribution Main Replacement	1,708	1,660	1,763	1,942	2,214	9,287
Gas Operations Departmental	342	324	355	344	378	1,742
CGI Standardization Program	144	133	141	133	-	551
Mandatory	**11,581**	**11,383**	**12,632**	**13,428**	**15,732**	**64,756**
Gas Meters	2,575	2,764	3,342	3,152	3,755	15,587
Large Government Jobs	2,319	2,324	2,703	3,017	3,710	14,073
Distribution Mains New Business	1,946	1,787	1,854	2,042	2,328	9,957
Non Leak Prone Service Replacement Program	1,709	1,693	1,799	1,982	2,259	9,442
New Services	1,838	1,688	1,751	1,929	2,199	9,405
Government Jobs	1,055	967	1,003	1,105	1,260	5,392
Regulators	140	160	180	200	220	900
Modernization	**-**	**-**	**555**	**923**	**-**	**1,478**
Track and Trace	-	-	555	923	-	1,478
Reliability	**27,701**	**26,121**	**27,980**	**23,705**	**27,026**	**132,533**
Leak Prone Main Replacement Program	21,414	22,801	24,455	19,821	22,598	111,089
Leak Prone Service Replacement Program	3,419	3,319	3,526	3,884	4,429	18,576
Paul Road Leak Prone Main	2,868	-	-	-	-	2,868
AMI	**10,075**	**7,587**	**-**	**-**	**-**	**17,661**
AMI Project	10,075	7,587	-	-	-	17,661
Total	**59,118**	**63,622**	**64,960**	**70,816**	**52,104**	**310,621**

NYSEG Common Projects

NYSEG - Common Projects ($000's)	2024	2025	2026	2027	2028	Total
Buildings and Facilities	**29,675**	**19,225**	**13,110**	**9,775**	**9,970**	**81,755**
Minor Projects	3,548	3,500	3,500	4,000	4,000	18,548
Solar Panels	-	3,000	3,000	-	-	6,000
Auburn Service Center Projects	1,050	-	2,775	150	1,000	4,975
Brewster Service Center Projects	2,500	500	-	1,350	-	4,350
EV Chargers	-	3,250	1,000	-	-	4,250
Mechanicville Service Center Projects	1,497	600	300	-	1,600	3,997
Hamburg Operations Center Projects	1,750	750	-	100	1,000	3,600
Liberty Service Center Projects	3,000	-	-	-	-	3,000
Geneva Service Center East Projects	1,500	1,500	-	-	-	3,000
Oneonta Service Center Projects	1,500	1,500	-	-	-	3,000
Lancaster Service Center Projects	150	1,500	-	400	525	2,575
Lancaster Service Center Garage Projects	100	350	75	100	1,765	2,390
Consolidation Ithaca	1,500	500	-	-	-	2,000
BMS System	750	750	500	-	-	2,000
Lockport Service Center Projects	100	-	-	1,695	-	1,795
KGO Projects	1,610	100	50	-	-	1,760
Long Lake Building Expansion	200	250	1,250	-	-	1,700
ECC Projects	570	325	-	800	-	1,695
Consolidation KGO	1,500	-	-	-	-	1,500
Low Risk Buildings Projects	820	250	250	80	80	1,480
Elmira Service Center Projects	425	100	-	700	-	1,225
Brewster HVAC	1,000	-	-	-	-	1,000
Plattsburgh Service Center	450	-	410	-	-	860
Brewster Truck Garage	800	-	-	-	-	800
Waterville Roof	700	-	-	-	-	700
Stamford Operations Center Projects	455	150	-	-	-	605
Norwich Truck Storage	600	-	-	-	-	600
Walton Service Center Projects	500	-	-	-	-	500
Norwich Operations Center Projects	-	50	-	400	-	450
Hornell Service Center Projects	100	300	-	-	-	400
Chatham Chiller	250	-	-	-	-	250
Brewster Generator	150	-	-	-	-	150
Vestal Energy Control Center Upgrade	100	-	-	-	-	100
Plattsburgh Site Upgrades	100	-	-	-	-	100
Gowanda Site Improvements	100	-	-	-	-	100
Geneva Service Center West Projects	100	-	-	-	-	100
Auburn HVAC Upgrades	100	-	-	-	-	100
Geneva HVAC and Lighting Upgrades	100	-	-	-	-	100

NYSEG - Common Projects ($000's)	2024	2025	2026	2027	2028	Total
Customer Service	**9,530**	**17,338**	**18,685**	**19,180**	**9,664**	**74,397**
S4 HANA Implementation	3,705	12,175	14,220	13,960	6,650	50,710
Distributed Generation Billing Program	1,226	2,376	1,801	1,801	1,801	9,005
CX Digital Journey	3,421	1,525	1,550	1,618	-	8,115
Regulatory Driven Efforts	827	912	764	886	913	4,302
Lab Equipment	250	250	250	300	300	1,350
Orchestration Platform - Customer Journey	-	-	-	515	-	515
Energy Manager Enhancements	100	100	100	100	-	400
Fleet	**18,875**	**18,875**	**18,875**	**19,382**	**21,000**	**97,007**
Fleet Replacement Program	18,875	18,875	18,875	18,633	21,000	96,257
Global Telematics Solution	-	-	-	749	-	749
Information Technology	**10,858**	**11,197**	**10,460**	**15,368**	**13,835**	**61,718**
Client Project Requests And Integration Projects	2,044	3,579	-	7,207	9,190	22,021
End User Life Cycle	1,705	1,238	2,263	1,891	1,265	8,362
Esri UN Deployment	1,822	1,822	1,822	-	-	5,465
S4 HANA Global SAP	-	-	2,363	2,363	-	4,727
Unix Life Cycle	916	925	1,140	980	396	4,358
Wintel Life Cycle	835	839	853	868	882	4,277
Storage Life Cycle	709	724	739	755	771	3,698
NETENG Life Cycle	591	588	600	612	624	3,014
Infrastructure Security	390	388	396	405	413	1,993
NETSEC Life Cycle	278	280	283	286	293	1,421
Supply Chain Digitization	473	561	-	-	-	1,034
Mobility Apps Enhancement	239	252	-	-	-	492
Virtualization Evolution	290	-	-	-	-	290
NY Gas Inspections	262	-	-	-	-	262
Wifi Site Enhancement	230	-	-	-	-	230
CYBER-SIEM	75	-	-	-	-	75
Operational Smart Grids	**29,810**	**30,114**	**25,149**	**63,713**	**87,365**	**236,151**
Data Center Consolidation	1,471	7,558	548	16,510	29,966	56,053
Energy Control Systems Infrastructure	6,593	2,142	5,053	10,112	17,386	41,285
Telecomm Infrastructure	4,062	6,702	3,028	9,425	9,425	32,641
NY AMI Lifecycle	-	-	6,928	8,660	10,825	26,412
Telecomm WAN Expansion	5,450	4,846	2,356	5,500	5,500	23,651
Telecomm Fiber	3,439	2,520	1,171	4,576	4,118	15,824
FAN + mobile technology refresh and expansion	1,200	1,800	1,800	2,250	2,813	9,863
Telecomm Vertical Builds	1,870	1,305	730	2,459	2,459	8,822
ECC Life cycle	1,100	1,250	1,320	1,650	2,063	7,383

NYSEG - Common Projects ($000's)	2024	2025	2026	2027	2028	Total
Historian And Analytic Upgrades Program	3,232	481	353	192	151	4,409
Communications Tower, Shelter Facility Improvements (Com)	-	576	900	1,125	1,406	4,007
OMS Enhancements	375	360	188	375	375	1,673
FCC License Radio Spectrum purchase	-	-	600	500	500	1,600
NMC Solar Winds	220	335	175	379	379	1,489
Microsoft Licensing	746	-	-	-	-	746
OMS Alignment ABB-Spectrum	-	240	-	-	-	240
Rochester Consolidation	53	-	-	-	-	53
Security	**22,597**	**18,417**	**16,517**	**25,580**	**26,515**	**109,626**
Security Program Planning	-	8,081	5,262	9,146	9,146	31,634
Global Cybersecurity Directors Plan	6,468	4,868	2,872	3,589	4,487	22,284
AVANGRID Security Domain Infrastructure	2,488	-	3,107	3,884	4,855	14,333
Fire Protection	2,300	2,300	2,300	2,875	3,019	12,794
AVANGRID Security Domain Telecommunications	3,562	2,940	1,531	1,914	2,392	12,340
ASD Security System Installation	6,986	-	-	-	-	6,986
Tripwire Implementation	-	-	1,318	1,648	2,059	5,025
DRAGOS	-	222	116	2,502	512	3,352
Security Operations Center	792	-	-	-	-	792
Security Operations Center Program	-	6	11	23	45	84
Training	**510**	**536**	**663**	**989**	**570**	**3,268**
Training Equipment And Tools	150	188	188	250	250	1,025
Training Facility	263	263	375	-	-	900
Training Technology Projects	19	8	23	320	320	690
Training – Fleet	78	78	78	419	-	653
Total	**121,856**	**115,701**	**103,459**	**153,987**	**168,919**	**663,921**

RG&E Common Projects

RG&E - Common Projects ($000's)	2024	2025	2026	2027	2028	Total
Buildings and Facilities	**6,186**	**4,390**	**2,750**	**1,400**	**1,650**	**16,376**
Minor Projects	1,150	1,150	1,150	1,200	1,200	5,850
50 Airpark Drive	3,500	-	-	-	-	3,500
Solar Panels	-	1,250	500	-	-	1,750
EV Chargers	-	1,250	-	-	-	1,250
Scottsville Rd Service Center Projects	1,000	-	-	-	-	1,000
Mushroom Blvd Projects	-	-	750	-	150	900
BMS System	300	300	100	-	-	700
Low Risk Building Projects	100	100	100	100	100	500
3 City Center	136	50	50	50	50	336
Sodus Service Center Projects	-	110	-	-	150	260
Eastern Monroe Operations Center Projects	-	105	-	50	-	155
Canandaigua Truck Garage Projects	-	-	100	-	-	100
Fillmore Operations Center Projects	-	75	-	-	-	75
Customer Service	**4,424**	**8,747**	**9,491**	**9,773**	**5,104**	**37,539**
S4 HANA Implementation	1,920	5,210	6,380	6,270	2,990	22,770
Distributed Generation Billing Program	612	1,191	901	901	901	4,506
Regulatory Driven Efforts	827	912	764	886	913	4,302
CX Digital Journey	315	685	696	727	-	2,422
Energy Manager Enhancements	500	500	500	450	-	1,950
Lab Equipment	250	250	250	300	300	1,350
Orchestration Platform - Customer Journey	-	-	-	239	-	239
Fleet	**7,287**	**5,500**	**5,592**	**10,444**	**7,305**	**36,129**
Fleet Replacement Program	7,287	5,500	5,592	10,188	7,305	35,873
Global Telematics Solution	-	-	-	256	-	256
Information Technology	**5,781**	**6,151**	**4,989**	**8,919**	**8,245**	**34,085**
Client Project Requests And Integration Projects	1,183	1,905	-	3,808	4,856	11,753
End User Life Cycle	1,124	923	738	953	700	4,437
S4 HANA Global SAP	-	-	1,202	1,202	-	2,404
Esri UN Deployment	801	801	801	-	-	2,404
Wintel Life Cycle	459	456	464	472	480	2,332
Unix Life Cycle	466	471	569	499	198	2,203
Storage Life Cycle	383	392	400	408	417	2,000
NETSEC Life Cycle	344	347	363	367	375	1,795
DER Market Management System	-	-	-	750	750	1,500
Infrastructure Security	217	222	227	231	236	1,133

RG&E - Common Projects ($000's)	2024	2025	2026	2027	2028	Total
NETENG Life Cycle	146	220	225	229	234	1,054
Supply Chain Digitization	240	285	-	-	-	526
Mobility Apps Enhancement	13	128	-	-	-	141
NY Gas Inspections	130	-	-	-	-	130
Wifi Site Enhancement	123	-	-	-	-	123
Virtualization Evolution	113	-	-	-	-	113
CYBER-SIEM	38	-	-	-	-	38
Operational Smart Grids	**15,901**	**14,081**	**15,027**	**26,503**	**35,713**	**107,226**
Data Center Consolidation	985	4,715	656	9,850	17,878	34,084
NY AMI Lifecycle	-	-	4,059	5,074	6,343	15,477
Telecomm Infrastructure	2,222	2,063	2,092	3,553	3,553	13,483
Telecomm WAN Expansion	2,824	1,323	1,330	2,200	2,200	9,877
FAN + mobile technology refresh and expansion	1,500	425	1,425	1,781	2,227	7,358
Energy Control Systems Infrastructure	3,575	1,749	384	480	600	6,789
Telecomm Fiber	1,226	1,098	984	1,034	930	5,272
Telecomm Vertical Builds	959	934	959	459	459	3,770
ECC Life cycle	160	200	700	875	1,094	3,029
Historian And Analytic Upgrades Program	1,691	290	384	93	75	2,533
Communications Tower, Shelter Facility Improvements (Com)	-	400	700	750	-	1,850
NMC Solar Winds	156	229	229	229	229	1,072
FCC License Radio Spectrum purchase	-	-	1,000	-	-	1,000
Microsoft Licensing	446	446	-	-	-	893
OMS Enhancements	125	125	125	125	125	625
OMS Alignment ABB-Spectrum	-	83	-	-	-	83
Rochester Consolidation	32	-	-	-	-	32
Security	**10,408**	**8,915**	**8,441**	**4,975**	**4,014**	**36,753**
Global Cybersecurity Directors Plan	3,959	3,037	3,440	-	-	10,435
Security Program Planning	-	2,325	2,778	2,118	2,118	9,339
AVANGRID Security Domain Infrastructure	2,688	1,344	246	307	384	4,969
Fire Protection	690	690	690	1,363	1,431	4,864
AVANGRID Security Domain Telecommunications	1,677	1,377	1,142	-	-	4,195
DRAGOS	-	140	140	1,175	58	1,512
ASD Security System Installation	994	-	-	-	-	994
Security Operations Center	400	-	-	-	-	400
Security Operations Center Program	-	3	6	11	23	43
Training	**47**	**101**	**2**	**205**	**80**	**435**
Training Equipment And Tools	38	94	-	125	-	257

RG&E - Common Projects ($000's)	2024	2025	2026	2027	2028	Total
Training Technology Projects	10	7	2	80	80	179
Total	**50,035**	**47,886**	**46,293**	**62,219**	**62,111**	**268,543**

Appendix B - Capital Project Summaries

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Electric Asset Condition

NYSEG

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NYSEG

Battery Program

Line of Business: Electric
Category: Asset Condition

Scope:

The Battery Replacement Program is responsible for the cycle replacement of substation batteries. Batteries are a critical component of the auxiliary DC System that powers the protection and control system. A failure in this system will negatively affect the reliability of the installations. The program budget is planned based on historical spend levels and split between the thirteen division across the NYSEG territory.

Reasons and Benefits:

Replace the substation battery systems. Batteries are replaced based upon the result of the periodic maintenance tests.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
600	722	394	826	1,000

NYSEG

Distribution Line Deficiencies

Line of Business: Electric
Category: Asset Condition

Scope:

Based on inspection criteria, distribution notifications are created as part of the pole inspection programs, Distribution Infrared Inspections and Distribution Line inspections. The grouping of these notifications is called Distribution Line Deficiencies (DLD).

Distribution Line Inspection (DLI)

Inspections are performed on the pole from the ground up and all associated components. Not all DLIs are initially identified as pole replacements, many are for repair or replacement of the pole's cross arms and equipment. Some are written to alert of a component issue, but due to pole age and complexity of the deficiency, many are changed into capital pole replacements through the Planning process of Work Order creation.

Priority of DLI Description

- Level I – Repair as soon as possible but not longer than one week. A Level I deficiency is an actual or imminent safety hazard to the public or poses a serious and immediate threat to the delivery of power. Critical safety hazards present at the time of the inspection shall be guarded until the hazard is mitigated.
- Level II – Repair within one year. A Level II deficiency is likely to fail prior to the next inspection cycle and represents a threat to safety and/or reliability should a failure occur prior to repair.
- Level III – Repair within three years. A Level III deficiency does not present immediate safety or operational concerns and would likely have minimal impact on the safe and reliable delivery of power should it fail prior to repair.

Distribution Infrared Inspections (DIR)

The objective of this program is to perform a thorough infrared inspection of Distribution equipment from ground patrols, with any deficiencies being thoroughly documented with a high-resolution thermographic image, including observed temperature scale. These notifications are identified as "IR" notifications. Any visual damage (burning, tracking, etc.) observed because of the thermographic identification is also documented and reported for repair. Any visual deficiencies are also documented for repair during the inspection. These notifications are identified as "NIR."

- Level I Condition: A Level I is a condition of any electrical equipment, device or structure that poses a serious and immediate threat to either the safety of the public or the reliability of the electric transmission or distribution system. Such conditions shall be repaired as soon as possible but not longer than one week. Critical safety hazards present at the time of the inspection shall be guarded until the hazard is mitigated.
- Level II: A Level II is a condition of any electrical equipment, device, or structure that, if not corrected, could develop into a Level I Condition. Such conditions shall be repaired within a one-year period based on the evaluation of the inspector.

Currently, both the DLI and DIR programs have a backlog of notifications that should be addressed at the Company's earliest availability. Interruptions due to equipment failure is a large contributor to customer interruptions.

Level 1 notifications are typically addressed within the prescribed timeline, few of these goes "overdue", hence the low number of open Level I notifications.

The DLD Program seeks to perform permanent repairs on existing open notifications resulting from past inspections. The DLD program is using a phased approach to prioritizing the work plan. Completing Phase 1(DLI Level II notifications 100% on time) will be the programs priority. Phase 2 prioritization has become more sophisticated as the remaining DLI level III and DIR notifications were ranked by reliability impact, by the number of customers downstream of the specific location, the historical customer impact, the device type, the notifications per specific FLOC and the historical incident count. These factors are scaled to be of equal/specific weight depending on importance, then combined and sorted to give the ranking from highest to lowest priority.

Reasons and Benefits:

The deficiencies were discovered during routine inspections performed on the distribution system. The deficiencies will worsen over time thus leaving them unaddressed risks reliability and increases the chance of service interruptions. Interruptions due to company equipment failure are a large contributor to customer interruptions. Adequate funding, materials, and available field crews are essential to ensure consistent repairs. Replacing deficient poles and equipment will rejuvenate an aging system, enhancing reliability and reducing customer outages while minimizing the need for costly emergency repairs and potential accidents or injuries to customers and employees. The New York Electric Capex Projects/Programs, particularly the Distribution Line Deficiency Mitigation Program, offer numerous benefits and compelling reasons for implementation. By promptly addressing Level I deficiencies, the program enhances public safety and mitigates the risk of accidents associated with electrical equipment failures. Moreover, its focus on repairing

Level II and Level III deficiencies within prescribed timelines improves system reliability, minimizes service disruptions, and boosts customer satisfaction. Proactive and preventative repairs also yield cost savings by reducing emergency repair expenses and optimizing resource allocation. Additionally, the program contributes to grid stability, enhances workforce safety, and ensures the long-term sustainability of the distribution infrastructure. Compliance with regulatory standards and requirements is a key aspect, further mitigating potential penalties and sanctions. In summary, the program's comprehensive approach underscores its critical role in upholding the integrity, reliability, and safety of the NYSEG distribution system.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
18,193	16,000	18,000	22,500	28,125

NYSEG

Electric Betterments

Line of Business: Electric
Category: Asset Condition

Scope:

The Electric Betterments program replaces various distribution system elements that contribute to high System Average Interruption Frequency Index (SAIFI) measures. Electric Betterment projects are aimed at improving the reliability of worst performing circuits and maintaining the safe and reliable delivery of electricity to our customers. These projects focus on the reliability, operability, and flexibility of the electric distribution system. The list of projects is approved by the distribution planning group and/or senior management as an identified item needing upgrade and/or replacement causing substantial risk for customer outages and potential safety hazards. This program allows divisions to respond to smaller identified jobs to better improve reliability metrics and reduce the frequency and duration of customer outages. The budget is planned based on historical spending levels and any projects identified and communicated by the divisions in advance.

Reasons and Benefits:

Maintaining a safe and reliable distribution system is paramount in meeting regulatory targets. This program provides the company with the agility required to correct what is negatively impacting reliability in the present and provides a safe and robust system for the future. This project helps avoid customer outages, more efficiently replaces aged infrastructure with planned work, and reduces the need for costly emergency repairs reducing the potential of accidents and injury to customers and employees.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
15,484	15,403	8,113	14,318	15,213

NYSEG

Gardenville Substation Rebuild

Line of Business: Electric
Category: Asset Condition

Scope:

A comprehensive study identified that a full rebuild of the New Gardenville Substation was necessary. This decision was chosen from many alternatives and consists of an expandable 230 kV ring bus, a 4 Bay 115 kV GIS, a three-bus section 34.5 kV straight bus utilizing MV GIS, one new 448 MVA 230/115/34.5 kV transformer, two 50 MVA 115/34.5 kV transformers, and a new control house.

Reasons and Benefits:

A Comprehensive Area study was conducted to address all reliability, distribution, and asset condition needs in this area. In addition, a Comprehensive Reliability Study was performed in 2019 which revealed three key North American Electric Reliability Corporation (NERC) Transmission Planning (TPL) Bulk Electric System (BES) violations. N-1 violations from loss of a transformer and stuck breaker condition, and N-1-1 violation when both transformer banks are out of service.

A comprehensive needs and solutions assessment was performed to address these reliability needs while also addressing asset condition needs.

Reliability Needs:

- Voltage collapse caused by multiple scenarios (single element (N-1) stuck breaker contingency, or by loss of both 230/115/34.5 kV transformers, N-1-1).
- Severe thermal violations on Bulk Power System (BPS) elements (~129% & 107% Long Term Emergency (LTE) on the tertiary winding of the 230/115/34.5 kV transformers).
- Approximately 76.2 MW non-consequential loss-of-load exposure.

Asset Condition:

- Widespread structural deficiencies indicate risk of failures of the supporting yard structures under the required National Electric Safety Code (NESC) loading conditions.
- Control house has code violations due to clearances, ventilation, & fire ratings.
- Obsolete electromechanical relays which are unsupported by the manufacturer.

- All 230kV and 115kV major equipment must be upgraded due to asset health or reliability.
- All 230 & 115 kV breakers (3-230 kV & 6-115 kV) were determined to be in poor condition.

System Protection & Control (SP&C) Requirements:

- Northeast Power Coordinating Council (NPCC) Directory #4 Implementation requires a 2nd battery and protection system A&B separation at the substation. A temporary battery solution is being planned that will allow for partial NPCC compliance while a permanent solution is implemented.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
2,080	654	695	5,961	26,559

NYSEG

General Equipment - Ops-SO

Line of Business: Electric
Category: Asset Condition

Scope:

The General Equipment program provides required electrical equipment, tools, and safety gear for new employees and to maintain safety and Occupational Safety and Health Administration (OSHA) requirements through replacement of tools and equipment at the end of their useful lives. Tools/equipment includes, but not limited to, hammers, wrenches, pliers, gloves, climbing rope, harnesses, and equipment bags to ensure safety.

Reasons and Benefits:

This program allows the Company to meet safety related regulatory compliance and OSHA requirements. This program provides the tools to perform testing activities in components such as the protection relays, batteries, and transformers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
942	214	219	273	342

NYSEG

General Equipment - Ops-T&D

Line of Business: Electric
Category: Asset Condition

Scope:

The General Equipment program provides required electrical equipment, tools, and safety gear for new employees and to maintain safety and Occupational Safety and Health Administration (OSHA) requirements through replacement of tools and equipment at the end of their useful lives. Tools/equipment includes, but not limited to, hammers, wrenches, pliers, gloves, climbing rope, harnesses, and equipment bags to ensure safety.

Reasons and Benefits:

Safety is NYSEG's number one priority and places significant emphasis on the safety of its employees and the public. This program allows the Company to meet safety related regulatory compliance and OSHA requirements.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,145	472	590	738	922

NYSEG

Line 803 - Croton to Tilly Foster Rebuild

Line of Business: Electric
Category: Asset Condition

Scope:

The project will rebuild of 5.3 miles of 46kV line from the Croton Falls Substation to the Tilly Foster Substation. This project will include erecting new wood poles, self-supporting laminated wood and steel poles on angles and dead ends. Transmission lines will completely be reconductored and replaced with 477 conductor cable and OPGW static wire. Underbuild replacement and/or transfers will be required along select areas of the line.

Reasons and Benefits:

The 5.3 miles of existing structures are aged and reaching the end of their service life. Line 803 from Croton to Tilly Foster has been ranked 13th for remediation in the Transmission Asset Remediation Project Ranking v4. From 2001 to the end of 2019, 305 Trips have occurred on Line 803. 153 of the trips are associated with Storm Events with only 8 of the trips recorded as being related to Hurricane Sandy in 2012. Bringing the line to current Resilience standards will help reduce trips related to storm events. The replacements and upgrades will increase reliability metrics in the area and provide better service to our customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	0	5,000

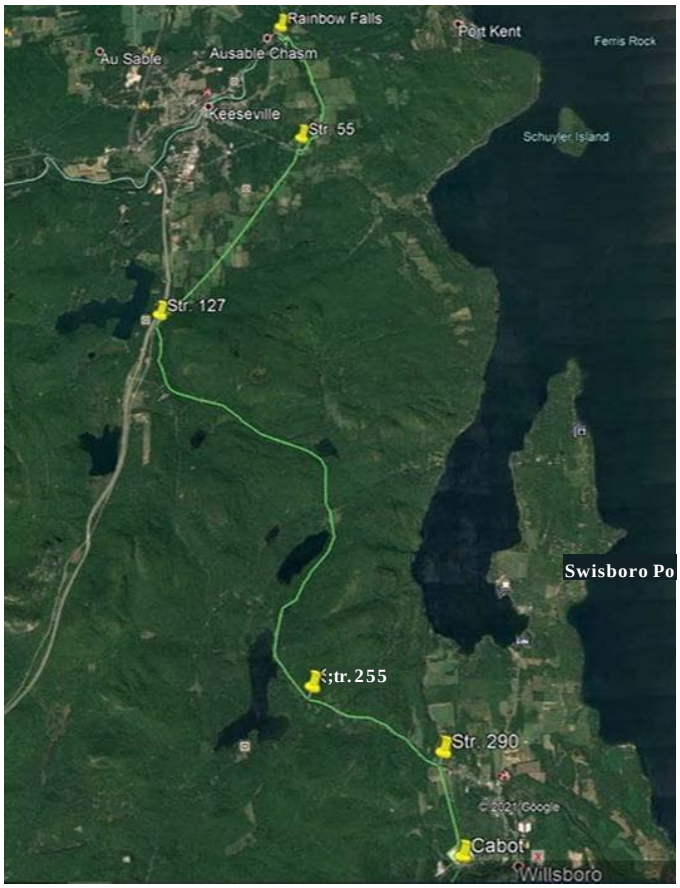
NYSEG

Line 880 Rebuild

Line of Business: Electric
Category: Asset Condition

Scope:

Line 880 has been identified by Asset Management that needs replacement due to Asset Condition. The 15.4 miles of 46 kV line from the Rainbow Falls Substation to the Cabot Substation provides service for 2,300 customers in the area. Phase 1, from Structure 127 to Structure 290, and Phase-2 South, from structure 291 to Cabot Substation has been constructed and completed in August 2023. This is approximately 9.57 miles of the total 15.4 mile rebuild. The remaining 5.75 miles for Phase 2 North are from Rainbow Falls Substation to Structure 127.



Reasons and Benefits:

There is presently no static wire existing for this line. Without a static wire, this line is presently at higher risk for lightning related outages and does not meet AVANGRID's standards for lightning protection. The Line's poles have also been rated in poor to fair condition, with the many of the poles being installed between 1947 and 1950 with an average age of 52 years.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
311	302	327	15,202	8,737

NYSEG

Line 890 Rebuild

Line of Business: Electric
Category: Asset Condition

Scope:

This project calls for the full rebuild of Line 890, replacing every pole with a combination of wood poles, steel poles, and self-supporting tangent structures. The project requires reconductoring the entire 13+ mile length with primarily Hendrix spacer cable and a short section of Pelican Aluminum Conductor Steel Reinforced (ACSR) cable. Phase 1 of the project has been completed in order to facilitate a NY State DOT bridge relocation project which included the replacement of 10 structures along a .43-mile stretch.

Reasons and Benefits:

Over 80% of the poles are 67 years old. In addition, to age, deterioration consisting of weathering, cracks, splits, and rot, many of the poles have ants damage and woodpecker holes which further weaken the structure. Line section from Raquette Lake to Steamboat Landing is listed as Poor health condition and High risk in the 2018 Asset Management report. There is currently no static wire which poses increased risk for lightning related outages. Additionally, the use of Hendrix spacer cable will help reduce outages due to tree contact.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
175	178	189	15,394	13,769

NYSEG

Meyer Substation Rebuild

Line of Business: Electric
Category: Asset Condition

Scope:

This project is to replace the existing 230/115/34.5kV transformer with a new 230/115/34.5kV 448 megavolt amp (MVA) transformer, fully rebuild the existing 115kV to a 3-BAY 115kV Gas Insulated Switchgear (GIS) breaker and a half (BAAH), install two (2) new 50 MVA 115/34.5 kV transformers, and fully rebuild the existing 34.5kV and 12.5kV with MV GIS. The scope also includes converting the existing 4.8kV circuit to 12.5kV and retiring existing 34.5/4.8kV transformers. The summary below highlights the major phases of construction as well as key steps that are required to facilitate the construction of Meyer Substation project:

Phase 1: Replace 230/115/34.5kV transformer (B4) with a new 230/115/34.5kV 448MVA

Phase 2: Replace in-kind 115/34.5kV 50MVA transformer (1T) and fully rebuild existing 34.5kV to 34.5kV MV GIS.

Phase 3: Fully rebuild existing 115kV to 115kV 3-Bay BAAH GIS and install a new 115/34.5kV 50MVA transformer to replace existing 115/34.5kV 33 MVA (2T).

Phase 4: Fully rebuild existing 12.5kV and 4.8kV to 12.5kV MV GIS and convert existing 4.8kV circuit to 12.5kV.

Reasons and Benefits:

Comprehensive need assessment conducted in 2021/22 identified the following assets health issues outlined below:

- 230kV/115kV/34kV transformer (B4) determined be in poor health condition with a substantial risk of failure according to recent maintenance testing and analysis.
- 115/34.5kV transformer (1T) was rejected for energization due to several failed tests and oil leakages and recommended for a comprehensive repair or replacement.
- 115/34.5kV three-single phase transformers (2T)-71 years old and 34.5/4.8kV three-single phase transformers (3T)-70 years old are determined to be in poor condition and obsolete based on recent field inspections.
- Widespread structural deficiencies in the 115kV, 34.5kV, and 4.8kV yard under the required National Electric Safety Code (NESC) loading conditions. These deficiencies indicate risk of failures of the supporting yard structures. Additionally, 14 foundations for these structures are determined to be in poor/very poor

conditions under American Concrete Institute (ACI 201.1R-08) requirements.

- Other poor/very poor condition assets identified at Meyer includes 64% of circuit breakers, 43% of disconnect switches, obsolete electromechanical relays, aged brown glass insulators, and old control house with multiple violations and with limited/no room for any major upgrades.

Other Reliability /Deliverability needs identified at Meyer include:

- A potential 115kV main bus thermal overload exposure under NY Renewable Integration (Climate Leadership and Community Protection Act (CLCPA) Initiative) 70% & 100% solution cases according to studies conducted by Transmission Planning.
- The 34.5kV main bus configuration has elements (conductors) with lower thermal that could curtail the existing transformer loading at its N-Long Term Emergency (N-LTE), and Short-Term Emergency (STE) ratings and impact future load growth at Meyer

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
11,283	11,092	1,560	6,500	50,000

NYSEG

Oneonta Roxbury Run URD Rebuild

Line of Business: Electric
Category: Asset Condition

Scope:

Roxbury Run subdivision located in the Town of Roxbury, NY. This was originally constructed in 1974 and has experienced 83 outages over the last few years due to failing cable.

Reasons and Benefits:

To increase reliability will replace failing URD cable from existing switchgear to the existing cabinets within the first section of this URD subdivision. There have been several outages caused by old, failing equipment. There will be one new terminating cabinet and approximately 1410 feet of conduit and URD cable. There are three phases to this project, with one phase in 2023, one phase in 2024, and one in 2025.

Installing a new three phase underground system utilizing #2 Alum 15 KV URD cable, replacing three underground laterals with #2 15 KV URD cable and relocating one three phase junction cabinet. In addition to the above work also install 2,820 ft of 4-inch PVC conduit and 2,680 ft of two-inch conduit per the attached sketch.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
395	176	0	0	0

NYSEG

PCB Transformer Replacements

Line of Business: Electric
Category: Asset Condition

Scope:

The objective of this program is to proactively replace the Polychlorinated Biphenyls (PCBs) transformers that remain on the distribution system. Although the manufacture of PCBs was banned in the United States in 1979 due to their numerous adverse health impacts, a portion of NYSEG's in-service mineral oil-filled pole top transformers still contain PCBs in concentrations above 50 ppm, as these units were manufactured before the national ban was put into effect. PCBs are suspected to be human carcinogens and they have a variety of other negative environmental and human health-related impacts. There are currently 8,006 PCB transformers remaining at NYSEG and 3,507 are considered high priority and 4,499 are considered mid priority. The foundational work of completing this project has been completed as we first conducted an analysis of historical NYSEG transformer disposal records and the 2016 transformer ID project to get a rough understanding of which transformer characteristics could be linked to identifying in-service PCB-contaminated (50-500 ppm PCB contents) and PCB transformers (≥500 ppm PCB contents.) We bolstered the information gained from these records by consulting similar large-scale PCB transformer studies conducted by third parties so that we could be more confident in the link between the applicable transformer characteristics and their probability of contamination.

As a result of the transformer disposal record analysis and the secondary research, we were able to determine that our search should focus on identifying two categories of transformers: high priority and mid- priority units for recommended replacement. High priority units for recommended replacement include Westinghouse transformers manufactured in their Sharon, Pennsylvania plant between the years of 1965 and 1970 (Huffman's study from the Northern Indiana Public Service Company determined that between 90-100% of these units were confirmed to be PCB-contaminated.) High priority units also include all ≤10 kVA units manufactured at General Electric's Pittsfield, Massachusetts plant before 1974. The Indiana Public Service Company's study confirms that most units manufactured at this plant during these years are contaminated. Mid-priority units include transformers manufactured by Westinghouse before 1965 at their Sharon, Pennsylvania plant. They also include all >10 kVA includes units manufactured by GE at their Pittsfield, Massachusetts plant before 1974. Once these characteristics were identified, Master Data provided us with a list of active NYSEG pole top transformers from SAP. A search through this list was conducted to identify units with High and Mid priority unit characteristics.

Reasons and Benefits:

On July 22, 2019, a storm caused a spill from a 5 kVA transformer manufactured by General Electric in 1967. Approximately 10 gallons of oil were spilled onto pavement and soil from the transformer at 5912 State Route 80 in Cooperstown, New York. The oil was confirmed through testing to contain 460 ppm PCBs, and two roll off cans of contaminated material (NYS waste code B007) were generated and disposed of during spill contractor NRC's cleanup process. The total cost of this spill cleanup amounted to $75,000. If this incident had involved a non-PCB transformer instead of a PCB-contaminated transformer, the cost would only have been approximately $20,000, according to spill response contractor NRC's Operations Manager.

On May 12, 2019, a crew of NYSEG workers responding to an outage during a rainstorm at 2209 Connor Rd., Baldwinsville, NY came across a spill from a downed 10 kVA transformer manufactured by Westinghouse at their Sharon, Pennsylvania plant in 1969. Testing determined that the transformer oil contained 161 ppm PCBs. Heavy rain posed an issue for the crew because it made the spill more difficult to contain to one area and caused the workers to track contaminated mud throughout the worksite and ultimately into the company vehicles. Once the workers returned the vehicles to the service center, it was difficult to distinguish which vehicles from the fleet had been contaminated by the spill. It was also suspected that the locker room had become contaminated while the crew doffed their work gear upon returning from the job. All work gear had to be disposed of as hazardous waste, the seat covers of nearly the entire fleet of Auburn Service Center vehicles had to be replaced, and several locations around the service center needed to be decontaminated after the spill. Due to the large amount of potential worker exposures that occurred during this cleanup process, the spill from the 10 kVA unit became a much more serious issue than a spill from a non-PCB transformer. The cost of cleanup, material disposal, seat cover replacement, and work gear replacement for this spill totaled approximately $57,000.

On 11/01/2019, a bank of three 50 kVA transformers manufactured by GE at the Pittsfield, Mass plant in 1944 and 1946 was downed in a storm in Van Buren, Onondaga County. The oil from these transformers spilled onto soil and pavement. One unit contained 450 ppm PCBs, while the other two units contained 452 ppm PCBs. The total costs of the on-going response to this spill are going to exceed an estimated $100,000.

The transformers involved in both the Cooperstown and Baldwinsville spill would have been identified during this project to be High Priority units for recommended replacement, while the transformers involved in the Van Buren spill were identified during this project to be Mid Priority units for recommended replacement.

These spill incidents demonstrate the value of identifying and replacing probable PCB and PCB-contaminated pole top transformers. PCB transformer spills are costly, resource-intensive, and they can increase the risk of PCB exposure for NYSEG employees. NYSEG experiences estimated 300-500 spills each year across New York State. Approximately 3% of all in-service transformers have been identified through this project as being likely or highly likely to be contaminated with PCBs, which means that a total of 9 to 15 PCB-contaminated or PCB transformer spills each year could be avoided if all high and mid-priority units were replaced.

Maintaining our estimated 3,507 highly likely contaminated units and 4,499 likely contaminated units exposes our company and the environment to an unnecessarily high amount of avoidable risk.

Replacing transformers with non-PCB units improves public perception of the company, decreases the average cost of oil-filled electrical equipment spill response over time, prevents pollution, and decreases the probability that AVANGRID employees will be exposed to possibly dangerous levels of PCBs while on the job. Proactively eliminating a portion of PCBs from the company's distribution systems supports AVANGRID's goal of environmental awareness, sustainability risk mitigation, and stewardship. Since all the units we have recommended for replacement were manufactured before 1970, and are smaller, older units, replacing them could help to improve reliability and capacity of our electrical systems.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	1,600	1,180	3,016

NYSEG

Pole Replace (WPIT) Program

Line of Business: Electric
Category: Asset Condition

Scope:

The NYSEG Wood Pole Inspection and Treatment Program encompasses a comprehensive set of activities aimed at ensuring the integrity, reliability, and safety of the distribution wood poles. Regular inspections of NYSEG's distribution wood poles are conducted, considering factors such as age, condition, and environmental influences, both overhead and underground. The program involves meticulous data collection to identify defects, wear, and potential issues affecting the poles.

Treatment planning is crucial, addressing concerns like rot, insect infestation, and environmental conditions, while prioritizing maintenance and construction activities based on risk assessments. Maintenance and repairs are performed in adherence to safety and environmental standards, with a focus on enhancing system safety and reliability. Construction activities are executed to enhance network capacity and reliability. Detailed documentation and reporting mechanisms are maintained to track inspection findings, maintenance activities, construction progress, and compliance documentation.

Project deliverables include distribution line inspection reports, maintenance records, construction plans, risk assessment reports, compliance documentation, and stakeholder communication materials. Assumptions regarding resource availability, regulatory compliance, and stakeholder support, along with identified risks and constraints, provide the framework for successful program implementation.

Reasons and Benefits:

The Wood Pole Inspect and Treat (WPIT) Program under New York Electric Capex Projects/Programs conducts specialized inspections and prioritizes replacements to maintain wood poles in the distribution system. With a 10-year inspection cycle, WPIT reduces the risk of pole failures, enhancing reliability, especially during adverse weather. Adequate funding ensures timely repairs, addressing backlogs efficiently. Proactive maintenance contrasts with reactive approaches, increasing safety and customer satisfaction. Coordination with other initiatives optimizes resource use, safeguarding infrastructure integrity and improving service quality. WPIT significantly impacts the

Customer Average Interruption Duration Index (CAIDI) and Customer Average Interruption Frequency Index (CAIFI) scores, mitigating interruptions and enhancing reliability for NYSEG and its customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
22,618	18,893	8,500	29,858	31,612

NYSEG

South Perry New Sub & Trans Line Upgrade

Line of Business: Electric
Category: Asset Condition

Scope:

This project will construct a new 230 ring bus with a 230/115kV transformer at South Perry and install a new 115/34.5kV, 56 MVA transformer. The new 230 ring bus with a 230/115kV transformer was completed and energized with no-load due to voltage, thermal and asset condition issues identified on the existing 115kV bus. A full rebuild of the 115kV GIS 4-BAY BAAH, 34.5kV GIS straight bus + 69kV AIS straight bus. This choice retires the existing RGE STA 162 substation and merges with South Perry Substation. A comprehensive study/evaluation has been performed for the 115/69/34.5kV yard at South Perry and a full rebuild of the station is required on the existing property.

Reasons and Benefits:

During the summer peak load period, loss of the existing South Perry 115/34.5kV 56MVA transformer (Bank #1) causes the entire South Perry area to be out of service. The load at potential risk is 30.5 MW (unacceptable loss N-1 according to Loss of Load criteria) and customer count is 8,218 including the Town of Castile. If load transferred to Bank #2 tertiary (9MVA) by closing the bus-tie, the transformer can become overloaded (254% Long Term Emergency (LTE)) past its emergency rating of approximately 12 MVA attempting to feed about 30.5 MVA.

A completed comprehensive needs assessment has identified asset health issues which include:

- 2021 Breaker asset report identified 40% (two out of five) of the 115 kV breakers, 33% (two out of six) of the 34.5 kV breakers, and the 69 kV breaker (one out of one) as poor/very poor in health condition.
- Widespread structural deficiencies per recent visual inspection. It is anticipated that the in-progress detailed structural analysis shall confirm structural deficiencies under the required National Electric Safety Code (NESC) loading conditions.
- 48 foundations assessed as failing inspection in accordance with ACI 201.1R-08 (Guide for Conducting a Visual Inspection of Concrete in Service) requirements. Most foundations are in very poor condition, not possible to repair and the majority are on the main 115kV bus of the station.
- 45% of 115kV switches, 85% of 34.5kV switches, 100% of 69kV switches are determined to be in poor condition.

- The majority of 115kV main bus strain bus insulators are aged brown glass types that are obsolete and prone to failure.
- Portions of 34.5kV bus consist of conductors can become thermally overloaded past its emergency ratings under transformer S-LTE loadings.
- Substation relies mostly on obsolete electromechanical relays and Supervisory Control and Data Acquisition (SCADA) automation with limited capabilities and are unsupported by their manufacturers.
- The 115kV control building has very limited/no room for any major upgrade. Building interior and exterior finishes do not meet building NEC/NFPA 70 code requirements for fire barrier and propagation.
- Limited reliability & flexibility (RGE STA 162 is retained with equipment in poor condition & with straight bus configuration) compared to alternative 2 & 4.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,000	272	260	7,476	30,276

RG&E

Substation Major Program

Line of Business: Electric
Category: Asset Condition

Scope:

The Substation Majors program covers work at substations over the $500K threshold for a minor job. This program addresses the replacement of failed or poor transformers. When planned, this program contributes to the reduction of outages because of substation equipment failures, which has been identified as the main root cause of substation outages.

Reasons and Benefits:

Replace failed or poor transformers units.

- The latest health assessment identifies 38 transformers in poor or very Health Condition as candidate units for replacement.
- 80% of the power transformers are 40 years or older. This increases the difficulty to maintain due to lack of vendor support and inability to get parts.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
9,161	756	771	964	21,204

NYSEG

Substation Minor Capital

Line of Business: Electric
Category: Asset Condition

Scope:

The Substation Minors Betterments program covers work at substations under the $500K threshold for a major project. This program includes the replacement of substation components such as:

- Capacitor Coupled Voltage Transformer (CCVT)/Current Transformer (CT)/Potential Transformer (PT)
- Transformers (component replacements)
- Fence / Gate
- Regulator
- Insulator
- Control House (betterments)
- Arresters
- Switch
- Animal Fences
- AC-DC systems
- Relay Replacement
- Capacitor Banks
- Spill Prevention, Control and Countermeasure (SPCC) mitigation
- Protection and Control relays

The scheduled replacement of the above elements contributes to the reduction of outages because of substation equipment failures, which has been identified as the main root cause of substation outages. Because of this, Substation Minors Betterments contributes to the reduction of System Average Interruption Frequency Index (SAIFI).

This program covers not only the planned activities but also it addresses unplanned events us a result of inspections or failures.

Budget is planned based on historical spend levels and split between the thirteen divisions across the NYSEG territory.

Reasons and Benefits:

Maintain and improve substations equipment to provide a safe and reliable system as per regulatory targets. This program provides the company with the agility path to correct what is negatively impacting reliability in a proactive way.

This work is reactive in nature. Given the age, condition, and size of our system in NY, there are constant, emerging needs that need to be addressed to continue reliable safe operation of the system.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
6,475	2,077	2,197	2,747	3,433

NYSEG

Substation Modernization - Clark Street

Line of Business: Electric
Category: Asset Condition

Scope:

A comprehensive needs analysis was performed for the Clark Street substation in Binghamton. This analysis showed that a large majority of electrical assets at the station are in poor and very poor health. A full rebuild of this station is recommended which will include:

- Two (2) new (37) MVA 34.5/12.5 kV transformers
- 34.5 and 12.5 kV GIS lineups
- One (1) control building
- One (1) 5.4 MVAr cap bank.

For reliability, it is recommended that all 4.8 kV distribution circuits from Clark St and Endicott Railway be upgraded to 12.5 kV. The upgrade of distribution will allow all Endicott Railway load to be fed from the Clark St substation and Endicott Railway to be decommissioned.

Reasons and Benefits:

- All 34.5, 12.5 and 4.8 kV major equipment must be upgraded due to poor and very poor asset condition ratings.
- The majority of the 34.5,12.5 and 4.8 kV breakers (25 of 27) will be in poor condition by 2026.
- The two 34.5/12.5 kV transformers are rated poor due to Load Tap Changers (LTCs) having poor oil quality with the presence of gassing.
- Control house has limited space, Heating, Ventilation, and Air Conditioning (HVAC) issues and peeling paint on the exterior.
- Most relays are obsolete electromechanical types which are unsupported by the manufacturer.
- One 34.5/4.8 kV transformer of Bank 2 rated fair due to marginal DGA results.
- Foundations generally fair with several in very poor condition.
- Unable to backup all 4.8 kV distribution circuit load under N-1 conditions.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	1,362	5,770	2,427

NYSEG

Substation Modernization - Noyes Island

Line of Business: Electric
Category: Asset Condition

Scope:

The Noyes Island Rebuild Project is the full rebuild of the existing substation with two new (37) MVA 34.5/12.5 kV transformers, 34.5 and 12.5 kV GIS, two control buildings and one 13.2 MVAr cap bank. This project will also be designed to resolve known flooding hazards. Seven distribution circuits will be converted from 8.3 kV to 12.5 kV.

Reasons and Benefits:

A large majority of breakers at the station need replacement due to age and design and manufacturing issues. They are older style Circuit Breakers (OCB) breakers and have been deemed obsolete. The transformers are rated poor, mainly driven by age, poor Dissolved Gas Analysis (DGA) results, and problematic LTCs (Load Tap Changers). Many foundations are in an advanced state of deterioration with spalling concrete and exposed rebar. Additionally, rebuilding this station at a higher elevation will resolve existing flooding concerns.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	11,145	31,304	22,009

NYSEG

Substation Modernization - South Owego

Line of Business: Electric
Category: Asset Condition

Scope:

South Owego is an existing 115/34.5 kV substation with two 115/34.5 kV power transformers and is located in the Binghamton Division. This project scope includes the complete rebuild of the substation on the existing site or a new site in order to replace components due to asset condition, address operational deficiencies, improve reliability and increase load-serving capability. This project will also need to coordinate with the STAR Article VII projects that connect to the existing substation box structure.

Reasons and Benefits:

Asset condition Needs and Justification:

- Widespread structural deficiencies indicate risk of failures of the supporting yard structures under the required National Electric Safety Cod (NESC) loading conditions.
- Control house has code violations due to clearances, ventilation, & fire ratings.
- Obsolete electromechanical relays which are unsupported by the manufacturer.
- Nine (9) circuit breakers assessed as Poor or Very Poor.
- Majority of switch insulators are aged and of types that are obsolete and prone to failure.

Reliability Needs and Justification:

- The breakers become over-dutied if the 34.5 kV bus-tie and the transformers are paralleled
- Upon the loss of transformer Bank 2, approximately 30 MW of load is lost (unacceptable loss N-1 according to Loss of Load criteria). If the load is transferred to Bank 1 by closing the bus-tie, the transformer can become overloaded (128% Long Term Emergency (LTE)) past its emergency rating of approximately 44 megavolt amp (MVA) attempting to feed about 55.125 MVA.
- Bank 2 is able to pick up the load lost if Bank 1 is lost without overloading.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	10,917	3,353

NYSEG

Substation Modernization - Wright Avenue

Line of Business: Electric
Category: Asset Condition

Scope:

The Wright Ave Substation Rebuild Project is the full rebuild of the substation with new 115 kV HV GIS configured as a ring bus, two new 115/34.5 kV (50) MVA transformers, two new (37) MVA 34.5/12.5 kV transformers, 34.5 & 12.5 kV GIS, one new control building and one new 12 MVAr 34.5 kV cap bank.

Reasons and Benefits:

A comprehensive needs and solution assessment was conducted which revealed both Reliability, Asset condition and Operational Needs.

The reliability needs that were identified included an overloaded 34.5/12.5 kV distribution transformer (113% CNR). The need for an N-1 solution due to inadequate field tie capability as well as a violation of BES criteria due to high and low voltages from the existing cap bank.

The substation asset condition needs included structural and equipment health needs. The structural needs included overstressed 115 kV line termination structures, bus support structures and anchor bolts. Additionally, a field inspection discovered foundations on the Line termination structures which show significant signs of spalling and deformation and require replacement.

All the existing 115 breakers, 70% of the 34.5 and 50% of the 12.5 kV breakers require replacement as a result of health ratings of poor or very poor. The two existing 115/34.5 kV transformers currently are limited to their base nameplate rating as they cannot automatically achieve their top nameplate ratings due to issues with their fans. The operational needs include the need to replace the existing obsolete electromechanical relays which make up the large majority of relays at the substation as well as the need to replace the Line 973 PLC communication equipment which is no longer supported and has been taken out of service. As a result, a single impedance relay is currently the only protection for the 115 kV 973 line. This station rebuild will address all identified reliability, operational and asset condition needs as well as allow for future substation load transfers. Provides for SCADA control of 12.5 kV breakers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	37,262	21,023	4,745

NYSEG

T&S Asset Condition Replacement Program

Line of Business: Electric
Category: Asset Condition

Scope:

The objective of the Transmission & Substation (T&S) Asset Condition Replacement Program is to conduct system-wide T&S facility surveys to determine the overall health of NYSEG's system and develop a long-term mitigation strategy (projects) to enhance the condition of these assets. These comprehensive T&S surveys will include an assessment of electrical and structural assets which will be scored against individually weighted categories such as age of equipment, resiliency/flooding impacts, substation Protection & Control (P&C) assessment, capacity (megavolt amp (MVA)), substation reliability performance, etc. Initial overall T&S health scores have been established which will be used to inform a system-wide prioritization of asset condition replacement/upgrade projects across the NYSEG's fleet of existing T&S assets. T&S health scores will continually be assessed with updated asset condition data.

Reasons and Benefits:

There are 478 substations and 4,550 miles of electric transmission (overhead and underground) at NYSEG. Over 59% of substations in NYSEG have assets that are over 60 years old: by 2030 this number increases to 74%. 3% of power transformers and 42% of substation breakers are in poor or very poor condition. 42% of power transformers and 17% of substation breakers are over 60 years old. By 2030, this number will increase to 68% and 35% respectively. (Age is only an indicator for asset replacement. Actual replacement is driven by condition-based analysis) 9% of substations contributed to SAIFI in 2020-2021.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	0	10,000

NYSEG

TLD Replacements

Line of Business: Electric
Category: Asset Condition

Scope:

The Transmission Line Deficiencies Replacement program (TLD Replacement Program) prioritizes the line segments needing intervention based on deficiencies identified on the transmission system by the various inspection programs (Crossarm Inspections, Aerial Inspections, Infrared Inspections, Transmission Line Inspection program, Wood Pole Inspect and Treat Program). Interventions are determined for each line segment and these interventions are engineered and scheduled for construction.

Reasons and Benefits:

- At the end of 2022 there were 3,335 overdue transmission line deficiencies.
- To address the consistent presence of backlogged transmission notifications, the Company needs to assign additional project management, engineering, construction, and funding resources in addition to the Operations resources that historically have addressed transmission notifications.
- Factors such as transmission circuit customer count, System Average Interruption Frequency Index (SAIFI) metrics, and percent of a line needing structure replacements are being factored into the prioritization of work.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
22,971	51,448	61,705	117,794	144,833

NYSEG

URD Replacement Program

Line of Business: Electric
Category: Asset Condition

Scope:

The purpose of this program is to replace underground facilities with aged or failing equipment and access difficulties. This program will be upgrading underground facilities by installing new underground cables in existing ductwork and replacing submersible equipment with new above ground pad mounted devices.

Reasons and Benefits:

Many of the NYSEG URD's were built in the 1970s and 1980s and are 40-50+ years old. The underground infrastructure in these developments is aging and experience an increasing number of failures as the infrastructure begins to break down. The electric cable utilized in these installations were traditionally a concentric neutral style design with the neutral located on the outside of the cable. This design leads to severe corrosion along the cable. In addition to an increase in full cable failures, the breakdown of the neutral also tends to lead to an increase in stray voltage conditions in the developments. All manufacturers of this style cable have highly recommended any current cable under this design be replaced as soon as possible. Many of the developments also utilized vaults with underground, submersible transformers as opposed to the current standard of above ground, pad-mounted transformers. The former design creates difficulties in accessing the equipment and led to extended outage times during maintenance and repairs which led to regulatory penalties associated with not meeting Customer Average Interruption Duration Index (CAIDI) service targets.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	1,080	563	776	821

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RG&E

Battery Program

Line of Business: Electric
Category: Asset Condition

Scope:

The Battery Replacement Program is responsible for the cycle replacement of substation batteries. Batteries are a critical component of the auxiliary DC System that powers the protection and control system. A failure in this system will negatively affect the reliability of the installations. The program budget is planned based on historical spend levels and split between the thirteen division across the RG&E territory.

Reasons and Benefits:

Replace the substation battery systems. Batteries are replaced based upon the result of the periodic maintenance test.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
501	696	737	773	0

RG&E

Distribution Line Deficiencies

Line of Business: Electric
Category: Asset Condition

Scope:

Based on inspection criteria, distribution notifications are created as part of the pole inspection programs, Distribution Infrared Inspections and Distribution Line inspections. The grouping of these notifications is called Distribution Line Deficiencies (DLD).

Distribution Line Inspection (DLI)

Inspections are performed on the pole from the ground up and all associated components. Not all DLIs are initially identified as pole replacements, many are for repair or replacement of the pole's cross arms and equipment. Some are written to alert of a component issue, but due to pole age and complexity of the deficiency, many are changed into capital pole replacements through the Planning process of Work Order creation.

Priority of DLI Description

- Level I – Repair as soon as possible but not longer than one week. A Level I deficiency is an actual or imminent safety hazard to the public or poses a serious and immediate threat to the delivery of power. Critical safety hazards present at the time of the inspection shall be guarded until the hazard is mitigated.
- Level II – Repair within one year. A Level II deficiency is likely to fail prior to the next inspection cycle and represent a threat to safety and/or reliability should a failure occur prior to repair.
- Level III – Repair within three years. A Level III deficiency does not present immediate safety or operational concerns and would have minimum impact on the safe and reliable delivery of power if it does fail prior to repair.

Distribution Infrared Inspections (DIR)

The objective of this program is to perform a thorough infrared inspection of Distribution equipment from ground patrols, with any deficiencies being thoroughly documented with a high-resolution thermographic image, including observed temperature scale. These notifications are identified as "IR" notifications. Any visual damage (burning, tracking, etc.) observed because of the thermographic identification is also documented and reported for

repair. Any visual deficiencies are also documented for repair during the inspection. These notifications are identified as “NIR.”

- Level I- A Level I is a condition of any electrical equipment, device or structure that poses a serious and immediate threat to either the safety of the public or the reliability of the electric transmission or distribution system. Such conditions shall be repaired as soon as possible but not longer than one week. Critical safety hazards present at the time of the inspection shall be guarded until the hazard is mitigated.
- Level II- A Level II is a condition of any electrical equipment, device, or structure that, if not corrected, could develop into a Level I Condition. Such conditions shall be repaired within a one-year period based on the evaluation of the inspector.

Currently, both the DLI and DIR programs have a backlog of notifications that should be addressed at the Company’s earliest availability. Interruptions due to company equipment failure are a large contributor to customer interruptions.

Level 1 notifications are typically addressed within the prescribed timeline, few of these go “overdue”, hence the low number of open Level I notifications.

The DLD Program seeks to perform permanent repairs on existing open notifications resulting from past inspections. The DLD program is using a phased approach to prioritizing the work plan. Completing Phase 1 (DLI Level II notifications 100% on time) will be the programs priority. Phase 2 prioritization has become more sophisticated as the remaining DLI level III and DIR notifications were ranked by reliability impact, by the number of customers downstream of the specific location, the historical customer impact, the device type, the notifications per specific FLOC and the historical incident count. These factors are scaled to be of equal/specific weight depending on importance, then combined and sorted to give the ranking from highest to lowest priority.

Reasons and Benefits:

The deficiencies identified during routine inspections of the distribution system pose a growing risk to reliability and increase the potential for service interruptions if left unaddressed. Interruptions stemming from company equipment failure significantly contributes to customer disruptions. Adequate funding, materials, and available field crews are essential to ensure consistent repairs. Replacing deficient poles and equipment will rejuvenate an aging system, enhancing reliability and reducing customer outages while minimizing the need for costly emergency repairs and potential accidents or injuries to customers and employees. The New York Electric Capex Projects/Programs, particularly the Distribution Line Deficiency Mitigation Program, offer numerous benefits and

compelling reasons for implementation. By promptly addressing Level I deficiencies, the program enhances public safety and mitigates the risk of accidents associated with electrical equipment failures. Moreover, its focus on repairing Level II and Level III deficiencies within prescribed timelines improves system reliability, minimizes service disruptions, and boosts customer satisfaction. Proactive and preventative repairs also yield cost savings by reducing emergency repair expenses and optimizing resource allocation. Additionally, the program contributes to grid stability, enhances workforce safety, and ensures the long-term sustainability of the distribution infrastructure. Compliance with regulatory standards and requirements is a key aspect, further mitigating potential penalties and sanctions. In summary, the program's comprehensive approach underscores its critical role in upholding the integrity, reliability, and safety of the RG&E distribution system.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
1,241	1,399	1,277	1,596	1,995

RG&E

Electric Betterments

Line of Business: Electric
Category: Asset Condition

Scope:

The Electric Betterments program replaces various distribution system elements that contribute to high System Average Interruption Frequency Index (SAIFI) measures. Electric Betterment projects are aimed at improving the reliability of worst performing circuits and maintaining the safe and reliable delivery of electricity to our customers. These projects focus on the reliability, operability, and flexibility of the electric distribution system. The list of projects is approved by the distribution planning group and/or senior management as an identified item needing upgrade and/or replacement causing substantial risk for customer outages and potential safety hazards. This program allows divisions to respond to smaller identified jobs to better improve reliability metrics and reduce the frequency and duration of customer outages. The budget is planned based on historical spending levels and any projects identified and communicated by the divisions in advance.

Reasons and Benefits:

Maintaining a safe and reliable distribution system is paramount in meeting regulatory targets. This program provides the company with the agility required to correct what is negatively impacting reliability in the present and provides a safe and robust system for the future. This project helps avoid customer outages, more efficiently replaces aged infrastructure with planned work, and reduces the need for costly emergency repairs reducing the potential of accidents and injury to customers and employees.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,466	2,748	2,349	5,380	5,981

RG&E

General Equipment - Ops-SO

Line of Business: Electric
Category: Asset Condition

Scope:

The General Equipment program provides required electrical equipment, tools, and safety gear for new employees and to maintain safety and Occupational Safety and Health Administration (OSHA) requirements through replacement of tools and equipment at the end of their useful lives. Tools/equipment includes, but not limited to, hammers, wrenches, pliers, gloves, climbing rope, harnesses, and equipment bags to ensure safety.

Reasons and Benefits:

This program allows the Company to meet safety related regulatory compliance and OSHA requirements. This program provides the tools to perform testing activities in components such us the protection relays, batteries, and transformers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
323	321	327	409	511

RG&E

General Equipment - Ops-T&D

Line of Business: Electric
Category: Asset Condition

Scope:

The General Equipment program provides required electrical equipment, tools, and safety gear for new employees and to maintain safety and Occupational Safety and Health Administration (OSHA) requirements through replacement of tools and equipment at the end of their useful lives. Tools/equipment includes, but not limited to, hammers, wrenches, pliers, gloves, climbing rope, harnesses, and equipment bags to ensure safety.

Reasons and Benefits:

Safety is RG&E's number one priority and places significant emphasis on the safety of its employees and the public. This program allows the Company to meet safety related regulatory compliance and OSHA requirements.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
824	849	875	1,094	1,367

RG&E

PCB Transformer Replacements

Line of Business: Electric
Category: Asset Condition

Scope:

The objective of this program is to proactively replace the Polychlorinated Biphenyls (PCBs) transformers that remain on the distribution system. Although the manufacture of PCBs was banned in the United States in 1979 due to their numerous adverse health impacts, a portion of AVANGRID's in-service mineral oil-filled pole top transformers still contain PCBs in concentrations above 50 ppm, as these units were manufactured before the national ban was put into effect. PCBs are suspected human carcinogens and they have a variety of other negative environmental and human health-related impacts. There are currently 2,249 remaining at RG&E and 268 are considered high priority and 1,981 are considered mid priority. The foundational work of completing this project has been completed as we first conducted an analysis of historical RG&E transformer disposal records and the 2016 transformer ID project to get a rough understanding of which transformer characteristics could be linked to identifying in-service PCB-contaminated (50-500 ppm PCB contents) and PCB transformers (≥500 ppm PCB contents.) RG&E bolstered the information gained from these records by consulting similar large-scale PCB transformer studies conducted by third parties so the Company could be more confident in the link between the applicable transformer characteristics and their probability of contamination.

As a result of the transformer disposal record analysis and the secondary research, the company was able to determine that the search should focus on identifying two categories of transformers: high priority and mid-priority units for recommended replacement. High priority units for recommended replacement include Westinghouse transformers manufactured in their Sharon, Pennsylvania plant between the years of 1965 and 1970 (Huffman's study from the Northern Indiana Public Service Company determined that between 90-100% of these units were confirmed to be PCB-contaminated.) High priority units also include all ≤10 kVA units manufactured at General Electric's Pittsfield, Massachusetts plant before 1974. The Indiana Public Service Company's study confirms that most units manufactured at this plant during these years are contaminated. Mid-priority units include transformers manufactured by Westinghouse before 1965 at their Sharon, Pennsylvania plant. They also include all >10 kVA includes units manufactured by GE at their Pittsfield, Massachusetts plant before 1974.

Once these characteristics were identified, Master Data provided a list of active RG&E pole top transformers from SAP. A search through this list was conducted to identify units with High and Mid priority unit characteristics.

Reasons and Benefits:

On July 22, 2019, a storm caused a spill from a 5 kVA transformer manufactured by General Electric in 1967. Approximately 10 gallons of oil were spilled onto pavement and soil from the transformer at 5912 State Route 80 in Cooperstown, New York. The oil was confirmed through testing to contain 460 ppm PCBs, and two roll off cans of contaminated material (NYS waste code B007) were generated and disposed of during spill contractor NRC's cleanup process. The total cost of this spill cleanup amounted to $75,000. If this incident had involved a non-PCB transformer instead of a PCB-contaminated transformer, the cost would only have been approximately $20,000, according to spill response contractor NRC's Operations Manager.

On May 12, 2019, a crew of NYSEG workers responding to an outage during a rainstorm at 2209 Connor Rd., Baldwinsville, NY came across a spill from a downed 10 kVA transformer manufactured by Westinghouse at their Sharon, Pennsylvania plant in 1969. Testing determined that the transformer oil contained 161 ppm PCBs. Heavy rain posed an issue for the crew because it made the spill more difficult to contain to one area and caused the workers to track contaminated mud throughout the worksite and ultimately into the company vehicles. Once the workers returned the vehicles to the service center, it was difficult to distinguish which vehicles from the fleet had been contaminated by the spill. It was also suspected that the locker room had become contaminated while the crew doffed their work gear upon returning from the job. All work gear had to be disposed of as hazardous waste, the seat covers of nearly the entire fleet of Auburn Service Center vehicles had to be replaced, and several locations around the service center needed to be decontaminated after the spill. Due to the large amount of potential worker exposures that occurred during this cleanup process, the spill from the 10 kVA unit became a much more serious issue than a spill from a non-PCB transformer. The cost of cleanup, material disposal, seat cover replacement, and work gear replacement for this spill totaled approximately $57,000.

On 11/01/2019, a bank of three 50 kVA transformers manufactured by GE at the Pittsfield, Mass plant in 1944 and 1946 was downed in a storm in Van Buren, Onondaga County. The oil from these transformers spilled onto soil and pavement. One unit contained 450 ppm PCBs, while the other two units contained 452 ppm PCBs. The total costs of the on-going response to this spill are going to exceed an estimated $100,000.

The transformers involved in both the Cooperstown and Baldwinsville spill would have been identified during this project to be High Priority units for recommended replacement, while the transformers involved in the Van Buren spill were identified during this project to be Mid Priority units for recommended replacement.

These spill incidents demonstrate the value of identifying and replacing probable PCB and PCB-contaminated pole top transformers. PCB transformer spills are costly, resource-intensive, and they can increase the risk of PCB exposure for AVANGRID employees. AVANGRID experiences estimated 300-500 spills each year across New York State. Approximately 3% of all in-service transformers have been identified through this project as being likely or highly likely to be contaminated with PCBs, which means that a total of 9 to 15 PCB-contaminated or PCB transformer spills each year could be avoided if all high and mid-priority units were replaced.

Maintaining our estimated 268 highly likely contaminated units and 1,981 likely contaminated units exposes our company and the environment to an unnecessarily high amount of avoidable risk.

Replacing transformers with non-PCB units improves public perception of the company, decreases the average cost of oil-filled electrical equipment spill response over time, prevents pollution, and decreases the probability that AVANGRID employees will be exposed to possibly dangerous levels of PCBs while on the job. Proactively eliminating a portion of PCBs from the company's distribution systems supports AVANGRID's goal of environmental awareness, sustainability risk mitigation, and stewardship. Since all the units we have recommended for replacement were manufactured before 1970, and are smaller, older units, replacing them could help to improve reliability and capacity of our electrical systems.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	5,000	6,250	7,813

RG&E

Pole Replace (WPIT) Program

Line of Business: Electric
Category: Asset Condition

Scope:
The RG&E Wood Pole Inspection and Treatment Program encompasses a comprehensive set of activities aimed at ensuring the integrity, reliability, and safety of the distribution wood poles. Regular inspections of RG&E's distribution wood poles are conducted, considering factors such as age, condition, and environmental influences, both overhead and underground. The program involves meticulous data collection to identify defects, wear, and potential issues affecting the poles.

Treatment planning is crucial, addressing concerns like rot, insect infestation, and environmental conditions, while prioritizing maintenance and construction activities based on risk assessments. Maintenance and repairs are performed in adherence to safety and environmental standards, with a focus on enhancing system safety and reliability. Construction activities are executed to enhance network capacity and reliability. Detailed documentation and reporting mechanisms are maintained to track inspection findings, maintenance activities, construction progress, and compliance documentation.

Project deliverables include distribution line inspection reports, maintenance records, construction plans, risk assessment reports, compliance documentation, and stakeholder communication materials. Assumptions regarding resource availability, regulatory compliance, and stakeholder support, along with identified risks and constraints, provide the framework for successful program implementation.

Reasons and Benefits:
The Wood Pole Inspect and Treat (WPIT) Program under New York Electric Capex Projects/Programs conducts specialized inspections and prioritizes replacements to maintain wood poles in the distribution system. With a 10-year inspection cycle, WPIT reduces the risk of pole failures, enhancing reliability, especially during adverse weather. Adequate funding ensures timely repairs, addressing backlogs efficiently. Proactive maintenance contrasts with reactive approaches, increasing safety and customer satisfaction. Coordination with other initiatives optimizes resource use, safeguarding infrastructure integrity and improving service quality. WPIT significantly impacts the Customer Average Interruption Duration Index (CAIDI) and Customer Average Interruption Frequency Index (CAIFI) scores, mitigating interruptions and enhancing reliability for

RG&E and its customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
5,116	4,797	4,101	5,842	6,429

RG&E

Station 43 Circuit Upgrades

Line of Business: Electric
Category: Asset Condition

Scope:

While performing the Station 43 Modernization work, RG&E determined that the station circuit breakers required extensive upgrades. This scope was part of Station 43 Modernization project and, is now being separated as substations and lines projects. This project is the lines portion that originally emanates from the modernization work. After investigation, the circuit breakers were found to be in the following conditions:

1. Circuit breakers for 34.5kV are 70 years old and rated as follows: 5X4352 tie breaker is "Poor", and 72622 and 75012 are "Very Poor".

2. Circuit breakers for 4.16kV (210402 and 210502) are 62 years old and rated "Very Poor". There is one installed spare that is rated "Poor" at 5XSP43.

The total work associated with Circuits Conversion (total 60.5 miles) is as follows:

- C444 (7.5 Miles)
- C462 (6.7 Miles)
- C464 (15.4 Miles)
- C470 (10.6 Miles)
- C2104 (10.2 Miles)
- C2105 (10.1 Miles)

Reasons and Benefits:

Replacement of breakers and circuits will allow for improved ratings on voltage output along with increased reliability on power emanating from the station. The installation of a new spare will also improve the redundancy of power provided to the new circuits.

The work associated with Circuits Conversion (total 60.5 miles):

- C444 (7.5 Miles)
- C462 (6.7 Miles)
- C464 (15.4 Miles)
- C470 (10.6 Miles)
- C2104 (10.2 Miles)
- C2105 (10.1 Miles)

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
9,531	8,471	5,519	43	0

RG&E

Station 156 Circuit Upgrades

Line of Business: Electric
Category: Asset Condition

Scope:

The project purpose is to rebuild Station 156 and convert from 4kV to 12kV which will enhance station capacity and adjacent station (12kV) circuit tie over for contingency.

The larger transformer will improve system reliability by providing N-1capacity to the station, and adjacent circuits that currently are without adequate circuit ties during high demand periods. The substation transformer is overloaded, and the existing equipment is in poor condition.

Reasons and Benefits:

Rebuild of an existing substation and to convert three distribution lines from 4kV to 12kV, 10/12.5 (14) MVA with an On-Load Tap Changer (OLTC) transformer bank.

The new station will be installed with modern Gas Insulated Switchgear/Breakers for the 34.5kV feeders and 12kV distribution lines. A new single 34.5-12kv, 10/12/14MVA transformer will replace the two existing units and provides optimum margins; redundancy requirements will be met by the adjacent 12kV stations in the event of a transformer failure.

Deliverables:

- 34KV System Upgrade
- Transformer 1 Upgrade & GIS Switchgear
- 4-12KV Distribution Line 255, 256
- 4-12KV Distribution Line 257
- 4KV System Removal

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,290	2,006	36	0	0

RG&E

Station 156 Transf. Facilities Upgrade

Line of Business: Electric
Category: Asset Condition

Scope:

This project calls for the rebuilding of an existing substation and conversion of three (3) distribution lines from 4 kV to 12 kV, 10/12.5 (14) MVA with an On-Load Tap Changer (OLTC) transformer bank. The new station will be installed with state of art Gas-Insulated Switchgear (GIS) / Breakers for both the 34.5 kV feeders and 12 kV distribution lines. A new single 34.5-12 kV, 10/12/14MVA transformer will replace the two existing units and provides optimum margins; redundancy requirements will be met by the adjacent 12 kV stations in the event of a transformer failure.

Reasons and Benefits:

- The substation transformer was overloaded in 2012-2013 and the exiting equipment is in poor condition.
- The existing transformers, #1T 1.5MVA, aged 53 years; and #2T 3.75MVA, aged 59 years, have exceedingly small margins during peak loading periods. The 4 kV circuit breakers are poor, all aged 40+ years can only be serviced or maintained with custom made parts as they are no longer manufactured. The control house is a 65+ year old block structure and needs major improvements.
- The conversion to 12 kV will enhance station capacity, and adjacent station 12 kV circuit tie over for contingency.
- The larger transformer will improve system reliability by providing N-1 capacity to the station, and adjacent circuits that currently are without adequate circuit ties during high demand periods.
- This substation upgrade will improve the entire area as it will allow to move load from adjacent stations and alleviate these adjacent stations located in a high demand area.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,778	1,147	679	0	0

RG&E

Station 192 Circuit Upgrades

Line of Business: Electric
Category: Asset Condition

Scope:

Distribution System Planning has requested a new project at Station 192 consisting of in:

• Replace existing 1500KVA transformer with a new 10/12.5/14MVA, and upgrade station equipment to facilitate the upgrade of three (3) 4kV circuits to 12kV (C232, C215, C216)

The justification of this replacement is the following:

• The existing 34/4kV Substation Transformer is loaded to 113% of rating (2013 loading). This 1.5 MVA unit supports three distribution circuits.

• The enhanced station capacity and conversion to 12kV will facilitate adjacent station, 12kV circuit tie over for increased N-1 contingency.

• The larger transformer will improve system reliability by providing N-1 capacity to adjacent circuits that currently are without adequate circuit ties during high demand periods.

• It will also facilitate the (possible) decommissioning of nearby station 181 and the eventual 4-12kV conversion of adjacent station circuits.

Reasons and Benefits:

Replace Existing Transformer with a 34.5/12kV Transformer. This will facilitate upgrades of the Lines & Transformers associated with the existing 4kV Circuits (C232, C215 & C216). Upgrade 20.8 miles of Distribution lines (C232, C215 & C216) to handle the new 12kV load from Station 192's upgrade.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
5,454	0	0	0	0

RG&E

Station 192 Trans Facilities Upgrade

Line of Business: Electric
Category: Asset Condition

Scope:

Station 192 is a small substation that consists of one 34 kV/4 kV 1.5MVA transformer and three 4 kV distribution circuits that feeds approximately 600 customers. Distribution planning has identified the need to replace this transformer. The project scope is a full substation rebuild with a new 34.5/12.5 kV 14MVA transformer along with a 12.5 kV circuit conversion.

- Upgrade existing 34 kV/4 kV 1.5MVA transformer to a new 34/12 14MVA transformer
- Upgrade three 4 kV distribution circuits to 12 kV
- Installation of new 34 & 12 kV Gas Insulated System (GIS), control house, protection & control

Reasons and Benefits:

- Station 192 had a peak transformer load of 113% in 2013 of its CNR rating.
- The transformer upgrade will help improve substation capacity, and the upgrade to the distribution circuits will increase network reliability.
- Distribution upgrades to 12 kV will facilitate future 12 kV upgrades in the region, thus increasing cut over tie capabilities.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,180	6,834	5,366	650	0

RG&E

Station 29 Modernization Project

Line of Business: Electric
Category: Asset Condition

Scope:

This project calls for the complete modernization of Station 29 and the addition of four (4) circuits from Station 34. The average age of the substation is 70 years and multiple 34.5 & 4.16 kV breakers are in poor or poor condition. Also, the 4 kV bus at Station 29 must be expanded to allow for four (4) new circuits being relocated from Station 34.e increased loading from these circuits two (2) larger 22.4 MVA 34.5/4.8 kV transformers are required as well a full rebuild of the 4 kV bus. The 34.5 kV breakers that are in poor health will be replaced in-kind.

To improve the conditions of this substation, the following works are required:

- Install new 4 kV Gas Insulated Switchgear (GIS) cubicles in a new building on the existing property
- Site expansion toward the east
- A rebuild of the existing 4 kV bus sections with new MV GIS.
- Replace seven (7) of the sixteen (16) 34 kV breakers
- New house service transformer (HSE) and Battery systems for new GIS building
- Replace the existing electromechanical relaying
- Removal of asbestos from the existing control house.
- Remote end station scopes i.e. (Station 137, 34, etc.).

Reasons and Benefits:

- The Asset condition Report (4/29/2021) shows ten (10) 4 kV breakers and seven (7) 34.5 kV Breakers need to be replaced due to the poor and very poor conditions.
- Most of the relays are electromechanical.
- Some foundations are in bad condition –need replacement and repair.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	77	82	103	1,831

RG&E

Station 34 Modernization Project

Line of Business: Electric
Category: Asset Condition

Scope:

This project calls for the retirement and relocation of Station 34. The average age of the substation is 70 years old. This substation is in the City of Rochester in a building that has structural issues in the southern area which needs to be demolished and rebuilt. There is limited space to rebuild this station, and all the breakers need to be replaced due to poor asset condition. To improve this substation, the following works are required:

- The existing substation will be retired and relocated to Station 29. The existing 4 kV circuits will be transferred to Station 29 which will have a new 34.5 & 4.8 kV MV GIS installed along with two new 34.5/4.8 kV transformers
- The rerouting and splicing of the existing 11 kV circuits. Two network 11 kV circuits will be connected to bypass the substation and the remaining two network 11 kV circuits will feed the two existing 11 kV distribution customers, one from Station 5 and the other from Station 137.
- Complete decommissioning and cleanup of the existing station

Reasons and Benefits:

The existing building has cracks in the floor of the south wing, cracks in the walls, and asbestos-containing equipment. A structural analysis was conducted, and it was determined that the south wing needs to be demolished and rebuilt. After evaluating the rebuild on site it was found that no space will be available to work: there is no area available for parking and laydown, nor is there sufficient area to work on this site.

- Asset condition Report (4/29/2021) shows ten (10) 11 kV breakers and five (5) 4 kV breakers need to be replaced due the poor and poor health index. These breakers will be replaced with new GIS equipment.
- Most of the relays are obsolete electromechanical relays.
- The proposed relocation of the substation will address all known needs at the site and optimize substation solutions in the area i.e.(Combining two stations into one).

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	68	73	2,078	5,083

RG&E

Station 37 Modernization Project

Line of Business: Electric
Category: Asset Condition

Scope:

The substation is over 70 years old. Major issues were found with the conditions of the 4 kV circuit breakers and the 11 kV wooden structures. The existing 4 kV breakers are either in poor health or of the VM1 type, which are known to have issues with capacitors failing resulting in prevention of tripping. A full rebuild of the one (1) 4 kV bus section and entire 11 kV system is needed, as well as replacement of five (5) 34.5kV breakers. To address the conditions of this substation, the following work is required:

- Install two new 11 kV buses with Gas Insulated Switchgear (GIS) cubicles.
- Install one new section of 4 kV GIS cubicles at North side of the existing enclosure.
- Replace the two (2) existing 34/11 kV transformers.
- Replace the existing electromechanical relaying.
- Replace/reroute 4 kV and 11 kV UG cables up to manholes
- Repair/replacement of foundations that are in bad conditions.
- Remote end scope
- Demolish the existing 4 kV and 11 kV buses.

Reasons and Benefits:

- The Asset condition Report (4/29/2021) shows that five (5) 34.5 kV, ten (10) 11 kV and thirteen (13) 4 kV breakers need to be replaced due the poor and very poor conditions of these breakers.
- Some 11 kV breakers are over duty.
- Most of the relays are electromechanical.
- Transformers 3T, 4T and 5T have failed in past and have been rewound and will not be replaced as part of this project.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
99	107	115	123	4,455

RG&E

Station 43 Modernization Project

Line of Business: Electric
Category: Asset Condition

Scope:

The existing power transformers installed in the Station 43 are overloaded and they must be replaced as per the Distribution Planning. In addition, the existing 4 kV equipment is in poor and poor condition. To improve the capacity of this substation the following works are required:

- A Full Substation rebuild (Replace the two existing 6.25 MVA 34.5kV/4 kV power transformers with two new 22.4 MVA 34.5 kV/12 kV power transformers and a new control house with medium voltage Gas-Insulated Switchgear (GIS).
- Complete demolition when all six (6) circuits have been converted four (4)12 kV.

Reasons and Benefits:

- The load on the existing 6.25 MVA transformer banks #3 and #4 at Station 43 has reached 113% and 95% of their Planned Loading Beyond Nameplate (PLBN) rating respectively during the summer peak.
- The transformers are older units, installed in the 1950's. The total peak loading at the station is above 12 MVA, attributable to the six (6) circuits, three (3) fed from each transformer.
- The Station serves approximately 6,467 residential and commercial customers. loss of either transformer places the other transformer in a situation where it is loaded well above its Long-Term Emergency (LTE) rating, which conflicts with Distribution Planning Criteria.
- The proposed larger transformer size will facilitate increased switching capabilities with adjacent circuits and is required for future four (4) 12 kV conversion of area distribution.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	903	0	0

RG&E

Station 5 Substation Mod

Line of Business: Electric
Category: Asset Condition

Scope:

The Station 5 Modernization Project includes the construction of new 11 kV Gas Insulated Switchgears (GIS) switchgear and removal of the existing 11 kV circuit breakers, switches, and associated relays and controls. The existing equipment will be replaced by three new 11 kV GIS switchgear sections. The associated 11 kV relays and controls will be microprocessor relays installed on the new 11 kV switchgear and relay cabinets. Installation of three sets of fault current limiting series reactors 9.52mH (3.59 ohms) for three generator feeders to Station 5 so that 40 kA GIS switchgear can be used. The existing line series reactors will be replaced with new reactors of the same sizes, including the R-Y bus reactor. Existing generators grounding breakers, switches, resistors, old electromechanical relays will be replaced with new breakers, switches, resistors, and electromechanical relays. Cable termination of 11 kV lines upgrade coming out of Station 5 to the first manhole is also part of this scope

Reasons and Benefits:

- Replace the breakers that are in “poor” and “very poor” condition.
- Replace the electromechanical relays with microprocessor relays to enable better protection and control.
- Replace the electromechanical generator control systems to allow for better operational control of the units
- Provide capacity to allow full send out of the plant’s 46MW and necessary system VAR / voltage support
- Would allow the plant to meet the NYISO (New York Independent System Operator) plant rating and fully utilize the approximately $115 M Station 5 hydro facility investment completed in 2012. By enabling output up to the full rating will increase revenue potential and provide provision to dispatch this into the distribution system.
- Provide an alternate 11 kV house service feed to provide full operational capability.
- Replace the distribution cables. These were previously damaged, and a short-term fix was put in place.
- Evaluate and upgrade/replace as necessary the grounding system and the neutral system and connections to the three generators.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
10,580	12,316	0	0	0

RG&E

Station 51

Line of Business: Electric
Category: Asset Condition

Scope:

Substation 51 is a small 11.5/4.16 kV substation that has one 6.25MVA transformer which is being replaced due to thermal overloads. It is geographically isolated with limited load relief options which requires an upgrade of the substation transformer.

- Upgrade existing 1T from 6.25MVA to 10.5MVA
- Installation of new 11 & 4 kV Gas-Insulated Switchgear (GIS)
- Installation of new control house

Reasons and Benefits:

- Station 51 transformer 1 had a summer peak loading exceeded its normal rating (103.4% of capacity)
- The substation is surrounded on three fronts by Irondequoit Bay on the east, Lake Ontario and Sea breeze Amusement Park on the north and Durand Eastman Park on the west.
- Station 51 has only two available tie points to provide load relief. In addition, neighboring circuits and their substation transformers have insufficient capacity or are not physically located in a position to relieve station 51's transformer.
- The upgrade of the transformer will increase substation capacity and reliability for the 2,300 customers that it serves.
- The 11 kV transmission line that feeds the station will also require a future upgrade as it will be the limiting element after this project is completed.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,022	5,572	4,755	0	0

RG&E

Station 82 Upgrades

Line of Business: Electric
Category: Asset Condition

Scope:

Station 82 is being upgraded in association with the Line 902 project. Transformer T1 failed in 2019 and T2 and T3 are at the end of life. The breakers have been rated as poor. The tie between Station 82 and the Mortimer substation is overloaded under the loss of Station 122. Line 902 requires upgrade due to thermal capacity. A new substation will be built adjacent to the existing substation. Transmission lines will be relocated from the old substation to the new substation. At the completion of work activities, the new substation will be placed into service as substation 82 and the existing substation will be demolished.

The scope of work includes replacing all 115KV, 34KV and 12KV equipment, except two 115KV capacitor banks which will be relocated to the new substation. The new substation will have two 115KV buses with six bays of breaker-and-a-half (BAAH) configuration to ensure all equipment has redundant connections to the 115KV buses. Two (2) new 115/34.5KV transformers and two (2) new 115/12.5KV transformers will be installed in the new 115KV yard. All new protection, control, and auxiliary services will be installed. The new control building will house 115KV switchgear controls. Separate control buildings will house 34KV and 12.5KV air insulated switchgear. All new protection and control devices installed in the control buildings will be powered from a dual alternating current (AC) distribution system. Two trains of direct current (DC) distribution will be installed for control power. New communications interfaces and required auxiliary systems will also be installed.

Reasons and Benefits:

- Station 82 was built in 1962 and a number of components are nearing end of life or are obsolete including breakers and transformers. In addition, there are a broad range of deficiencies such as obsolete or unsupported equipment, poor operating or maintenance history, and known operational issues or complexities.
- 115 kV bus is overstressed when evaluated using IEEE605
- Circuit breaker fault duties are approaching 100%
- There are system deficiencies that result from the application of regional and local planning standards.
- Aging Protection & Control (P&C) system will be updated in compliance with

Northeast Power Coordinating Council (NPCC) requirements

Asset Conditions:

The following transformers need to be replaced:

115/34.5 kV 1T failed in 2019 and is temporarily using a system spare.

Transformer Load Tap Changers (LTCs) are rated in poor condition.

115/34.5 kV 2T is 50 years old

115/34.5 kV 3T is 45 years old

The following circuit breakers need to be replaced:

The age of the breaker is a significant variable for the health score; therefore, the breaker evaluation for Station 82 assumed an in-service date of 2030. Therefore, the score's breaker evaluations were projected based on the ISD date using the same exact metrics.

With that assumption, a total of 12 breakers are rated as HI-4: 4T, 2T8272, IT8272, 903, 906, 3T, 7X, 2T8252, 1T8252, 8X, 516902, 523302.

Reliability needs:

115 kV Circuit Breaker Fault Duty

These breakers are rated for 40 kA, and the current short circuit at 82 is 38.4 kA (96%).

The breakers were then assessed for their fault duty as a part of the New York Independent System Operator (NYISO) Annual Transmission Baseline Assessment (ATBA) cases (CY19) and the duty percentage increased to ~98%.

In cases where significant modifications are being proposed, “High Duty” breakers (95%-100%) should be replaced. Therefore, the following breakers need to be replaced: 916, 2 Cap, 1 Cap, 905, 9X, and TR23.

115 kV Circuit Breaker Thermal Needs

The 115 kV breakers 901/902 were assessed for their thermal capacity to evaluate the needs for the 901/902 project. It was found that the 901 and 902 breakers Current Transformer (CT) and other series path equipment are the limiting element (203 MVA), so breaker 902 must be replaced. The 901 breakers will be replaced by National Grid and will be replaced in kind.

Five Year Capital Plan

All amounts shown below in thousands ($000’s)

2024	2025	2026	2027	2028
0	539	578	2,629	10,962

RG&E

Substation Major Program

Line of Business: Electric
Category: Asset Condition

Scope:

The Substation Majors program covers work at substations over the $500K threshold for a minor job. This program addresses the replacement of failed or poor power transformers. When planned, this program contributes to the reduction of outages because of substation equipment failures, which has been identified as the main root cause of substation outages.

Reasons and Benefits:

Replace failed or very poor transformers units.

- The latest health assessment identifies 27 transformers in poor or very Health Condition as candidate units for replacement.
- 40% of the power transformers are 40 years or older. This increases the difficult to maintain due to lack of vendor support and inability to get parts.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,223	1,193	1,240	11,550	24,438

RG&E

Substation Minor Program

Line of Business: Electric
Category: Asset Condition

Scope:

The Substation Minors Betterments program covers work at substations under the $500K threshold for a major project. This program includes the replacement of substation components such as:

Capacitor Coupled Voltage Transformer (CCVT)/Current Transformer (CT)/Potential Transformer (PT)
Transformers (component replacements)
Fence / Gate
Regulator
Insulator
Control House (betterments)
Arresters
Switch
Animal Fences
AC-DC systems
Relay Replacement
Capacitor Banks
Spill Prevention, Control and Countermeasure (SPCC) mitigation
Protection and Control relays

The scheduled replacement of the above elements contributes to the reduction of outages because of substation equipment failures, which has been identified as the main root cause of substation outages. Because of this, Substation Minors Betterments contributes to the reduction of System Average Interruption Frequency Index (SAIFI).

This program covers not only the planned activities but also it addresses unplanned events us a result of inspections or failures.

Budget is planned based on historical spend levels and split between the thirteen divisions across the RGE territory.

Reasons and Benefits:

Maintain and improve substations equipment to provide a safe and reliable system as per regulatory targets. This program provides the company with the agility path to correct what is negatively impacting reliability in a proactive way. This work is reactive in nature. Given the age, condition, and size of our system in NY there are constant, emerging needs that need to be addressed to continue reliable safe operation of the system.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
873	793	817	1,021	1,277

RG&E

TLD Replacements

Line of Business: Electric
Category: Asset Condition

Scope:

The Transmission Line Deficiencies Replacement program (TLD Replacement Program) prioritizes the line segments needing intervention based on deficiencies identified on the transmission system by the various inspection programs (Crossarm Inspections, Aerial Inspections, Infrared Inspections, Transmission Line Inspection program, Wood Pole Inspect, and Treat Program) Interventions are determined for each line segment and these interventions are engineered and scheduled for construction.

Reasons and Benefits:

- At the end of 2022 there were 580 overdue transmission line deficiencies in RGE's territory.
- To address the consistent presence of backlogged transmission notifications, the Company needs to assign additional project management, engineering, construction, and funding resources in addition to the Operations resources that historically have addressed transmission notifications.
- Factors such as transmission circuit customer count, System Average Interruption Frequency Index (SAIFI) metrics, and percent of a line needing structure replacements have been factored into the prioritization of work.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
2,035	2,686	2,653	1,248	1,277

RG&E

UG Cable Replacements

Line of Business: Electric
Category: Asset Condition

Scope:

The objective of the program is to replace aged underground cables proactively and preventatively at RG&E, in the Rochester Region (City of Rochester). Approximately 510 sections of aged and obsolete cable were identified, with the oldest installation being 101 years old as of 2021. Priority One is to address the '4-core' cable as identified in our records. These cable sections will be prioritized first by the total number of downstream customers connected. In addition to the obsolete cable, any 'pump-log' duct (i.e. wooden ducts) that are encountered will be replaced in conjunction with any cable replacements. Likewise, any collapsed ducts will be replaced as encountered. External vendors will be utilized for camera inspections to help predetermine scope, i.e. cable replacement or total rebuild of the ducted system. While the mainlines with the highest customer counts will be done first, any 'side taps', i.e. smaller laterals off the mainline will also be replaced at that time. This is both for the obvious synergistic efficiencies gained, as well as to avoid negative impacts from stakeholders such as customers, public officials, or the media, if we were to revisit and disturb an area twice. One caveat to the priority noted in #1 above; if a given street is on the City of Rochester's Moratorium List, then it will be deferred until the city will allow any Utility work to commence. Similarly, if there are repeat and/or frequent outages to a section of cable already identified per this program, that section will be moved up the priority list accordingly. Lastly, pending cable replacements will be reviewed regarding any planned Highway Reconstruction or Relocations. The timing can be advanced or delayed, to align our schedules.

Reasons and Benefits:

Without a dedicated and funded replacement program, the 'run to failure' model results in long duration unplanned outages, i.e., in many cases cable cannot be spliced (obsolete cable past its useful life) and/or new cable cannot be pulled in through the old conduit (blocked or collapsed). This program will help avoid customer outages by increasing the rating of the underground system in RG&E and ensuring redundancies in the underground system.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,787	3,500	2,905	1,546	6,696

RG&E

URD Replacement Program

Line of Business: Electric
Category: Asset Condition

Scope:

The purpose of this program is to replace underground facilities with aged or failing equipment and access difficulties. This program will be upgrading underground facilities by installing new underground cables in existing ductwork and replacing submersible equipment with new above ground pad mounted devices.

Reasons and Benefits:

Many of the RG&E URDs were built in the 1970s and 1980s and are 40-50+ years old. The underground infrastructure in these developments is aging and experience an increasing number of failures as the infrastructure begins to break down. The electric cable utilized in these installations were traditionally a concentric neutral style design with the neutral located on the outside of the cable. This design leads to severe corrosion along the cable. In addition to an increase in full cable failures, the breakdown of the neutral also tends to lead to an increase in stray voltage conditions in the developments. All manufacturers of this style cable have highly recommended any current cable under this design be replaced as soon as possible. Many of the developments also utilized vaults with underground, submersible transformers as opposed to the current standard of above ground, pad-mounted transformers. The former design creates difficulties in accessing the equipment and has led to extended outage times during maintenance and repairs which led to regulatory penalties associated with not meeting Customer Average Interruption Duration Index (CAIDI) service targets.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,164	10,000	15,000	18,750	23,438

Electric Reliability

NYSEG

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NYSEG

Animal Guard Program

Line of Business: Electric
Category: Reliability

Scope:

This program will target the worst performing circuits across NYSEG for animal guard installation with the goal of increasing service reliability through minimizing animal contact on distribution transformers. Guards are to be installed on distribution transformer bushings, arresters, and LA brackets, if applicable.

Reasons and Benefits:

The NYSEG Animal Guard Program demonstrates significant benefits and reasons for implementation. These installations have shown measurable improvements in System Average Interruption Frequency Index (SAIFI) and Customer Average Interruption Duration Index (CAIDI), resulting in reduced Operation and Maintenance (O&M) costs by decreasing animal contact outages. Animal guard installations are simple, cost-effective, and offer immediate benefits compared to ongoing repair costs for service interruptions caused by animal contact. By targeting the worst-performing circuits, the program aims to enhance service reliability through the installation of guards on distribution transformers. Adequate funding, materials, and field crews are crucial for timely installations, ensuring ongoing service reliability. Without pursuing this project, persistent service interruptions from animal contact will lead to increased O&M costs. By increasing circuit reliability and reducing O&M expenses associated with animal-caused interruptions, the Animal Guard Program offers significant benefits to NYSEG and its customers. The program's funding requests underscore its importance in maintaining grid reliability and minimizing disruptions caused by wildlife interactions.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,395	2,755	999	1,293	1,364

NYSEG

Breaker Replacement Program

Line of Business: Electric
Category: Reliability

Scope:

The Substation Circuit Breaker Replacement program prioritizes the proactive replacement of substation circuit breakers needing intervention based on the latest health and risk assessment as well as breakers that have been identified as overdutied by Engineering. The assessment lists candidate units to be evaluated for replacement by investigating specific needs including operational and maintenance issues identified for each unit, and coordinating with system operations, maintenance engineering and the projects teams.

The Asset Health and Risk Assessment looks at a health, criticality, and risk index for specific asset class equipment. A Health Index quantifies equipment condition based on numerous condition parameters related to the long-term degradation factors that cumulatively lead to an asset's end of life. The health score is a composite indicator of the asset's overall health, relative to a brand-new asset, and is given in terms of percentage, with 100% representing an asset in "as new" condition. The health index is analogous to the probability of failure of an asset. The Criticality Index is analogous to and quantifies the consequence of a failure of the asset. For circuit breakers, the consequence or severity of a breaker mis-operation or failure is represented by several factors including safety to utility personnel and the public, environmental impact, impact to customers, fiscal impact, impact to other parts of the electric grid, and regulatory compliance issues. A Risk Score quantifies the risk associated with each asset. The risk score is a combination of the Health Index (probability of failure) and the Criticality Index (consequence of failure). Risk scores can be used to show the level of need for intervention for each asset.

Reasons and Benefits:

The latest health assessment identifies 434 substation circuit breakers as in poor health and 423 substation circuit breakers in very poor health as candidate units for replacement. The latest risk assessment scoring identifies 603 substation circuit breakers as high risk and 243 substation circuit breakers as very high risk as a starting point for prioritizing candidate units. These breakers are included in the list of poor and very poor health.

Candidate circuit breakers typically fall in two categories:

1. Obsolete models that are older models that are increasingly difficult to maintain due

to lack of vendor support and inability to get parts.
2. Older models that have components that need more frequent maintenance to assure proper operation.

Currently, 405 (17.7%) of breakers in NYSEG are over 60 years old, if no breakers are replaced that number grows to 35% by 2030. (Aging is only an indicator for asset replacement. Actual replacement is driven by condition-based analysis)

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
22,703	21,121	6,000	42,569	53,212

NYSEG

Circuit Sensor Implementation

Line of Business: Electric
Category: Reliability

Scope:

The Circuit Sensor Implementation program is intended to provide Line Sensors at the head-end of distribution feeders on overhead conductors up to 35 kV. The primary function of these sensors is to detect, monitor, and report electrical quantities on each circuit including watts, current, voltage, power factor, Volts-Amps Reactive (VAR), as well as electrical transients. Load, phase balance, faults, alarms, and events shall be monitored in real time and sent via telecommunications to a Supervisory Control and Data Acquisition (SCADA) system. The sensors are also intended to detect fault current and location along with the subsequent change of voltage on a line that are reported to SCADA and sent to an analysis software. The data is also used to provide summer and winter load information for forecasting, modeling, enhancing power quality, making reliability improvements, and during emergency situations when needed to transfer load from adjacent circuits

Reasons and Benefits:

There are 1,138 circuits at NYSEG with 73% having no interval monitoring devices, 22% have partial internal monitoring, and 4% have full interval monitoring capabilities. This means that most of these circuits (832) have no means to detect, monitor, and report electrical quantities on the distribution system. The increased demand for distribution generation with photovoltaic, wind, and battery storage devices can lead to power quality issues and require constant monitoring for improvements in performance and reliability.

The project requires the installation of 2,193 power line sensors at the head end of distribution feeders that do not have interval monitoring devices. Each three-phase circuit would need three devices. This program would install line sensors on approximately 350 circuits over the next 2 years (2024 – 2025), with additional funding required to complete installation on the remaining circuits. An additional 35 circuits that need monitoring are underground and will require additional resources to provide similar data monitoring. 101 out of 832 circuits with no interval monitoring are part of the breaker replacement program which would install Remote Terminal Unit's (RTU's) and SCADA devices to monitor substation and circuit load and are not part of the Line Sensor Program.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
6,232	977	36	72	72

NYSEG

Cobble Hill Transformer Replacement

Line of Business: Electric
Category: Reliability

Scope:

Cobble Hill is a 115/34.5kV substation in NYSEG's Lancaster division constructed in 1974 and serves approximately 3,688 customers. Peak load for 2022 was 21 MVA1.

Replace the 1T transformer and construct an oil-containment system for the transformer selected for the site. Requires SPC upgrades to integrate the new transformer at Cobble Hill.

Reasons and Benefits:

The 1T transformer - the sole transformer for the substation - has failed. The 1T transformer must be repaired or replaced to return Cobble Hill substation to normal operation status

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
6,376	3,000	0	0	0

NYSEG

Craryville New Substation Breaker And Circuit Upgrade

Line of Business: Electric
Category: Reliability

Scope:

This project includes WO design, material procurement, pole setting, new wire pulling, phase balancing, installation of capacitor banks & regulators, enhanced tree trimming, relocation of existing step transformer and installation of a new pad mounted step transformer. Craryville #3 Transformer has been fully installed and placed into service.

All Craryville distribution upgrades have an estimated in-service date of Q2 of 2024.

Reasons and Benefits:

The Craryville Substation located in the Mechanicville Division has three distribution circuits consisting of two 34.5 kV distribution circuit (610 and 611) on transformer bank # 3 and one 12.5 kV distribution circuit (400) off transformer bank #1.

Reliability Needs

Craryville #400 has low voltage violations throughout the circuit. Craryville #400 has a phase imbalance of about 110 amps. Normal imbalance is about 15-20 amps. Craryville #610 phase imbalance is about 40 amps.

Craryville #400 does not have an N-1 solution. In-field switching with Craryville #610 cannot pick up the full load on Craryville #400. Craryville #610 does not have an N-1 solution. In-field switching with Craryville #400 and Klinekill #631 cannot pick-up the full load on Craryville #610.

Asset Condition Needs

Craryville #610 step bank failed and needed to be replaced three times since July 2022 (Line 959, Pole 2, FLOC 9301-L0126-1115-0147-ED00001). The likely cause of the step bank failure was a phase imbalance (Majority of taps are off one phase).

The Craryville Bank #3 (115 kV / 34.5 kV) transformer was 48 years old, failed and was out of service for approximately four years. The entire substation was served from a mobile substation.

Outages

Craryville #610 has been on the red circuit list (RCL) four out of the last five years. 2022 RCL: Craryville #610 rated as the 24th worst circuit at NYSEG. 2022 PSC worst performer. Craryville #400 is on the 2022 RCL, ranked at 30th worst rated NYSEG circuit. 2022 PSC worst performer.

Benefits:

Mitigate the phase imbalance on Craryville #400 by converting approximately 3.5 miles from single phase to three phase 4/0 AWG AAC. Perform phase balancing on entire Craryville #400 circuit. Perform phase balancing in specific locations on Craryville #610 circuit. Install switched line capacitor banks and regulators on Craryville #400 to eliminate low voltage issues. Perform enhanced tree trimming at all work locations in the detailed scope of work (~4 miles) to reduce the occurrence of outages on Craryville #400 and Craryville 610. Install reclosers on Craryville #400. Relocate the existing 1500 kVA step bank and install a new 3750kVA pad mounted step transformer to mitigate overloads. Install Bank #3 (115 / 34.5 kV) transformer at Craryville Substation and remove mobile substation. This alternative does not resolve the N-1 contingency.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
2,528	0	0	0	0

NYSEG

Dingle Ridge - 2nd Bank and 13.2 kV Conv

Line of Business: Electric
Category: Reliability

Scope:

This project will upgrade the current 5MVA transformer bank substation to a new Greenfield substation with 2 - 12/16/20 (22.4) MVA transformer banks, a new 13.2 kV GIS with two bus sections as well as the conversion of 9.6 miles of 4.8 kV on circuits 277 and 278 to 13.2 kV and make provisions for the establishment of a 3rd circuit.

Reasons and Benefits:

The current substation 5MVA transformer has experienced overloads of 132% above the capacity. This substation upgrade will allow other overloaded stations to be offloaded and increase area field tie capabilities between Dingle Ridge, Putnam Lake and Tilly Foster.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
10,424	0	0	0	0

NYSEG

Distribution Load Relief Program

Line of Business: Electric
Category: Reliability

Scope:

The objective of the Distribution Load Relief Program is to conduct system-wide facility surveys on substations that are overloaded and/or exceed 90% of capacity. The study will develop a mitigation strategy (projects) to enhance the condition of these assets, so they do not exceed Planned Loading Beyond Nameplate (PLBN). These comprehensive surveys will include electrical and structural assessments which will be scored against individually weighted categories such as age of equipment, resiliency/flooding impacts, substation Protection & Control (P&C) assessment, substation reliability performance, etc.

For single transformer stations, the transformer loading should not exceed 100% of the Normal Rating. For normal loading conditions, new customer loads shall not exceed facility capabilities from point of interconnection (POI), including the substation and transmission area (sub-transmission). When the addition of new loads results in overloading of device thermal capacity from POI to substation transformer bank secondary bus, it is recommended by Distribution Planning to start system reinforcements. When the addition of new loads result in circuit capacity or substation bank capacity reach or exceed 90%, it is recommended by Distribution Planning to investigate long-term strategy (projects) that could involve load shedding or substation upgrades to hold capacity at 90% with the new load.

Reasons and Benefits:

NYSEG has currently identified fourteen (14) substation banks that have reached or exceeded 90% capacity with seven (7) of these banks exceeding 100% of the CNR. This program is designed to focus on conducting system-wide facility surveys and pending the outcome, focus on a strategy that could involve several solutions involving adding fans, retrofitting upgrades, infield switching to load shed, or retiring smaller substation.

<u>Substations & Preliminary Scope</u>

- Port Byron: Transformer Replacement
- Crafts: Load Transfer
- Whiskey Creek: Load Transfer
- West Winfield: Transformer Replacement
- Genoa: Load Transfer

- Holland: Transformer Replacement
- Woodhull: Load Transfer
- Kane: Load Transfer
- Crooked Lake: Load Transfer
- Whig Street: Transformer Replacement
- Arkport: Load Transfer
- Rein Rd: Load Transfer
- Marcellus: Bank Replacement
- Swift St: Load Transfer (separated to specific project)

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
10,893	10,073	3,001	3,000	30,000

NYSEG

Hillcrest Transformer Replacement

Line of Business: Electric
Category: Reliability

Scope:

This project will replace the existing 34.5/12.5 kV transformer in poor health with a new (22) MVA 34.5/12.5 kV Transformer as well as the complete rebuild of the substation with 34.5 & 12.5 kV Gas Insulated Switchgear (GIS) using a compact substation design.

Reasons and Benefits:

The transformer tested with an alarming level of combustible gases present and was removed from service after abnormal moisture content was discovered and should be replaced. A portable generator has been installed at the Station which has been on the site for approximately two years. The transformer foundation is a wood/steel beam and tie, is in poor condition, and needs to be replaced. 12.5 kV Cir #315 and #316 are old (1963) self-contained oil breakers and are scheduled to be replaced on the next major rebuild. The insulators in the substation are all old brown glass and need to be replaced. Several foundations are also crumbling.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
5,180	0	0	0	0

NYSEG

Homer City Capital Breakers and Upgrades

Line of Business: Electric
Category: Reliability

Scope:

This project was created to allow for the payment of co-owned projects that are proposed by First Energy that NYSEG has 50/50 ownership in. Currently, First Energy and NYSEG must work to scope and pay for services related to a generator deactivation which is currently estimated at $2M and needs to be completed in 2024.

In addition to this scope, First Energy has proposed approximately $21M in potential projects in future years which NYSEG has currently deferred to a future rate case and plans to perform needs and solutions assessment on.

Proposed First Energy Projects

- Homer City Replace 345-230 TNN-BK 345/230kV
- PN Program - Group 1 - Install traveling wave fault locator system
- Counter UAS - Tier 2 substations – PN
- Homer City Online Battery Monitor
- Homer City Replace 345-230 TS, circuit switcher, relay protection

Reasons and Benefits:

This project is required as NYSEG is a 50/50 owner of the Homer City substation. Most of the proposed upgrades by First Energy are focused on improving asset condition, Bulk Power Substation (BPS) reliability and regulatory compliance.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,000	0	0	0	0

NYSEG

Line 620 Rebuild - 34.5 kV

Line of Business: Electric
Category: Reliability

Scope:

This project is a 3.3 Mile Rebuild of a 34.5kV Line from West Lebanon Substation to Brainard Tap. During certain N-1 contingency conditions, the line can be closed to provide backup to the Wynantskill area substations. The current conditions of the line have limited its use to provide backup support to the area.

Figure 1: Picture ol Work Area. Proposed ReEocalion.

Reasons and Benefits:

The current conditions of the line have limited its use to provide backup support to the area. Correcting these problems will allow operations and the division to utilize the West Lebanon to Brainard 620 line during contingency conditions and provide backup and improved contingency voltage profile to the customers supplied from West Sand Lake, Crooked Lake, and Hoag-NM Substations. The problem occurs when the Mechanicville Division load exceeds 107 MW or for 1,450 hours in 2018. The potential load at risk is up

to 5.6 MW and the customers at risk are 1,918.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	0	5,000

NYSEG

Milo Substation Rebuild

Line of Business: Electric
Category: Reliability

Scope:

Full rebuild of substation with Mini MV GIS solution and14 MVA LTC transformer. Partial conversion of existing 4.8 kV circuit to 12.5 kV, which includes rebuilding 1.39 miles of 34.5kV transmission with distribution underbuilds to the South and adding primary neutral to 5 miles of existing conductors to the North.

Reason and Benefits:

- **Capacity issues:** Resolves transformer T1 N 0 overloads issues.
- **Quality of supply:** Resolves 4.8kV circuit N 0 voltage drop issues.
- **Reliability:** Sectionalizing 34.5kV line 593 at Milo Substation results in ~80% reduction in exposure for a transmission line fault for ~744 customers at Milo.
- **Resiliency:** Can provide N 1 contingency support to the nearby circuits
- **Future Load growth (5- and 10-year outlook)/hosting capacity/expansion:** Allows for future load growth/hosting capacity for DER's and physical expansion.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
7,777	5,641	0	0	0

NYSEG

Mobile #2 Replacement

Line of Business: Electric
Category: Reliability

Scope:

The first NYSEG Mobile Substations were purchased in the mid 1960's. Most of them are approaching the end of their life cycle and need to be replaced due to the aging of the trailer frame and electrical components. Mobile #2 and #4 are both critical pieces of equipment required to perform planned substation maintenance, respond to unplanned substation failures or system emergencies, and to accommodate substation capital improvements.

The existing Mobile Substation #2 will be replaced with Mobile Substation #23 at 34.5 kV.

Reasons and Benefits:

Replacement of Mobile Substation #2 is necessary to ensure that NYSEG can continue to provide service to its customers during all situations, whether planned or unplanned. Mobile substations are used to replace existing substation power transformers for routine maintenance, construction activities, or emergency equipment failure. Mobile Substation #2 is currently unavailable for service due to several serious maintenance issues. Mobile Substation replacement #23 will improve efficiency in responding to planned/unplanned substation maintenance, failures, or system emergencies.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,778	661	0	0	0

NYSEG

Mobile #4 Replacement

Line of Business: Electric
Category: Reliability

Scope:

The first NYSEG Mobile Substations were purchased in the mid 1960's. Most of them are approaching the end of their life cycle and need to be replaced due to the aging of the trailer frame and electrical components. Mobile #2 and #4 are both critical pieces of equipment required to perform planned substation maintenance, respond to unplanned substation failures or system emergencies, and to accommodate substation capital improvements.

The existing Mobile Substation #4 will be replaced with Mobile Substation #24 at 46 kV.

Reasons and Benefits:

Replacement of Mobile Substation #4 is necessary to ensure that NYSEG can continue to provide service to its customers during all situations, whether planned or unplanned. Mobile substations are used to replace existing substation power transformers for routine maintenance, construction activities, or emergency equipment failure. Mobile Substation #4 is currently unavailable for service due to several serious maintenance issues. Mobile Substation replacement #24 will improve efficiency in responding to planned/unplanned substation maintenance, failures, or system emergencies.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,970	757	0	0	0

NYSEG

New York 21st Century Grid Plan (Cheektowaga)

Line of Business: Electric
Category: Reliability

Scope:

The Objective of the New York Grid Modernization Pilot is to identify a subset of transmission and distribution facilities, with poor performing System Average Interruption Frequency Index (SAIFI) metrics and propose system upgrades (solutions) to enhance system reliability while addressing known system capacity and asset condition needs.

This project scope will involve eleven separate subprojects in the Lancaster Area in order to resolve all transmission, distribution and asset condition needs in the area. The Total Project Cost is estimated at $200.3M with an ISD of 2027. Below are the individual project details.

- Losson Rd - Full GIS Substation Rebuild with 4 x 34.5 kV line source connections, 9 x 12.5 kV feeders, 2 x 50 MVA transformers.
- Blossom Rd - Full GIS Substation Rebuild with 3 x 34.5 kV line source connections, 6 x 12.5 kV feeders, 2 x 37 MVA transformers, and control house. Install two 8 MVAr capacitor banks on 34.5 kV terminal at Blossom Road.
- Walden Ave - Upgrade existing AIS to include 2 x 115 kV line breakers and replacement of existing 115/12.5 kV transformers with 50 MVA units. 12.5 kV Full GIS rebuild with 9 x 12.5 kV feeders+1 express feeder, and control house.
- Indian Church Retirement - Convert 4.8 kV to 12.5 kV (~20 miles), retire Indian Church, and feed 4 circuits out of expanded Losson Road.
- Sloan Retirement and Switching Station - Convert 4.8 kV to 12.5 kV (~25 miles), retire Sloan, feed 3 circuits out of expanded Walden Avenue, and install switching station in the existing location with 5 feeders from Walden Avenue. Build two underground direct feeders from Walden and Losson to be used as express feeder backups.
- Ellicot Retirement - Convert 4.8 kV to 12.5 kV (~16 miles), retire Ellicott, and feed 2 circuits out of expanded Walden Avenue.
- Ebenezer Retirement - Convert 4.8 kV to 12.5 kV (~12 miles), retire Ebenezer, feed 2 circuits out of expanded Blossom
- Losson Switching Station - Install a 12.5 kV switching station near Losson Rd. Build two underground direct feeders from Losson and Blossom to be used as express feeder backups. Depew Retirement - Retire 115/34.5 kV substation, reroute Line 532 into N. Broadway

- North Broadway Expansion - Install 3 new breakers on the 115 kV AIS, install a new 50 MVA 115/34.5 kV transformer, expand the 34.5 kV AIS and install 3 new breakers.
- Line 555 Reconductor - Line 555 from Girdle Rd to Blossom Rd will have to be upgraded with 477 ACSR 18/1 (~6.25 mi)

Reasons and Benefits:

This project will allow for a standardized voltage throughout the study area as well as increased system reliability & capacity, N-1 Reliability at the Station and Circuit Level as well as the reduction of operating costs by retiring stations in poor asset condition.

This solution addresses the following needs:

Reliability Needs:

The substations Losson Rd, Blossom Rd and Walden Ave have been the top 10 worst performing stations in NYSEG with regards to SAIFI with Losson and Blossom being in the top 3.

Distribution Needs:

These stations also do not have adequate N-1 field tie capabilities as well N-1 substation transformer criteria violations. The Sloan substation transformer is currently overloaded.

Transmission Needs:

This area has four different transmission loss of load criteria violations. Three of these affects between 5000 & 10000 customers and 1 affecting over 10000 customers.

Asset Condition Needs:

The substations of Sloan, Walden, Indian Church, Ebenezer, Ellicot, Depew all have asset condition concerns ranging from aging equipment health, brown insulators, manual switches and deteriorated foundations and steel structures.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
59,728	86,976	66,297	0	0

NYSEG

North Brewster Reinforcement

Line of Business: Electric
Category: Reliability

Scope:

This project intends to upgrade to a new 46/13.2 kV, 20/26/33 (37.3) MVA transformer, low side capacitor bank and accompanying equipment. Also included is the conversion of approximately 9 miles of the existing 4.8 kV circuits 153 and 154 to 13.2 kV.

Reasons and Benefits:

Silo Ridge Ventures, LLC is constructing a new housing and golfing development on NYS Route 44, Town of Amenia, NY. This exceeds the load capacity of the existing substation. A new estimated additional connected load of 2.5 MVA is required from Amenia substation 0.4 miles from the development. This project will strengthen the existing transmission system and increase the capacity of Amenia substation in Brewster Division, NY to meet the growing local demand.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
5,987	4,813	3,000	7,000	7,000

NYSEG

Sackett Lake Replace Transformer

Line of Business: Electric
Category: Reliability

Scope:

Transformer Bank at NYSEG Sackett Lake Substation is a bank of three single-phase transformer units each rated 1667kVA, 34.5-4.8kV. The transformer serves as a distribution system step-down transformation from the 34.5kV system to the 4.8kV system. The Sackett Lake 4.8kV distribution has been experiencing load growth. Birchwood Estate added load on the Sackett Lake 121 4.8KV circuit. The Sackett Lake 121 can support Birchwood Estate Phases 1 and 2 for a total of 650KVA. Birchwood Estate Phase 3 totaling 273KVA will require that the Sackett Lake 121 circuit be converted to 12.5KV. This project proposes to convert the Sackett Lake substation and circuits to 12.5KV to further support load growth in the area.

Reasons and Benefits:

This project upgrades the existing 7.5 MVA 34.5-4.8 kV transformer with a new 10/14 MVA, 34.5-12.47 kV LTC transformer, with provisions for two 12.47 kV distribution circuit positions. Convert all existing circuits to 12.47 kV operation.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,465	0	0	0	0

NYSEG

Sloan Substation Load Relief

Line of Business: Electric
Category: Reliability

Scope:

The Sloan Substation Load Relief project consists of three load transfers from the Sloan substation distribution circuits to neighboring circuits to reduce the expected peak overload on the Sloan substation transformer. The proposed load transfers will shed approximately 1.8MVA of peak load off the Sloan substation transformer and delay further and more costly substation upgrades/alternatives by at least 7 years.

Load Transfers:

- Sloan #230 to Walden Ave #301
- Sloan #231 to Walden Ave #301
- Sloan #231 to New Gardenville #536

Reasons and Benefits:

A Comprehensive Area study was conducted in 2021 to address all reliability, distribution and asset condition needs in this area. This study revealed thermal and loss of load violations on the Sloan substation transformer and #231 distribution circuit.

The NYSEG Sloan Distribution Substation located in the Lancaster division serves approximately 4,200 customers via a three-phase, 34.5 kV-4.8 kV, 9.375MVA transformer, with a 5-year peak load average of 9.83MVA (105%). The Sloan substation consists of three distribution circuits (#229, #230, and #231) which serve the town of Cheektowaga, NY. The #231 distribution circuit is the most heavily loaded of the three circuits with a 5-year average peak loading of 4.54MVA (90%), with an overload of 5.22MVA (104%) in the summer of 2020. These overloads are approaching the substation transformer Planned Loading Beyond Nameplate (PLBN) rating and the limits of the 477AL substation exit conductors.

The substation acts as a 4.8 kV island with no neighboring 4.8kV sources, N-1 capabilities are not presently available. Implementation of the proposed load transfers will reduce the overall peak loading on the substation transformer by approximately 19% and the #231 circuit by 8%. These created ties will continue to be utilized for future substation configurations/upgrades for reliability, resiliency, and N-1 considerations.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
246	0	0	0	0

NYSEG

Substation Modernization - Raquette Lake

Line of Business: Electric
Category: Reliability

Scope:

This project requires a full station rebuild at Raquette Lake with a 72.5 kV circuit breaker and new 69 kV box structures. All structural electrical and control equipment require replacement and expansion of the Supervisory Control and Data Acquisition (SCADA) and control capabilities will be incorporated. Due to our inability to obtain easements at the current location, this substation is being rebuilt on property across the road from the current substation, which is a slightly larger, safer, and less visible location.

Reasons and Benefits:

The existing recloser tests have shown it to have high contact resistance - it is aged, and oil filled and poses an environmental risk. The wood support structure is at the end of its life and erosion, warping, and splitting of the timber has been noted.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,500	0	0	0	0

NYSEG

Swift Street - Stryker Avenue Load Transfer

Line of Business: Electric
Category: Reliability

Scope:

The Swift Street substation is an existing 34.5/4.16 kV substation in the Auburn division of NYSEG. The 34.5 kV is configured as a straight bus, currently no line sectionalizing capabilities, with a tapped 5 MVA transformer, which supports three (3) distribution feeders serving 2,794 customers.

This load transfer reduces the loading at Swift Street to 90%, thus resolving the thermal overloading of the transformer at the station. The total load to be transferred to Stryker Ave is 1.1 MVA (572 customers), resulting in total loading at Stryker Avenue of 88%.

This will require voltage conversion of 4.16 kV to 12.5 kV on sections of circuit 315 and then tying these sections to circuit 721, which is already built to 12.5 kV. The sections of circuit 315 that will have voltage conversions are on South Seward Avenue, Walnut Street, Evans Street, Sheriden Street, as well as the single-phase spur lines.

Distribution: The existing 34.5/4.16 kV transformer bank T1 (with 5.25 MVA normal rating) at Swift Street is overloaded (112% in 2020).

Reasons and Benefits:

This solution relieves the Swift Street T1 overload which decreases the probability of failure and increases the reliability of service to the customers in the area.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
306	0	0	0	0

NYSEG

Transmission Reinforcement Program

Line of Business: Electric
Category: Reliability

Scope:

This Program is to address needs identified on the NYSEG Transmission System.

In 2022/2023 NYSEG Transmission Planning completed a needs assessment on the local transmission system and identified over 125 loss of load, thermal, and voltage criteria violations that can directly affect our customers.

Based on the quantity of identified needs, NYSEG expects that a significant investment is needed to reinforce the local transmission systems so that they meet the NYSEG Transmission Planning loss of load, thermal, and voltage criteria.

Development of comprehensive solutions for the identified needs, coupled with asset condition assessments, will begin in 2023 with many solution designs expected to be finalized by 2024. Project development and project execution will be prioritized based on several factors such as customer benefit, asset health, and solution complexity.

Reasons and Benefits:

The NYSEG Transmission Planning local transmission system needs assessment identified criteria violations throughout the NYSEG local transmission systems. A high-level summary of local needs is shown below.

Local Transmission Violations (N-1 only)			
Company	Loss of Load	Thermal / Voltage	Total
NYSEG	59	66	125

There are at least 59 loss of load criteria violations. A summary descriptive statistic of single contingency exposure on transmission system that violates loss of load criteria is presented below:

Descriptive Statistic	MW	Customer Count	Miles
Min	10.1	717	0.34
Max	44.8	15,065	45.81
Mean	19.5	5,232	13.04
Median	16.7	4,752	12.15

Solution Alternatives:

Solutions to criteria violations on the transmission system can take a variety of forms and generally fall into a few main categories:

- Comprehensive Solutions – solutions that account for more than one type of need (i.e., thermal, voltage, asset health, and/or loss of load)
- Low Complexity Solutions – solutions that address a single need without considering other nearby needs.
- Non-Wires Alternative (NWA) Solutions – solutions that can be used to defer the need for a comprehensive solution.

Prior to determining the preferred solution, all factors, including other nearby needs, will be considered to identify holistic area solutions.

Risk of No Action:

The NYSEG Transmission Planning criteria is designed to ensure that customers receive adequate electric supply under conditions that can be reasonably expected to occur. If the transmission system does not meet these criteria there are risks including but not limited to unnecessary loss of customer load, and an increased likelihood of equipment failure.

This program will include projects that:

- Improve customer reliability,
- Address thermal, voltage and loss of load criteria violations
- Improve transmission system performance.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
1,000	0	0	0	10,000

NYSEG

Wood Street New 3rd 345 115 kV Trans

Line of Business: Electric
Category: Reliability

Scope:

The scope of the Wood Street Substation project is to install a third 345/115 kV Load Tap Changer (LTC) transformer rated 150/200/250 MVA at Wood Street Substation and operate it in parallel with the two existing 345/115 kV LTC transformers. This will improve system reliability in Brewster.

Reasons and Benefits:

When the Brewster Division load is greater than 153 MW, a forced outage of one of the existing 345/115 kV transformers at Wood Street Substation with the other 345/115 kV transformer already out of service, would cause widespread submarginal voltages and thermal overloads throughout the Brewster Division. During summer peak load periods, there could be up to 200 MW of load and 35,000 customers at risk for potential load shed. Based on the current Brewster Division summer peak load growth rate of 2.04% per year, it is expected that this area would be exposed to this potential problem for up to 5100 hours during the summer peak load period. In order to address the needs listed above, a third transformer at the Wood St substation is required.

Wood St substation is a large substation with enough space to install new equipment making the addition of a third transformer the best and least-cost solution. The substation was initially designed to easily add a third transformer and associated equipment in the future. Additionally, the area where the Control Building will be located was also prepared to facilitate/construct a new building if necessary. The installation of a third transformer in Wood St substation will increase the reliability of the system in the Brewster area specially during the summer peak load periods. This project affects 35,000 customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
6,199	1,658	0	0	0

Electric Reliability

RG&E

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RG&E

Animal Guard Program

Line of Business: Electric
Category: Reliability

Scope:

This program will target the worst performing circuits across RG&E for animal guard installation with the goal of increasing service reliability through minimizing animal contact on distribution transformers. Guards are to be installed on distribution transformer bushings, arresters, and LA brackets, if applicable.

Reasons and Benefits:

The RG&E Animal Guard Program demonstrates significant benefits and reasons for implementation. These installations have shown measurable improvements in System Average Interruption Frequency Index (SAIFI) and Customer Average Interruption Duration Index (CAIDI), resulting in reduced Operations and Maintenance (O&M) costs by decreasing animal contact outages. Animal guard installations are simple, cost-effective, and offer immediate benefits compared to ongoing repair costs for service interruptions caused by animal contact. By targeting the worst-performing circuits, the program aims to enhance service reliability through the installation of guards on distribution transformers. Adequate funding, materials, and field crews are crucial for timely installations, ensuring ongoing service reliability. Without pursuing this project, persistent service interruptions from animal contact will lead to increased O&M costs. By increasing circuit reliability and reducing O&M expenses associated with animal-caused interruptions, the Animal Guard Program offers significant benefits to RG&E and its customers. The program's funding requests underscore its importance in maintaining grid reliability and minimizing disruptions caused by wildlife interactions.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,656	1,108	988	912	1,005

RG&E

Breaker Replacement Program

Line of Business: Electric
Category: Reliability

Scope:

The Substation Circuit Breaker Replacement program prioritizes the proactive replacement of substation circuit breakers needing intervention based on the latest health and risk assessment as well as breakers that have been identified as overdutied by Engineering. The assessment lists candidate units to be evaluated for replacement by investigating specific needs including operational and maintenance issues identified for each unit, and coordinating with system operations, maintenance engineering and the projects teams.

The Asset Health and Risk Assessment looks at a health, criticality, and risk index for specific asset class equipment. A Health Index quantifies equipment condition based on numerous condition parameters related to the long-term degradation factors that cumulatively lead to an asset's end of life. The health score is a composite indicator of the asset's overall health, relative to a brand-new asset, and is given in terms of percentage, with 100% representing an asset in "as new" condition. The health index is analogous to the probability of failure of an asset. The Criticality Index is analogous to and quantifies the consequence of a failure of the asset. For circuit breakers, the consequence or severity of a breaker mis-operation or failure is represented by several factors including safety to utility personnel and the public, environmental impact, impact to customers, fiscal impact, impact to other parts of the electric grid, and regulatory compliance issues. A Risk Score quantifies the risk associated with each asset. The risk score is a combination of the Health Index (probability of failure) and the Criticality Index (consequence of failure). Risk scores can be used to show the level of need for intervention for each asset.

Reasons and Benefits:

The latest health assessment identifies 269 substation circuit breakers as in poor health and 164 substation circuit breakers in very poor health as candidate units for replacement. The latest risk assessment scoring identifies 372 substation circuit breakers as high risk and 39 substation circuit breakers as very high risk as a starting point for prioritizing candidate units. These breakers are included in the list of poor and very poor health.

Candidate circuit breakers typically fall in two categories:

1. Obsolete models that are older models that are increasingly difficult to maintain due to lack of vendor support and inability to get parts.

2. Older models that have components that need more frequent maintenance to assure proper operation.

Currently, 234 (14.25%) of breakers in RG&E are over 60 years old, if no breakers are replaced that number grows to 24% by 2030. (Aging is only an indicator for asset replacement. Actual replacement is driven by condition-based analysis)

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
11,658	9,290	10,630	12,892	12,892

RG&E

Circuit Sensor Implementation

Line of Business: Electric
Category: Reliability

Scope:

The Circuit Sensor Implementation program is intended to provide Line Sensors at the head-end of distribution feeders on overhead conductors up to 35 kV. The primary function of these sensors is to detect, monitor, and report electrical quantities on each circuit including watts, current, voltage, power factor, Volt-Amps Reactive (VAR), as well as electrical transients. Load, phase balance, faults, alarms, and events shall be monitored in real time and sent via telecommunications to a Supervisory Control and Data Acquisition (SCADA) system. The sensors are also intended to detect fault current and location along with the subsequent change of voltage on a line that are reported to SCADA and sent to an analysis software. The data is also used to provide Summer and Winter load information for forecasting, modeling, enhancing power quality, and making reliability improvements, and during emergency situations when needed to transfer load from adjacent circuits.

Reasons and Benefits:

There are 698 circuits at RG&E with 57% having no interval monitoring devices, 30% having partial internal monitoring, and 13% having full interval monitoring capabilities. This means that most of these circuits (401) have no means to detect, monitor, and report electrical quantities on the distribution system. The increased demand for Distribution Generation with Photo Voltic, Wind, and Battery Storage devices can lead to power quality issues and require constant monitoring for improvements in performance and reliability.

The project requires implementing a solution in 332 circuits at RG&E to retrieve the information detailed above. Approximately 50% of the circuits are overhead. In those circuits, and as part of this project, power circuit sensors will be installed in the head end of the circuit, one sensor per phase. The remaining circuits, underground after the first load, will require underground sensors (one per phase) or RTACs installed at the station. Excluded from this program are the circuits that are part of the breaker replacement program which would install Remote Terminal Unit's (RTU's) and SCADA devices to monitor substation and circuit load and are not part of the Line Sensor Program.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,882	2,353	0	0	0

RG&E

Comprehensive Area Studies

Line of Business: Electric
Category: Reliability

Scope:

The Distribution Comprehensive Area Improvement Program will consist of several projects that will be identified by the Electric Distribution Planning management team through a process of identifying deficiencies and performance issues. The process will identify both present and future (10-year projection) deficiencies and performance issues that will negatively impact the ability to provide reliable and consistent power to our customers.

Comprehensive area studies will be performed on substations and distribution feeders, analyzing present and future conditions related to distribution system capacity loading, common operating voltage conditions, load balancing, reliability and resiliency, loss of load, voltage and power factor quality, distributed generation, hosting capacity and distribution automation and Supervisory Control and Data Acquisition (SCADA) needs.

Reasons and Benefits:

Several projects are under consideration that require intervention to maintain necessary reliability and performance for our customers.

Example projects will include (but not limited to):

- Station 16 evaluation. The station is 11.5 kV and serves 5,062 customers with two undersized 34.5 kV/4.16 kV transformers and six (6) 4.16 kV feeders all predicted to be overloaded during peak demand in 10 years. Consideration will be given to increasing capacity of transformers and feeders, improve N-1 capability with automation and capacity increase and target asset replacements based on condition and capability to achieve new capacity goals. Consideration will also be given to alternative solutions such as area station consolidation, voltage conversion and Non-Wires Alternatives (NWA).
- Station 127 evaluation. The station is 12.47 kV and serves 6,356 customers with one 34.5 kV/12.47 kV transformer that has been overloaded the last several years and three feeders that are also at capacity. The transformer was replaced with a next size larger unit that was spare from another station in 2021 but will require further upgrade in the next 10 years to address capacity issues. Consideration will be given to increasing capacity of transformers and feeders, improve N-1 capability with automation and capacity increase and target asset replacements based on condition and capability to achieve new capacity

goals. Consideration will also be given to alternative solutions such as area station consolidation, voltage conversion and NWA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	0	10,000

RG&E

Distribution Load Relief Program

Line of Business: Electric
Category: Reliability

Scope:

The objective of the Distribution Load Relief Program is to conduct system-wide facility surveys on substations that are overloaded and/or exceed 90% capacity. The study will develop a mitigation strategy (projects) to enhance the condition of these assets, so they do not exceed the Transformer Normal Rating. These comprehensive surveys will include electrical and structural assessments which will be scored against individually weighted categories such as age of equipment, resiliency/flooding impacts, substation Protection & Control (P&C) assessment, substation reliability performance, etc.

For single transformer stations, the transformer loading should not exceed 100% of the Continuous Normal Rating. For normal loading conditions, new customer loads shall not exceed facility capabilities from point of interconnection (POI), including the substation and transmission area (sub-transmission). When the addition of new loads results in overloading of device thermal capacity from POI to substation transformer bank secondary bus, it is recommended by Distribution Planning to start system reinforcements. When the addition of new loads result in circuit capacity or substation bank capacity reaching or exceeding 90%, it is recommended by Distribution Planning to investigate long term strategy (projects) that could involve load shedding or substation upgrades to hold capacity at 90% with the new load.

Reasons and Benefits:

RG&E has currently identified three (3) substation banks that have reached or exceeded 90% of the capacity of their Normal Rating. This program is designed to focus on conducting system-wide facility surveys and pending the outcome focus on a strategy that could involve several solutions involving adding fans, retrofitting upgrades, infield switching to load shed, or retiring smaller substation.

<u>Substations and Preliminary Scope</u>

- Station 71: Substation Transformer Replacement
- Station 215: Substation Transformer Replacement
- Station 174: Needs and Solutions Assessment under Development

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
4,234	600	0	10,000	10,000

RG&E

GMI-Station 168 Service Area Reinforcements

Line of Business: Electric
Category: Reliability

Scope:

The Station 168 Substation project includes the Sectionalizing of the 115 kV Trunk 2 and 4 lines by installing new 115 kV circuit breakers, the replacement of both 115/34.5 kV transformers with larger Load Tap Changer (LTC) banks having a Long Term Emergency (LTE) rating of 100MVA, the expansion of the yard at the 34 kV side of the substation to locate a new control house building with new Gas Insulated Switchgear (GIS) equipment, the relocation of Circuits C704, C736 and C737 terminals in 34kV to allow space for the new 34 kV system and the upgrade of all necessary protection and control schemes in the remote ends affected by the new configuration in Station 168.

Reasons and Benefits:

- Station 168 serves about 72MW of load in the Canandaigua Division of RG&E. Presently, there are low voltage issues under normal conditions in the load areas served by Station 168.
- Additionally, in the event of a contingency involving the loss of either National Grid Trunk #4 or #7 under summer peak or winter peak load conditions, the remaining 115/34.5 kV transformers at Station 168 overloads above its thermal capacity necessitating the dropping of either portions or all load served by Station 168. For the same contingency, and at lower levels of transformer loading, the three 34.5 kV circuits (#736, #737, #704) served from Station 168 suffer submarginal voltage problems.
- Furthermore, the contingency loss of one of the 115/34.5 kV transformers at Station 168 causes thermal overload of the remaining transformer and poses low voltage concerns along circuit #736, #737, #704.
- For a contingency involving the loss of Trunk #4, the calculated exposure to low voltage is 2,628 hours/year (30% of the time), calculated exposure to transformer overload above its normal rating is 1,139 hours/year (13% of the time), calculated exposure to transformer overload above its LTE rating is 438 hours/year (5% of the time), and calculated exposure to transformer overload above its Short Term Emergency (STE) rating is 175 hours/year (2% of the time).

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
11,165	5,015	0	0	0

RG&E

iTOA Implementation

Line of Business: Electric
Category: Reliability

Scope:

This project is the installation of a planned outage management tool for the control centers. ITOA will be integrated with Avangrid's Energy Management and Outage Management Systems and provide an end-end solution for outage planning, approval, and execution.

Reasons and Benefits:

Once implemented, the application will provide the following modules and capabilities:

- Transmission request scheduling
- Distribution request scheduling
- Switching and Tagging
- Permit Management
- Logging
- Automatic Outage Reporting
- ISO communication module
- Reporting and Data Analytics

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
33	32	0	0	0

RG&E

Replace DC Pilot Wire System

Line of Business: Electric
Category: Reliability

Scope:

The purpose of this project is to replace the existing Pilot Wire Protection Systems in RG&E with modern relays using fiber optic communication. The existing Pilot Wire relays communicate through multi-conductor copper cabling throughout Rochester, this will be replaced by expanding the RG&E SONET network and installing direct fiber where appropriate.

Reasons and Benefits:

RG&E's pilot wire system is 60–70 years old and consists of approximately 100 separate pilot wire routes that interconnect many critical substations. Rochester's entire downtown electrical network depends on the pilot wire systems to rapidly isolate faults in the network to provide safe and reliable energy service.

The Pilot Wire Replacement Program will improve the system reliability by replacing the electro-mechanical pilot wire relays currently connected with copper pilot wires, with microprocessor type relays, and migrating the communication to Fiber Optic.

The copper cables have been steadily deteriorating to the point where several of the pilot wire loops have been placed out of service. The pilot wire communication channels are unmonitored and when a failure occurs it can result in overtripping of transmission lines. The pilot wire relays are electromechanical and do not contain event recording that modern microprocessors have so there is no downloadable information from these relays to assist in system event analysis. These relays are obsolete and spare parts are not available. Under these conditions, the reliability of these relays is poor, and results in additional O&M expenses. This project will help to alleviate this condition and increase system reliability.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,903	2,347	2,107	0	0

RG&E

Station 117

Line of Business: Electric
Category: Reliability

Scope:

Station 117 is a 34.5/12.5 & 34.5/4.16 kV substation that has two separate distribution bus sections. The existing 34.5/4.16 kV transformer #1 at Station 117 has experienced overloads and is rated as in fair health as per the latest health and safety assessment. This transformer should be replaced with a larger unit, or a load transfer should be completed. Additionally, this station has limited field tie and N-1 capabilities which negatively affects reliability. This project scope includes the addition of a new 34.5/12.5 kV transformer, a new 12.5 kV GIS and a 12.5 kV voltage conversion to increase the capacity & reliability at the station as well as to address poor asset condition. The scope for this upgrade is listed as follows:

- Upgrade existing 1T (5.25MVA) to a new 22.4 MVA transformer
- Installation of new 34.5 and 12 kV Gas-Insulated Switchgear (GIS) and control house
- 12.5 kV voltage conversion on 4 kV distribution circuits

Reasons and Benefits:

- Station 117's existing transformer #1, a 5.25MVA, has experienced repeated overloads and should be replaced or load should be transferred to another transformer. This transformer feeds three (3) distribution circuits that serve 4,100 customers.
- The latest health assessment of this transformer has it listed it as in poor health. Failure of the transformer will directly impact the customer as there are inadequate field tie capabilities at this station.
- The proposed upgrades will replace the existing 5.25MVA with a new 22.4MVA transformer which will match the existing transformer 34.5/12.5 kV.
- In addition, it will strengthen the surrounding 12 kV network by enhancing N-1 capacity to adjacent circuits that are currently without adequate circuit ties during high demand periods.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
269	291	312	335	176

RG&E

Station 210 - Circuit 207

Line of Business: Electric
Category: Reliability

Scope:

Substation 210 supplies the towns of Sodus and Sodus Point and accounts for approximately 5 MW of net distribution load. This is a distribution substation that has one 34.4/4.16 kV transformer installed in 1966 and is loaded to 90.6% (2020) of the rating. There are four 4.16kV distribution circuits supplied from this substation, Circuits 207, 208, 225 and 229.

Reasons and Benefits:

System needs:

- T1 transformer overload.
- 4.16 kV circuit voltage violations.
- Limited N-1 Back-Up Tie Capability and N-1 transformer.
- Upgrade current T1 transformer to 14 MVA
- Convert S/S transformer to 34.5/12.47 kV
- C208 partially convert to 12 kV (3 miles) + regulators
- 12kv to 4kv Ratio Banks installation
- Decommission old Substation

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,098	0	0	0	0

RG&E

Station 210 Modernization

Line of Business: Electric
Category: Reliability

Scope:

The station 210 project is a full rebuild of the existing 34.5/4.8 kV substation with a new 34.5/12.5 kV substation on adjacent property. A comprehensive needs and solutions assessment was completed which identified voltage issues on the existing 4 kV network as well as asset condition issues on the 4 kV bus i.e. (The 4 kV bus currently has no breakers which were removed as a part of previous project). This project will deliver a new control house, transformer, circuit upgrades (from 4 kV to 12 kV), and Gas Insulated Switchgear (GIS)

Reasons and Benefits:

4 kV voltage violations have been identified along with the modified station topology. The upgrade of station 210 will restore its original functionality and address all reliability, distribution, and asset condition needs. As well as provide for a growing demand and the ability to operate the substation remotely.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
7,418	897	0	0	0

RG&E

Station 46 - Circuit 261

Line of Business: Electric
Category: Reliability

Scope:

Interconnection Project:

Distribution scope includes the 4 kV to 12 kV conversion of the station's six (6) distribution circuits which serve approximately 6,356 residential and commercial customers. Convert 4 kV distribution equipment, potentially 600 distribution transformers and 57 miles of circuit conductors to be replaced or re-rated to 15 kV.

Reasons and Benefits:

Replacement of 6 circuits will allow for improved ratings on voltage output along with increased reliability on power emanating from the station. The conversion of distribution equipment to 15 kV spare will serve extra load growth in the area for years to come.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
61	3,189	1,294	0	0

RG&E

Station 46 - Replace #1 #3 Transf. Banks

Line of Business: Electric
Category: Reliability

Scope:

This project calls for the design and construction of two (2) new 22.4MVA Load Tap Changer (LTC) 4T & 5T transformers for installation, new station service transformers, new control house with 34&12kV Gas-Insulated Switchgear (GIS), Remote Terminal Unit (RTU), Human-Machine Interface (HMI), Supervisory Control and Data Acquisition (SCADA) communication panels, AC/DC panels and NiCad battery system. Distribution scope includes the 4 kV to 12 kV conversion of the station's six (6) distribution circuits serving about 6,356 residential and commercial customers. Convert 4 kV distribution equipment, potentially 600 distribution transformers and 57 miles of circuit conductors to be replaced or re-rated to 15 kV.

Reasons and Benefits:

- The transformers are aging units, #1T was placed in-service in 1951, 70 years; #3T was placed in service in 1958, 63 years.
- The loading on the existing transformer banks #1 and #3 at Station 46 has reached 117% and 103% of their ratings during the summer peak of 2022.
- T1 has been overloaded (more than 100% of its normal capacity) the last 4 years (2019-2022) while T3 has being overloaded the past two years (2021 and 2022).
- Loss of either transformer places the sister unit well above its Long-Term Emergency (LTE) rating, which conflicts with Distribution Planning Criteria.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
4,939	1,435	0	0	0

RG&E

Station 49 4KV to 12KV Upgrade

Line of Business: Electric
Category: Reliability

Scope:

Convert the 4.16kV bus to 12.47kV. Replace transformers 1 & 2 with two 22.4MVA dual voltage transformers and convert 6 distribution circuits from 4.16kV to 12.47KV. Reduce/Eliminate exit conductor adjacency and increase conductor size. Mitigate circuit issues and include automation / resiliency improvements.

Reasons and Benefits:

Heavy demand on the 4 kV network at station 49 has led to compromise of N-1 between the station 4 kV transformers. Projected demand will increase the transformer load to 70% to 81% of transformer capacity respectively in five years.

In addition, five of the six 4 kV circuits are projected to be overloaded during summer peak demand by 110%-122%. Five of the six 4 kV circuits have performance issues (device overloading, voltage, and circuit balance problems). Substation 4 kV transformer and circuit capacities need to be increased to eliminate the risk of overload, restore N-1 redundancy in the station and between the circuits and eliminate circuit performance issues.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	0	5,000

RG&E

Transmission Reinforcement Program

Line of Business: Electric
Category: Reliability

Scope:

This Program is to address needs identified on the RG&E Transmission System.

In 2023 RG&E Transmission Planning completed a needs assessment on the local transmission system and identified over forty-five loss of load, thermal, and voltage criteria violations that can directly affect our customers.

Based on the quantity of identified needs, RG&E expects that a significant investment is needed to reinforce the local transmission systems so that they meet the RG&E Transmission Planning loss of load, thermal, and voltage criteria.

Development of comprehensive solutions for the identified needs, coupled with asset condition assessments, will begin in 2023 with many solution designs expected to be finalized by 2024. Solution development and project execution will be prioritized based on several factors such as customer benefit, asset health, and solution complexity.

Reasons and Benefits:

The 2023 RG&E Transmission Planning local transmission system needs assessment identified criteria violations throughout the RG&E local transmission systems. A high-level summary of local needs is shown below.

Local Transmission Violations (N-1 only)			
Company	Loss of Load	Thermal / Voltage	Total
RGE	24	20	44

There are at least 24 loss of load criteria violations. A summary descriptive statistic of single contingency exposure on transmission system that violates loss of load criteria is presented below:

Descriptive Statistic	MW	Customer Count	Miles
Min	10.3	717	0.34
Max	43.7	10,263	35.1
Mean	19.2	4,170	9.53
Median	17.4	4,140	6.15

Solution Alternatives:

Solutions to criteria violations on the transmission system can take a variety of forms and generally fall into a few main categories:

- Comprehensive Solutions – solutions that account for more than one type of need (i.e., thermal, voltage, asset health, and/or loss of load)
- Low Complexity Solutions – solutions that address a single need without considering other nearby needs.
- Non-Wires Alternative (NWA) Solutions – solutions that can be used to defer the need for a comprehensive solution.

Prior to determining the preferred solution, all factors, including other nearby needs, will be considered to identify holistic area solutions.

Risk of No Action:

The RG&E Transmission Planning criteria is designed to ensure that customers receive adequate electric supply under conditions that can be reasonably expected to occur. If the transmission system does not meet these criteria, there are risks including unnecessary loss of customer load and an increased likelihood of equipment failure.

This program will include projects that:

- Improve customer reliability,
- Address thermal, voltage and loss of load criteria violations,
- Improve transmission system performance.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,000	0	0	7,000	15,000

RG&E

Webster Area Projects

Line of Business: Electric
Category: Reliability

Scope:

The Webster Area project consists of the full rebuild of three substations i.e. (Station 73, Station 55 and Station 62), brownfield upgrades at three substations (Station 420, 42 and 420), the rebuild of four 34.5 kV lines and the addition of two new 34.5 kV lines (Circuits 813 and 812).

Reasons and Benefits:

Benefits:

A Comprehensive Area study was conducted to address all reliability, distribution and asset condition needs in this area. A comprehensive reliability study was performed in 2019 which revealed thermal and loss of load violations on numerous lines. The Line 778 had a N-1 and N-0 thermal overloads, Line L735 had N-1 thermal overloads, Line 772 had N-1 thermal overloads, Line 726 had N-1 thermal overloads, Lines 780 and 740 both had N-1 loss of load violations. All these violations were identified when more than 25 MW of load could be lost if a thermal overload were identified.

A comprehensive needs and solutions assessment were performed to address these reliability needs while also addressing asset condition needs. The station 62 project requires a full rebuild to allow for the rebuild of the 34.5 kV bus in accordance with the preliminary preferred solution, as well as Station 55 and Station 73. Station 73 also includes a voltage conversion of approximately 12.5 miles to resolve voltage issues on the existing distribution circuits.

A total of 12 projects are required to address all these needs and all these improvements allow for increased reliability on the 34.5 kV system, which was shown to have serious reliability concerns.

Risks:

This project resolves the risk of thermal and loss of load in the study area. Risk of No Action includes significant risk of thermal and loss of load would be allowed to remain on the system affecting system reliability.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,662	8,735	5,192	17,638	12,487

RG&E

Webster Area Substation

Line of Business: Electric
Category: Reliability

Scope:

This project was originally a part of Webster Area Solutions Project- the substation portion is being broken out for better project management to the substation's teams. This work consists of the full rebuild of Stations 55, 73, 62 and brownfield upgrades at stations 420, and station 42. Brownfield modifications help maximize efficiency, maintain asset integrity and extend the life of assets at the substations.

Reasons and Benefits:

A comprehensive needs and solutions assessment were performed to address these reliability needs while also addressing asset condition needs. The station 62 project requires a full rebuild to allow for the rebuilding of the 34.5 kV bus in accordance with the preliminary preferred solution, as well as Station 55 and Station 73. Station 73 also includes a voltage conversion of approximately 12.5 miles to resolve voltage issues on the existing distribution circuits. Brownfield modifications help maximize efficiency, maintain asset integrity and extend the life of assets at the substations.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
6,278	11,611	17,910	14,753	15,000

Electric Resiliency

NYSEG

DSIP - Grid Automation 242
Resiliency Automation, Hardening And Topology 245
SCADA Automation 247
Trip Saver 249

NYSEG

DSIP - Grid Automation

Line of Business: Electric
Category: Resiliency

Scope:

The Distribution Automation program is intended to provide smart devices on all parts of the electric distribution system. A system fully metered, monitored, and controlled provides integrated system operations, access for competing providers, and enhanced customer services that maximize benefits. This program will include only the purchase and installation of devices that have full communications and control capabilities. All new distribution equipment will be “smart.” NYSEG also has a strategic plan to deploy digital Remote Terminal Units (RTUs) to provide for status and control of smart devices within substations and on the distribution system. In short, NYSEG will continue to automate its entire system, consistent with all applicable standards and requirements.

The Distribution Network will be fully automated through a deployment of digital devices that will reduce customers to 300 between digital devices per the distribution planning criteria, enabling 100% remote operation & supervision capabilities as well as Automatic Grid Restoration (AGR) functionality implementation.

Reasons and Benefits:

- Fundamental objective is to improve system SAIFI reliability by enabling remote device operation through Energy
- Control Center (ECC) SCADA control
- Provides better quality data for distribution analyses (ability to gather data remotely)
- Improves reliability in a safe, efficient, and cost-effective way

There is a trend of increasing the System Average Interruption Frequency Index (SAIFI) that needs to be addressed and corrected. In recent years NYSEG has not accomplished the regulatory targets regarding the reliability index.

Without smart devices every outage resolution follows the next steps that affect the reliability due to the manual fault location and isolation (time consuming):

Fault Location:

- Faults occur but there is no information until a customer calls.
- Crews are sent to the site to investigate and isolate the fault. Meanwhile all customers in the affected feeder are affected by outage.
- Time is affected by the crew's location: longer distances mean longer travel time.

Fault Isolation:

- Once crews have identified the fault, they proceed to manually reconfigure the network.
- Meanwhile all customers in the affected feeder are still affected by outage

Fault Repair:

- Once crews have identified the fault, they can more quickly proceed to repair.

Currently there is not standard amounts of customers between distribution protective devices so an outage in a circuit could create a shutdown of the entire circuit and affect all the customers on that line. Reducing customer counts to 500 between protective devices will reduce the number of customers affected by an unexpected outage in a circuit.

Selected Solution Rationale: Digital devices were selected because of the cost saving and benefits of being able to operate smart and remote, monitoring and detection of faults on a distribution line.

Risk of No Action: Increase the number of customers interrupted and customer minutes interruption per the degradation of the existing equipment. The reliability will get worse.

Project Benefits: The proposed solution based on automated digital devices to deploy in the Medium Voltage Distribution Network (Reclosers, Supervisory Control And Data Acquisition (SCADA) Switches and Sectionalizer) will allow to Improve Medium Voltage network outage management by reducing the impact, duration and cost of outage events across the steps of an outage resolution: fault location, fault isolation and fault repair. This means reduction of customer interrupted and customer minutes interruption, so the reliability will improve (SAIFI).

Reduce total operating expenses as the devices could be operated remotely and the implementation of the Automatic Grid Restoration (AGR).

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
25,311	30,310	15,848	19,810	24,762

NYSEG

Resiliency Automation, Hardening And Topology

Line of Business: Electric
Category: Resiliency

Scope:

NYSEG's 2024-2028 Distribution Resiliency Plan ("Resiliency Plan") will enhance resiliency and reliability on Worst Performing Circuits across the NYSEG service territory. These circuits were identified by the Electric Distribution Planning management team as having deficiencies and performance issues that negatively impact service reliability to our customers. The Resiliency Plan is designed to enhance the resiliency of our electric distribution system in response to more intense and more frequent storms. This is driven by a consensus among our Companies, our customers, state policy makers, and regulators, about the importance of grid resiliency given the number and severity of storms over the past three years.

NYSEG's resiliency programs sit alongside numerous other capital and O&M programs that our Companies use to ensure the reliable operation of the transmission and distribution systems. These include betterments, major projects, grid modernization programs such as distribution automation and smart grid, and vegetation management. The Resiliency Plan focuses on three critical areas.

1. Enhanced Vegetation Management

Maintaining standard clearances using cycle trimming is effective for keeping trees and branches from getting too close to power lines under most conditions. However, during severe storms, high winds and the increased weight of ice, snow, and even wet leaves, can be enough to cause large branches to break, and trees to topple. The Enhanced Vegetation Management (EVM) program is designed to reduce the likelihood that storm-damaged trees will contact power lines. This is done in two ways:

- Enhanced clearances with ground-to-sky trimming
- Enhanced tree removal targeting more hazard trees to prevent the damage and outages they can cause during storms.

2. Hardening

A significant portion of NYSEG's outages are caused by trees and large branches falling into lines with enough force to break conductors and wood poles. The Hardening program in the Resiliency Plan targets two improvements on vulnerable circuits:

- Replacement of bare overhead conductor with stronger, contact-resistant tree wire
- Replacement of weakened wood poles with stronger ones that can withstand higher physical loads.

3. Topology, with Automation

NYSEG has many long, radial distribution circuits. One tree can knock out power for many hours to hundreds of customers until crews can make the repair. The Topology, with Automation, program enables reconfiguration and sectionalizing of circuits so that an outage can be isolated while service is maintained to a portion of customers. This program focuses in two areas:

- Adding feeder ties between distribution circuits to enable load transfers
- Replacing manual switches with automated reclosers, Supervisory Control and Data Acquisition (SCADA) switches, and Trip Savers to enable sectionalizing and faster restoration for customers.

Selected Solution Rationale:
Rank and Prioritize Worst Performing Circuits:

- Based on SAIFI data (3 Year Weighted Average) * including major storms
- Prioritize circuits with SAIFI above 2.2 and individual SAIFI contribution lower than 0.14%
- Consider feedback from Operations and Field Evaluations

Reasons and Benefits:

This project resolves the risk of loss of load in the study area. Benefits include value for customers from avoided interruptions, and value for the utility in the form of avoided restoration costs and replacement of damaged distribution infrastructure.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
26,929	28,006	28,006	35,008	43,760

NYSEG

SCADA Automation

Line of Business: Electric
Category: Resiliency

Scope:

The goal of this program is to install a Remote Terminal Unit (RTU) in all substations that do not currently have an RTU, as well as integrate all the bays into our master Supervisory Control and Data Acquisition (SCADA) system of those stations where there is an RTU is already in service. This program covers the replacement of electromechanical relays with digital relays to get the bays digitalized. The addition of supervisory control and data acquisition in the substations injunction with the installation of digital relays will allow for improved visibility and remote control, proper system protection coordination and outage assessment. Which in turn will result in quicker response and improved Customer Average Interruption Duration Index (CAIDI) and can also improve System Average Interruption Frequency Index (SAIFI) performance over the longer term. Providing remote control capabilities will contribute to increasing the safety of workers while operating the switchgear, preventing them from performing manual commands.

Reasons and Benefits:

There are approximately 437 substations at NYSEG. Substations fall into three categories in terms of Automation based on the remote control and indication capabilities of SCADA over the substation's bays.

1. Fully Automated: A substation will be considered as fully automated if SCADA has control over more than 95 % of the bays.
2. Partially Automated: A substation will be considered as partially automated if between 10% and 95 %of the bays are integrated into SCADA
3. No automated: A substation will be considered as no automated if SCADA has control of less than 10 % of the bays. Substations will no RTU installed will fall under this category.

If substation automation study is done at the circuit breaker, we can conclude that SCADA has no remote-control capabilities over the ~44% of the substation circuit breakers in the distribution level.

The goal of this program is to fully automate substations by replacing the

electromechanical relays with digital relays to allow for improved digitalization and remote control.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,579	7,601	5,179	16,832	21,039

NYSEG

Trip Saver

Line of Business: Electric
Category: Resiliency

Scope:

The NYSEG Trip Saver Program endeavors to bolster grid reliability and minimize service disruptions by deploying Trip Saver devices on selected distribution circuits. Through careful circuit selection based on historical outage data and load analysis, the program aims to install these devices to automatically isolate and restore power during temporary faults, thus reducing outage durations and enhancing customer satisfaction. The program encompasses various components including device procurement, installation planning, testing, and commissioning, along with training sessions for field personnel and customer awareness initiatives. Resource allocation, quality assurance measures, performance monitoring, stakeholder engagement, and documentation are integral aspects ensuring the program's success. By adhering to these guidelines, the NYSEG Trip Saver Program seeks to implement innovative solutions that elevate grid reliability and customer service across targeted distribution circuits

Reasons and Benefits:

The NYSEG Trip Saver Program is instrumental for several reasons and offers numerous benefits. Firstly, by deploying Trip Saver devices on distribution circuits, the program aims to automatically isolate and restore power during temporary faults, thereby reducing outage durations and minimizing service disruptions for customers. This leads to enhanced grid reliability and customer satisfaction. Additionally, the program helps improve operational efficiency by reducing the need for manual intervention during fault detection and restoration processes, enabling quicker response times and optimizing resource utilization. Moreover, Trip Saver technology contributes to increased safety for field personnel by minimizing exposure to hazardous conditions during outage restoration activities. Overall, the program's implementation aligns with NYSEG's commitment to delivering reliable and resilient electrical service to its customers while improving operational effectiveness and safety standards.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,357	0	0	4,196	5,245

Electric Resiliency

RG&E

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Resiliency Automation, Hardening And Topology 253
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RG&E

DSIP - Grid Automation

Line of Business: Electric
Category: Resiliency

Scope:

The Distribution Automation program is intended to provide smart devices on all parts of the electric distribution system. A system fully metered, monitored, and controlled provides integrated system operations, access for competing providers, and enhanced customer services that maximize benefits. This program will include only the purchase and installation of devices that have full communications and control capabilities. All new distribution equipment will be “smart.” RG&E also has a strategic plan to deploy digital Remote Terminal Units (RTUs) to provide for status and control of smart devices within substations and on the distribution system. In short, RG&E will continue to automate its entire system, consistent with all applicable standards and requirements.

The Distribution Network will be fully automated through a deployment of digital devices that will reduce customers to 500 between digital devices per the distribution planning criteria, enabling 100% remote operation and supervision capabilities as well as Advance Restoration Automation (ARA) functionality implementation.

Reasons and Benefits:

There is a trend of increasing the System Average Interruption Frequency Index (SAIFI) that needs to be addressed and corrected. In recent years RG&E has not accomplished the regulatory targets regarding the reliability index.

Without smart devices every outage resolution follows the next steps that affect the reliability due to the manual fault location and isolation (time consuming):

Fault Location:

- Faults occur but there is no information until a customer calls.
- Crews are sent to the site to investigate and isolate the fault. Meanwhile all customers in the affected feeder are affected by outage.
- Time is affected by the crew's location: longer distances mean longer travel time.

Fault Isolation:

- Once crews have identified the fault, they proceed to manually reconfigure the network.
- Meanwhile all customers in the affected feeder are still affected by outage.

Fault Repair:

- Once crews have identified the fault, they can more quickly proceed to repair.

Currently there is not standard amounts of customers between distribution protective devices so an outage in a circuit could create a shutdown of the entire circuit and affect all the customers on that line. Reducing customer counts to 500 between protective devices will reduce the number of customers affected by an unexpected outage in a circuit.

Selected Solution Rationale: Digital devices were selected because of the cost saving and benefits of being able to operate smart and remote, monitoring and detection of faults on a distribution line.

Risk of No Action: Increase the number of customers interrupted and customer minutes interruption per the degradation of the existing equipment. The reliability will get worse.

Project Benefits: The proposed solution based on automated digital devices to deploy in the Medium Voltage Distribution Network (Reclosers, Supervisory Control And Data Acquisition (SCADA) Switches and Sectionalizer) will allow to Improve Medium Voltage network outage management by reducing the impact, duration and cost of outage events across the steps of an outage resolution: fault location, fault isolation and fault repair. This means reduction of customer interrupted and customer minutes interruption, so the reliability will improve (SAIFI).

Reduce total operating expenses as the devices could be operated remotely as well as the implementation of the Advance Restoration Automation(ARA).

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,903	2,495	2,545	5,145	5,125

RG&E

Resiliency Automation, Hardening And Topology

Line of Business: Electric
Category: Resiliency

Scope:

Rochester Gas & Electric's (RG&E's) 2024-2028 Distribution Resiliency Plan ("Resiliency Plan") will enhance resiliency and reliability on Worst Performing Circuits across the RG&E service territory. These circuits were identified by the Electric Distribution Planning management team as having deficiencies and performance issues that negatively impact service reliability to our customers. The Resiliency Plan is designed to enhance the resiliency of our electric distribution system in response to more intense and more frequent storms. This is driven by a consensus among our Companies, our customers, state policy makers, and regulators, about the importance of grid resiliency given the number and severity of storms over the past three years.

RG&E's resiliency programs sit alongside numerous other Capital and O&M programs that our Companies use to ensure the reliable operation of the transmission and distribution systems. These include betterments, major projects, grid modernization programs such as distribution automation and smart grid, and vegetation management. The Resiliency Plan focuses on three critical areas.

1. Enhanced Vegetation Management

Maintaining standard clearances using cycle trimming is effective for keeping trees and branches from getting too close to power lines under most conditions. However, during severe storms, high winds and the increased weight of ice, snow, and even wet leaves, can be enough to cause large branches to break, and trees to topple. The Enhanced Vegetation Management (EVM) program is designed to reduce the likelihood that storm-damaged trees will contact power lines. This is done in two ways:

- Enhanced clearances with ground-to-sky trimming
- Enhanced tree removal targeting more hazard trees to prevent the damage and outages they can cause during storms.

2. Hardening

A significant portion of RG&E's outages are caused by trees and large branches falling into lines with enough force to break conductors and wood poles. The Hardening program in the Resiliency Plan targets two improvements on vulnerable circuits:

- Replacement of bare overhead conductor with stronger, contact-resistant tree wire
- Replacement of weakened wood poles with stronger ones that can withstand higher physical loads.

3. Topology, with Automation

RG&E has many long, radial distribution circuits. One tree can knock out power for many hours to hundreds of customers until crews can make the repair. The Topology, with Automation, program enables reconfiguration and sectionalizing of circuits so that an outage can be isolated while service is maintained to a portion of customers. This program focuses in two areas:

- Adding feeder ties between distribution circuits to enable load transfers
- Replacing manual switches with automated reclosers, Supervisory Control and Data Acquisition (SCADA) switches, and Trip Savers to enable sectionalizing and faster restoration for customers.

Selected Solution Rationale:
Rank and Prioritize Worst Performing Circuits:

- Based on SAIFI data (3 Year Weighted Average) * including major storms
- Prioritize circuits with SAIFI above 2.2 and individual SAIFI contribution lower than 0.14%
- Consider feedback from Operations and Field Evaluations

*Weighted values taken from reliability calculator

Risk of No Action:

Significant risk of loss of load during storms would be allowed to remain on the system affecting system reliability and power quality to customers.

Reasons and Benefits:

This project resolves the risk of loss of load in the study area. Benefits include value for customers from avoided interruptions, and value for the utility in the form of avoided restoration costs and replacement of damaged distribution infrastructure.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
9,700	10,194	10,984	13,234	13,129

RG&E

SCADA Automation

Line of Business: Electric
Category: Resiliency

Scope:

The goal of this program is to install a remote terminal unit (RTU) in all substations that do not currently have an RTU, as well as integrate all the bays into our master supervisory control and data acquisition (SCADA) system of those stations where there is an RTU is already in service. The program covers the replacement of electromechanical relays with digital relays to get the bays digitalized. The addition of supervisory control and data acquisition in the substations injunction with the installation of digital relays will allow for improved visibility and remote control, proper system protection coordination and outage assessment. which in turn will result in quicker response and improved Customer Average Interruption Duration Index (CAIDI) and can also improve System Average Interruption Frequency Index (SAIFI) performance over the longer term. Providing remote control capabilities will contribute to increasing the safety of workers while operating the switchgear, preventing them from performing manual commands.

Reasons and Benefits:

There are approximately 163 substations at RG&E. Substations fall into three categories in terms of Automation based on the remote control and indication capabilities of SCADA over the substation's bays.

A description of the substation automation status is as follows:

1. Fully Automated: A substation will be considered as fully automated if SCADA has control over more than 95 % of the bays.
2. Partially Automated: A substation will be considered as partially automated if between 10% and 95 %of the bays are integrated into SCADA
3. No automated: A substation will be considered as no automated if SCADA has control of less than 10 % of the bays. Substations will no RTU installed will fall under this category.

If substation automation study is done at the circuit breaker, we can conclude that SCADA has no remote-control capabilities over the ~45% of the substation circuit breakers, in the distribution level.

The goal of this program is to fully automate substations by replacing the

electromechanical relays with digital relays to allow for improved digitalization and remote control.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,328	4,482	4,511	4,709	0

RG&E

Trip Saver

Line of Business: Electric
Category: Resiliency

Scope:

The RG&E Trip Saver Program endeavors to bolster grid reliability and minimize service disruptions by deploying Trip Saver devices on selected distribution circuits. Through careful circuit selection, based on historical outage data and load analysis, the program aims to install these devices to automatically isolate and restore power during temporary faults, thus reducing outage durations and enhancing customer satisfaction. The program encompasses various components including device procurement, installation planning, testing, and commissioning, along with training sessions for field personnel and customer awareness initiatives. Resource allocation, quality assurance measures, performance monitoring, stakeholder engagement, and documentation are integral aspects ensuring the program's success. By adhering to these guidelines, the RG&E Trip Saver Program seeks to implement innovative solutions that elevate grid reliability and customer service across targeted distribution circuits.

Reasons and Benefits:

The RG&E Trip Saver Program is instrumental for several reasons and offers numerous benefits. Firstly, by deploying Trip Saver devices on distribution circuits, the program aims to automatically isolate and restore power during temporary faults, thereby reducing outage durations and minimizing service disruptions for customers. This leads to enhanced grid reliability and customer satisfaction. Additionally, the program helps improve operational efficiency by reducing the need for manual intervention during fault detection and restoration processes, enabling quicker response times and optimizing resource utilization. Moreover, Trip Saver technology contributes to increased safety for field personnel by minimizing exposure to hazardous conditions during outage restoration activities. Overall, the program's implementation aligns with RG&E's commitment to delivering reliable and resilient electrical service to its customers while improving operational effectiveness and safety standards.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,226	5,000	5,000	6,250	7,813

Electric Compliance

NYSEG

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BES - Ten Mile River 266
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BES - Border City 270
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BES - Coopers Corners 274
BES - East Norwich 275
BES - Eel Pot 276
BES - Erie St 277
BES - Frog Valley 279
BES - Fuller Hollow / Langdon Rd 280
BES - Klinekill 282
BES - Robinson Rd 283
BES - Sleight Rd 284
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NYSEG

BES Program - FERC Compliance

Line of Business: Electric
Category: Compliance

Scope:

The NYSEG Bulk Electric System (BES) program's objective is to identify and address system deficiencies on the portion of the BES owned by AVANGRID in compliance with mandatory reliability standards. The criteria and system performance requirements for the BES are provided in the North American Electric Reliability Corporation's (NERC) standard TPL-0011. Each transmission owner has an obligation to demonstrate through planning studies that its portion of the BES meets all mandatory NERC requirements. In cases where unacceptable reliability performance is detected, a documented Corrective Action Plan showing how these deficiencies will be mitigated must be developed.

To achieve compliance with NERC Transmission Planning (TPL) requirements, a comprehensive planning assessment was performed, initially in 2014 and then again in 2018 to incorporate a number of changes with the most significant being a decline in forecasted load levels. The load levels used in the 2018 study match the forecasts provided in the New York Independent System Operator's (NYISO) most recent 2018 Load and Capacity Data or "Gold Book" update three. Since the load forecast reductions were significant, AVANGRID elected to include a full re-assessment of all previously recommended solutions to determine if they were still needed in their original form or if a refined or new solution could more effectively address the system needs.

Subsequently, in 2021 a Climate Leadership and Community Protection Act (CLCPA) needs, and solutions assessment study was performed to assess AVANGRID's long term capital plan projects across its New York service territory (i.e., NYSEG and RG&E). The study covered projects that are mature, immediately actionable, and beneficial to the integration of renewable resources in support of New York's year 2030 climate policy objectives.

Conclusions of this study activated further reassessment of all previously recommended solutions of BES program and transferring of several BES projects to CLCPA program due to similar or equal solution needs. Although the primary focus of this program is to address BES reliability deficiencies, some of the recommended solutions have also been designed to mitigate asset condition and local reliability deficiencies at the same substation locations where significant BES upgrades are being recommended. This approach ensures that a comprehensive and cost-effective solution is developed.

Reasons and Benefits:

The 2018 AVANGRID BES study and BES re-assessment with 2021 CLCPA study confirmed the need for a number of system upgrades across the NYSEG system. These are shown by the Project Identifiers in the red text on Figure 1 with each of the Project ID's referenced in NY BES program project list in Table 1.

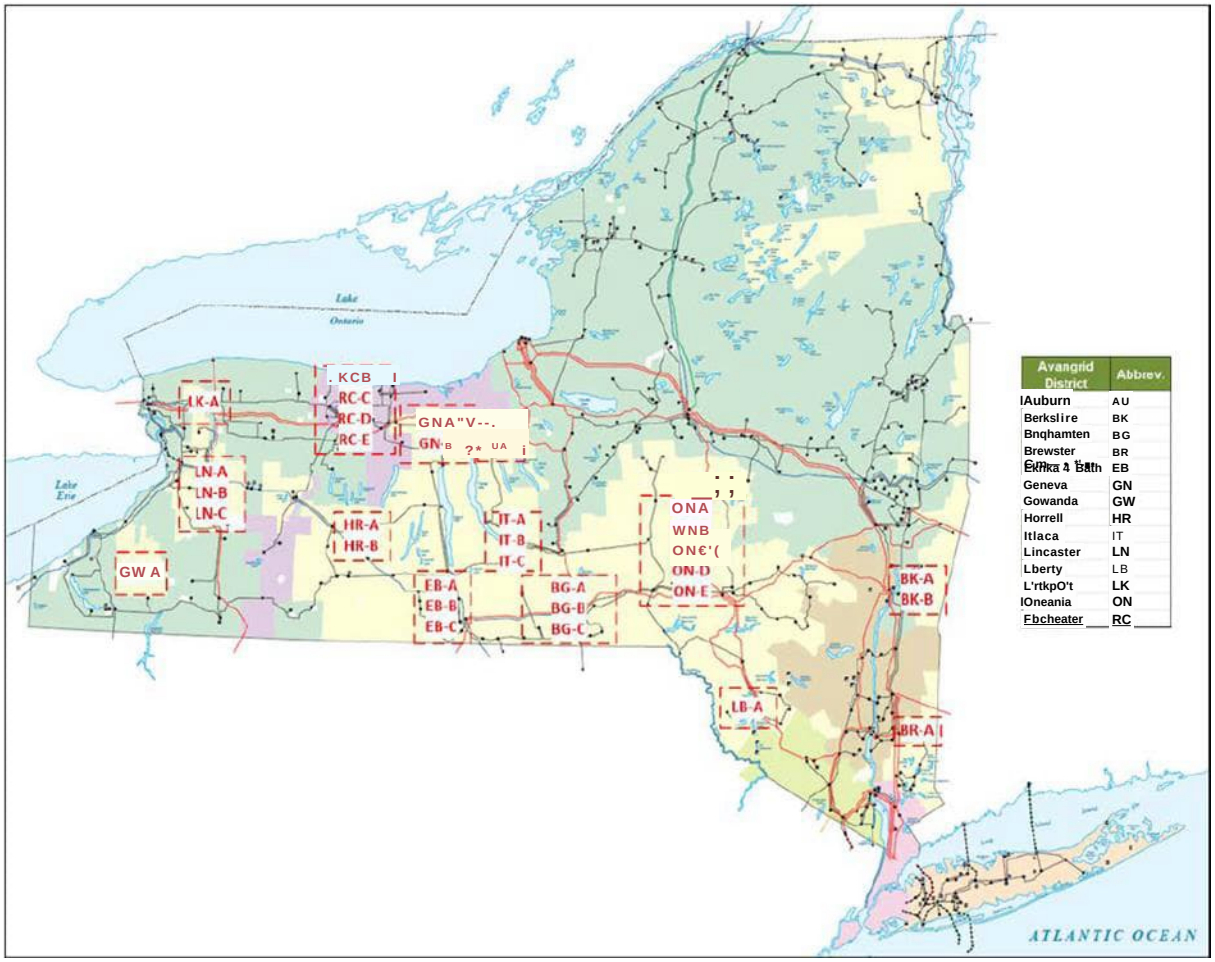

Figure 1. – NYSEG/RGE BES Program Project Map

Project ID	*OPCO*	*Project Name*	*Project Status*	*ISD*	*Project Details*
LN-A	NYSEG	Big Tree	IP3	2022	Exhibit __ (CEE-R4)
GN-A	NYSEG	Border City	IP2	2028	Exhibit __ (CEE-R5)
LB-A	*NYSEG*	*Cooper's Corners*	*IP2*	*2027*	*Exhibit __ (CEE-R9)*
LN-B	*NYSEG*	*Erie Street*	*IP3*	*2026*	*Exhibit __ (CEE-R12)*
ON-D	*NYSEG*	*Fraser / Delhi*	*IP3*	*2025*	*Exhibit __ (CEE-R14)*
GW-A	*NYSEG*	*Frog Valley*	*IP2*	*2025*	*Exhibit __ (CEE-R15)*
BG-B	*NYSEG*	*Fuller Hollow/ Langdon Road*	*IP2*	*2031*	*Exhibit __ (CEE-R16)*
RC-D	*RGE*	*Station 127*	*IP3*	*2024*	*Exhibit __ (CEE-R17)*
BK-A	*NYSEG*	*Klinekill*	*IP2*	*2028*	*Exhibit __ (CEE-R19)*
RC-C	*RGE*	*Line 947*	*IP2*	*2027*	*Exhibit __ (CEE-R20)*
RC-B	*RGE*	*Line 949*	*IP2*	*2026*	*Exhibit __ (CEE-R21)*
IT-A	*NYSEG*	*Line 981*	*IP2*	*2024*	*Exhibit __ (CEE-R23)*
GN-B	*NYSEG*	*Sleight Rd*	*IP2*	*2025*	*Exhibit __ (CEE-R27)*
RC-E	*RGE*	*Station 56*	*IP3*	*2023*	*Exhibit __ (CEE-R28)*
BR-A	*NYSEG*	*Ten Mile River*	*IP2*	*2035*	*Exhibit __ (CEE-R30)*
EB-C	*NYSEG*	*West Erie*	*IP2*	*2028*	*Exhibit __ (CEE-R32)*

Table 1. – BES Program Projects List

An increased risk of customer outages and an increased duration of these outages may be expected should no action is taken.

This program provides a comprehensive assessment of BES reliability deficiencies with mandatory reliability standards and presents the State with an opportunity to simultaneously solve numerous reliability, resiliency, and asset condition issues. Please refer to relevant exhibits for specific project details.

NYSEG

BES - Big Tree Road

Line of Business: Electric
Category: Compliance

Scope:

Big Tree Substation is an existing air insulated 115/34.5kV substation located on Dorchester Road in Orchard Park Township, NY, with two (2) existing 115kV lines namely Davis Rd (line 904) and Langner Rd (Line 903) and connected to a 34.5kV main & transfer bus scheme thru two (2) 40/53/66(74) MVA 115kV/34.5kV Delta-Wye transformers designated as Bank #1 & Bank #2. The 34.5 kV bus feeds the following six (6) loads:

- Line 522 (Armor)
- Line 523 (Erie Co)
- Line 526 (Orchard Park)
- Line 527 (Gardenville)
- CIRC 528
- CIRC 539

As part of the work proposed in South Lancaster Alternative 1 New York BES TLP Solutions Study, it is proposed that the 115kV bus will be rebuilt as three (3) bay breaker and a half (BAAH) arrangement with nine (9) 3000A 145kV circuit breakers and twenty-eight (28) motorized disconnect switches. National Grid Line 151 will be cut into two separate lines and terminated to the new BAAH arrangement. New line section from Big Tree to Cobble Hill will be renamed as Line 733, and North side termination on same line will be renamed as Line 902. The existing transformer banks #1 & #2 will be relocated to the south side of the new BAAH yard. The LV side of the two transformers will be connected to the existing 34.5kV substation yard via motorized disconnect switches, potheads and 35kV U/G cable. Existing two 115 kV capacitor banks and related circuit breakers will be relocated in the new BAAH yard.

Reasons and Benefits:

In 2018 Transmission Planning performed a comprehensive NERC TPL assessment. Faults on 115 kV lines in N-1-1 conditions produced voltage collapse at Big Tree Substation and the southern Lancaster 34.5 kV network. Rebuilt of the 115 kV yard in a 3 bay - BAAH configuration with the addition of an independent 115 kV source (National Grid Line 151) will increase reliability and solve the voltage collapse in the 34.5 kV network for N-1-1 condition.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
66	0	0	0	0

NYSEG

BES - Ten Mile River

Line of Business: Electric
Category: Compliance

Scope:

In 2018 Transmission Planning performed a comprehensive NERC TPL assessment. The Pawling 115/46 kV substation is the predominant feed source into the northern region of the 46 kV network in Brewster. Any contingency event which results in the loss of 115/46 kV transformation at Pawling can result in voltage collapse in the surrounding area. The following is the scope of work for this project:

- Build a new 115 kV Line from Pleasant Valley to Ten Mile River (16 miles)
- Build a new 115 kV line termination at Pleasant Valley and Ten Mile Substations
- Install a new 115/46 kV transformer at Ten Mile River
- Install two 46 kV breakers on the existing 46 kV lines going in and out of Ten Mile River
- Install one 46 kV breaker at the existing Ten Mile River distribution transformer
- Replace two 12 kV breakers at Ten Mile River

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) and Rochester Gas & Electric (RGE) must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
48	50	54	729	1,753

NYSEG

BES - L981

Line of Business: Electric
Category: Compliance

Scope:

In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. The Line 975 breaker failure at Etna Substation results in the loss of 115 kV Line 998 and leaves the parallel Line 981 as the only 115 kV path from Etna to Coddington. Under this configuration, Line 981 becomes thermally overloaded.

- Uprate 115kV Line 981
- Install OPGW from Etna to Coddington (6 Miles)

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
274	291	309	328	1,287

NYSEG

BES - Baker Hill

Line of Business: Electric
Category: Compliance

Scope:

In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. Any N-1-1 (multiple outage) combination of two 115 kV lines from Colliers, East Norwich, Jennison, Willet, or Richfield Springs can result in voltage collapse condition of the entire 46 kV network in Oneonta. The Baker Hill Substation addition and associated line projects introduce new 115 kV and 46 kV sources into Oneonta to mitigate reliability needs. In addition, this project increases available headroom capacity for renewable integration.

- Build a new 115 kV 2-bay Breaker-and-a-half substation - (Both AIS and GIS will be considered based on cost and reliability benefits)
- Install a 115/46 kV transformer
- Build a new 115 kV line to Fraser (30 miles)
- Install one 10 MVAr 115 kV capacitor
- Install one 46 kV breaker
- Build a new 46 kV line to Morris (4.8 miles)

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
131	139	147	401	2,114

NYSEG

BES - Border City

Line of Business: Electric

Category: Compliance

Scope:

In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. The N-1 (single outage) loss of 115 kV Line 977 (TR04) results in the loss of a strong source into Station 168. This results in increased flows on adjacent Trunk 8, stressing the Geneva system and leading to low voltages in the area, particularly when the Greenridge generator is out-of-service.

At Border City:

- Install two 25 MVAr 115 kV capacitors
- Rebuild the station as a 115 kV 3-bay Breaker-and-a-half - (Both AIS and GIS will be considered based on cost and reliability benefits)
- Replace two 115/34 kV transformers
- Replace Power House
- Replace Control House
- New 38kV GIS replacing 34 kV Breakers
- Re-terminate the existing 115 and 34.5 kV Lines into the rebuilt station

At Haley Rd:

- Install two 25 MVAr 115 kV capacitors

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of

planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
27	29	31	33	50,323

NYSEG

BES - Colliers

Line of Business: Electric
Category: Compliance

Scope:

In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. After an N-1 (single outage) bus-tie breaker failure at Colliers low voltage at Richfield Springs can occur. A similar condition was also observed during N-1-1 (multiple outage) testing when Line 929 was lost followed by Line 951 this resulted in voltage collapse on the 46 kV network. Climate Leadership & Climate Protection Act (CLCPA) identified asset condition and distribution needs at Colliers substation. In addition, this project increases available headroom capacity for renewable integration.

- Rebuild 115 kV as a 3-Bay Breaker-and-a-half - (Both AIS and GIS will be considered based on cost and reliability benefits)
- Replace the two existing 115/46 kV transformers
- Build a new 115 kV line to the new station “New Morris” (18 Miles)
- Install one 10 MVAr capacitor on the 115 kV
- Replace two existing 46/4 kV, 24 MVA transformers
- Replace the 46kV grounding bank

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system’s ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
152	161	171	2,120	2,042

NYSEG

BES - Coopers Corners

Line of Business: Electric
Category: Compliance

Scope:

In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. The loss of the 115 kV bus at Coopers Corners Substation results in a configuration where the load in the Liberty area is fed radially from a single 69/34.5 kV transformer at West Woodbourne Substation. In this configuration, voltage collapse conditions were observed. The same condition occurs if both of the existing 345/115 kV transformers are lost.

- Rebuild the 115 kV as a 4-Bay Breaker-and-a-half - (Both AIS and GIS will be considered based on cost and reliability benefits)
- Install one new 345/115 kV transformer
- Install one new 115/34.5 kV transformer
- Replace the existing 115/34.5 kV transformer
- Replace both existing 345/115 kV transformers
- Replace the existing 34.5 kV grounding bank

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
4	4	5	4,475	22,906

NYSEG

BES - East Norwich

Line of Business: Electric
Category: Compliance

Scope:
In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. The Oneonta district of NYSEG's territory is a particularly weak area that lacks a strong 115 kV "backbone". As a result, there are a multitude of contingencies that cause voltage violations throughout the area. CLCPA identified asset condition needs at East Norwich Substation. In addition, this project increases available headroom capacity for renewable integration.

- Rebuild the 115 kV as a 4-Bay Breaker-and-a-half (Both AIS and GIS will be considered based on cost and reliability benefits)
- Build a new 115 kV line to the new station "New Morris" (15 miles)
- Replace two 115/46 kV transformers
- Replace one 115/34.5kV transformer
- Replace one 46kV Ground Bank

Reasons and Benefits:
To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
234	248	263	576	1,312

NYSEG

BES - Eel Pot

Line of Business: Electric
Category: Compliance

Scope:

In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. An N-1-1 (multiple outage) loss of the 115 kV line 724 followed by the Greenridge generator results in low voltage violations. Secondly an N-1-1 (multiple outage) loss of 115 kV Lines 724 and 968, has the potential of voltage collapse occurring.

- Add Reverse Power Relaying to both 115/34.5 kV transformers
- Install one 20 MVAr 115 kV capacitor

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1	1	1	969	3,353

NYSEG

BES - Erie St

Line of Business: Electric
Category: Compliance

Scope:

In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. A fault on 115 kV Line 922 followed by a stuck breaker at Erie Street Substation which results in the loss of 115/34.5 kV transformation at Erie Street and North Broadway Substations. This leaves the northern Lancaster 34.5 kV network to be fed radially from Pavement Road Substation. Under these conditions, voltage collapse in the surrounding area was observed.

- Rebuild the 115kV as a 3-bay Breaker-and-a-half (AIS)
- Install 2x50 MVAr 115 kV capacitors
- Install new 15kV GIS replacing 4 kV Breakers
- Install new 38kV GIS replacing 34 kV Breakers
- Replace two 34/4 kV transformers
- Replace one 34.5 kV capacitor
- Replace all 4 kV capacitors
- Replace the Power House

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,973	2,128	2,237	2,962	41,296

NYSEG

BES - Frog Valley

Line of Business: Electric
Category: Compliance

Scope:

In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. The Gowanda 34.5 kV network is served from three dispersed 115 kV sources at Cold Springs Road, Machias, and North Angola Substations. Upon the loss of 115/34.5 kV transformation at Cold Springs Road, voltage collapse on the 34.5 kV in the surrounding area occurs, due to the long distances to the remaining 115 kV network sources.

- Install 1x5 MVAr static synchronous compensator at Frog Valley with associated breaker
- Install 3-34.5 kV breakers (on L500, L501, and 34.5/12.5 kV transformer)
- Replace the 34.5/12 kV transformers
- Expand Frog Valley as needed.

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
30	31	33	35	1,412

NYSEG

BES - Fuller Hollow / Langdon Rd

Line of Business: Electric
Category: Compliance

Scope:

In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. In the event that the Binghamton 115 kV loop (consisting of Lines 938-920-937-936-944) is opened due to an N-1-1 outage of Lines 944 and 920, and without sufficient 115 kV support in Binghamton, voltage collapse conditions were observed.

At Fuller Hollow:

- Expand station and rebuild 115 kV as a 4-bay Breaker-and-a-half (AIS)
- Install 2 - 115/12 kV transformers
- Tap and terminate 115kV line 952 in and out of Fuller Hollow
- Rebuild 115kV, Line 952 from Fuller Hollow to Oakdale and designate as line 736
- 12- MV GIS Cubicles in 15 kV
- GIS Power House

At Langdon Rd:

- Rebuild 115kV as a 3-bay Breaker-and-a-half (AIS)
- Build a new line from Langdon to Fuller Hollow
- Replace 2, 50 MVA 115/34.5 kV transformer

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
157	166	176	2,827	5,024

NYSEG

BES - Klinekill

Line of Business: Electric
Category: Compliance

Scope:

In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. The N-1-1 condition involving the loss of the Greenbush – Falls Park Line 13 segment and the Churchtown – Pleasant Valley Line 13 segment results in several Berkshire area 115 kV substations isolated from the BES. The resulting configuration creates power flows "backfeeding" the Klinekill 115/34.5 kV transformer from the 34.5 kV network toward the then-isolated 115 kV stations. The 34.5 kV system is not sufficient to support the 115 kV system, thus voltage collapse can occur.

- Install reverse power relays on the 115/34.5 kV transformer.

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	99	110

NYSEG

BES - Robinson Rd

Line of Business: Electric
Category: Compliance

Scope:
In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. Upon losing 115/34.5 kV transformation at Hinman Road, voltage collapse in the surrounding area was observed during the analysis. Climate Leadership & Climate Protection Act (CLCPA): The single contingency (N-1) loss of 345 kV paths from Stolle Road to East Stolle (loss of Line 29) forces all UPV near Stolle Road 345 kV down the 345/115 kV transformer at Stolle Road and onto the 115 kV lines throughout Lancaster. This results in the Stolle Road 345/115 kV transformer being 116% overloaded Long-Term Emergency (LTE). CLCPA also found asset condition needs at Robinson Road.

- Retire Hinman
- 230 kV Addition, 115 & 34.5kV Full Rebuild at Robinson.

Reasons and Benefits:
To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
31	33	35	2,077	13,371

NYSEG

BES - Sleight Rd

Line of Business: Electric
Category: Compliance

Scope:

In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. The loss of 115 kV Line 930 and Trunk 13 results in Sleight Road being served radially from the BES and serving a large portion of the northern Geneva 34.5 kV network. The remaining 115 kV Line 971 at Sleight Road Substation is not a strong enough source to maintain acceptable voltages, thus low voltage occurs.

- Install a +25 MVAr static synchronous compensator on the 34.5 kV bus

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
20	21	22	24	2,705

NYSEG

BES - South Oneonta Area - Fraser

Line of Business: Electric
Category: Compliance

Scope:

In January 2013, the NERC Brightline Project was initiated to be compliant with the Brightline order. The Brightline order became enforceable on July 1, 2016.

A Transmission Planning Study for both New York (2016-01-26 Final NYSEG and RGE 2015 TPL-001-4 Compliance Solutions Report)were performed by Transmission Planning using the new TPL-001-4 criteria to ensure would be compliant with the Brightline Order by July 1, 2016 (Appendix 1.0).

The study's objective was to identify any transmission system needs and solutions (reinforcement projects) due to the stricter criteria. The planning portion of the study was performed by a consultant starting in August 2013 and completed in late 2015. It was completed in two phases:

- The Needs Assessment determined which portions of the BES system were not compliant with TPL standards; and
- The Initial Solutions Study developed and tested projects which addressed the identified needs through a thorough alternatives analysis (Appendix 1.1)

The New York Planning Study was submitted to NYPSC on July 1st, 2016. Fraser 345/115/46kV was one of the substations developed under this plan to improve the network's overall reliability in the South Oneonta region.

Reasons and Benefits:

The Fraser Expansion and Delhi Removal Project is in the southern portion of NYSEG's Oneonta district. Fraser is an existing 345/115 kV substation and is the strongest source into Oneonta's 115 kV system. Delhi is a 115/46 kV substation that is a 115 kV hub in the area and supplies several 115 kV interconnected distribution substations via two radial 115 kV lines.

The project consists of a significant expansion of Fraser and a complete removal of Delhi's 115 kV to improve reliability and address asset condition concerns. These changes are listed below:

Fraser S/S

- Expand the 345 kV to a 4-bay breaker-and-a-half
- Expand the 115 kV to a 4-bay breaker-and-a-half
- Build a new 46kV bus with bus-tie; terminate transformer winding on either side
- Install 2nd 345/115/46 kV 3-winding transformer

- Build 46 kV line 824 Tap to Delhi Co-op (3.5 Mile)
- Rebuild 115 kV line 916 Fraser – Delhi Segment (3.5 Mile)
- Fraser Reroutes - Move all 115kV lines from Delhi to Fraser (4.5 Mile) - L916, L917
- L949, L919, L951

Delhi S/S

- Remove Delhi 115 kV substation switchyard
- Build new 46 kV line 841 from Fraser to Delhi 46 kV (5.5 Mile)
- Build a 46kV Bus with Tie-Breaker
- Replace two 12 kV Circuit Breakers"

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
26,555	37,316	36,508	25,247	0

NYSEG

Cost Sharing

Line of Business: Electric
Category: Compliance

Scope:

Cost-Sharing 2.0 would apply to upgrades identified through utility-initiated planning processes and in response to market-initiated driven upgrades. Qualifying Upgrades: Substation Upgrades: 3V0 substation upgrades, Load Tap Changers (LTC). Substation transformer installation/upgrade. Distribution/ sub-transmission line upgrades: Three-phase extensions, three-phase line reconductoring, new three-phase feeders

Reasons and Benefits:

New York State PSC orders CASE 20-E-0543 and CASE 19-E-0566

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
6,368	5,000	5,000	5,000	5,000

NYSEG

DER-ICCP connection to NYISO

Line of Business: Electric
Category: Compliance

Scope:

Implement Distributed Energy Resources (DER) - Inter-Control Center Communications Protocol (ICCP) connection to New York Independent System Operator (NYISO) for base point setpoint through NY Energy Management System (EMS) to comply FERC Order No. 2222.

Reasons and Benefits:

For NYISO to regulate DER installations, it sends a desired energy output through the EMS system. They in return send back their energy output to the NYISO. This data interchange is done through the ICCP protocol, which has a specific polling period.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	115	20	0	0

NYSEG, RGE, CMP, UI

FERC 881 Regulatory Compliance

Line of Business: Electric
Category: Compliance

Scope:

FERC order 881 mandates the system-wide implementation of Ambient Adjusted Rating (AARs) to maximize transmission line capacity based on forecast weather conditions (air temperature). The requirements are a significant change from the existing NYSEG ratings methodology which relies on static ratings that are adjusted seasonally. The new methodology will require ratings to be updated in real time (at least hourly), based on ambient air temperature, and taking account of day / night heating effects. AARs will be required for all Bulk Electric System (BES) circuits. FERC881 requires system wide AAR implementation by Q2 2025.

A Transmission Facility Rating that:

- Reflects an up-to-date forecast of ambient air temperature across the period to which the rating applies.
- Reflects the absence of solar heating during nighttime periods, where the local sunrise/sunset times used to determine daytime and nighttime periods are accurate to and vary at least monthly, if not weekly or daily.
- Applies to a period of not greater than one hour.
- Is calculated at least each hour, if not more frequently
- If a transmission facility is impacted by an outage, it reflects the up-to-date status of transmission equipment and accounts for transmission equipment that is out of service or derated because of an outage across the period to which the rating applies.

AARs must be able to be calculated for each FERC 881 Facility covering the “range of Local historical temperatures (over the entire period for which records are available) plus or minus a margin of 10 degrees Fahrenheit.”

Reasons and Benefits:

Reasons:

1. Rating Development:

Develop ratings tables for all BES transmission circuits. These will be developed by the AGR Protection & Control group.

2. Solution Development:

Develop solution for integrating real time weather data with ratings tables, and update Energy Management System (EMS) and communicate to Independent System Operator (ISO) real time ratings.

3. Non-compliance Penalties:

Noncompliance for 881 order violations can result in fines up to $1.5M per occurrence

Benefits:

1. Efficiency and Sustainability:

Mandating AAR 881 promotes a more efficient and sustainable use of the transmission grid.

2. Consumer Benefits:

AAR adds transmission capacity in a faster and more cost-effective way than building new transmission lines. Enhanced grid efficiency can lead to reduced transmission costs, potentially resulting in savings for end-users.

3. Renewable Energy Integration:

AAR rating methodologies will ensure that renewable energy sources are integrated more efficiently, reducing waste, and promoting the transition to green energy.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,752	3,604	-	-	-

NYSEG

FERC Order 2222

Line of Business: Electric
Category: Compliance

Scope:

The New York Independent System Operator (NYISO) has made a compliance filing to the FERC related to tariff modifications to allow for aggregation of Distributed Energy Resources (DERs) for participation in the wholesale markets. The FERC has responded to NYISO's compliance filing. The utilities continue to collaborate with NYISO to enable DER aggregation and participation in the wholesale markets. As details continue to be vetted, investments related to: Metering (Company and third party), DER aggregation registration, billing and settlement, DER aggregation studies, telecommunications infrastructure, cyber security, and other systems are expected.

Reasons and Benefits:

The NYISO has submitted its compliance filing to the FERC in response to FERC Order 2222 to allow for DER aggregations to participate in the wholesale markets. FERC has responded to NYISO's compliance filing, and discussions continue amongst NYISO and the Joint Utilities (including NYSEG and RG&E) regarding the implementation of FERC Order 2222. Details surrounding the implementation of FERC Order 2222 continue to be vetted and discussions around sub-metering (Company and third-party), registration of DER aggregations, DER aggregation studies, and other areas continue. The planned investment shown is essentially a placeholder to provide funding for modifications to and/or development of systems and processes to allow for NYISO's implementation of FERC Order 2222.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
4,000	0	0	0	0

NYSEG

NERC Alert Priority III

Line of Business: Electric
Category: Compliance

Scope:

The NERC Alert Priority III project is required per the North American Electric Reliability Corporation (NERC) mandate issued on October 7, 2010. All 115 kV transmission lines not completed in the NERC Alert Priority I & II scope which was completed in 2012/2013 must be evaluated to determine how many points of interest will require correcting. Corrections mean increasing the ground to conductor clearances to meet standards. Increasing clearances will be accomplished mostly by performing structure replacements. The Priority III lines are all 115kV transmission lines. There are 79 of these lines in NYSEG totaling 1,229 miles

Reasons and Benefits:

NERC distributes alerts broadly to Transmission Owners (TOs) and Operators of the bulk power system. All TOs are required to provide reliable assets and maintain up to date their network. Non-compliance with these requirements mandated by FERC, make TOs subjected to actionable observations or penalties by the Main Authorities bodies. NYSEG must comply with the 2010 NERC Alert mandate to correct all conductors to ground clearances that do not meet National Electric Safety Code (NESC) standards. Regulators desired Priority I & II-line clearances to be corrected by 2013 this was completed. Priority III lines were not emphasized at that time, but they now must be addressed.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
10,458	11,161	10,217	22,446	26,450

NYSEG

NERC CIP Asset Transition

Line of Business: Electric
Category: Compliance

Scope:

Transition of North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) Assets in 23 New York State Gas & Electric (NYSEG) substations from Information Technology (IT) network to Avangrid Networks and teams (Protection and Control (P&C) & Operational Smart Grids (OSG)) to ensure NERC CIP compliance. IT is currently maintaining CIP responsibilities which will progressively move to Networks team as the specific asset is transferred. Of the 23 substations in this project's scope, they are assessed and prioritized to assure effectively addressing the sequence in which this will be completed.

Reasons and Benefits:

Existing equipment in NYSEG substations is coming to end-of-life and eventual loss of support and maintenance. As equipment is upgraded, the ownership and maintenance is transitioning into the Operational Technology environment to ensure a consistent approach to managing ERC CIP compliance (CIP 002).

Benefits:

1. Centralizes operational responsibility and NERC-CIP compliance into a single organization.
2. Simplifies network mapping.
3. Aligns Networks organizational structure.
4. Upgrades end-of-life hardware.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
7,767	0	0	0	0

NYSEG

NERC Compliance Projects

Line of Business: Electric
Category: Compliance

Scope:

This is a program to execute Corrective Action Plans and Mitigation Plans that could arise to comply with North American Electric Reliability Corporation (NERC) Compliance. The NERC standards include, but not limited to: NERC PRC, NERC CIP, NPCC Directory, NERC FAC-008 standards, and ISO standards. Corrective Action Plans and Mitigation Plans could include replacing relays, RTUs, and other equipment as necessary to achieve NERC Compliance.

- PRC violations may result in mitigations requiring installations of new relays, SCADA equipment, or other substation equipment.
- CIP violations may result in mitigations requiring installations of SCUs, RTUs, Switches if unsupported by manufactures.
- FAC-008/RAM related upgrades could include replacing the most limiting relay elements will increase thermal ratings of the equipment for increased power flow. New micro-processor relays will allow for more resilient protection and better event analysis during faults.
- PRC violations may result in mitigations requiring installations of new relays, SCADA equipment, or other substation equipment.
- CIP violations may result in mitigations requiring installations of SCUs, RTUs, Switches if unsupported by manufactures.
- FAC-008/RAM related upgrades could include replacing the most limiting relay elements will increase thermal ratings of the equipment for increased power flow. New micro-processor relays will allow for more resilient protection and better event analysis during faults.

All mitigations are first evaluated to check if relay setting changes can fix the issue or if another existing capital project exists that is addressing the issue, before a conclusion is made that a relay upgrade with a new project is the only solution. Failure to comply with NERC Compliance could incur monetary fines.

PRC-005: Equipment failed mandated maintenance during the calendar year, per requirement 5, the TO needs to provide evidence that failed equipment has been efforts to address any failed maintenance.

Relay thermal limitations: Relay is the most limiting element on a transmission line or a transformer bank.

- Hancock Line 955: Upgrade electromechanical relays to SEL-411L, SEL-451 and GE-L90 (three total) microprocessor relays at Hancock end on Line 955 to mitigate relay thermal limitation.
- State St L972 and L976: Replace electromechanical bus bar relays to a new GE-B30 to improve relay thermal limitation.
- Replace failed RFL GARD device for PRC-005 compliance.
- Erie St L926: Replace failed RFL 6745 teleprotection equipment with a new RFL device for PRC-005 compliance.
- Hillside and S Owego L962: Replace teleprotection equipment to a new RFL device to reestablish communication with remote end (East Sayre) for PRC-005 compliance.
- Hinman Rd L908: Replace failed 56K MODEM teleprotection equipment to a new 56K MODEM to meet PRC-005 compliance.
- Montour Falls Breaker T1-42: Replace electromechanical burned relays to SEL-411L microprocessor relay at Montour Falls end to meet PRC-005 compliance.
- Delhi L951: Upgrade electromechanical relays to GE-L90 microprocessor relays at Delhi end to meet PRC-005 compliance.

Reasons and Benefits:

This is to execute mitigation plans for NERC Standard PRC-002, PRC-023, PRC-026, FAC-008, and Directory #1.

- Achieving NERC compliance will prevent Avangrid from incurring any monetary fines (as high as ~$1M per violation for severe violation per day).
- Improve reliability of the grid by improving dependability and security of relays
- Full NERC Compliance will improve relationship with NERC, NPCC, and ISOs
- Enhance NERC Audit experience and reduce evidence gathering effort

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,200	0	0	0	0

Electric Compliance

RG&E

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RG&E

BES Program - FERC Compliance

Line of Business: Electric
Category: Compliance

Scope:

The objective of the RG&E Bulk Electric System (BES) program is to identify and address system deficiencies on the portion of the BES owned by AVANGRID in compliance with mandatory reliability standards. The criteria and system performance requirements for the BES are provided in the North American Electric Reliability Corporation's (NERC) standard TPL-0011. Each transmission owner has an obligation to demonstrate through planning studies that its portion of the BES meets all mandatory NERC requirements. In cases where unacceptable reliability performance is detected, a documented Corrective Action Plan showing how these deficiencies will be mitigated must be developed.

In order to achieve compliance with NERC Transmission Planning (TPL) requirements, a comprehensive planning assessment was performed, initially in 2014 and then again in 2018 to incorporate a number of changes with the most significant being a decline in forecasted load levels. The load levels used in the 2018 study match the forecasts provided in the New York Independent System Operator's (NYISO) most recent 2018 Load and Capacity Data or "Gold Book" update three. Since the load forecast reductions were significant, AVANGRID elected to include a full re-assessment of all previously recommended solutions to determine if they were still needed in their original form or if a refined or new solution could more effectively address the system needs.

Subsequently, in 2021 a Climate Leadership and Community Protection Act (CLCPA) needs and solutions assessment study was performed to assess AVANGRID's long term capital plan projects across its New York service territory (i.e., NYSEG and RG&E). The study covered projects that are mature, immediately actionable, and beneficial to the integration of renewable resources in support of New York's year 2030 climate policy objectives.

Conclusions of this study activated further re-assessment of all previously recommended solutions of BES program and transferring of several BES projects to CLCPA program due to similar or equal solution needs. Although the primary focus of this program is to address BES reliability deficiencies, some of the recommended solutions have also been designed to mitigate asset condition 4 and local 5 reliability deficiencies at the same substation locations where significant BES upgrades are being recommended. This approach ensures that a comprehensive and cost-effective solution is developed.

Reasons and Benefits:

The 2018 AVANGRID BES study and BES re-assessment with 2021 CLCPA study confirmed the need for a number of system upgrades across the RG&E system. These are shown by the Project Identifiers in the red text on Figure 1 with each of the Project ID's referenced in NY BES program project list in Table 1. An increased risk of customer outages and an increased duration of these outages may be expected should no action is taken.

This program provides a comprehensive assessment of BES reliability deficiencies with mandatory reliability standards and presents the State with an opportunity to simultaneously solve numerous reliability, resiliency, and asset condition issues. Please refer to relevant exhibits for specific project details.

Figure 1. - NYSEG/RG&E BES Program Project Map

Project ID	OPCO	Project Name	Project Status	ISD	Project Details
RC-D	RG&E	Station 127	IP3	2024	Exhibit_(CEE-R17)
RC-C	RG&E	Line 947	IP2	2027	Exhibit_(CEE-R20)
RC-B	RG&E	Line 949	IP2	2026	Exhibit_(CEE-R21)
RC-E	RG&E	Station 56	IP3	2023	Exhibit_(CEE-R28)

Table 1.- BESRGE Program Project List

RG&E

BES - L947

Line of Business: Electric
Category: Compliance

Scope:

In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. There are multiple contingencies that result in line 947 to become overloaded. The most severe is an internal breaker failure of the 115 kV bus-tie circuit breaker at Station 48 resulting in the complete loss of the 115 kV bus at Station 48. Consequentially, Line 947 is the only remaining 115 kV path to Station 7 and becomes thermally overloaded.

- Build a new 115 kV line from ST 418 to ST 48 (Line 949, 6.7 Miles)
- Station 418, build 115kV termination
- Station 48 build 115kV termination
- Replace one 115 kV tie breaker
- Replace two 115kV switches

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, Rochester Gas & Electric (RG&E) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,290	1,308	654	745	11,193

RG&E

BES - Hook Rd Upgrades (ST 127)

Line of Business: Electric
Category: Compliance

Scope:

Bring the 115 kV Line TR02 in and out of S 127 (Hook Rd). Install two 25 MVAr 115kV Capacitors (50 MVAr total) on separate breakers at S 127. Extend existing straight bus. Install a 115 kV Bus-tie Breaker. Replace all electromechanical relays

Reasons and Benefits:

In 2018 Transmission Planning performed a comprehensive North American Electric Reliability Corporation (NERC) Transmission Planning (TPL) assessment. There are multiple N-1 and N-1-1 low voltages conditions below 0.9 put on the 115 kV bus of Station 127 (Hook Rd). The project will mitigate the needs associated with reliability, low voltage and asset condition related with the protection and control system.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
14,856	811	0	0	0

RG&E

BES - Line 949 115 kV Line Addition

Line of Business: Electric
Category: Compliance

Scope:

Build a new 115 kV line from ST 418 to ST 48 (Line 949, 6.7 Miles). For Station 418, build 115kV termination. For Station 48, build 115kV termination. Replace one 115 kV tie breaker. Replace two 115kV switches.

Reasons and Benefits:

In 2018 Transmission Planning performed a comprehensive North American Electric Reliability Corporation (NERC) Transmission Planning (TPL) assessment.

The new line 949 is mainly driven by low voltage concerns at Station 48. There are two conditions that can cause this:

- One is the loss of 115 kV Line 910 which leaves a portion of western Rochester served radially via Line 947 out of Station 7.
- A subsequent contingency affecting the 51 MVAr 115 kV shunt capacitor at Station 113 can also result in low voltage violations.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
7,623	36,663	34,017	14,855	79

RG&E

BES - Station 056 Reconfiguration

Line of Business: Electric
Category: Compliance

Scope:

Station 56 is an existing 115/34.5/12 kV substation in Rochester area. There are three trunks feeding the substation in a tap connection, Trunk 23 (Station 82 to Station 121), Trunk 24 (Station 122 to National Grid Mortimer) & Trunk 25 (Station 122 to National Grid Mortimer). There are two 115/34.5 kV transformers, 1T (connecting with Trunk 24) and 2T (connecting with Trunk 23), and two 115 / 12 kV transformers supplied by 12 kV bus connecting with Trunk 23 and Trunk 25. To solve the voltage collapse problem, Transformer 1T will be terminated on Trunk 23 tap and Transformer 2T will be terminated on 115 kV bus supplied by Trunk 24 in and out of Station 56.

Reasons and Benefits:

With current configuration, Transformer 1T and 2T would be lost if Trunk 23 failed followed by the loss of Trunk 24, which would result voltage collapse on 34.5 kV system and violate North American Electric Reliability Corporation (NERC) stability requirement. With the 115 kV yard expansion proposed and lines reconfiguration described, the voltage collapse will be solved with improved reliability due to the redundant feed to the station in case of loss of any side supply on Trunk 24.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
4,233	0	0	0	0

RG&E

Cost Sharing

Line of Business: Electric
Category: Compliance

Scope:

Cost-Sharing 2.0 would apply to upgrades identified through utility-initiated planning processes and in response to market-initiated driven upgrades. Qualifying Upgrades: Substation Upgrades: 3V0 substation upgrades, Load Tap Changers (LTC). Substation transformer installation/upgrade. Distribution/ sub-transmission line upgrades: Three-phase extensions, three-phase line reconductoring, new three-phase feeders

Reasons and Benefits:

This is being conducted to comply with New York State PSC orders CASE 20-E-0543 and CASE 19-E-0566.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
4,008	3,000	3,000	3,000	3,000

RG&E

DER-ICCP connection to NYISO

Line of Business: Electric
Category: Compliance

Scope:

Implement Distributed Energy Resources (DER) - Inter-Control Center Communications Protocol (ICCP) connection to New York Independent System Operator (NYISO) for base point setpoint through NY Energy Management System (EMS) to comply FERC Order No. 2222.

Reasons and Benefits:

For NYISO to regulate DER installations, it sends a desired energy output through the EMS system. They in return send back their energy output to the NYISO. This data interchange is done through the ICCP protocol, which has a specific polling period

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	120	40	0	0

RG&E

FERC 881 Regulatory Compliance

Line of Business: Electric
Category: Compliance

Scope:

FERC order 881 mandates the system-wide implementation of Ambient Adjusted Rating (AARs) to maximize transmission line capacity based on forecast weather conditions (air temperature). The requirements are a significant change from the existing RG&E ratings methodology which relies on static ratings that are adjusted seasonally. The new methodology will require ratings to be updated in real time (at least hourly), based on ambient air temperature, and taking account of day / night heating effects. AARs will be required for all Bulk Electric System (BES) circuits. FERC881 requires system wide AAR implementation by Q2 2025.

A Transmission Facility Rating that:

- Reflects an up-to-date forecast of ambient air temperature across the period to which the rating applies.
- Reflects the absence of solar heating during nighttime periods, where the local sunrise/sunset times used to determine daytime and nighttime periods are accurate to and vary at least monthly, if not weekly or daily.
- Applies to a period of not greater than one hour.
- Is calculated at least each hour, if not more frequently
- If a transmission facility is impacted by an outage, it reflects the up-to-date status of transmission equipment and accounts for transmission equipment that is out of service or derated because of an outage across the period to which the rating applies.

AARs must be able to be calculated for each FERC 881 Facility covering the “range of Local historical temperatures (over the entire period for which records are available) plus or minus a margin of 10 degrees Fahrenheit.”

Reasons and Benefits:

Reasons:

1. Rating Development:

Develop ratings tables for all BES transmission circuits. These will be developed by the AGR Protection & Control group.

2. Solution Development:

Develop solution for integrating real time weather data with ratings tables, and update EMS and communicate to ISO real time ratings.

3. Non-compliance Penalties:

Noncompliance for 881 order violations can result in fines up to $1.5M per occurrence

Benefits:

1. Efficiency and Sustainability:

Mandating AAR 881 promotes a more efficient and sustainable use of the transmission grid.

2. Consumer Benefits:

AAR adds transmission capacity in a faster and more cost-effective way than building new transmission lines. Enhanced grid efficiency can lead to reduced transmission costs, potentially resulting in savings for end-users.

3. Renewable Energy Integration:

AAR rating methodologies will ensure that renewable energy sources are integrated more efficiently, reducing waste, and promoting the transition to green energy.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,519	1,419	0	0	0

RG&E

FERC Order 2222

Line of Business: Electric
Category: Compliance

Scope:

The New York Independent System Operator (NYISO) has made a compliance filing to the FERC related to tariff modifications to allow for aggregation of Distributed Energy Resources (DERs) for participation in the wholesale markets. The FERC has responded to NYISO's compliance filing. The utilities continue to collaborate with NYISO to enable DER aggregation and participation in the wholesale markets. As details continue to be vetted, investments related to: Metering (Company and third party), DER aggregation registration, billing and settlements, DER aggregation studies, telecommunications infrastructure, cyber security, and other systems are expected.

Reasons and Benefits:

The NYISO has submitted its compliance filing to the FERC in response to FERC Order 2222 to allow for DER aggregations to participate in the wholesale markets. FERC has responded to NYISO's compliance filing and discussions continue amongst NYISO and the Joint Utilities (including NYSEG and RG&E) regarding the implementation of FERC Order 2222. Details surrounding the implementation of FERC Order 2222 continue to be vetted and discussions around sub-metering (Company and third-party), registration of DER aggregations, DER aggregation studies, and other areas continue. The planned investment shown is essentially a placeholder to provide funding for modifications to and/or development of systems and processes to allow for NYISO's implementation of FERC Order 2222.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,000	500	500	0	0

RG&E

NERC CIP Asset Transition

Line of Business: Electric
Category: Compliance

Scope:

Transition of North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) Assets in 10 Rochester Gas & Electric (RG&E) substations from Information Technology (IT) network to Avangrid Networks team (Protection and Control (P&C) & Operational Smart Grids (OSG)) to ensure NERC CIP compliance. IT is currently maintaining CIP responsibilities which will progressively move to Networks team as the specific asset is transferred. Of the 10 substations in this project's scope, they are assessed and prioritized to assure effectively addressing the sequence in which this will be completed.

Reasons and Benefits:

Existing equipment in RG&E substations is coming to end-of-life and eventual loss of support and maintenance. As equipment is upgraded, the ownership and maintenance is transitioning into the Operational Technology environment to ensure a consistent approach to managing ERC CIP compliance (CIP 002).

Benefits:

1. Centralizes operational responsibility and NERC-CIP compliance into a single organization.
2. Simplifies network mapping.
3. Aligns Networks organizational structure.
4. Upgrades end-of-life hardware.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,660	3,502	3,692	4,615	5,769

Electric Clean Energy Transformation

NYSEG

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NYSEG

CLCPA Phase 1 - 115 kV Line 961 Rebuild

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 1 Program. Rebuild of the existing 18-mile 115 kV line with 1192 Bunting Aluminum Conductor Steel Reinforced (ACSR) conductor on an offset with light duty steel monopole structures. Also, to modify terminal bay at South Owego Substation.

Reasons and Benefits:

The scope consists of rebuilding the 115 kV Line 961 on an offset to the existing line with higher rated 1192 Bunting ACSR which has a Long-Term Emergence (LTE) rating of 331 MVA. This conductor would address the deliverability need and would create the most renewable headroom along the line for renewable generators. Optical ground wire is included to provide enhanced future communication path for protection and control system upgrades. Light duty steel poles were selected over wood poles on lines because they provide more durable, and longer lasting age of the pole. The line would be rebuilt with light duty steel poles in a davit arm delta configuration. Angle and dead-end structures would employ the use of guy wires. Guy wires and anchors will provide support to the structures. This will address all asset condition needs on line 961. In order to accept the newly rebuilt line 961, modifications at the South Owego Substation are required.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,008	1,041	11,315	21,643	36,152

NYSEG

CLCPA Phase 1 - Clarks Corners

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 1 Program. The scope of the project is to bring the existing Line 945 into and out of the Clarks Corners Substation to resolve the reliability and deliverability needs. This results in two new line positions on the 115 kV and brings the new total of 115 kV key transmission elements to seven (7) 38. Due to the need to expand the station for these two new line positions, the station's 115 kV yard must be converted to a 4- bay break and a half (BAAH) configuration. The two new positions for the 115 kV Line 945 in-and-out will be terminated into new BAAH positions and the two existing power transformers currently connected to the future BAAH bus. All lines at the substation with be relocated and terminated into new positions to allow for the conversion to the new BAAH configuration. This solution will also relocate the existing 50 MVAr capacitor bank from its current position to a new position of Bus #4.

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, NYSEG and RG&E must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
4,042	$8,637	17,226	1,368	0

NYSEG

CLCPA Phase 1 - Coddington 115/34.5 kV Substation Upgrades

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. The loss of 115/34.5 kV transformation at Coddington, as a result of the bus-tie breaker failure, results in a configuration where the load in southern Ithaca is fed radially from the 34.5 kV bus at Etna Substation. In this configuration, voltage collapse conditions were observed. The single contingency (N-1) bus-tie breaker failure at Coddington, which results in Ithaca Area voltage collapse, were considered a deliverability need since additional renewable source capabilities can only be achieved if the underlying power system is stable under N-1 conditions. The Climate Leadership & Climate Protection Act (CLCPA) identified asset needs at Coddington Substation as follows:

- New 115 kV Breaker-and-a-half (BAAH) Full Rebuild with GIS on existing property
- 2 new 50 MVA transformers
- 2 new cap banks

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES. These solutions were included as part of the CLCPA Phase I efforts.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	700	3,700

NYSEG

CLCPA Phase 1 - Etna 115/34.5/4.8 kV Substation Full Rebuild

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. The study revealed multiple N-1 and N-1-1 events in Ithaca that result in both thermal and voltage violations. The Climate Leadership & Climate Protection Act (CLCPA) identified needs at Etna Substation as follows:

- Full Substation Rebuild: 5-Bay breaker-and-a-half (BAAH) 115 kV AIS and medium voltage 34.5/4.8 kV GIS Substation
- 2 new 56 MVA 115/34.5 kV transformers
- 1 new 14 MVA 34.5/4.8 kV dual secondary transformer

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES. These solutions were included as part of the CLCPA Phase I efforts.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	2,900	5,700

NYSEG

CLCPA Phase 1 - Jennison 115 46 kV Substation Upgrades

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 1 Program.
High Level Scope:

- Rebuild Jennison 115kV 4 Bay break and a half (BAAH) air insulated switchgear (AIS) and 46 kV double bus box structure with six feeders and 2 transformer incomers
- Re-route four (4) 115kV and two (2) 46kV lines from old SS to new substation
- New Line 919 to be brought in-and-out of the new substation (L-919 & L756) for reliability
- Decommission and demolish old Jennison Substation

Detailed Scope:

The rebuild of the Jennison Substation will include the following works:

- Two TRANSFORMER, 115/46KV, 50 MVA LTC
- Grading work
- Two Grounding work
- Build and install twelve (12) A–frames for 115 kV
- Build New 46kV AIS Box Structure
- Construct a Lighting system for the expansion
- Construct a new control building
- Install two house service transformers
- Install (12) Circuit breakers
- Thirty-four - (34) disconnect switches
- Forty-eight (48) CCVT´s Transformers
- Construct Driveway
- Install seven (7) Lightning masts
- Install Control and Protection Systems
- Remote ends for the 6 115kV line and 2 46kV lines

Jennison RRs

115 kV lines L919, L943, L946, L949, L954; 756 and 46 kV lines L818 and L823 will be re-routed according to the new location. The 115kV re-routes are selected following the existing right of way (ROW) lines and using most of the route of the existing lines. 46kV lines will be re-routed in a combination of using a section of the existing L818 ROW and in a greenfield ROW where both lines will be located.

* Lines 949 and 946 are article 7 and are not in this scope.

Reasons and Benefits:

This project as part of the Jennison Transmission Solution, (which includes 115 kV rebuild of lines 946 and 949) will increase headroom capacity by ~ 175 MW. Also, this project mitigates all needs associated with reliability, deliverability and asset conditions identified at the existing Jennison 115/46 kV Substation, including the flooding risk. (Based into previous flood scenarios it was decided the existing Jennison 115/46 kV SS will need to be rebuilt up the hill approx. 0.9 miles out of the flood way).
This solution addresses all deliverability constraints, N-1/N-1-1 reliability violations and mitigates all identified asset condition needs at the existing Jennison Substation. In addition, the relocation, addresses all flooding concerns.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
23,745	34,160	49,081	31,224	0

NYSEG

CLCPA Phase 1 - Lounsberry 115 12.5 kV Substation Full Rebuild

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 1 Program. The proposed scope includes a full rebuild on a new site above the floodplain along the L962 corridor. New equipment includes a 115kV/12.5kV LTC power transformer, a three 115kV breakers in a ring bus configuration, accommodation for future second transformer bank, and three 12.5kV GIS SCADA controlled line breakers for two existing and one future distribution line. A new control house, station service, and relays with communication link to ECC.

Reasons and Benefits:

This is fully qualified Phase 1 CLCPA Projects per the December 15 PSC Order.

This project will mitigate existing flooding risks, reintroduce 12.5 kV circuit breakers, and the 3-breaker 115 kV ring bus will allow for more operational flexibility on the 115 kB 962 Line.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,398	2,496	10,457	23,544	3,441

NYSEG

CLCPA Phase 1 - Oakdale Westover Solution

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 1 Program.
At Oakdale

- Add an additional 345 kV bay to complete the BAAH
- Install a new 345/115/34.5 kV XFMR
- Re-terminate 3 115 kV lines from Westover to Oakdale
- Reconfigure 115 kV yard into a new 6 bay Breaker-and-a-half to accommodate existing lines and re-terminated lines from Westover -(Both AIS and GIS will be considered based on cost and reliability benefits)
- Build a new 34.5 kV line from Westover to Oakdale
- Upgrade 34kV Lines 407 and 408
- New 15kV GIS replacing 12 kV Breakers
- 1 - 345/115/34 kV XFMR for new bay
- 2 - 345/115/34 kV XFMR to replace old ones
- New 38kV GIS replacing 34 kV Breakers

At Westover [Fully rebuild in new location]

- New 15kV GIS replacing 12 kV Breakers
- New 38kV GIS replacing 34 kV Breakers
- 2 - 34.5/12.5/4.8kV (dual) XFMR
- 3 - 34kV Ground Banks"

Reasons and Benefits:

It is anticipated that this project, combined with Projects (Line 961, Line 962, and Lounsberry SS Rebuild) will increase headroom capacity by ~878 MW. Also, this project mitigates all needs associated with reliability, deliverability and asset conditions identified at the Oakdale/Goudey/Westover Substations, including the flooding risk at Goudey.

This solution fortifies the existing 115 and 345 kV yards (breaker-and-a-half design), and as a result, addresses all deliverability constraints, N-1/N-1-1 reliability violations and mitigates all identified asset condition needs at Oakdale and Goudey/Westover. In addition, the relocation of Goudey/Westover addresses all flooding and asset condition concerns.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
53,237	99,930	154,847	112,133	7,529

NYSEG

CLCPA Phase 1 - Stolle Road 345/230/115/34.5 kV Substation Upgrades

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

In 2018 Transmission Planning (TPL) performed a comprehensive North American Electric Reliability Corporation (NERC) assessment. An internal breaker failure of the 115 kV circuit breaker at Stolle Rd will result in the loss of all 115/34.5 kV transformation at Stolle Rd leading to voltage collapse in the surrounding area. The single contingency (N-1) loss of 345 kV paths from Stolle Road to East Stolle (loss of Line 29) forces all UPV near Stolle Road 345 kV down the 345/115 kV transformer at Stolle Road and onto the 115 kV lines throughout Lancaster. This results in the Stolle Road 345/115 kV transformer being 116% overloaded (LTE). The Climate Leadership & Climate Protection Act (CLCPA) identified asset needs at Stolle Road Substation as follows:

- Reconfigure 115 kV yard as a 5-bay Breaker-and-a-half (BAAH)
- Replace one 115 kV circuit breaker
- Replace two 115/34.5 kV transformers

Reasons and Benefits:

To comply with the requirements of the North American Electric Reliability Corporation (NERC) TPL-001-4 standard, New York State Electric & Gas (NYSEG) – must conduct both near-term and long-term transmission system planning assessments including steady state, dynamic stability, and short circuit analyses. These studies assess the reliability of the Bulk Electric System (BES) based on the system's ability to satisfy the performance requirements of TPL-001-4 when subjected to a prescribed set of planning events. If the BES is determined to be unable to satisfy the TPL-001-4 performance requirements, a Corrective Action Plan (CAP) must be developed to ensure the continued reliability of the BES. These solutions were included as part of the CLCPA Phase I efforts.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	20,000	39,400

NYSEG

CLCPA Phase 1 - Trans Line - 946 Rebuild

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 1 Program. Line 946 will be split into two separately numbered lines in conjunction to the addition of a new substation. The construction of the new North Pond Substation is being designed under a separate project scope (”High Bridge Wind” Tie-In) and constructed by Others, with a completion date ahead of construction initialization of the project outlined in this document. This project assumes the High Bridge Tie-In scope to include elements necessary for accessible integration.

Rebuild 6.6 miles of 115kV main line segment from East Norwich S/S to Structure 734/59 outside of North Pond substation, and 14.7 miles of 115kV mainline from Structure 946/1 outside of North Pond substation to Jennison substation. Jennison substation is to be relocated approximately 0.8 miles to the West of the existing substation. Line 946 will be connected to this new location. Rebuild will occur in the existing corridor of Line 946 such that construction will require limited outages. Most of the line will be built on a centerline offset parallel to the exiting line; however, some segments will be re-routed on new Right of Way (ROW). One, two structure temporary bypass will be required so the existing Jennison Substation can be demolished without a large outage. The new line will use steel construction with braced post insulators in a delta pattern and suspension insulators in delta pattern with 1192.5 kcmil Bunting Aluminum Conductor Steel Reinforced (ACSR) conductor and a seventy-two fiber optical ground wire (OPGW) static wire. All new structures will be directly embedded where feasible with guys used to support angles and dead-ends. Where guying is not feasible or economical, self-supporting angle and dead-end structures on reinforced concrete foundations will be utilized. New conductor rating (MVA) is 287 MVA N, 331 MVA LTE.

Reasons and Benefits:

The scope consists of rebuilding the 115 kV Line 946 on an offset to the existing line with higher rated 1192 Bunting ACSR which has an LTE rating of 331 MVA. This conductor would address the deliverability need and would create the most renewable headroom along the line for renewable generators. Optical ground wire is included to provide enhanced future communication path for protection and control system upgrades. Light duty steel poles were selected over wood poles on lines because they provide more durable, and longer lasting age of the pole. Angle and dead-end structures would employ

the use of guy wires. Guy wires and anchors will provide support to the structures. This will address all asset conditions need on line 946.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,666	1,693	24,000	10,827	11,469

NYSEG

CLCPA Phase 1 - Trans Line - 949 Rebuild

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 1 Program. Rebuild 25.3-mile 115kV main line segment from the New Jennison substation to Structure 182. Jennison substation is to be relocated approximately 0.8 miles to the West of the existing substation. Line 949 will be connected to this new location. Work to occur in the existing corridor of Line 949 such that construction will require limited outages. A majority of the line will be built on a centerline offset parallel to the existing line; however, some segments will need to be built in place due to Right of Way (ROW) constraints and adjacent circuits. Where an offset is impractical a temporary bypass will be created, and the line will be built on the existing alignment. The new line will use steel monopole construction with suspension insulators on delta pattern davit arms with 1192.5 kcmil Bunting Aluminum Conductor Steel Reinforced (ACSR) conductor and a seventy-two fiber optical ground wire (OPGW) static wire. All new structures will be directly embedded where feasible with guys used to support angles and dead-ends. Where guying is not feasible or economical, self-supporting angle and dead-end structures on reinforced concrete foundations will be utilized. New conductor rating (MVA) is 287 MVA N, 331 MVA LTE.

Reasons and Benefits:

The scope consists of rebuilding the 115 kV Line 949 on an offset to the existing line with higher rated 1192 Bunting ACSR which has an LTE rating of 331 MVA. This conductor would address the deliverability need and would create the most renewable headroom along the line for renewable generators. Optical ground wire is included to provide enhanced future communication path for protection and control system upgrades. Light duty steel poles were selected over wood poles on lines because they provide more durable, and longer lasting age of the pole. Angle and dead-end structures would employ the use of guy wires. Guy wires and anchors will provide support to the structures. This will address all asset conditions need on line 949.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,807	1,739	30,339	31,628	19,908

NYSEG

CLCPA Phase 1 - Trans Line - 982 Rebuild

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 1 Program. The scope consists of rebuilding the existing 21-mile 115 kV line with 1192 Bunting Aluminum Conductor Steel Reinforced (ACSR) conductor on the existing centerline with light duty steel monopole structures and optical ground wire (OPGW).

Reasons and Benefits:

In 2018 Transmission Planning performed a comprehensive North American Electric Reliability Corporation (NERC) Transmission Planning (TPL) assessment. The 2020 CLCPA Study found deliverability needs regarding Line 982. The existing Long-Term Emergency (LTE) Summer rating of Line 982 is 128 MVA. The loss of 345 kV Line 31 yields a 142% overload of the LTE Summer rating on Line 982. To solve this overload, the line will require a new LTE Summer rating of at least 182 MVA. CLCPA found asset condition needs on Line 982.

This solution alternative results in a significant increase in the rating of Line 982 which addresses all deliverability constraints and creates the most headroom for (renewable) generator interconnections. The new rating of this 115 kV line will be 287/331 MVA Norm/LTE which is approximately a 175/195 MVA increase over the existing 336 Oriole ACSR conductor.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,703	937	22,849	29,908	11,232

NYSEG

CLCPA Phase 1 - Trans Line 115kv - 962 Rebuild

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 1 Program. Rebuild the existing 35-mile 115 kV line with 1192 Bunting aluminum conductor steel reinforced (ACSR) conductor on an offset with light duty steel monopole structures. When an offset is impractical the lines will be rerouted to existing alignment. Modify terminal bay at South Owego Substation. Modify terminal bay at Hillside Substation. North Waverly Switching station would be replaced with a new 3-way transmission line switch. Add a Switch outside of Stagecoach Substation on a Transmission line structure.

Reasons and Benefits:

The 115 kV Line 962 scope was selected because it resolves all known asset condition needs inherent to a 94-year-old transmission line. This scope results in a significant increase in the rating of Line 962 which addresses all deliverability constraints and creates the most headroom for (renewable) generator interconnections. The new rating of this 115 kV line will be 287/331 MVA Norm/LTE, about a 175/195 MVA increase over the existing 336 Oriole ACSR conductor. The Optical ground wire will add a communication path for the protection and control system which does not currently exist. Light duty steel poles were selected over wood poles on lines because they provide more durable, and longer lasting pole. The line would be rebuilt with light duty steel poles in a davit arm delta configuration. Angle and dead-end structures would employ the use of guy wires. Guy wires and anchors will provide support to structures. This will address all asset condition needs on Line 962. In order to accept the newly rebuilt Line 962, modifications to the terminal bays at South Owego, and Hillside Substation would be required. Also, North Waverly Switching Station would be replaced with a 3-way transmission line switch. The switch outside Stagecoach substation will limit the transmission line to 303 MVA from Lounsberry to Substation to South Owego Substation.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,088	1,880	18,566	31,224	26,448

NYSEG

CLCPA Phase 1 - Transmission Projects

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

The Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 1 Program originally consisted of 23 projects which were all included in the CLCPA Phase 1 report which was filed on December 23rd. The New York Public Service Commission's (NYPSC) responded on 12/15/2022 with an order granting approval for continued investment in nine of these projects, approval for continued investment with scope reduction for four projects, and the removal of ten projects from the group of CLCPA Phase 1 projects. The projects that were rejected have been removed from the Phase 1 program. The specific projects and their status are as follows:

The following projects were approved in 2022

1) Oakdale
2) Line L962
3) Line L961
4) Lounsberry
5) Clarks Corners
6) Line 982 Rebuild
7) Jennison
8) Line L946
9) Line L949

The follow projects were partially approved in 2022

1) Coddington Substation Rebuild
2) Etna Substation Rebuild
3) Stolle Road Substation Rebuild
4) Robinson Road Substation Rebuild

The following projects were removed from CLCPA in 2022.

1) Baker Hill Substation
2) New 46 kV Line from Pierce Ave to Baker Hill
3) New 46 kV Line from Morris to Baker Hill
4) New 115 kV Line from Baker Hill to East Norwich
5) New 115 kV Line from Baker Hill to Colliers
6) New 115 kV Line from Baker Hill to Fraser
7) East Norwich Substation Rebuild
8) Colliers Substation Rebuild
9) Pierce Ave Substation Upgrades
10) Morris Substation Upgrades

Reasons and Benefits:

The objective of CLCPA Phase 1 Needs and Solutions Assessment study was to perform a comprehensive assessment of NYSEG's long term capital plan projects across its New York service territory (i.e. NYSEG and RG&E) that are mature, immediately actionable, and beneficial to the integration of renewable resources in support of New York's year 2030 climate policy objectives. This study found that by accelerating select NYSEG long term capital plan projects, several reliability and asset condition needs can be mitigated while also providing significant land-based renewable resource deliverability benefits to the Bulk Electric System (BES).

Deliverability Needs

Deliverability needs are comprised of constraints or "bottlenecks" identified on the existing "Local Transmission" system (less than 200 kV) under simulated high renewable dispatches that would limit renewable energy deliverability under either normal (N-0) or contingency (N-1) conditions.

Sixty unique deliverability needs were identified in all the NYSEG Divisions under study, including N-0 (system normal or base-case) and N-1 (contingency) bottlenecks.

Reliability Needs

The 2018 BES Study and the 2019 Cayuga Generation Deactivation Assessment (GDA) Study were used as the basis for these needs, however, a re-assessment utilizing updated case assumptions to confirm needs was included in this study.

Sixteen (16) unique and limiting reliability needs were identified throughout the NYSEG Divisions in this study; these included N-0 (system normal or base-case), N-1 (contingency), or N-1-1 (line-out) violations.

Asset Condition Needs

Asset condition deficiencies were identified by an assessment of the physical condition of the transmission and substation ("T&S") assets related to each of the proposed projects, including visual inspections along with a review of operations and maintenance reports. Other available records, including equipment health reports, protection and control records, and flood exposure risks were also considered.

Please refer to the CLCPA Transmission Projects Phase I Needs and Solutions Assessment for additional details.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	0	0

NYSEG

CLCPA Phase 2 - SS - Bennett

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. The Limited Curtailment option for the Bennett Substation requires the replacement of the 115 kV Line 953 & 725 terminal equipment as well a new dead-end structure and bus work on Line 953. It also requires the installation of a 0.05pu power flow control device on the 115 kV Line 932. Due to space and outage constraints, this Line 932 power flow control device must be in a new location about 0.5 miles west. Due to the limited amount of scope associated with this alternative, no flood mitigation measures at the existing site were proposed as a part of this alternative.

The cost estimate for this component alternative is $25.7 M (+50/-25%), In Service Date: 2028.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of one hundred percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investment in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
701	2,945	763	5,935	5,521

NYSEG

CLCPA Phase 2 - SS - Eelpot

Line of Business: Electric
Category: Clean Energy Transformation

Scope:
The Limited option for the Eelpot Substation required the installation of a new a +100/-100 MVAR dynamic VAR compensation unit (STATCOM). There is enough space at the existing parcel to allow for the substation to be expanded. This option will convert the existing 115 kV four-position ring bus to a five-position ring bus by adding a new 115 kV breaker and three switches. The new +100/-100 MVAR new dynamic VAR compensation unit (STATCOM) will be installed in this new 115 kV ring bus position.

The cost estimate for this component alternative is $76.7M (+50%/-25%). In Service Date: 2028.

Reasons and Benefits:
Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of one hundred percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investment in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,132	31,043	10,498	27,317	31,964

NYSEG

CLCPA Phase 2 - SS - Greenidge

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. The Limited Curtailment option required adding a cap bank at the Greenidge substation and replacing the dead-end structure and terminal equipment on the 115 kV line 968. This solution consists of one (1) new 115 kV circuit breaker for Line 968, Line 968 terminal work, and a new 30 MVAR capacitor bank.

The cost estimate for this component alternative is $17.2 M(+50%/-25%), In Service Date: 2026.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of one hundred percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investment in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
843	1,391	2,668	2,613	4,560

NYSEG

CLCPA Phase 2 - Hickling RR

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

Existing Hickling substation is to be demolished. A new substation will be built out of the flood zone for Chenango River, where the current substation is location. The new substation will include three (3) bays with a Breaker-and-a-half (BAAH) configuration, with three (3) line positions, two (2) transformers and two (2) cap banks, relocated from the existing substation if suitable. The new substation will contain two (2) 34.5kV indoor GIS buses and one (1) 12.5kV GIS bus, with one (2) 115/34,5kV Transformer and one (1) 34,5/12,5 kV transformer. Reroute of the existing lines will be required, including: 115kV lines 935 (West Erie Ave.), 958 (Caton Ave.) & 964 (Yawger Rd.); 34.5kV lines 551 (Sunoco Pumping St.), 554 (Fulton), 556 (Goss Rd.) & 550 (Fallbrook); 12.5kV circuits 381 & 382.

Reasons and Benefits:

The Climate Leadership & Climate Protection Act or “CLCPA” enacted in July 2019, establishes aggressive renewable energy and emissions reduction targets for New York State, including: a minimum of 70 percent of statewide electricity being generated from renewable sources by 2030 and a 100 percent reduction in greenhouse gas emissions from the electricity sector by 2040.

To comply with the Commission’s direction to identify CLCPA Needs, the Company modeled the wind and solar generation in the Areas of Concern at 100 percent (No Curtailment) and 70 percent (Limited Curtailment) name plate capacity to determine if any reliability violations would occur."

Five Year Capital Plan

All amounts shown below in thousands ($000’s)

2024	2025	2026	2027	2028
1,319	10,424	13,828	1,671	704

NYSEG

CLCPA Phase 2 - SS - Hickling

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. The Limited Curtailment option for Hickling substation required the replacement of the 115 kV bus work for Lines 958, 935 and 964. Due to the physical and outage limitations of the existing substation, the deliverability needs, and the existing asset condition needs, a full rebuild of the substation would be necessary.

The limited curtailment option consists of a full substation rebuild at a new location approximately one mile to the south outside of the flood zone. The 115 kV will be configured as a three-bay breaker-and-a-half (BAAH) air insulated substation (AIS) design with two (2) new 115/34.5 kV 50 MVA transformers with dedicated low side breakers, a new 34.5 kV gas insulated switchgear (GIS) straight bus with a tie breaker as well as a new 12.5 kV GIS. The 12.5 kV will include a new 14.5 MVA 34.5/12.5 kV transformer with load tap changer (LTC) and the 12.5 kV will be configured as a straight bus. This solution alternative was selected as it addresses all known needs at the station.

The cost estimate for this component alternative is $134.3 M (+50/-25%), In Service Date: 2028.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of 100 percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investment in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,604	13,876	13,085	25,252	19,598

NYSEG

CLCPA Phase II - SS - Terminal Upgrades

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

Terminal Equipment at the following stations will be replaced at the following substations:

- Moraine Rd
- Flat St
- Spencer Hill
- Yawger Rd
- Caton Ave
- West Erie Ave
- Sullivan Park

Reasons and Benefits:

Increase in System Headroom: Implementation is part of the New York State Public Service Commission CLCPA Phase II Order dated 9/9/2021, to provide, at a minimum, the minimum Limited Curtailment Headroom.

Deliverability: Implementation addresses program solution need to remove system constraints (or “bottlenecks”) caused by high renewable generation dispatches. Such scenario was determined by power flow analysis performed to identify all applicable thermal and voltage constraints requiring mitigation, so renewables were sufficiently deliverable.

Reliability: solution addresses system deficiencies identified from the application of regional and local planning standards (e.g., voltage, thermal overloads etc.).

Five Year Capital Plan

All amounts shown below in thousands ($000’s)

2024	2025	2026	2027	2028
818	3,690	2,735	0	0

NYSEG

CLCPA Phase 2 - SS - Hillside

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. Due to the physical and outage limitations of the existing substation, the deliverability needs, and the existing asset condition needs, a full rebuild of the substation would be necessary. The limited curtailment option requires the decommissioning of the substation's 115 kV yard and re-routing the existing 115 kV lines to a new 115 kV 3 bay AIS break and a half (BAAH) at the Watercure Road substation approximately one mile to the east and connecting the 230/115/34.5 kV power transformer Bank #3 tertiary to the 34.5 kV bus.

The cost estimate for this component alternative is $10.2 M (+50/-25%), In Service Date: 2029.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of 100 percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investment in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
65	3,133	2,963	2,705	312

NYSEG

CLCPA Phase 2 - SS - Montour Falls

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. The Limited Curtailment option for the Montour Falls substation required the replacement of the 115 kV main bus due to thermal overloads as well as the installation of a two new 30 MVAR cap banks. Due to the physical and outage limitations of the existing substation, the deliverability needs, and the existing asset condition needs, a full rebuild of the substation in a new location would be necessary.

The limited curtailment option consists of a full substation rebuild as a 115 kV four-bay breaker-and-a-half (BAAH) air insulated substation (AIS) design with two (2) new 115/34.5 kV 50 MVA transformers, two (2) new 115 kV 30 MVAR capacitor banks, a new 34.5 kV gas insulated switchgear (GIS) straight bus, well as a 12.5 kV GIS straight bus (operated at 8.3 kV). The existing 34.5/12.4/8.3 kV transformer will be relocated and reused.

The cost estimate for this component alternative is $135.9 M (+50/-25%), In Service Date: 2029.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of one hundred percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investment in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
9,812	14,175	22,056	2,596	122,401

NYSEG

CLCPA Phase 2 - SS - Stoney Ridge

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. The Limited Curtailment option requires the replacement of the existing 230/115/34.5 kV transformer Bank 1 one (1) new larger 448 MVA 230/115/34.5 kV transformer. Bank #2 needs to be installed in the substation at a new breaker bay position. This requires the addition of a new 230kV circuit breaker and switches at available position Bus #2 position. The existing 115kV breaker transformer/line bay equipment feeding to line 712 shall be removed and new similar 115kV equipment connected to the secondary of Bank #2 transformer shall be installed.

The cost estimate for this component alternative is $36.5 M (+50/-25%), In Service Date: 2028.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of 100 percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,710	12,040	1,828	7,120	7,842

NYSEG

CLCPA Phase 2 - SS - Watercure

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. The Limited Curtailment option for the 345/230/115 kV Watercure Road substation required the decommissioning of the Hillside substation 115 kV yard and re-routing the existing 115 kV lines to a new 115 kV 3 bay air insulated substation (AIS) break and a half (BAAH) at the Watercure Road substation. This solution also requires the addition of one 345 kV AIS BAAH bay to existing two bay BAAH at the Watercure road substation with a new 345/115 448 MVA power transformer.

The limited curtailment option consists of a 345 kV AIS BAAH bay expansion, the installation of a new 448 MVA 345/115 kV transformer and a new 115 kV three-bay BAAH AIS substation at the existing Watercure Rd substation location. New Site grading and the relocation of the four existing 115 kV lines (L978, L960, L962 & L963) currently at Hillside will be required as a part of this solution.

The cost estimate for this component alternative is $138.3 M (+50/-25%), In Service Date: 2028.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of one hundred percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
8,787	6,624	5,389	19,561	6,762

NYSEG

CLCPA Phase 2 Lines - Line 539

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. As a result of the known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild about two miles (out of 12.9 miles) of Line 539 with 477 Pelican aluminum conductor steel reinforced (ACSR). Record drawings indicate this transmission line has right of way (ROW), but the width is not defined. It is anticipated that twenty-five feet of additional ROW would be required for about two miles, or six acres.

The cost estimate for this project is $8.2 M (+50/-25%), In Service Date: 2027.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of one hundred percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
711	852	5,796	7	0

NYSEG

CLCPA Phase 2 Lines - Line 542

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. As a result of the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 542 on an offset with 477 Pelican aluminum conductor steel reinforced (ACSR). Where Line 542 is currently on double circuit structures with Line 544, Line 542 will be rebuilt with new single circuit structures. Line 544 will be left on the existing double circuit structures. The right of way (ROW) will be expanded by fifty feet for about 0.7 miles, or four acres.

The cost estimate for this project is $21.8 M (+50/-25%), In Service Date: 2027.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of one hundred percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,713	1,850	16,568	21	0

NYSEG

CLCPA Phase 2 Lines - Line 546

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. As a result of the aging infrastructure, known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild about 10.9 miles (out of 15.7 miles) of Line 546 on an offset with 477 Pelican aluminum conductor steel reinforced (ACSR). Record drawings indicate the right of way (ROW) varies extensively. To make this transmission line have at least one hundred feet of ROW in all locations, thirty-nine acres of land will be required.

The cost estimate for this project is $42.8 M (+50/-25%), In Service Date: 2027.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of one hundred percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,697	3,985	18,320	13,704	5

NYSEG

CLCPA Phase 2 Lines - Line 565

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. Due to the aging infrastructure, known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 565 on an offset with 477 Pelican aluminum conductor steel reinforced (ACSR). Record drawings indicate the right of way (ROW) varies extensively. To make this transmission line have at least one hundred feet of ROW in all locations, thirty-seven acres of land will be required.

The cost estimate for this project is $31.0 M (+50/-25%), In Service Date: 2027.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of one hundred percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,039	2,994	14,594	8,184	0

NYSEG

CLCPA Phase 2 Lines - Line 67

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. As a result of the aging infrastructure, known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 67 on an offset with bundled 1192 Bunting aluminum conductor steel reinforced (ACSR). Due to right of way (ROW) congestion near Stolle Road Substation and anticipated outage restrictions, it is assumed that Line 67 will be constructed with single circuit structures on new ROW near Stolle Road Substation. 150 feet of new ROW will be required for about 2.6 miles, or fifty-four acres. Line 29 will remain on the existing double circuit towers. This project will require an article VII permitting submission.

The cost estimate for this project is $93.05 M (+50/-25%), In Service Date: 2029.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of one hundred percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will

allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,040	5,869	3,571	17,013	15,276

NYSEG

CLCPA Phase 2 Lines - Line 68

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. Due to the known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 68 on an offset with bundled 1192 Bunting aluminum conductor steel reinforced (ACSR). No new right of way (ROW) is anticipated for this solution. The circuit has a 250-foot-wide ROW, however one hundred foot is uncleared, some of which will be required to accommodate a centerline offset. This project will require an article VII permitting submission.

The cost estimate for this project is $181.8 M (+50/-25%), In Service Date: 2030.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of one hundred percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investment in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
8,665	5,507	1,050	2,646	27,555

NYSEG

CLCPA Phase 2 Lines - Line 69

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. As a result of the known asset condition needs and the deliverability overloads requiring larger capacity conductors, the initial recommended solution was to rebuild Line 69 on an offset. However, due to right of way (ROW) congestion near Hillside Substation and anticipated outage restrictions, Line 69 will be rebuilt on new ROW using single circuit structures with 2156 Bluebird aluminum conductor steel reinforced (ACSR). 150 feet of new ROW will be required for about three miles, or 54 acres.

The cost estimate for this project is $34.7 M (+50/-25%), In Service Date: 2030.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of 100 percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
192	1,925	1,601	4,199	24,886

NYSEG

CLCPA Phase 2 Lines - Line 711

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. Due to the known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 711 on an offset with 2156 Bluebird aluminum conductor steel reinforced (ACSR). Where Line 711 is currently on double circuit structures with Line 561, Line 711 will be rebuilt with new single circuit structures. Line 561 will be left on the existing double circuit structures. The right of way (ROW) will be expanded by fifty feet for about one mile, or six acres.

The cost estimate for this project is $11.1 M (+50/-25%), In Service Date: 2029

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of one hundred percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
649	943	701	1,864	4,416

NYSEG

CLCPA Phase 2 Lines - Line 712

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. As a result of the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 712 on an offset with 2156 Bluebird aluminum conductor steel reinforced (ACSR). Where Line 712 is currently on double circuit structures with Line 561, Line 712 will be rebuilt with new single circuit structures. Line 561 will be left on the existing double circuit structures. The right of way (ROW) will be expanded by fifty feet for about 2.5 miles, or fifteen acres.

The cost estimate for this project is $23.7 M (+50/-25%), In Service Date: 2026.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of one hundred percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
212	3,584	2,555	4,295	14,735

NYSEG

CLCPA Phase 2 Lines - Line 72

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. As a result of the known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 72 on an offset with 2156 Bluebird aluminum conductor steel reinforced (ACSR). Due to right of way (ROW) congestion near Hillside Substation and anticipated outage restrictions, Line 72 will be rebuilt on new ROW using single circuit structures near Hillside Substation. 160 feet of new ROW will be required for about two miles, or thirty-nine acres. The remainder of the circuit has a 250-foot-wide ROW, however 100 foot is uncleared, some of which will be required to accommodate a centerline offset. This project will require an article VII permitting submission.

The cost estimate for this project is $224.4 M (+50/-25%), In Service Date: 2030.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of one hundred percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
9,225	6,712	1,510	4,309	40,046

NYSEG

CLCPA Phase 2 Lines - Line 722

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. As a result of the aging infrastructure, known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 722 on an offset with 1590 Falcon aluminum conductor steel reinforced (ACSR) for both curtailment conditions. Record drawings indicate this transmission line has pole rights only, no right of way (ROW). One hundred feet of new ROW will be required for this rebuild, or 281 acres. This project will require an article VII permitting submission.

The cost estimate for this project is $114.8 M (+50/-25%), In Service Date: 2030

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of one hundred percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
4,150	10,545	2,984	975	49,509

NYSEG

CLCPA Phase 2 Lines - Line 723

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. As a result of the known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 723 on an offset with bundled 795 Drake aluminum conductor steel reinforced (ACSR). No new right of way (ROW) is anticipated for this solution. This project will require an article VII permitting submission.

The cost estimate for this project is $75.9 M (+50/-25%), In Service Date: 2030.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of one hundred percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,445	4,329	834	9,109	22,025

NYSEG

CLCPA Phase 2 Lines - Line 724

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. Under Limited Curtailment conditions, this transmission line is 90% overloaded. Under No Curtailment conditions, this transmission line is 144% overloaded. As a result of the aging infrastructure, known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 724 on an offset with 1590 Falcon aluminum conductor steel reinforced (ACSR) for both curtailment conditions. Record drawings indicate this transmission line has pole rights only, no right of way (ROW). One hundred feet of new ROW will be required for this rebuild, or 183 acres. This project will require an article VII permitting submission.

The cost estimate for this project is $63.8 M (+50/-25%), In Service Date: 2029

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of 100 percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,557	7,030	813	507	16,317

NYSEG

CLCPA Phase 2 Lines - Line 932

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. As a result of the known and unknown asset condition needs, in-kind structure replacements will be required on the NYSEG section of this transmission line prior to installing the smart valve power flow control device that will prevent this line from overloading. No new right of way (ROW) is anticipated for this solution. This project may require an article VII permitting submission.

The cost estimate for the in-kind structure replacements is $33.9 M (+200/-50%), In Service Date: 2030.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of 100 percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
692	1,143	760	11,378	16,225

NYSEG

CLCPA Phase 2 Lines - Line 934

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. Under Limited Curtailment conditions, this transmission line is 138% overloaded. Under No Curtailment conditions, this transmission line is 154% overloaded. As a result of the aging infrastructure, known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 934 on an offset with 795 Drake aluminum conductor steel reinforced (ACSR) for both curtailment conditions. Line 934 will be rebuilt as single circuit monopole structures through Letchworth State Park. Record drawings indicate the right of way (ROW) varies extensively. To make this transmission line have at least one hundred feet of ROW in all locations, forty-eight acres of land will be required. This project will require an article VII permitting submission.

The cost estimate for this project is $89.4 M (+50/-25%), In Service Date: 2029.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of 100 percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
7,179	12,748	1,385	18,374	47,731

NYSEG

CLCPA Phase 2 Lines - Line 935

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. Due to the known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 935 on an offset with 2156 Bluebird aluminum conductor steel reinforced (ACSR). No new right of way (ROW) is anticipated for this solution. The cost estimate for this project is $31.5 M (+50/-25%), In Service Date: 2027.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of 100 percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
231	2,697	2,249	685	6,394

NYSEG

CLCPA Phase 2 Lines - Line 953

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. Due to the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 953 on an offset with 2156 Bluebird aluminum conductor steel reinforced (ACSR). No new right of way (ROW) is anticipated for this solution.

The cost estimate for this project is $18.1 M (+50/-25%), In Service Date: 2028

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of 100 percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investment in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,192	1,154	335	5,134	8,682

NYSEG

CLCPA Phase 2 Lines - Line 963

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. As a result of the aging infrastructure, known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild the double circuit Line 963/978 on an offset. Line 963 will use 1590 Falcon aluminum conductor steel reinforced (ACSR) conductor from Montour Falls Substation to Ridge Road and 1192 Bunting ACSR from Ridge Road to Hillside Substation. Record drawings indicate this double circuit transmission line has pole rights only, no right of way (ROW). One hundred feet of new ROW will be required for this rebuild. The allocation of land to be acquired under the Line 963 scope of work is ninety-eight acres. This project will require an article VII permitting submission. The costs provided hereafter are for Line 963 only.

The cost estimate for this project is $74.6 M (+50/-25%), In Service Date: 2030.

Reasons and Benefits:

Together, these projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of 100 percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
4,703	6,442	425	430	15,211

NYSEG

CLCPA Phase 2 Lines - Line 965

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. As a result of the known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 965 on an offset with bundled 795 Drake aluminum conductor steel reinforced (ACSR). No new right of way (ROW) is anticipated for this solution. This project will require an article VII permitting submission.

The cost estimate for this project is $116.1 M (+50/-25%), In Service Date: 2030

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of 100 percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
4,464	5,392	1,309	1,530	30,539

NYSEG

CLCPA Phase 2 Lines - Line 968

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. Under Limited Curtailment conditions, this transmission line is 98% overloaded. Under No Curtailment conditions, this transmission line is 157% overloaded. As a result of the aging infrastructure, known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 968 on an offset with 1590 Falcon aluminum conductor steel reinforced (ACSR) for both curtailment conditions. Record drawings indicate this transmission line has pole rights only, no right of way (ROW). One hundred feet of new ROW will be required for this rebuild, or sixty-four acres.

The cost estimate for this project is $18.5 M (+50/-25%), In Service Date: 2027.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of 100 percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
792	1,507	696	161	3,668

NYSEG

CLCPA Phase 2 Lines - Line 978

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. As a result of the aging infrastructure, known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild double circuit Line 978/963 on an offset. Line 978 will use 1192 Bunting aluminum conductor steel reinforced (ACSR) conductor from Montour Falls Substation to Ridge Road and 795 Drake ACSR from Ridge Road to Hillside Substation. Record drawings indicate this double circuit transmission line has pole rights only, no right of way (ROW). One hundred feet of new ROW will be required for this rebuild. The allocation of land to be acquired under the Line 978 scope of work is ninety-eight acres. This project will require an article VII permitting submission. The costs provided hereafter are for Line 978 only.

The cost estimate for this project is $74.6 M (+50/-25%), In Service Date: 2030.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of 100 percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
799	12,040	485	484	17,569

NYSEG

CLCPA Phase 2 Lines - Willis-Malone -Line 910

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. As a result of the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 910 on an offset with 795 Drake aluminum conductor steel reinforced (ACSR). Where Line 910 is currently on double circuit structures with Line 911, Line 910 will be rebuilt with new single circuit structures. Line 911 will be left on the existing double circuit structures. A preliminary review of gas insulated switchgear (GIS) maps, NYSEG GIS and Plan and Profiles indicate no additional right of way (ROW) should be required for the rebuild of this line.

The cost estimate for this project is $39.0 M (+50/-25%), In Service Date: 2030.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of 100 percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,374	1,622	627	7,845	27,714

NYSEG

CLCPA Phase 2 - SS - Bath

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. The Limited Curtailment option for the Bath Substation required decommissioning existing 115kV portion of station and expansion of yard to accommodate addition of 115 kV 3 Bay Breaker-and-a-half (BAAH) and a +150/-150 MVAR dynamic volts-amps reactive (VAR) compensation unit (STATCOM). The expansion work considered reusing exiting 34.5kV and 12.5kV switchyard equipment if practicable. There is enough space at the existing parcel to allow for the substation to be expanded.

The cost estimate for this component alternative is $114.0 M (+50%/-25%), In Service Date: 2028.

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of 100 percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investment in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
8,168	49,339	26,212	61,506	49,544

NYSEG

Ithaca Electrification Project Phase 1

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

Voltage and thermal violations exist under a range of contingency conditions in the transmission and distribution network between Coddington and Etna Substations in NYSEG's Ithaca Division. To resolve the voltage violations, three shunt capacitors are proposed at

- West Hill
- Trumansburg
- Cayuga Heights

There is a plan to rebuild Coddington substation, which will resolve the thermal violations in the long term (2026-2027), but in the short term there will be upgrades to the 115 kV bus work at Coddington. Two transformers at Fourth Street will be replaced with larger units, and the 8.3 kV distribution network (which is islanded from the 12.5 kV surrounding network) will be upgraded to 12.5 kV.

Reasons and Benefits:

The 34.5 kV transmission network between Coddington and Etna Substations is unable to maintain system voltages above Transmission Planning's minimum criteria of 0.95 per unit under multiple contingency conditions.

The long-term plan to rebuild Coddington Substation does not address the immediate system thermal needs which impact up to 30,000 customers. For a fault on either of the Coddington 115/34.5 kV transformers, the remaining transformer may exceed its thermal Long-Term and Short-Term Emergency ratings. Installing a temporary transformer at Coddington Substation until construction is complete on the rebuild will improve reliability in the short term.

The Fourth Bank Substation Bank #1 transformer is projected to have its capacity exceeded by 2026. The distribution circuits out of Fourth Street Substation are 8.3 kV, while all other distribution circuits in this region are 12.5 kV. This negatively impacts reliability for Fourth Street Substation customers (approximately 3,300) as well as

customers on the nearby circuits (approximately 1,500) since the redundancy that could be provided by having a uniform voltage level is not available. Load growth opportunities are also restricted due to fewer load balancing options resulting from disparate distribution voltages.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
4,274	13,033	23,288	1,542	0

NYSEG

Ithaca Reliability Projects Phase 2 (Electrification)

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

The load growth projected due to the Ithaca Electrification Project is expected to result in new thermal violations on the transmission and distribution systems, which require mitigation. Five projects would be required to support the full extent of load growth projected by 2030.

1. The West Hill 34.5/12.5 kV transformer will be replaced with a larger unit.
2. Both 34.5/12.5 kV transformers at South Hill will be replaced with larger units.
3. A new 12.5 kV distribution circuit will be routed out of East Ithaca.
4. 34.5 kV Line 526 between Coddington and South Hill Substations, 2.7 miles, will be uprated.
5. 34.5 kV Line 532 between Coddington and West Hill Substations, 4.5 miles, will be uprated.

Reasons and Benefits:

The projected load growth from the Ithaca Electrification Project is expected to result in up to a 100% increase in Winter peak (30% increase in summer peak) load at Fourth St, West East Ithaca, South Hill, and West Hill Substations. This load growth has the potential to result in a series of new thermal violations on the transmission and distribution systems.

The West Hill 34.5/12.5 kV transformer is rated to 10.5 MVA. Based on the rated of expected load growth, the peak load at West Hill is expected to exceed 10.5 MVA in 2027 and increase up to 15.5 MVA by 2030.

South Hill 34.5/12.5 kV transformer Bank #1 is rated to 10.5 MVA, and Bank #2 is rated to 14 MVA. Based on the rated of expected load growth, the peak load at West Hill is expected to exceed the capacity of the Bank #1 transformer in 2027 and exceed the capacity of the Bank #2 transformer in 2028. By 2030 the combined load at South Hill Substation is projected to be up to 35 MVA.

East Ithaca substation supplies four (4) distribution circuits, and two of these circuits (#404 and #406, each rated to 13 MVA) are projected to become overloaded by 2028. Due to the location of these circuits, it is not feasible to offload these circuits onto other existing circuits to the extent that the overload concerns would be fully resolved.

34.5 kV Line 526 supplies the South Hill Substation under normal conditions, and the Winter Normal rating of Line 526 is 31 MVA. The load, under normal Winter peak conditions, is projected to exceed 31 MVA in 2028 and reach up to 37 MVA by 2030.

34.5 kV Line 532 is a source to West Hill Substation under normal conditions and a backup source to South Hill Substation. By 2029, the load growth at South Hill is projected to cause a thermal overload (exceeds Winter LTE rating of 51 MVA by 108%) on Line 532 for any conditions when Line 526 is removed from service.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	1,000	10,000	10,000	10,000

NYSEG

Java SS Microgrid BESS

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

The Java Substation (SS) Microgrid Battery Energy Storage System (BESS) project meets the New York Rate Case Order to address a reliability need for loss of a substation transformer by installing a microgrid utilizing BESS. This is a very innovative and unique solution for the distribution side and one of the first projects of its kind in New York where energy is not sold back into the market. The microgrid will be owned by NYSEG and provide back-up to multiple substation circuits during an outage for approximately 1,700 customers. The project is currently on hold until 2027, pending re-evaluation of traditional solution costs, project costs, and a Benefit Cost Analysis (BCA).

Reasons and Benefits:

The project needs identified for either a traditional wires solution or a Non-Wires Alternatives (NWA) solution (in total) were to:

- Address reliability and power quality issues that exist on the Java circuit #280 and #281
- Address the potential risk of failure of the existing transformer; and
- Avoid an outage up to eight hours for approximately 1,700 customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
283	69	73	31,984	9,383

Electric Clean Energy Transformation

RG&E

CLCPA Phase 2 - Lines - Line 906 CAPEX 372
CLCPA Phase II - SS - Terminal Upgrades 374
CLCPA Phase 2 - Transmission Projects 375

RG&E

CLCPA Phase 2 - Lines - Line 906 CAPEX

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

This project is part of the Climate Leadership and Community Protection Act (CLCPA) Transmission Projects Phase 2 Program. Line 906 is a 115 kV transmission line that is 29.7 miles long and runs from Station 82 to Station 128. The existing conductor type is 336 Linnet aluminum conductor steel reinforced (ACSR). Today, the conductor is 46 years old, and the average pole age is 56 years old. There is currently a total of six Transmission Line Deficiencies (TLD)'s on this transmission line that require a structure replacement. One outage has occurred on this transmission line since January of 2019.

Under Limited Curtailment conditions, this transmission line is 60% overloaded. Under No Curtailment conditions, this transmission line is 123% overloaded. Due to the known asset condition needs and the deliverability overloads requiring larger capacity conductors, the recommended solution is to rebuild Line 906 on an offset with 1590 Falcon ACSR for both curtailment conditions. Record drawings indicate this transmission line has pole rights only, no right of way (ROW). 100 feet of new ROW will be required for this rebuild, or 359 acres. This project will require an article VII permitting submission.

The cost estimate for this project is $156.8 M (+50/-25%), In Service Date: 2030

Reasons and Benefits:

Together, CLCPA Phase 2 projects will provide 1,876 MW of capacity headroom for renewable generation and will be the jumpstart investments needed for the State to achieve its goals of 70 percent renewable energy by 2030, and elimination of 100 percent of greenhouse gas emissions from the electric sector by 2040. The selected solution modernizes the grid by replacing aging transmission assets with infrastructure built to current Avangrid standards. These Phase 2 Projects will allow renewable generation developers to make substantial private investments in large-scale renewables in the areas of the State that are most favorable for such development.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,980	7,823	6,279	6,641	72,316

RG&E

CLCPA Phase II - SS - Terminal Upgrades

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

Terminal Equipment at the following stations will be replaced:

- Station 128

Reasons and Benefits:

Increase in System Headroom: Implementation is part of the New York State Public Service Commission CLCPA Phase II Order dated 9/9/2021, to provide, at a minimum, the minimum Limited Curtailment Headroom.

Deliverability: Implementation addresses program solution need to remove system constraints (or "bottlenecks") caused by high renewable generation dispatches. Such scenario was determined by power flow analysis performed to identify all applicable thermal and voltage constraints requiring mitigation, so renewables were sufficiently deliverable.

Reliability: solution addresses system deficiencies identified from the application of regional and local planning standards (e.g., voltage, thermal overloads etc.).

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
162	296	300	0	0

RG&E

CLCPA Phase 2 - Transmission Projects

Line of Business: Electric
Category: Clean Energy Transformation

Scope:

The CLCPA Transmission Projects Phase 2 Program consists of the projects listed below. The projects are spread throughout the Hornell and South Perry areas within NYSEG's territory and the Central area of RGE. The specific projects are as follows:

RG&E Transmission Lines

- RGE 115 kV Line 906 Full Rebuild

RG&E Substations

- Minor Substation Upgrade Projects

Reasons and Benefits:

The objective of this Climate Leadership and Community Protection Act (CLCPA) Phase 2 Southern Tier Region Area of Concern Firm Renewable Generation Assessment (Study) was to determine the system upgrades necessary to satisfy the New York Public Service Commission's (PSC) order (Phase 2 Order) to study the necessary investment to reduce/eliminate transmission restrictions for the developed renewable energy projects in New York. This Study focused on the PSC's Z1" Area of Concern (Southern Tier) as it includes areas within the Central area of RGE.

To resolve the Near-Term CLCPA Need, the Phase 2 Order directed that the applicable New York transmission utilities present a minimum of two alternatives for each Area of Concern that identify the most cost-effective Phase 2 Projects on a dollar per megawatt basis. These proposals would include transmission system upgrades that reduce the curtailment risk facing the renewable energy projects that have reached an advanced development status ("Advanced Stage Renewables") within the Areas of Concern. Accordingly, AVANGRID studied two scenarios: No Curtailment (100% generation capability across the Southern Tier region), and Limited Curtailment (70% generation capability across the Southern Tier region).

This Study investigated two option sets to address the PSC order: the Reinforcement Option Set, and the Expansion Option Set. Each Option Set consists of two alternatives,

one each to address the Phase 2 Order's stated objectives. The study found the Reinforcement Option Set the recommended solution set to address the congestion issues in the "Z1" Area of Concern.

Deliverability Needs

A steady state deliverability assessment was performed on each case to determine the extent of N-0 (i.e. system normal) and N-1 (i.e. post-contingency) transmission system constraints in the Area of Concern when the Advanced Stage Renewables were coincidently modeled at the benchmark output levels (i.e. 100% or 70% of nameplate). The contingency analysis included all applicable BES contingencies and respected all applicable system operating limits.

The existence of constraints in the deliverability assessment is indicative that, absent a transmission investment, one or more generators must be curtailed. Therefore, in order to meet the Area of Concern curtailment risk-reduction objectives of the Phase 2 Order, the deliverability assessment was required to yield a result which indicated no transmission system constraints.

Asset Condition Needs

Asset condition deficiencies were identified by an assessment of the physical condition of the transmission and substation ("T&S") assets related to each of the proposed projects, including visual inspections along with a review of operations and maintenance reports. Other available records, including equipment health reports, protection and control records, and flood exposure risks were also considered.

Please refer to the CLCPA Southern Tier Region Area of Concern Firm Renewable Generation Assessment for additional details.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
158	0	0	0	0

Electric Customer Focus

NYSEG

Distribution Line 378
Electric Meters 379
Government Highway 380
Industrial and Commercial Service Connections 381
LED Streetlighting 382
Make Ready 383
Residential Line 384
Service Connect 385
Storms Electric 386
Street Light 387
Transmission Line 388

NYSEG

Distribution Line

Line of Business: Electric
Category: Customer Focus

Scope:

The Distribution Line program consists of replacing infrastructure due to emergency situations causing interruptions in service. This program is for unplanned, reactive work on the electric distribution system such as car hit poles, damaged conductors, transformers, and poles. This program is budgeted each year based on the cost that has occurred in previous years. It is difficult to predict what may break and or be damaged by others, so a historical estimate is used year after year.

Reasons and Benefits:

Being able to quickly repair damaged assets is paramount in ensuring public safety and maintaining a reliable distribution system. The program maintains public safety and ensures our regulatory service targets are met. Responding to and repairing emergency situations promptly directly impacts System Average Interruption Frequency Index (SAIFI)/Customer Average Interruption Duration Index (CAIDI) and reduces the likelihood of facing regulatory penalties.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
36,365	37,014	39,364	49,205	61,506

NYSEG

Electric Meters

Line of Business: Electric
Category: Customer Focus

Scope:

This program purchases electric meters and metering transformers to replace existing, aged meters and transformers as they are removed from service as well as for new installations, as required by Tariff. Electric meters are exchanged for annual PSC required programs including statistical sampling, remediation programs and for other various reasons including, but not limited to, relocation, load increases, meter damage, and special testing

Reasons and Benefits:

This program is required by 16 New York Codes, Rules and Regulations (NYCRR) Part 92 and Tariff PSC 19- 4 (Metering and Billing) for new meters and replacement programs. The program helps to ensure accurate recording of customers usage and results in accurate customer billing.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,071	1,597	2,491	2,451	2,786

NYSEG

Government Highway

Line of Business: Electric
Category: Customer Focus

Scope:

This program relocates electric facilities that conflict with highway, road, and street projects being undertaken by municipalities and other government agencies. This program is budgeted based on historical spend while considering any added increase or decrease from various government agencies if communicated in advance. Many of these requests are made in-year by the government agencies and are therefore unplanned.

Reasons and Benefits:

The projects funded under this program are non-discretionary and must be completed under tariff to serve NYSEG State and Municipal customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,773	4,902	5,049	6,312	7,890

NYSEG

Industrial and Commercial Service Connections

Line of Business: Electric
Category: Customer Focus

Scope:

This program provides service connections for industrial and commercial customers. Included within the program is anything required for constructing, expanding, replacing, or relocating electric infrastructure assets to connect commercial customers. The cost of the service is comprised of tariff portions as well as customer payments for the amounts above the tariff required provision. This program is budgeted based on historical spend and any added increase or decrease from the various commercial customers if communicated in advance.

Reasons and Benefits:

This program is mandatory to serve NYSEG customers. NYSEG needs to provide reliable and dependable electric service to large commercial and industrial customers. Often, large commercial and industrial customers require an upgrade to a Company's electric facilities to meet their needs, and the Company strives to make these upgrades in a timely manner. In certain cases, all, or a portion of the costs of these upgrades may be offset by contributions from the specifically affected customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
8,284	7,783	8,016	10,020	12,525

NYSEG

LED Streetlighting

Line of Business: Electric
Category: Customer Focus

Scope:

The NYS LED Streetlight Conversion Program is a tariff mandated program to provide streetlighting customers with the availability to install energy efficient lighting to meet NY State mandates. This is an on-going Program that is estimated as a five-year program (2019-2024).

Reasons and Benefits:

This program helps to create safe and inviting areas throughout the communities we serve. The benefits associated with the conversion of existing lighting to LED include energy conservation, will create a positive environmental impact due to decreased light trespass and no mercury content (reducing hazardous waste), lower maintenance costs due to longer expected life, and improved visibility thereby increasing safety.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,932	0	0	4,915	6,144

NYSEG

Make Ready

Line of Business: Electric
Category: Customer Focus

Scope:

The Make Ready program is working to make our infrastructure available to meet the broadband communication needs of our customers. As this work has evolved, we have developed, with input from DPS Staff and other stakeholders, guidelines for the cost treatment of the different situations encountered in the field that more closely align with those used by other New York utilities.

In 2022, Governor Hochul announced the start of the $1 billion ConnectALL initiative, which is intended to deliver affordable broadband to millions of New Yorkers statewide. As a result of this initiative, the Companies have begun to see significant increases in pole attachment applications by broadband companies impacting the Companies' infrastructure. As a result of these applications, the Companies may experience extraordinary increases in the level of pole attachment requests, which would have a corresponding material increase in the Companies' costs to accommodate broadband expansion initiatives.

Reasons and Benefits:

Process Applications providing safe access to distribution pole plant for communications/broadband deployment needs in accordance with PSC Law 119a. There are significant consequences if these regulatory requirements are not met. The program also provides an avenue for timely access to distribution pole plant for communications and broadband deployment needs in serving residents of New York State.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
70,000	80,884	70,450	88,063	110,078

NYSEG

Residential Line

Line of Business: Electric
Category: Customer Focus

Scope:

This program provides distribution line extensions and necessary facilities (poles, transformers, conductors, conduit, hand holds, manholes, etc.) to provide service to both large scale residential development projects and individual residential units or meters. The requirement for each project is unique based on the requirements of development projects, the project locations, and the existing electric system infrastructure. This program is budgeted based on historical spend and any added increase or decrease from various residential customers if communicated in advance. If a project is greater than $500K a separate tracking order is created.

Reasons and Benefits:

The extensions completed under this program are mandatory to serve NYSEG customers. NYSEG needs to provide safe, reliable, and dependable electric service. Often customers require line extensions to connect to the Company's electric facilities, and the Company strives to meet the customers' demands in a timely manner. In certain cases, a portion of the costs of these upgrades may be offset by contributions from the specifically affected customers. Adequate funding, material, and available field crews are necessary to serve our customers in a timely manner.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
16,616	13,552	13,958	17,448	21,810

NYSEG

Service Connect

Line of Business: Electric
Category: Customer Focus

Scope:

This program installs or upgrades new electric service to individual residential units at the customer's request. Included within the program is anything required for constructing, expanding, replacing, or relocating electric infrastructure assets to connect residential customers. Meters required as part of customer projects are also included on this line item. The cost of the service is comprised of tariff portions as well as customer payments for the amounts above the tariff required provision.

Reasons and Benefits:

This program is obligatory to serve NYSEG customers. NYSEG needs to provide reliable and dependable electric service to residential customers. The Company strives to fulfill these requests in a timely manner. In certain cases, all, or a portion of the costs of these installations and upgrades may be offset by contributions from the specifically affected customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
10,308	11,973	12,362	15,452	19,315

NYSEG

Storms Electric

Line of Business: Electric
Category: Customer Focus

Scope:

The Storm Restoration program is to restore power (distribution and/or transmission) due to impacts from major weather events. This program replaces broken poles, conductor, transformers, and other facilities that are damaged during qualifying storm events.

Reasons and Benefits:

Having the ability to quickly respond to storm events and the customer outages is paramount in maintaining a safe and reliable system. The longer the outage the greater impact to Customer Average Interruption Duration Index (CAIDI) metrics and the greater risk that the damaged equipment poses a threat to employee and public safety.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
15,000	16,500	18,150	19,965	21,962

NYSEG

Street Light

Line of Business: Electric
Category: Customer Focus

Scope:

This program provides new overhead street and area lighting and replaces damaged lighting facilities. This program also includes the upgrading and conversion of existing lighting to LED lighting when maintenance occurs. This program is planned based on historical spend and any added projections for LED lighting conversion per request by municipalities in advance.

Reasons and Benefits:

The program keeps NYSEG tariff compliant and improves public safety. The program helps to create safe and inviting areas throughout the communities we serve. The benefits associated with the conversion of existing lighting to LED include energy conservation, positive environmental impact due to decreased light trespass and no mercury content (reducing hazardous waste), lower maintenance costs due to longer expected life, and improved visibility thereby increasing safety.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,867	2,500	2,500	3,125	3,906

NYSEG

Transmission Line

Line of Business: Electric
Category: Customer Focus

Scope:

The Transmission Line program consists of addressing safety concerns by replacing reject poles, car hit poles, damaged conductors, and similar unplanned, reactive work on the electric transmission system 34.5 kV or higher. Work is also performed to replace individual units of property identified as emergent from the transmission line inspection program in addition to addressing Customer Average Interruption Duration Index (CAIDI)/System Average Interruption Frequency Index (SAIFI) Hot Spots in the same calendar year.

Reasons and Benefits:

This program helps to maintain a reliable transmission system and addresses transmission line inspection deficiencies that directly impact CAIDI/SAIFI. Addressing CAIDI/SAIFI Hot Spots and replacing damaged equipment will positively impact the continuity and quality of service required to maintain the transmission system.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
17,106	15,236	15,540	19,425	24,281

Electric Customer Focus

RG&E

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Electric Meters Program 393
Genesee Street 394
Government Highway 395
Government Highway Majors Cap 396
Industrial and Commercial Service Connections 397
LED Streetlighting 398
Make Ready 399
Residential Line 400
Service Connect 401
Storm Electric 402
Street Light 403
Town Of Brighton Arc Light Conversion 404
Transmission Line 405

RG&E

Aqueduct Re-Imagined

Line of Business: Electric
Category: Customer Focus

Scope:

The City of Rochester is executing a program called ROC the Riverway, which includes two dozen transformation projects along the Genesee River. The program is intended to allow Rochester to better leverage the riverfront. Aqueduct Re-Imagined will include a suite of highway and street improvements programs that require RG&E to refurbish and relocated their facilities in the following major sections:

- Rehabilitation of the Aqueduct Streets district
- Removal of the Street Surface of the Broad Street Bridge to expose the historic Aqueduct. RG&E has approximately 11 Circuits in the raceway that will need some type of relocation to facilitate the city's plans.
- South Avenue Two Way conversion
- Stone Street Reconstruction

Reasons and Benefits:

RG&E has been put on notice by the City of Rochester that we will need to address the circuits in conflict with the City's plans. The city asked RG&E to start construction in the summer of 2023.

RG&E would be supporting a betterment initiative while facilitating a mandated relocation within the City right of way.

If this project is not pursued, there is potential for litigation with the City of Rochester as the re-route has the support of New York State with pledged funding, both federal and state.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,618	721	16,064	0	0

RG&E

Distribution Line

Line of Business: Electric
Category: Customer Focus

Scope:

The Distribution Line program consists of replacing infrastructure due to emergency situations causing interruptions in service. This program is for unplanned, reactive work on the electric distribution system such as car hit poles, damaged conductors, transformers, and poles. This program is budgeted each year based on the cost that has occurred in previous years. It is difficult to predict what may break and or be damaged by others, so a historical estimate is used year after year.

Reasons and Benefits:

Being able to quickly repair damaged assets is paramount in ensuring public safety and maintaining a reliable distribution system. The program maintains public safety and ensures our regulatory service targets are met. Responding to and repairing emergency situations promptly directly impacts System Average Interruption Frequency Index (SAIFI)/Customer Average Interruption Duration Index (CAIDI) and reduces the likelihood of facing regulatory penalties.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
16,470	15,775	16,249	20,311	25,389

RG&E

Electric Meters Program

Line of Business: Electric
Category: Customer Focus

Scope:

This program purchases electric meters and metering transformers to replace existing, aged meters and transformers as they are removed from service as well as for new installations, as required by Tariff. Electric meters are exchanged for annual PSC required programs including statistical sampling, remediation programs and for other various reasons including, but not limited to, relocation, load increases, meter damage, and special testing.

Reasons and Benefits:

This program is required by 16 New York Codes Rules and Regulations (NYCRR) Part 92 and Tariff (PSC 19- 4 (Metering and Billing) for new meters and replacement programs. The programs help to ensure accurate recording of customers usage and result in accurate customer billing.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
230	505	918	804	1,020

RG&E

Genesee Street

Line of Business: Electric
Category: Customer Focus

Scope:

The City of Rochester has a highway improvement project that requires relocating 2000'+ of 4 and 11KV underground circuits. The city is scheduled to start construction in spring of 2024 through Fall of 2025.

Genesee St from Elmwood Ave/Scottsville Rd to Brooks Ave requires lowering RG&E's underground facilities that conflicts with proposed construction. There is one 4kV, one 11kV circuits, 600V secondary feeders and pilot cables that are impacted by the reconstruction.

RG&E will rebuild the abandon duct systems to a 6-way duct bank ~2,033' and rebuild 11 manholes needs to be lowered at full depth construction city specifications standards to the new road elevation.

Reasons and Benefits:

This is a mandated project to accommodate the City's highway improvement project.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,009	0	0	0	0

RG&E

Government Highway

Line of Business: Electric
Category: Customer Focus

Scope:

This program relocates electric facilities that conflict with highway, road, and street projects being undertaken by municipalities and other government agencies. This program is budgeted based on historical spend while considering any added increase or decrease from various government agencies if communicated in advance. Many of these requests are made in-year by the government agencies and are therefore unplanned. Type of work includes installation, replacement, relocation, upgrades, repairs to poles, transformers, and feet of conductor.

Reasons and Benefits:

The projects funded under this Program are non-discretionary and must be completed under tariff to serve RG&E State and Municipal customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
7,162	9,319	8,452	10,565	13,206

RG&E

Government Highway Majors Cap

Line of Business: Electric
Category: Customer Focus

Scope:

This program relocates electric facilities that conflict with highway, road, and street projects being undertaken by municipalities and other government agencies. This program is budgeted based on historical spend while considering any added increase or decrease from various government agencies if communicated in advance. Many of these requests are made in-year by the government agencies and are therefore unplanned.

Reasons and Benefits:

The projects funded under this Program are non-discretionary and must be completed under tariff to serve RG&E State and Municipal customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,829	1,695	1,812	2,265	2,831

RG&E

Industrial and Commercial Service Connections

Line of Business: Electric
Category: Customer Focus

Scope:

This program provides service connections for industrial and commercial customers. Included within the program is anything required for constructing, expanding, replacing, or relocating electric infrastructure assets to connect commercial customers. The cost of the service is comprised of tariff portions as well as customer payments for the amounts above the tariff required provision. This program is budgeted based on historical spend and any added increase or decrease from the various commercial customers if communicated in advance.

Reasons and Benefits:

This program is mandatory to serve RG&E customers. RG&E needs to provide reliable and dependable electric service to large commercial and industrial customers. Often, large commercial and industrial customers require an upgrade to a Company's electric facilities to meet their needs, and the Company strives to make these upgrades in a timely manner. In certain cases, all, or a portion of the costs of these upgrades may be offset by contributions from the specifically affected customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
4,554	3,930	3,360	4,200	5,250

RG&E

LED Streetlighting

Line of Business: Electric
Category: Customer Focus

Scope:

The NY LED Streetlight Conversion Program is a tariff mandated program to provide streetlighting customers the availability to install energy efficient lighting to meet NY State mandates. This is an on-going Program that is estimated as a five-year program (2019-2024).

Reasons and Benefits:

This program helps to create safe and inviting areas throughout the communities we serve. The benefits associated with the conversion of existing lighting to LED include energy conservation, will create a positive environmental impact due to decreased light trespass and no mercury content (reducing hazardous waste), lower maintenance costs due to longer expected life, and improved visibility thereby increasing safety.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,190	0	0	0	0

RG&E

Make Ready

Line of Business: Electric
Category: Customer Focus

Scope:

The Make Ready program is working to make our infrastructure available to meet the broadband communication needs of our customers. As this work has evolved, we have developed, with input from DPS Staff and other stakeholders, guidelines for the cost treatment of the different situations encountered in the field that more closely align with those used by other New York utilities.

In 2022, Governor Hochul announced the start of the $1 billion ConnectALL initiative, which is intended to deliver affordable broadband to millions of New Yorkers statewide. As a result of this initiative, the Companies have begun to see significant increases in pole attachment applications by broadband companies impacting the Companies' infrastructure. As a result of these applications, the Companies may experience extraordinary increases in the level of pole attachment requests, which would have a corresponding material increase in the Companies' costs to accommodate broadband expansion initiatives.

Reasons and Benefits:

Process Applications provide safe access to distribution pole plant for communications/broadband deployment needs in accordance with PSC Law 119a. There are significant consequences if these regulatory requirements are not met. The program also provides an avenue for timely access to distribution pole plant for communications and broadband deployment needs in serving residents of New York State.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
32,540	57,189	52,476	65,595	81,994

RG&E

Residential Line

Line of Business: Electric
Category: Customer Focus

Scope:

This program provides distribution line extensions and necessary facilities (poles, transformers, conductors, conduit, hand holds, manholes, etc.) to provide service to both large scale residential development projects and individual residential units or meters. The requirement for each project is unique based on the requirements of development projects, the project locations, and the existing electric system infrastructure. This program is budgeted based on historical spend and any added increase or decrease from various residential customers if communicated in advance. If a project is greater than $500K a separate tracking order is created.

Reasons and Benefits:

The extensions completed under this Program are mandatory to serve RG&E customers. RG&E needs to provide safe, reliable, and dependable electric service. Often customers require line extensions to connect to the Company's electric facilities, and the Company strives to meet the customers' demands in a timely manner. In certain cases, a portion of the costs of these upgrades may be offset by contributions from the specifically affected customers. Adequate funding, material and available field crews are necessary to serve our customers in a timely manner.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
5,797	5,264	4,499	5,624	7,030

RG&E

Service Connect

Line of Business: Electric
Category: Customer Focus

Scope:

This program installs or upgrades new electric service to individual residential units at the customer's request. Included within the program is anything required for constructing, expanding, replacing, or relocating electric infrastructure assets to connect residential customers. Meters required as part of customer projects are also included on this line item. The cost of the service is comprised of tariff portions as well as customer payments for the amounts above the tariff required provision.

Reasons and Benefits:

This program is obligatory to serve RG&E customers. RG&E needs to provide reliable and dependable electric service to residential customers. The Company strives to fulfill these requests in a timely manner. In certain cases, all, or a portion of the costs of these installations and upgrades may be offset by contributions from the specifically affected customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,992	3,670	3,137	3,922	4,902

RG&E

Storm Electric

Line of Business: Electric
Category: Customer Focus

Scope:

The Storm Restoration program is to restore power (distribution and/or transmission) due to impacts from major weather events. This program replaces broken poles, conductor, transformers, and other facilities that are damaged during qualifying storm events.

Reasons and Benefits:

Having the ability to quickly respond to storm events and the customer outages is paramount in maintaining a safe and reliable system. The longer the outage the greater impact to Customer Average Interruption Duration Index (CAIDI) metrics and the greater risk that the damaged equipment poses a threat to employee and public safety.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
4,000	4,400	4,840	5,324	5,856

RG&E

Street Light

Line of Business: Electric
Category: Customer Focus

Scope:

This program provides new overhead street and area lighting and replaces damaged lighting facilities. This program also includes the upgrading and conversion of existing lighting to LED lighting when maintenance occurs. This program is planned based on historical spend and any added projections for LED lighting conversion per request by municipalities in advance.

Reasons and Benefits:

The program keeps RG&E tariff compliant and improves public safety. The program helps to create safe and inviting areas throughout the communities we serve. The benefits associated with the conversion of existing lighting to LED include energy conservation, positive environmental impact due to decreased light trespass and no mercury content (reducing hazardous waste), lower maintenance costs due to longer expected life, and improved visibility thereby increasing safety.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,266	1,118	955	1,194	1,493

RG&E

Town Of Brighton Arc Light Conversion

Line of Business: Electric
Category: Customer Focus

Scope:

The Town of Brighton has 11 historic streetlight circuits that are in disrepair and need light fixtures, cable feeds and bulb replacements. The current concrete pole "harp" arc street lighting system is out of date and RG&E is struggling to find parts for replacement. There are 6 circuits for the RG&E Projects division to restore and convert.

Reasons and Benefits:

The failure of the older lighting system results in unsafe conditions for pedestrians and requests from the Town to replace the failing system. Replacement parts are also incredibly challenging to find and are becoming obsolete.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
4,401	3,790	3,246	6,624	6,275

RG&E

Transmission Line

Line of Business: Electric
Category: Customer Focus

Scope:

The Transmission Line program consists of addressing safety concerns by replacing reject poles, car hit poles, damaged conductors, and similar unplanned, reactive work on the electric transmission system 34.5 kV or higher. Work is also performed to replace individual units of property identified as emergent from the transmission line inspection program in addition to addressing Customer Average Interruption Duration Index (CAIDI)/System Average Interruption Frequency Index (SAIFI) Hot Spots in the same calendar year.

Reasons and Benefits:

This program helps to maintain a reliable transmission system and addresses transmission line inspection deficiencies that directly impact CAIDI/SAIFI. Addressing CAIDI/SAIFI Hot Spots and replacing damaged equipment will positively impact the continuity and quality of service required to maintain the transmission system.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,068	1,905	1,981	2,476	3,095

Electric Modernization

NYSEG

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NYSEG

AMI Integration for ISO

Line of Business: Electric
Category: Modernization

Scope:

NYSEG's current settlement system uses regular scheduled readings from the billing kWh meters applied to static load profiles or for the hourly priced customers with interval meters, the customer's actual hourly usage. This data is used to determine the Load Serving Entities (LSE) hourly loads in accordance with New York Independent System Operator's (NYISO) billing schedule. The current settlement is performed in SAP-EDM (Energy Data Management). The use of Advanced Metering Infrastructure (AMI) data for settlement and NYISO reporting will require upgrades to the existing settlement system. This will include purchasing a new system to handle approximately 1.3 million interval meters for settlement. There will be an RFP process to select a vendor to provide a system. As part of the system, interfaces will be designed including, but not limited to, SAP-CCS (Customer Care System), MV90, ITRON AMI, Energy Service Company (ESCO) files, and NYISO.

The current electric wholesale settlement is performed in SAP-CCS which is not capable of processing the necessary amount (approximately 1.3M) of new AMI meters in an efficient manner. A Request for Proposal (RFP) process will be used to determine the most qualified vendor. The entire project will take 24 months to complete and will start during the first quarter 2023.

The AMI Integration Project involves the following activities:

1. Develop RFP documents and a list of qualified bidders and receive bid responses.
2. Review and score responses and select a vendor.
3. Negotiate and sign a contract with the winning bidder.
4. Engage the successful bidder in Blueprinting/design workshops including detailed project phase planning.
5. Architecture design and initial system build in DEV environment.
6. Functional test and sign-off by the Company
7. System integration test and user acceptance
8. Parallel testing
9. Training and then cut over
10. Post go-live support

Reasons and Benefits:

The existing system for NYISO reporting will not handle the forecasted 1.3 million hourly metered accounts. An upgrade to a more robust system is required. In addition, the use of AMI metered data for NYISO reporting was filed with the New York Public Service Commission (NYPSC) as part of the January 18, 2021, AMI Benefit Implementation Plan. The use of AMI data for settlement will allow NYSEG to provide the NYISO more accurate data in a shorter time frame. By using the actual customer's hourly data, meter error, unread meters, and load profiling error from the use of static profiles will be reduced. During a recent twelve-month period, the approximate hourly value of the swing in system wide Unaccounted for Energy (UFE) ranged from a positive maximum of $35,000 to negative maximum of $(25,000). With these sources of UFE reduced, accuracy of the load settlement data will be increased alleviating these variations in energy costs and provided better load forecasts, and hedging schedules. In addition, the AMI data will improve the accuracy of load profiles used for rate design and cost allocation for future rate cases.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	4,848	893

NYSEG

Application Interface Upgrades

Line of Business: Electric
Category: Modernization

Scope:

Application Interface Upgrades includes projects for Energy Management System (EMS), Outage Management System (OMS), and IT related interface programming. The existing OMS – Geographic Information System (GIS) interface is not efficient and requires to be redesigned to meet operational requirements. The current OMS-GIS interface sends raw data to the GIS system, which then performs significant processing before populating customer facing websites and GIS/OMS related tools. Instead, the OMS system will provide more comprehensive summary data to be used verbatim by IT with minimal processing. This will be much more efficient and greatly simplify the process. The EMS interface converts GIS data to update the transmission and distribution model in the EMS. This program requires rework and a redesign to reduce the processing time.

Reasons and Benefits:

The purpose of the project is to upgrade and, in some cases, largely rewrite the current EMS and OMS-related interfaces to be more efficient. One example is the EMS/GIS interface, which provides graphical information to Spectrum. Today's OMS-GIS interface requires significant processing to convert OMS data into that of the prior GIS/OMS system. This can cause discrepancies in numbers and long processing times. Utilizing data in the format of the new system to populate outer facing web sites and GIS-related apps is preferrable. The Damage Assessment system (DA) was interfaced with SAP, which then provides the DA data to OMS. This interface has continued to improve, but ultimately it may be shifted directly to OMS for increased flexibility and processing capability. This will allow additional data and functionality to be provided beyond what's possible in SAP.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	45	0	0	0

NYSEG

Capital Automation NAT

Line of Business: Electric
Category: Modernization

Scope:

Network Automation & Technology needs to test Distribution Automation devices before their installation. These tests need to be performed in the lab and on the network as pilots. Project includes lab infrastructure, test cabinets, equipment, and tools, besides piloting new technologies devices on the network.

Reasons and Benefits:

Purchase lab equipment and infrastructure to perform tests with automated devices. Also, the funds will be used to pilot new technologies and/or devices on the network. These tests and pilots and important to:

- Make sure they are technically accepted before approving them on BIDs.
- Perform tests for automated schemes, avoiding wrong operations on the field.
- Test new technologies on the network, to justify their benefits in future rate cases.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
545	0	0	0	0

NYSEG

CDG Billing Automation SAP

Line of Business: Electric
Category: Modernization

Scope:

Upgrade SAP CCS for automated Distributed Generation Billing.

Reasons and Benefits:

Since 2015, the New York Public Service Commission (NYPSC) has issued several regulatory Orders directing NY Utilities to comply with Community Distributed Generation (CDG) program implementation requirements. The current CDG Billing Automation Project was initiated in 2021 to address a specific type of compensation methodology referred to as “Value of Distribution of Energy Resources” (VDER or Value Stack).

On September 15, 2022, the NYPSC directed the NY Utilities to file Implementation Plans detailing the progress toward automation of billing and crediting CDG projects. Updates to the Implementations Plans are required to be made quarterly until automation efforts are completed.

The scope of the current efforts to automate Value Stack CDG for the Companies include the billing and crediting of Value Stack CDG Hosts and Satellites, Net Crediting, File Automation, and Reporting. As Distributed Energy Resources (DER) programs and billing continue to evolve, automation of new billing processes will be required.

On December 9, 2023, the core Value Stack CDG Billing Automation code was successfully transported into the Production system. Conversion of existing CDG Projects from the current manual billing method to the automated billing method is planned in 2024. The Companies will begin migrating CDG Projects to automation beginning Q1 2024. The conversion process will be ongoing for several months until all projects are successfully converted to the automated billing method.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
25	0	0	0	0

NYSEG

Distribution Automation

Line of Business: Electric
Category: Modernization

Scope:

Install reclosers, and other applicable control devices, or add communications to existing control devices to automate the Distribution network, specifically at Distributed Generation (DG) interconnected locations, to enable remote monitoring and control of applicable control devices.

Reasons and Benefits:

Improve grid reliability (frequency, duration and breadth of outages), reduce local intervention (use of crew resources) and increase grid integration (growing Distributed Energy Resource (DER) penetration).

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	445	458	0	0

NYSEG

DSIP - ADMS

Line of Business: Electric
Category: Modernization

Scope:

The ADMS (Advanced Distribution Management Systems) will provide the ability to test distribution power flow, volt-var optimization, demand response, and FLISR (Fault Location, Isolation, and Service Restoration).

Reasons and Benefits:

ADMS will provide additional tools to the Distribution Operators to optimize the distribution network. This project awaits updates to the current data sources, which lack enough specific and detailed data to feed the ADMS. The current Grid Model Enhancement Project (GMEP) is a key to producing consistent and accurate data as input to the ADMS system.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	960	0	0	0

NYSEG

DSIP - Advanced Planning Tools

Line of Business: Electric
Category: Modernization

Scope:

The project entails evaluating commercially available Distributed Energy Resources (DER) and load forecasting applications in terms of granular (location and time) functionality and ease of use. To integrate and optimize DER, advanced, granular load and DER forecasting by location on the grid (i.e., each substation and feeder) and by time of day (8,760 hours per year) is needed to inform needs assessments. Accurate, granular DER and load forecasts will help identify grid solutions that ensure that all areas of the grid will be able to reliably serve customers at the lowest reasonable cost.

Reasons and Benefits:

Using a load & DER forecasting tool, distribution system planners can address both short-term circuit trends and long–term grid expansion while remaining consistent with the overall corporate load forecasts for energy and peak demand. This tool will enable NYSEG planners to analyze specific future scenarios such as solar penetration and beneficial electrification adoption.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
132	0	0	0	0

NYSEG

DSIP - Enterprise Analytics

Line of Business: Electric
Category: Modernization

Scope:

A future discovery session will be held to identify beneficial enterprise data analytics use cases. The project will develop solutions to user stories to meet the beneficial use cases.

Reasons and Benefits:

Data and analytics are foundational to realizing Utility of the Future initiatives. The development of the Distributed System Platform (DSP) will provide a range of new data in the NYSEG service territories, including sub-hourly customer consumption data, status information from grid devices, interval measurements of service conditions on distribution feeders, and Distributed Energy Resource (DER) information. As the volume of data collected continues to increase in magnitude through platform investments, NYSEG recognizes the importance of leveraging Data Management, Business Intelligence, and Advanced Analytics to extract insights from this data to help move the business and the market toward a future of informed, proactive, and agile decision making.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	541	541

NYSEG

Electric Reliability Application (ERA) Integration

Line of Business: Electric
Category: Modernization

Scope:

The Electric Reliability Application is used to house outage-related data and compute reliability metrics. It is currently interfaced with the Outage Management System (OMS) reporting system. The initial need is to transition the current ERA system from IT to Operational Smart Grids (OSG) (hardware/support). The long-term goal is to integrate it more tightly with the OMS system for better reporting. This may involve a redesign and ultimately a rewrite of the application.

Reasons and Benefits:

Efficiency, Reliability, Customer Satisfaction. The OSG Applications development team is setting up the system and has appropriate experience to build and support it moving forward. The IT teams are transitioning to more traditional role of Network, server, and PC support (and away from application support). Additionally, OSG currently maintains and supports the NY OMS systems, which populate outage data into ERA, it is logical to support both.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
84	32	0	0	0

NYSEG

IEE Service Mode

Line of Business: Electric
Category: Modernization

Scope:

Currently, MV90 is used to collect data from meters that require interval data. There is an opportunity to exchange the majority of these with AMI (Advanced Metering Infrastructure) meters, but enhancements are required. The Itron Enterprise Edition (IEE) Service Mode implementation project includes the addition of the IEE Service Mode and interval billing determinant calculation. The Service Mode solution will support NYSEG's data collection and management requirements.

NYSEG and RG&E currently have ~2,500 meters that require interval data including Mandatory Hourly Pricing (MHP), Net Meter Installations, and other accounts. By 2026, Net Meter Installations projected volume is expected to double, adding an additional 350 meters to the system. Existing meters will be exchanged for AMI meters and IEE Service Mode and interval billing determinants will be implemented to replace the functionality of AMI and automate some tasks required for billing.

Reasons and Benefits:

Benefits include more timely and accurate bills to customers, elimination of manual work and more sustainable model to accommodate future growth.

Risks if not implemented: Plain Old Telephone Service (POTS) lines are required to communicate data from meters to the MV90 system. POTS lines are becoming obsolete and are no longer being installed by many telephone companies. Meters with built in cellular service are an option for some but not all meters based on cell service coverage across the state. Many cell meters use 2G service which is also being phased out. When communication with the meters is not possible, data must be downloaded manually by a meter tech (NYSEG twice a month due to 5-minute intervals). Phone line issues result in lost data requiring time-consuming editing to estimate and fill in the usage and generation gaps. Troubleshooting issues currently requires 0.31 FTE (Full-time Equivalent). Delayed bills caused by communication failures negatively impact customer satisfaction.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,584	1,626	0	0	0

NYSEG

iTOA Implementation

Line of Business: Electric
Category: Modernization

Scope:

This project is the installation of a planned outage management tool for the control centers. ITOA will be integrated with Avangrid's Energy Management and Outage Management Systems and provide an end-end solution for outage planning, approval, and execution.

Reasons and Benefits:

Once implemented, the application will provide the following modules and capabilities:

- Transmission request scheduling
- Distribution request scheduling
- Switching and Tagging
- Permit Management
- Logging
- Automatic Outage Reporting
- ISO communication module
- Reporting and Data Analytics

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
73	74	0	0	0

NYSEG

New Scheduler

Line of Business: Electric
Category: Modernization

Scope:

Description: Implementation of New Scheduling and Dispatching Solution, replacing the actual Click, evolving to a unified and integrated solution in Avangrid where the different corporate and business applications could be accessed from the field with a new user experience and enabling an improved communication and collaboration between the Field Workforce.

Main Project Goals

- Single Scheduler System
- Improve the User Experience
- Optimize the Mobile System

Main Deliverables:

- Current Scheduling Systems Migration for the Salesforce Scheduling System
- Salesforce Field Service for Short Cycle Implementation
- FWM Integration for Long Cycle
- New Process Harmonization

Reasons and Benefits:

Phase I: Long cycle for NYSEG. This phase will substitute the existing Click V8.3 installed on premise which end of life is December 2023.

Phase II: Short cycle for NYSEG. This phase will migrate the existing solution in Click FSE to the new platform.

Process in the Scope:

- Long cycle: Construction, Maintenance, and Inspections
- Short Cycle: Meter Work / Customer Work

OpCos in the Scope:

- NY State: NYSEG

Networks Business Areas in the Scope:

- Electric Operations
- Gas Operations
- Customer Service

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,240	78	0	570	0

NYSEG

NYSEG Transmission GIS and GIS Interface optimization

Line of Business: Electric
Category: Modernization

Scope:

Implement enhancement on the Transmission Geographic Information System (GIS) model: Transmission Network Applications (TNA) modeling, split conductor, dual representation correction, object naming and relation. GIS-Energy Management System (EMS) interface optimization

Reasons and Benefits:

The changes will allow a better representation of the Transmission model, benefiting TNA, (Distribution Network Applications (DNA) and Supervisory Control and Data Acquisition (SCADA) functions and will reduce the update time in the EMS/ Outage Management System (OMS) system in for more accurate data

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
120	115	60	0	0

NYSEG

REV - Electric Vehicles

Line of Business: Electric
Category: Modernization

Scope:

The EV Make-Ready Program (MRP) supports the development of electric infrastructure and equipment necessary to accommodate an increased deployment of EVs within the NYSEG service area by reducing the upfront costs of building charging stations for light-duty EVs. Through this EV Make-Ready Program, entities seeking to install or participate in the installation of Level 2 ("L2") and/or Direct Current Fast Charging (DCFC) chargers can earn incentives that will offset a large portion of, or in some cases, all the infrastructure costs associated with preparing a site for EV charger installation. Incentives are categorized by utility-side make ready and customer-side make ready. Utility-side make ready includes all traditional distribution work for new service lines and/ or service upgrades and incentives are recoverable through capital plant in service. Customer-side make ready includes all electrical infrastructure from the point of utility point of attachment up to but not include EV charging stations themselves. Customer-side incentives are recoverable as regulatory assets amortized over 15 years through a surcharge on customer bills.

Costs associated with this program include infrastructure updates and extensions required to make the system ready to accept a customer's charging infrastructure. Some examples of this work might be installing transformers, setting new poles, and setting new wires which are utility owned. Customers do need to pay a Contribution In Aid of Construction (CIAC) for some of this work but are eligible for up to 100% of that CIAC to be returned as a rebate by order of the PSC.

Reasons and Benefits:

The NY Public Service Commission originally issued an Order establishing the Electric Vehicle Make-Ready Program, mandating that the expenses associated with implementing EV chargers as well as associated new business expenses be factored into the companies' Capital Planning process and ultimately factored into utility Rate Case Proceedings. Following that order, the EV Program Order was introduced. The new order mandated costs associated with customer owned infrastructure and incentive payments would be recovered through 15-year Regulatory Assets, five-year Regulatory Assets, and Rate surcharges. Utility owned Infrastructure costs associated implementing the program and making EV chargers available for connection are to be factored into the companies' Capital Planning Process. This Program encompasses those expenses.

This project supports the creation of an environment that facilitates and supports the adoption of electric vehicles within our service territories. To encourage the growth of the EV Market, sufficient charging infrastructure is necessary. Electrification of transportation is a key solution for de-carbonizing the economy. These infrastructure upgrades are PSC mandated.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,100	3,415	0	0	0

NYSEG

Siemens Spectrum Upgrade to V7

Line of Business: Electric
Category: Modernization

Scope:

This project is the NYSEG portion of the upgrade of Siemens Spectrum System to version 7. The Siemens Spectrum System provides Energy Management System (EMS)/ Supervisory Control and Data Acquisition (SCADA)/ Advanced Distribution Management System ADMS/Outage Management System (OMS) functionalities to operate the electric transmission and distribution systems in New York State.

Reasons and Benefits:

Spectrum 7 is the latest software version. Moving to the latest version will guarantee that we get the latest operating system, database, and applications security patch. In addition, Spectrum 7 works on Linux which will allow the Company to expand the hardware options.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	192	3,000	3,000	2,250

NYSEG

SMSI Field Deployment

Line of Business: Electric
Category: Modernization

Scope:

This project is a follow on to the Smart Meter – Smart Inverter (SMSI) New York State Energy Research and Development Authority (NYSERDA) Program Opportunity Notice (PON) Project performed in collaboration with Rochester Institute of Technology's Golisano Institute for Sustainability. The project will take the lessons learned from the PON project and deploy the technology in the field at small DER (50kW) sites. Target is a total of fifteen pilot sites (10 NYSEG). The SMSI Gateway will collect Watts, Volts, VARs, and other measurement data from the inverter and allow it to be accessed remotely. The project will also allow for verifying inverter settings, enabling control, and changing settings remotely.

Reasons and Benefits:

Deploying the Smart Meter - Smart Inverter DER Gateway technology in the field will allow for evaluation of field performance and provide operational experience. The project provides a needed Monitoring & Control (M&C) solution for small, residential scale DER that will be necessary to operate the electrical system as DER penetration increases. This M&C will not only provide the monitoring to make it easier to identify and address system issues caused by DERs as they arise, but also gives our operators and our Distributed Energy Resource Management System (DERMS) the ability to control those DERs to mitigate issues via remote commands or settings changes. Results of the field deployment will inform if the technology is viable, cost-effective, and can be deployed at scale. The project is planned to leverage the Advanced Metering Infrastructure that is currently being deployed by NYSEG.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
207	414	0	0	0

NYSEG

Spectrum Planned Work Module

Line of Business: Electric
Category: Modernization

Scope:

The purpose of the Planned Work Module is to provide an integrated, automated solution for the creation, approval, and execution of planned work in the control system. Planned outages are currently managed locally by the division; but the plan is to centralize this function into the Energy Control Center (ECC) to enable coordination across workstreams, improve planning from a reliability perspective and ensure effective operation of Distribution Generator (DG) connections. The iTOA+ commercial planned work system has been purchased and will serve as the primary platform for planned work (vs a home-grown solution).

This project will cover interfaces and back end technical analysis/development on the Spectrum system that will likely be needed to supplement iTOA+ out of the box functionality. The iTOA+ product along with this programming/interface work will directly interface to the Energy Management System to enable a “point and click” approach to the creation of switching orders. Customer impacting outages (both load and generation customers) it will interface with SAP to generate the necessary customer outage notifications to the Customer Service team. The product will also provide a notification to indicate an asset data update is required to complete the job.

Reasons and Benefits:

Reliability, Efficiency, Safety. While iTOA+ software covers planned work creation, organization, and workflow, it would not cover changes to the NERC CIP Spectrum control system and OMS needed to realize the full benefits of the solution. These changes would be in the form of Spectrum/OMS software updates and associated interface changes to improve the complete planned work solution

Five Year Capital Plan

All amounts shown below in thousands ($000’s)

2024	2025	2026	2027	2028
237	88	44	0	0

Electric Modernization

RGE

AMI Integration for ISO 430
Application Interface Upgrades 432
Capital Automation NAT 433
CDG Billing Automation SAP 434
DSIP - ADMS 435
DSIP - Advanced Planning Tools 436
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Electric Reliability Application (ERA) Integration 438
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Transmission GIS and GIS Interface optimization 448

RG&E

AMI Integration for ISO

Line of Business: Electric
Category: Modernization

Scope:

RG&E's current settlement system uses regular scheduled readings from the billing kWh meters applied to static load profiles or for the hourly priced customers with interval meters, the customer's actual hourly usage. This data is used to determine the Load Serving Entities (LSE) hourly loads in accordance with New York Independent System Operator's (NYISO) billing schedule. The current settlement is performed in SAP-EDM (Energy Data Management). The use of Advanced Metering Infrastructure (AMI) data for settlement and NYISO reporting will require upgrades to the settlement system. This will include purchasing a new system to handle approximately 1.3 million interval meters for settlement. There will be an RFP process to select a vendor to provide a system. As part of the system, interfaces will be designed including but not limited to SAP-CCS (Customer Care System), MV90, ITRON AMI, Energy Service Company (ESCO) files, and NYISO

The current electric wholesale settlement is performed in SAP-CCS which is not capable of processing the necessary amount (approximately 800k) of new AMI meters in an efficient manner. A Request for Proposal (RFP) process will be used to determine the most qualified vendor. The entire project will take 24 months to complete and will start 1st quarter 2023.

AMI Integration Project involves the following activities:

1. Develop RFP documents and a list of qualified bidders and receive bid responses.
2. Review and score responses and select a vendor.
3. Negotiate and sign a contract for the winning bidder.
4. Engage the successful bidder in Blueprinting/design workshops including detailed project phase planning.
5. Architecture design and initial system build in DEV environment.
6. Functional test and sign-off by the Company
7. System Integration test and user acceptance
8. Parallel testing
9. Training and then cut over
10. Post go-live support

Reasons and Benefits:

The existing system for NYISO reporting will not handle 1.3 million hourly metered accounts. An upgrade to a more robust system will be required. In addition, the use of AMI metered data for NYISO reporting was filed with the New York Public Service Commission (NYPSC) as part of the January 18, 2021 AMI Benefit Implementation Plan. The use of AMI data for settlement will allow RG&E to provide the NYISO more accurate data in a shorter time frame. By using the actual customer's hourly data, meter error, unread meters, and load profiling error from the use of static profiles will be reduced. During a recent twelve-month period, the approximate hourly value of the swing in system wide Unaccounted for Energy (UFE) ranged from a positive maximum of $25,200 to negative maximum of $(15,200). With these sources of UFE reduced, accuracy of the load settlement data will be increased alleviating these variations in energy costs and provided better load forecasts, and hedging schedules. In addition, the AMI data will Improved the accuracy of load profiles used for rate design and cost allocation for future rate cases.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	1,382	246

RG&E

Application Interface Upgrades

Line of Business: Electric
Category: Modernization

Scope:

Application Interface Upgrades includes projects for Energy Management System (EMS), Outage Management System (OMS) and IT related interface programming. The existing OMS – Geographic Information System (GIS) interface is not efficient and requires to be redesigned to meet operational requirements. The current OMS-GIS interface sends raw data to the GIS system, which then performs significant processing before populating customer facing websites and GIS/OMS related tools. Instead, the OMS system will provide more comprehensive summary data to be used verbatim by IT with minimal processing. This will be much more efficient and greatly simplify the process. The EMS interface converts GIS data to update the transmission and distribution model in the EMS. This program requires rework and a redesign to reduce the processing time.

Reasons and Benefits:

The purpose of the project is to upgrade and, in some cases, largely rewrite the current EMS and OMS-related interfaces to be more efficient. One example is the EMS/GIS interface, which provides graphical information to Spectrum. Today's OMS-GIS interface requires significant processing to convert OMS data into that of the prior GIS/OMS system. This can cause discrepancies in numbers and long processing times. Utilizing data in the format of the new system to populate outer facing web sites and GIS-related apps is preferrable. The Damage Assessment system (DA) was interfaced with SAP, which then provides the DA data to OMS. This interface has continued to improve, but ultimately it may be shifted directly to OMS for increased flexibility and processing capability. This will allow additional data and functionality to be provided beyond what's possible in SAP.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	20	0	0	0

RG&E

Capital Automation NAT

Line of Business: Electric
Category: Modernization

Scope:

Network Automation & Technology needs to test Distribution Automation devices before their installation. These tests need to be performed in the lab and on the network as pilots. Project includes lab infrastructure, test cabinets, equipment, and tools, besides piloting new technologies devices on the network.

Reasons and Benefits:

Purchase lab equipment and infrastructure to perform tests with automated devices. Also, the funds will be used to pilot new technologies and/or devices on the network. These tests and pilots and important to:

- Make sure they are technically accepted before approving them on BIDs.
- Perform tests for automated schemes, avoiding wrong operations on the field.
- Test new technologies on the network, to justify their benefits in future rate cases.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
206	0	0	0	0

RG&E

CDG Billing Automation SAP

Line of Business: Electric
Category: Modernization

Scope:

Upgrade SAP CCS for automated Distributed Generation Billing.

Reasons and Benefits:

Since 2015, the New York Public Service Commission (NYPSC) has issued several regulatory Orders directing NY Utilities to comply with Community Distributed Generation (CDG) program implementation requirements. The current CDG Billing Automation Project was initiated in 2021 to address a specific type of compensation methodology referred to as "Value of Distribution of Energy Resources" (VDER or Value Stack).

On September 15, 2022, the NYPSC directed the NY Utilities to file Implementation Plans detailing the progress toward automation of billing and crediting CDG projects. Updates to the Implementations Plans are required to be made quarterly until automation efforts are completed.

The scope of the current efforts to automate Value Stack CDG for the Companies include the billing and crediting of Value Stack CDG Hosts and Satellites, Net Crediting, File Automation, and Reporting. As Distributed Energy Resources (DER) programs and billing continue to evolve, automation of new billing processes will be required.

On December 9, 2023, the core Value Stack CDG Billing Automation code was successfully transported into the Production system. Conversion of existing CDG Projects from the current manual billing method to the automated billing method is planned in 2024. The Companies will begin migrating CDG Projects to automation beginning Q1 2024. The conversion process will be ongoing for several months until all projects are successfully converted to the automated billing method.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
25	0	0	0	0

RG&E

DSIP - ADMS

Line of Business: Electric
Category: Modernization

Scope:

The ADMS (Advanced Distribution Management Systems) will provide the ability to test distribution power flow, volt-var optimization, demand response, and FLISR (Fault Location Isolation and Service Restoration).

Reasons and Benefits:

ADMS will provide additional tools to the Distribution Operators to optimize the distribution network. This project awaits updates to the current data sources, which lack enough specific and detailed data to feed the ADMS. The current Grid Model Enhancement Project (GMEP) is a key to producing consistent and accurate data as input to the ADMS system.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	1,275	100	0	0

RG&E

DSIP - Advanced Planning Tools

Line of Business: Electric
Category: Modernization

Scope:

The project entails evaluating commercially available Distributed Energy Resources (DER) and load forecasting applications in terms of granular (location and time) functionality and ease of use. To integrate and optimize DER, advanced, granular load and DER forecasting by location on the grid (i.e., each substation and feeder) and by time of day (8,760 hours per year) is needed to inform needs assessments. Accurate, granular DER and load forecasts will help identify grid solutions that ensure that all areas of the grid will be able to reliably serve customers at the lowest reasonable cost.

Reasons and Benefits:

Using a load & DER forecasting tool, distribution system planners can address both short-term circuit trends and long–term grid expansion while remaining consistent with the overall corporate load forecasts for energy and peak demand. This tool will enable RG&E planners to analyze specific future scenarios such as solar penetration and beneficial electrification adoption.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
132	0	0	0	0

RG&E

DSIP - Enterprise Analytics

Line of Business: Electric
Category: Modernization

Scope:

A future discovery session will be held to identify beneficial enterprise data analytics use cases. The project will develop solutions to user stories to meet the beneficial use cases.

Reasons and Benefits:

Data and analytics are foundational to realizing Utility of the Future initiatives. The development of the Distributed System Platform (DSP) platform will provide a range of new data in the RG&E service territories, including sub-hourly customer consumption data, status information from grid devices, interval measurements of service conditions on distribution feeders, and Distributed Energy Resource (DER) information. As the volume of data collected continues to increase in magnitude through platform investments, RG&E recognizes the importance of leveraging Data Management, Business Intelligence, and Advanced Analytics to extract insights from this data to help move the business and the market toward a future of informed, proactive, and agile decision making.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	275	275

RG&E

Electric Reliability Application (ERA) Integration

Line of Business: Electric
Category: Modernization

Scope:

The Electric Reliability Application is used to house outage-related data and compute reliability metrics. It is currently interfaced with the Outage Management System (OMS) reporting system. The initial need is to transition the current ERA system from IT to Operational Smart Grids (OSG) (hardware/support). The long-term goal is to integrate it more tightly with the OMS system for better reporting. This may involve a redesign and ultimately a rewrite of the application.

Reasons and Benefits:

Efficiency, Reliability, Customer Satisfaction. The OSG Applications development team is setting up the system and has appropriate experience to build and support it moving forward. The IT teams are transitioning to more traditional role of Network, server and PC support (and away from application support). Additionally, OSG currently maintains and supports the NY OMS systems, which populate outage data into ERA, it is logical to support both.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
24	15	0	0	0

RG&E

IEE Service Mode

Line of Business: Electric
Category: Modernization

Scope:

Currently, MV90 is used to collect data from meters that require interval data. There is opportunity to exchange a large majority of these for AMI (Advanced Metering Infrastructure) meters, but enhancements are required. Itron Enterprise Edition (IEE) Service Mode implementation project includes addition of the IEE Service Mode and interval billing determinant calculation. The Service Mode solution will support RG&E's data collection and management requirements.

NYSEG and RG&E currently have ~2,500 meters that require interval data including Mandatory Hourly Pricing (MHP), Net Meter Installations, and other accounts. By 2026, Net Meter Installations projected volume is expected to double, adding an additional 350 meters to the system. Existing meters will be exchanged for AMI meters and IEE Service Mode and interval billing determinants will be implemented to replace the functionality of AMI and automate some tasks required for billing.

Reasons and Benefits:

Benefits include more timely and accurate bills to customers, elimination of manual work, more sustainable model to accommodate future growth.

Risks if not implemented: Plain Old Telephone Service (POTS) lines are required to communicate data from meters to the MV90 system. POTS lines are becoming obsolete and are no longer being installed by many telephone companies. Meters with built in cellular service are an option for some but not all meters based on cell service coverage across the state. Many cell meters use 2G service which is also being phased out. When communication with the meters is not possible, data must be downloaded manually by a meter tech. Phone line issues result in lost data requiring time-consuming editing to estimate and fill in the usage and generation gaps. Troubleshooting issues currently requires .31 FTE. Delayed bills caused by communication failures negatively impact customer satisfaction.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
853	876	0	0	0

RG&E

New Scheduler

Line of Business: Electric
Category: Modernization

Scope:

Description: Implementation of New Scheduling and Dispatching Solution, replacing the actual Click and ABB Systems, evolving to a unified and integrated solution in Avangrid where the different corporate and business applications could be accessed from the field with a new user experience and enabling an improved communication and collaboration between the Field Workforce.

Main Project Goals:

- Single Scheduler System
- Improve the User Experience
- Optimize the Mobile System

Main Deliverables:

- Current Scheduling Systems Migration for the Salesforce Scheduling System
- Salesforce Field Service for Short Cycle Implementation
- FWM Integration for Long Cycle
- New Process Harmonization

Reasons and Benefits:

Phase I: Long cycle for RG&E. This phase will substitute the existing Click V8.3 installed on premise which end of life is December 2023.

Phase II: Short cycle for RG&E. This phase will migrate the existing solution in Click FSE to the new platform.

Process in the Scope:

- Long cycle: Construction, Maintenance, and Inspections
- Short Cycle: Meter Work / Customer Work

OpCos in the Scope:

- NY State: RG&E

Networks Business Areas in the Scope:

- Electric Operations
- Gas Operations
- Customer Service

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,755	41	0	353	0

RG&E

REV - Electric Vehicles

Line of Business: Electric
Category: Modernization

Scope:

The EV Make-Ready Program (MRP) supports the development of electric infrastructure and equipment necessary to accommodate an increased deployment of EVs within the RG&E service area by reducing the upfront costs of building charging stations for light-duty EVs. Through this EV Make-Ready Program, entities seeking to install or participate in the installation of Level 2 ("L2") and/or Direct Current Fast Charging (DCFC) chargers can earn incentives that will offset a large portion of, or in some cases, all the infrastructure costs associated with preparing a site for EV charger installation. Incentives are categorized by utility-side make ready and customer-side make ready. Utility-side make ready includes all traditional distribution work for new service lines and/ or service upgrades and incentives are recoverable through capital plant in service. Customer-side make ready includes all electrical infrastructure from the point of utility point of attachment up to but not include EV charging stations themselves. Customer-side incentives are recoverable as regulatory assets amortized over 15 years through a surcharge on customer bills.

Costs associated with this program include infrastructure updates and extensions required to make the system ready to accept a customer's charging infrastructure. Some examples of this work might be installing transformers, setting new poles, setting new wires which are utility owned. Customers do need to pay a Contribution In Aid of Construction (CIAC) for some of this work but are eligible for up to 100% of that CIAC to be returned as a rebate by order of the PSC.

Reasons and Benefits:

The NY Public Service Commission originally issued an Order establishing the Electric Vehicle Make-Ready Program, mandating that the expenses associated with implementing EV chargers as well as associated new business expenses be factored into the companies' Capital Planning process and ultimately factored into utility Rate Case Proceedings. Following that order, the EV Program Order was introduced. The new order mandated costs associated with customer owned infrastructure and incentive payments would be recovered through 15-year Regulatory Assets, five-year Regulatory Assets, and Rate surcharges. Utility owned Infrastructure costs associated implementing the program and making EV chargers available for connection are to be factored into the companies' Capital Planning Process. This Program encompasses those expenses.

This project supports the creation an environment that facilitates and supports the adoption of electric vehicles within our service territories. To encourage the growth of the EV Market, sufficient charging infrastructure is necessary. Electrification of transportation is a key solution for de-carbonizing the economy. These infrastructure upgrades are also PSC mandated.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
494	1,586	0	0	0

Rochester Gas & Electric (RG&E)

Siemens Spectrum Upgrade To V7

Line of Business: Electric
Category: Modernization

Scope:

This is the RG&E portion of the upgrade of Siemens Spectrum system to version 7. The Siemens Spectrum system provides Energy Management System (EMS)/ Supervisory Control and Data Acquisition (SCADA)/ Advanced Distribution Management System ADMS/Outage Management System (OMS) functionalities to operate the electric transmission and distribution systems in New York State.

Reasons and Benefits:

Spectrum 7 is the latest software version. Moving to the latest version will guarantee that we get the latest operating system, database, and applications security patch. In addition, Spectrum 7 works on Linux which will allow the Company to expand the hardware options.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	100	2,000	1,000	750

RG&E

SMSI Field Deployment

Line of Business: Electric
Category: Modernization

Scope:

This project is a follow on to the Smart Meter – Smart Inverter (SMSI) New York State Energy Research and Development Authority (NYSERDA) Program Opportunity Notice (PON) Project performed in collaboration with Rochester Institute of Technology's Golisano Institute for Sustainability. The project will take the lessons learned from the PON project and deploy the technology in the field at small DER (50kW) sites. Target is a total of fifteen pilot sites (5 RG&E). The SMSI Gateway will collect Watts, Volts, VARs, and other measurement data from the inverter and allow it to be accessed remotely. The project will also allow for verifying inverter settings, enabling control, and changing settings remotely.

Reasons and Benefits:

Deploying the Smart Meter - Smart Inverter DER Gateway technology in the field will allow for evaluation of field performance and provide operational experience. The project provides a needed Monitoring & Control (M&C) solution for small scale DER that will be necessary to operate the electrical system as DER penetration increases. This M&C will not only provide the monitoring to make it easier to identify and address system issues caused by DER as they arise but also gives our operators (and our Distributed Energy Resource Management System) the ability to control those DERs to mitigate issues via remote commands or settings changes. Results of the field deployment will inform if the technology is viable, cost-effective, and can be deployed at scale. The project is planned to leverage the Advanced Metering Infrastructure that is currently being deployed by RG&E.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
104	207	0	0	0

RG&E

Spectrum Planned Work Module

Line of Business: Electric
Category: Modernization

Scope:

The purpose of the Planned Work Module is to provide an integrated, automated solution for the creation, approval, and execution of planned work in the control system. Planned outages are currently managed locally by the division; but the plan is to centralize this function into the Energy Control Center (ECC) to enable coordination across workstreams, improve planning from a reliability perspective and ensure effective operation of Distribution Generator (DG) connections. The iTOA+ commercial planned work system has been purchased and will serve as the primary platform for planned work (vs a home-grown solution). This project will cover interfaces and back end technical analysis/development on the Spectrum system that will likely be needed to supplement iTOA+ out of the box functionality,

The iTOA+ product along with this programming/interface work will directly interface to the Energy Management System to enable a “point and click” approach to the creation of switching orders. Customer impacting outages (both load and generation customers) it will interface with SAP to generate the necessary customer outage notifications to the Customer Service team. The product will also provide a notification to indicate an asset data update is required to complete the job.

Reasons and Benefits:

Reliability, Efficiency, Safety. While iTOA+ software covers planned work creation, organization, and workflow, it would not cover changes to the NERC CIP Spectrum control system and OMS needed to realize the full benefits of the solution. These changes would be in the form of Spectrum/OMS software updates and associated interface changes to improve the complete planned work solution.

Five Year Capital Plan

All amounts shown below in thousands ($000’s)

2024	2025	2026	2027	2028
75	26	28	0	0

RG&E

Transmission GIS and GIS Interface optimization

Line of Business: Electric
Category: Modernization

Scope:

Implement enhancement on the Transmission Geographic Information System (GIS) model: Transmission Network Applications (TNA) modeling, split conductor, dual representation correction, object naming and relation. GIS-Energy Management System (EMS) interface optimization.

Reasons and Benefits:

The changes will allow a better representation of the Transmission model, benefiting TNA, Distribution Network Applications (DNA) and Supervisory Control and Data Acquisition (SCADA) functions and will reduce the update time in the EMS/ Outage Management System (OMS) system for more accurate data.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
120	120	120	0	0

Electric Innovation

NYSEG

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DSIP - GIS Enhancements GMEP 451
FICS Scalability Plan 453
IEDR Phase I 454
IEDR Phase 2 455
Microgrid Management System 457
NY Energy Storage RFP 458
Stephentown BESS 459
Wales Center Energy Storage 461

NYSEG

CYME Server

Line of Business: Electric
Category: Innovation

Scope:

The scope includes Procurement & Provisioning of a server; Procurement, Testing, & Commissioning of the CYME Server software and training the user community.

Reasons and Benefits:

Implementation of the CYME Server software on a dedicated server will allow automated simulations and future integration with other systems.

The CYME Server work is expected to result in efficiencies related to power flow simulations and analysis which can be leveraged to facilitate interconnection request technical screens, hosting capacity analysis, and automation of engineering analysis related to load and Distribution Energy Resource (DER) capacity planning.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2023	2024	2025	2026	2027
250	0	0	0	0

NYSEG

DSIP - GIS Enhancements GMEP

Line of Business: Electric
Category: Innovation

Scope:

1. GMEP - Comprehensive field inventory of physical assets across all electric distribution circuits (1,900 approximately) in RG&E and NYSEG service territories employing best available technologies and service providers.

2. GMEP Development, implementation, and validation of streamlined integrated processes covering: field data acquisition during and after the inventory, data interfaces and exchange across systems and platforms (SAP, Geographic Information System (GIS), Spectrum, Eaton CYME), sustained data quality assurance and governance plan, cybersecurity, stakeholder engagement, communications, and change management. Provide Lessons Learned Report and Continuous Improvement Plan for Project Closure.

3. Global Process Group (GPG) scope - To improve design/project efficiencies through design standardization, automated engineering analysis and sketch development and GPS coordinate based facility spotting in the field to develop SAP work orders with electronic and/or hard copy shop papers. A mobility tool will enable the designer to perform the field functions, engineering analysis and translate the information into an executable SAP Work Order with sketches and other shop papers. The standardized SAP Compatible Unit (CU) work order design will flow into the Pay ID Automation process which will then allow Construction Managers to work with Vendors through the new Contractor Portal. The tool aligns with the planning/scheduling for contractor work engineering/construction and allows the reconciliation of the Pay ID engineering Master Service Agreements (MSAs) also done in the new Contractor Portal. The tool drives the ability to manage and track productivity of field planning processes and workflow.

Reasons and Benefits:

Significant reduction of current workload dedicated to solving data gaps and redirecting to core and priority activities demanded by stakeholders (backlogs). An example: identify new projects or potential upgrades to mitigate current reliability concerns. Enhanced Operations Situational Awareness through accurate data (e.g., phase assignments), and unlocking optimized grid operation functions, would enable: Load balancing and automation to achieve distribution losses reduction; Improved outage prevention, detection, and restoration.

GPG Benefits - Reduction in time spent from fieldwork to work order creation, up to 50% reduction. This drives consistency in the end products; constructable designs, documents & sketches, Pay ID templates, and faster SAP work orders production.

Mobile design tools and software platform using the GIS are implemented and integrated with SAP to automate work order creation based on standardized CU's designs created within the design tool - manual creation in SAP is eliminated. Field Planners can spend more time and cover more projects using a mobile tool in the field, reducing the office time required to create simple and complex work orders. Also, this will provide consistent sketches and designs driving standardized material sets to support procurement cost improvement. The tool should include a consistent wo design. Estimated reduction, time savings for field planner, up to 50%. The field tools use an AutoCAD underlay which eliminates and/or minimizes the need for standalone operated AutoCAD for the majority of designs. The mobile software platform embeds company and industry standards and design rules. Platforms provide real-time updates to the tool selectable standards providing and maintaining standardized designs.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
8,334	6,813	0	0	0

NYSEG

FICS Scalability Plan

Line of Business: Electric
Category: Innovation

Scope:

The Flexible Interconnect Capacity Solution (FICS) Scalability project scales the Company's Reforming the Energy Vision (REV) demonstration FICS approach to additional sites and use cases by acquiring additional substation site licenses. The project is considered a follow-on (Phase II) of the Company's existing FICS REV Demonstration project. The project will leverage real-time system operational data and command Distributed Energy Resources (DER) assets to curtail as needed as a cost-effective alternative to modifications to the electric system to ensure the electric system is operating within specific thermal, voltage, and other parameters.

Reasons and Benefits:

Flexible Interconnection allows DERs to be cost-effectively interconnected to the grid by agreeing to curtailment or other mitigating control actions as an alternative to funding costly system upgrades to avoid violating any grid constraints (thermal, voltage, etc.). Without the option of flexible interconnections, costly interconnection bottlenecks will develop on both the distribution and transmission system as DER penetration increases, hampering NY's ability to meet its clean energy goals. Flexible interconnections provide a cost-effective option for DER interconnections that allows for additional DER capacity to be interconnected to the grid while still maintaining grid safety and reliability.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	1,743	0

NYSEG

IEDR Phase I

Line of Business: Electric
Category: Innovation

Scope:

This project is to implement NYSEG's portion of Phase I of the Integrated Energy Data Resources platform as defined in the Order to Case #20-M-0082 "Proceeding on Motion of the Commission Regarding Strategic Use of Energy Related Data" and the associated Staff's Whitepaper Recommendation to Implement the IEDR and the Staff's Whitepaper Regarding a Data Access Framework. Note: There is a companion project for RG&E and the total project costs are allocated 65% to NYSEG and 35% to RG&E

Reasons and Benefits:

This project is mandated by the Public Service Commission. The risk of non-compliance and missing the transferring of data at the required date put the Companies in serious financial (penalties could apply) and reputational risk (being non-compliance with a NY PSC order and not collaborating with NY energy transition efforts).

New York is transforming its electricity system into one that is cleaner, more resilient, and more affordable. Effective access to useful energy data will play a critical role in this transformation, unleashing the power of integrated energy customer data and energy system data to speed the deployment of clean energy solutions. This will attract investment, enable analytics, help identify operational efficiencies, promote innovation, and encourage new business models, which will in-turn create value for customers and the State’s energy system.

Five Year Capital Plan

All amounts shown below in thousands ($000’s)

2024	2025	2026	2027	2028
530	0	0	0	0

NYSEG

IEDR Phase 2

Line of Business: Electric
Category: Innovation

Scope:

The scope includes implementation of NYSEG's portion of the Integrated Energy Data Resource (IEDR) processes and systems as mandated in the Order of Case 20-M-0082. The order requires the utilities to provide the IEDR statewide platform with the necessary data to support the selected Use Cases. Use Cases will be further defined but are expected to require the data elements as defined in Appendix B of the Data Access Framework order not already included in the Phase 1 scope. Scope to include Data assessment in terms of availability and quality as well as to integrate all systems and scheduled transports of the data elements to the company's data lake and scheduled transports of the various data sets to the statewide IEDR platform being run by New York State Energy Research & Development (NYSERDA). The scope includes design, development, testing, integration, and maintenance of systems and processes.

Phase 2

Building on the successful implementation of Phase 1, Phase 2 will expand and enhance the IEDR to enable a total of approximately forty use cases. Completion of Phase 1 is expected on or about March 31, 2024. Phase 2 will be completed 30 to 36 months after the completion of Phase 1.

Reasons and Benefits:

New York is transforming its electricity system into one that is cleaner, more resilient, and more affordable. Effective access to useful energy data will play a critical role in this transformation, unleashing the power of integrated energy customer data and energy system data to speed the deployment of clean energy solutions. This will attract investment, enable analytics, help identify operational efficiencies, promote innovation, and encourage new business models, which will in-turn create value for customers and the State’s energy system.

This project is mandated by the Public Service Commission of NY and funded for NYSEG and RG&E with a total of $15.2M for Phase 2 (65% NYSEG, 35% RG&E). The risk of non-compliance and missing the transferring of data at the required date put the Companies in

serious financial (penalties could apply) and reputational risk (being non-compliance with a NY PSC order and not collaborating with NY energy transition efforts).

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,199	3,326	3,386	0	0

NYSEG

Microgrid Management System

Line of Business: Electric
Category: Innovation

Scope:

The project involves the development of business requirements, procurement, installation, configuration, and commissioning of a Microgrid Management System (MGMS). The MGMS will provide monitoring and control of islanded portions of the distribution network to ensure the proper delivery of frequency, voltage, and power quality while maintaining the balance of load and generation

Reasons and Benefits:

The timing of this project will be dependent upon the proliferation of community microgrids serving multiple customers over the distribution network. Since the Companies have an obligation to ensure safe and reliable service, the MGMS will monitor and control the microgrid during intentional islands, when separating and re-synchronizing with the distribution system. The MGMS is expected to complement the Distributed Energy Resource Management System.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	0	2,250

NYSEG

NY Energy Storage RFP

Line of Business: Electric
Category: Innovation

Scope:

Develop and execute on an energy storage Request for Proposal (RFP) to procure a minimum of 10 MW of energy storage for NYSEG. The capital is to pay for the right to manage and bid the storage assets into the New York Independent System Operator (NYISO) wholesale markets to meet Order 2 for Case 18-E-0130. It is anticipated the RFP will start in Q4 of 2024 with awarded project(s) going operational towards the end of 2027.

Reasons and Benefits:

This project will provide capital to meet the NY PSC Order to procure a minimum of 10 MW of energy storage for NYSEG. Specific benefits include:

- Gaining Experience in the NYISO Wholesale markets for energy storage
- Meeting the Commission's Order 2 for Case 18-E-0130
- Furthering the state's goal of 6,000 MW of energy storage in NY by 2030

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	0	760

NYSEG

Stephentown BESS

Line of Business: Electric
Category: Innovation

Scope:

The Stephentown Battery Energy Storage System (BESS) project consists of installing a 1MW/4MWh battery energy storage system at the Stephentown substation located in NYSEG's Mechanicville division to provide peak shaving to Bank #1 during future overload conditions.

Reasons and Benefits:

The Stephentown Substation Bank #1 of New York State Electric & Gas is a 34.5 - 4.8 kV station located in the Mechanicville Division. The 2.5 MVA substation transformer has an average summer peak load of 97% of its nameplate. However, the load at the station has exceeded its nameplate rating in 2019 and 2021. While the loading is approaching the nameplate rating, these loading values are based on instantaneous reads. By factoring in the average peak 15-minute interval data, it is expected that continuous thermal loads will not occur for the next few years. To avoid these future potential overload issues, it is proposed to install Energy Storage at the substation which will result in peak demand reduction at the station and will increase the transformer loading efficiency. Preliminary sizing analysis indicates the battery should be at least 1 MW to provide 10 years of peak load support.

Due to the rural location of the station, there is approximately 0.34 MW of interconnected residential Distribution Energy Resource (DER) on the substation transformer. Installing energy storage at the station will enhance this station's ability to host a higher level of proposed DER. The peak load at the Station occurs during the four-hour period between 5:00pm and 9:00pm.

Existing residential DER are proving to reduce the transformer peak loading during daylight hours, but overloading concerns are still present in the evening. Sizing the battery to match the existing generation with consideration for the existing transformer loading conditions described above places the optimum battery size at a 4 MWh battery. This will result in a 1 MW peak output for a four (4) hour duration.

This project resolves the significant risk of thermal and loss of load on the system affecting system reliability.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
666	0	0	0	0

NYSEG

Wales Center Energy Storage

Line of Business: Electric
Category: Innovation

Scope:

The Wales Center Battery Energy Storage System (BESS) project consists of installing a 1MW/4MWh battery energy storage system at the Wales Center substation located in NYSEG's Lancaster division to provide peak shaving during future overload concerns and to increase hosting capacity.

Reasons and Benefits:

The Wales Center substation of New York State Electric & Gas is a 34.5 - 4.8 kV station located in the Lancaster Division. The 5 MVA substation transformer has an average summer peak load of 92% of its nameplate. However, the load at the station has exceeded its nameplate rating in 2011, 2012, 2013 and 2014. To avoid a future potential overload issue, it is proposed to install Energy Storage at the substation which will result in peak demand reduction at the station and will increase the transformer loading efficiency. Preliminary sizing analysis indicates the battery should be at least 1 MW to provide 10 years of peak load support.

Both distribution circuits served from the Wales Center Substation have very low Hosting Capacity (HC) values. Despite these low HC values, due to the rural location of the station, there is over 2.3 MW of interconnected Distribution Energy Resources (DER) and over 2.5 MW of queued DER on the substation transformer. Installing energy storage at the station will enhance this station's ability to host a higher level of the already existing and proposed DER. The peak load at the Station occurs during the four-hour period between 6:00pm and 10:00pm.

As a secondary use case, the battery system will be used to optimize the use of the existing connected DER by using the peak daylight hours to charge the battery with the solar generation and discharge the battery during the evening hours to offset the peak load of the Station. Existing interconnected DER is proving to reduce the transformer peak loading during daylight hours, but overloading concerns are still present in the evening. Sizing the battery to match the existing and queued generation with consideration for the existing transformer loading conditions described above places the optimum battery size at a 4 MWh battery. This will result in a 1 MW peak output for a four-hour duration.

This project resolves the significant risk of thermal and loss of load on the system affecting system reliability.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
666	0	0	0	0

Electric Innovation

RG&E

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FICS Scalability Plan 467
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NY Energy Storage RFP 472

RG&E

CYME Server

Line of Business: Electric
Category: Innovation

Scope:

The scope includes Procurement & Provisioning of a server; Procurement, Testing, & Commissioning of the CYME Server software; and training the user community.

Reasons and Benefits:

Implementation of the CYME Server software on a dedicated server will allow automated simulations and future integration with other systems.

The CYME Server work is expected to result in efficiencies related to power flow simulations and analysis which can be leveraged to facilitate interconnection request technical screens, hosting capacity analysis, and automation of engineering analysis related to load and Distribution Energy Resource (DER) capacity planning.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2023	2024	2025	2026	2027
250	0	0	0	0

RG&E

DSIP - GIS Enhancements GMEP

Line of Business: Electric
Category: Innovation

Scope:

1. GMEP - Comprehensive field inventory of physical assets across all electric distribution circuits (1,900 approximately) in RG&E and NYSEG service territories employing best available technologies and service providers.

2.GMEP development, implementation, and validation of streamlined integrated processes covering: field data acquisition during and after the inventory, data interfaces and exchange across systems and platforms (SAP, Geographic Information System (GIS), Spectrum, Eaton CYME), sustained data quality assurance and governance plan, cybersecurity, stakeholder engagement, communications, and change management. Provide Lessons Learned Report and Continuous Improvement Plan for Project Closure.

3. Global Process Group (GPG) scope - To improve design/project efficiencies through design standardization, automated engineering analysis and sketch development and GPS coordinate based facility spotting in the field to develop SAP work orders with electronic and/or hard copy shop papers. A mobility tool will enable the designer to perform the field functions, engineering analysis and translate the information into an executable SAP Work Order with sketches and other shop papers. The standardized SAP Compatible Unit (CU) work order design will flow into the Pay ID Automation process which will then allow Construction Managers to work with Vendors through the new Contractor Portal. The tool aligns with the planning/scheduling for contractor work engineering/construction and allows the reconciliation of the Pay ID engineering Master Service Agreements (MSAs) also done in the new Contractor Portal. The tool will drive the ability to manage and track productivity of field planning processes and workflow.

Reasons and Benefits:

Significant reduction of current workload dedicated to solving data gaps and redirecting to core and priority activities demanded by stakeholders (backlogs). An example: identify new projects or potential upgrades to mitigate current reliability concerns. Enhanced Operations Situational Awareness through accurate data (e.g., phase assignments), and unlocking optimized grid operation functions, would enable: Load balancing and automation to achieve distribution losses reduction; Improved outage prevention, detection, and restoration.

GPG Benefits: Reduction in time spent from field work to work order creation, up to 50% reduction. This drives consistency in the end products; constructable designs, documents & sketches, Pay ID templates, and faster SAP work orders production.

Mobile design tools and software platform using the GIS are implemented and integrated with SAP to automate work order creation based on standardized Compatible Units (CU's) designs created within the design tool - manual creation in SAP is eliminated. Field planners can spend more time and cover more projects using a mobile tool in the field, reducing the office time required to create simple and complex work orders. Also, this will provide consistent sketches and designs driving standardized material sets to support procurement cost improvement. The tool should include a consistent wo design. Estimated reduction, time savings for field planner, up to 50%. The field tools use an AutoCAD underlay which eliminates and/or minimizes the need for standalone operated AutoCAD for the majority of designs. The mobile software platform embeds company and industry standards and design rules. Platforms provide for real-time updates to the tool selectable standards providing and maintaining standardized designs.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
4,514	4,667	0	0	0

RG&E

FICS Scalability Plan

Line of Business: Electric
Category: Innovation

Scope:

The Flexible Interconnect Capacity Solution (FICS) Scalability project scales the Company's Reforming the Energy Vision (REV) demonstration FICS approach to additional sites by acquiring additional substation site licenses. The project is considered a follow-on (Phase II) of the Company's existing FICS REV Demonstration project. The project will leverage real-time system operational data and command Distributed Energy Resources (DER) assets to curtail as needed as a cost-effective alternative to modifications to the electric system to ensure the electric system is operating within specific thermal, voltage, and other parameters. The project will also convert one of the existing REV demonstration substation licenses to a permanent license to cover the on-going operation of the three FICS sites interconnected to that substation.

Reasons and Benefits:

Flexible Interconnection allows DERs to be cost-effectively interconnected to the grid by agreeing to curtailment or other mitigating control actions as an alternative to funding costly system upgrades to avoid violating any grid constraints (thermal, voltage, etc.). Without the option of flexible interconnections, costly interconnection bottlenecks will develop on both the distribution and transmission system as DER penetration increases, hampering NY's ability to meet its clean energy goals. Flexible interconnections provide a cost-effective option for DER interconnections that allows for additional DER capacity to be interconnected to the grid while still maintaining grid safety and reliability.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	759	0

RG&E

IEDR Phase I

Line of Business: Electric
Category: Innovation

Scope:

This project is to implement RG&E's portion of Phase I of the Integrated Energy Data Resources platform as defined in the Order to Case #20-M-0082 "Proceeding on Motion of the Commission Regarding Strategic Use of Energy Related Data" and the associated Staff's Whitepaper Recommendation to Implement the IEDR and the Staff's Whitepaper Regarding a Data Access Framework. Note: There is a companion project for NYSEG and the total project costs are allocated 65% to NYSEG and 35% to RG&E

Reasons and Benefits:

This project is mandated by the Public Service Commission. The risk of non-compliance and missing the transferring of data at the required date put the Companies in serious financial (penalties could apply) and reputational risk (being non-compliance with a NY PSC order and not collaborating with NY energy transition efforts).

New York is transforming its electricity system into one that is cleaner, more resilient, and more affordable. Effective access to useful energy data will play a critical role in this transformation, unleashing the power of integrated energy customer data and energy system data to speed the deployment of clean energy solutions. This will attract investment, enable analytics, help identify operational efficiencies, promote innovation, and encourage new business models, which will in-turn create value for customers and the State’s energy system.

Five Year Capital Plan

All amounts shown below in thousands ($000’s)

2024	2025	2026	2027	2028
286	0	0	0	0

RG&E

IEDR Phase 2

Line of Business: Electric
Category: Innovation

Scope:

The scope includes implementation of RG&E's portion of the Integrated Energy Data Resource (IEDR) processes and systems as mandated in the Order of Case 20-M-0082. The order requires the utilities to provide the IEDR statewide platform with the necessary data to support the selected Use Cases. Use Cases will be further defined but are expected to require the data elements as defined in Appendix B of the Data Access Framework order not already included in the Phase 1 scope. Scope to include Data assessment in terms of availability and quality as well as to integrate all systems and scheduled transports of the data elements to the company's data lake and scheduled transports of the various data sets to the statewide IEDR platform being run by New York State Energy Research & Development (NYSERDA). The scope includes design, development, testing, integration, and maintenance of systems and processes.

Phase 2

Building on the successful implementation of Phase 1, Phase 2 will expand and enhance the IEDR to enable a total of approximately forty use cases. Completion of Phase I is expected on or about March 31, 2024. Phase 2 will be completed 30 to 36 months after the completion of Phase 1.

Reasons and Benefits:

New York is transforming its electricity system into one that is cleaner, more resilient, and more affordable. Effective access to useful energy data will play a critical role in this transformation, unleashing the power of integrated energy customer data and energy system data to speed the deployment of clean energy solutions. This will attract investment, enable analytics, help identify operational efficiencies, promote innovation, and encourage new business models, which will in-turn create value for customers and the State’s energy system.

This project is mandated by the Public Service Commission of NY and funded for NYSEG and RG&E with a total of $15.2M for Phase 2 (65% NYSEG, 35% RG&E). The risk of non-compliance and missing the transferring of data at the required date put the Companies in serious financial (penalties could apply) and reputational risk (being non-compliance with a NY PSC order and not collaborating with NY energy transition efforts).

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,722	1,791	1,823	0	0

RG&E

Microgrid Management System

Line of Business: Electric
Category: Innovation

Scope:

The project involves the development of business requirements, procurement, installation, configuration, and commissioning of a Microgrid Management System (MGMS). The MGMS will provide monitoring and control of islanded portions of the distribution network to ensure the proper delivery of frequency, voltage, and power quality while maintaining the balance of load and generation.

Reasons and Benefits:

The timing of this project will be dependent upon the proliferation of community microgrids serving multiple customers over the distribution network. Since the Companies have an obligation to ensure safe and reliable service, the MGMS will monitor and control the microgrid during intentional islands, when separating and re-synchronizing with the distribution system. The MGMS is expected to complement the Distributed Energy Resource Management System.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	0	750

RG&E

NY Energy Storage RFP

Line of Business: Electric
Category: Innovation

Scope:

Develop and execute on an energy storage Request for Proposal (RFP) to procure a minimum of 10 MW of energy storage for RG&E. The capital is to pay for the right to manage and bid the storage assets into the New York Independent System Operator (NYISO) wholesale markets to meet Order 2 for Case 18-E-0130. It is anticipated the RFP will start in Q4 of 2024 with awarded project(s) going operational towards the end of 2027.

Reasons and Benefits:

This project will provide capital to meet the NY PSC Order to procure a minimum of 10 MW of energy storage for RG&E. Specific benefits include:

- Gaining Experience in the NYISO Wholesale markets for energy storage
- Meeting the Commission's Order 2 for Case 18-E-0130
- Furthering the state's goal of 6,000 MW of energy storage in NY by 2030

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	0	760

Electric Hydro-Generation

NYSEG

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Upper Mechanicville Unit 2 Generator Rewind 536

NYSEG

Bradford Concrete Spillway and Toe Resurfacing Improvement Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Bradford Dam is a low hazard dam as classified by New York State Department of Environmental Conservation (NYSDEC Dam No. 054-0377), and is located in Bradford, New York. The dam, which was installed circa 1928, is unstaffed and locally operated in accordance with NYSDEC approved Bradford Dam Operation Plan for Water Level Management of Waneta and Lamoka Lakes. Outflow from Bradford Dam enters Mud Creek.

Bradford Concrete Spillway and Toe Resurfacing Improvement Project is a project to reconstruct and resurface the dam, spillway, and dam toe. Recent inspections noted areas of the dam, spillway, and dam toe with significant spalling and areas that are at end of life. The project will extend useful life of the dam and continue NYSEG's responsibility for public safety of Waneta and Lamoka Lakes while maintaining safe operation and compliance of the dam.

Bradford Concrete Spillway and Toe Resurfacing Improvement Project involves the following activities:

- Detailed inspection of the dam structure with identification of area requiring reconstruction
- Detailed design of upgrades to the dam structure
- Personnel, equipment, and material to implement the design upgrades

Funding identified is for project initiation, conceptual and detailed design, procurement of services and implementation of the design to reconstruct and resurface the dam, spillway, and dam toe. The project is presently forecasted to be complete in 2027.

Reasons and Benefits:

Bradford Concrete Spillway and Toe Resurfacing Improvement Project is a dam safety project that will reconstruct the dam to address degradation identified through inspections and will result in improved dam integrity, extend the useful life of the dam, and continue NYSEG's public safety responsibility for management of Waneta and Lamoka Lakes in accordance with Bradford Dam Operation Plan.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
333	393	2,186	100	0

NYSEG

Bradford Dam Automation Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Bradford Dam is a low hazard dam as classified by New York State Department of Environmental Conservation (NYSDEC Dam No. 054-0377), and is located in Bradford, New York. The dam, which was installed circa 1928, is unstaffed and local operation is in accordance with NYSDEC approved Bradford Dam Operation Plan for Water Level Management of Waneta and Lamoka Lakes. Outflow from Bradford Dam enters Mud Creek.

Bradford Dam Automation Project is to upgrade from the existing manual flood / control gate operation and install necessary infrastructure that allows for remote operation of the dam. Presently, flood / control gates are operated locally requiring NYSEG personnel being dispatched to perform operations.

Project scope will require installation of remote instrumentation, control systems and security cameras to monitor lake elevations and have automatic and remote operation of dam flood / control gates to maintain lake elevations according to NYSDEC's approved Bradford Dam Operation Plan.

Bradford Dam Automation Project involves the following activities:

- Study to determine communication infrastructure around Bradford Dam and between Waneta and Lamoka Lakes for remote operation and monitoring of the dam
- Conceptual and detailed design's allowing for remote operation and monitoring of Bradford Dam and lake level instrumentation
- Personnel, equipment, and material to implement the design

Funding identified is for project initiation, conceptual and detailed design, procurement of services and implementation of the design to automate NYSEG's Bradford Dam. The project is presently forecasted to be complete in 2030.

Reasons and Benefits:

Bradford Dam Automation Project is a dam safety project that will allow for automatic and remote monitoring and operation of the dam. Automation will improve NYSEG's response, compliance, and management of Waneta and Lamoka Lakes according to NYSDEC's approved Water Level Management Plan. Automation of the dam will reduce the need for personnel to make local adjustments at the dam to maintain lake level compliance.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	349	295

NYSEG

NYSEG Cadyville and Kents Falls Facility and Window Upgrades

Line of Business: Electric
Category: Hydro-Generation

Scope:

The NYSEG hydro facilities (Cadyville, Rainbow Falls) were constructed in the early-to-mid 1900s. Facility windows are showing signs of excess wear/degradation caused by many years of use and exposure to elements. NYSEG has identified a need to perform full window replacement/upgrade at the NYSEG Cadyville Powerhouse and NYSEG Kents Falls Powerhouse necessary to ensure the integrity of this infrastructure is adequately maintained and available for the continued safe, efficient, and reliable service of these existing hydro facilities. The ability to maintain a watertight structure is critical to system performance and employee safety with an electric generating facility.

Reasons and Benefits:

Installation of new, upgraded windows and a roof at each hydro facility (Cadyville, Kents Falls) will extend the life of the hydroelectric facility. Proactive measures to address these areas will reduce the potential for damage to the turbine-generator and associated equipment during operation and allow for continued reliable operation of renewable energy at Cadyville and Kents Falls hydroelectric facilities in support of New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
363	335	0	0	0

NYSEG

Cadyville and Mill C Penstock Vent Valve House Upgrade Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Cadyville and Mill C hydroelectric facilities (FERC Project No. P-2738) were constructed in the early-to-mid 1900s. The existing penstock vent valve houses, which prevent the vent valves from freezing (closed) during winter months, are showing signs of excess wear/degradation caused by many years of exposure to the elements. Failure of the vent valves to open could result in collapse / implosion of the penstock during dewatering.

With the existing houses at end of life, NYSEG has identified a need to upgrade the existing wooden framed valve houses at Cadyville and Mill C to new, steel framed and enclosed valve houses. The new valve houses will include metal cladding, electric upgrades (lighting, heat and power supply), and new access platforms (stairs, grating, etc) necessary for personnel safety and to ensure the penstock air valves are adequately maintained and functional for continued safe and reliable operation.

Reasons and Benefits:

Installation of new, upgraded penstock vent valve houses at Cadyville and Mill C hydroelectric facilities will allow for continued access for maintenance and operation of the vent valves. The project is necessary to reduce the potential for damage to the penstocks and associated equipment, during dewatering of the penstocks, and for continued reliable generation of renewable energy in support of New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,373	1,293	0	0	0

NYSEG

Cadyville Right Abutment Spillway Improvements Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Cadyville Hydroelectric Project (FERC Project No. P-2738) is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three (3) hydropower turbine-generating units that are remotely monitored and controlled with a total rated capacity of 5.53 MW and a high hazard dam used for impounding water for use in generation of renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

Cadyville Right Abutment and Spillway Improvement Project is a resurfacing and restoration project necessary to address the several items identified during inspections and operation of equipment at the dam. The areas requiring resurfacing and restoration will address moderate to significant spalling includes concrete loss on the right dam abutment, concrete loss at the base of the dam toe and dam spillway and overtopping of the retaining wall when the bypass gate is in operation.

The bypass gate is used to convey water, upstream of the dam, into the river bypass reach downstream of the dam during high river flows or when there is an electric disturbance at the Cadyville hydroelectric facility. Overtopping of the retaining wall is leading to material loss around the penstock, which is adjacent to the dam and bypass gate. The project will address upgrades to the water retaining structures for continued safe operation of the dam and penstock

Cadyville Right Abutment and Spillway Improvement Project involves the following activities:

- Study to review current issues identified during inspection and operation of equipment at the dam
- Conceptual and detailed design of upgrades to correct issues leading to concrete loss and overtopping
- Personnel, equipment, and material to implement the design upgrades

Reasons and Benefits:

Cadyville Right Abutment and Spillway Improvement Project is a dam safety project that will restore areas of moderate to significant concrete loss, eliminate material loss around and supporting the penstock that conveys water to Cadyville hydroelectric facility. Upon completion of the project, the improvements will ensure continued integrity and safe operation of the Cadyville high hazard dam, as classified by the FERC. Under NYSEG's FERC operating license, NYSEG has a responsibility to safely operate and maintain all hydroelectric facilities and structures.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,271	0	0	0	0

NYSEG

Cadyville Switchgear and Generator Protection Upgrade Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Cadyville Hydroelectric Project (FERC Project No. P-2738) is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three (3) hydropower turbine-generating units that are remotely monitored and controlled with a total rated capacity of 5.53 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

The facility was constructed circa 1921 (Unit 1 and Unit 2 turbine-generator) with Unit 3 turbine-generator constructed in 1986. Replacement parts and components for the Original Equipment Manufacturer (OEM) switchgear and generator project systems are difficult to locate and require procurement of refurbished components or after-market parts to restore service.

The purpose of the project is to upgrade the current switchgear and generator protection hardware with state-of-the-art hardware and technology that brings it in-line with current standards resulting in increased operational reliability and personnel safety.

Cadyville Switchgear and Generator Protection Upgrade Project involves the following activities:

- Updating of the existing switchgear and generator protection system drawings.
- Identify new switchgear and generator protection systems that comply with current industry standards / state-of-the-art technology that allow for standardizing switchgear and generator protection systems across NYSEG's hydroelectric generation fleet.
- Detailed design of required modifications to implement the new switchgear and generator protection hardware
- Procurement of services, material, equipment, and hardware to remove the existing infrastructure and install new switchgear and generator protection and cabinetry

Funding identified is for project initiation, review of existing switchgear and generator protection system drawings, conceptual and detailed engineering, and implementation of the design. The project is presently forecasted to be complete in 2030.

Reasons and Benefits:

Cadyville Switchgear and Generator Protection Upgrade Project involves installation of new switchgear and generator protection systems due to the existing assets being functionally obsolete, having difficulty in locating OEM components, and are at end-of-life.

Upgrade of the switchgear and generator protection system will extend the operational life of the generating facility, increase long-term reliable operation of the facility, and continue NYSEG's production of clean renewable energy in support of New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	503	101

NYSEG

Cadyville Unit 1 Turbine Major Overhaul

Line of Business: Electric
Category: Hydro-Generation

Scope:

The NYSEG Cadyville Hydroelectric Project (FERC Project No. P-2738), is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three hydropower turbine-generating units that are remotely monitored and controlled with a total rated capacity of 5.53 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

Cadyville Unit 1 turbine-generator was originally installed circa 1921 and has a rated capacity of 1.2 MW. Unit 1 turbine-generator is out-of-service due to excessive wear of bearing journals and sealing surfaces required for safe, efficient, and reliable operation. The purpose of the project is to overhaul Unit 1 turbine and return the generating unit to service in support of New York State's Clean Energy Goals and initiatives.

Cadyville Unit 1 Turbine Overhaul involves the following activities:

- Personnel, equipment, and material to disassemble turbine-generator assembly
- Inspection of all turbine components
- Upgrading of turbine assembly components, as deemed necessary, such as bottom ring, wicket gates, wicket gate bushings, and sealing surfaces.
- In-place machining of embedded components
- Installation of new bearing journals and rebabbitting of bearings
- Design and manufacture of new thrust bearing assembly
- Installation of new vibration monitoring system
- Reassembly and alignment of turbine-generator with new mechanical seal
- Commission turbine-generator and return to service

Funding identified is for project initiation, procurement of services, disassembly of the turbine-generator, inspection, and testing of turbine-generator components, along with upgrade, overhaul and reassembly of the turbine-generator. The project is presently forecasted to be complete in 2028.

Reasons and Benefits:

Cadyville Unit 1 Turbine Overhaul will restore 1.2MW of reliable capacity and extend the useful life of the asset. Rebuild of Unit 1 turbine will return the generating unit to service in support of New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2	370	785	2,205	45

NYSEG

Cadyville Unit 1 & Unit 2 Turbine-Generator Cooling Water System

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Cadyville Hydroelectric Project (FERC Project No. P-2738) is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three (3) hydropower turbine-generating units that are remotely monitored and controlled with a total rated capacity of 5.53 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

Cadyville Unit 1 and 2 turbine-generators were originally installed circa 1921 and have a rated total rated capacity of 2.4 MW. Each turbine-generator uses water from the Saranac River for cooling of lubricating oil and bearing lubrication during generation of electricity. Over the years, river water consumption has increased in the generation of electricity, which was not foreseen in the original design from 1921. With the addition of a mechanical turbine seal on Unit 2 turbine-generator, and planned for Unit 1 turbine-generator, redesign and upgrade of the cooling water system is required to support the additional water demand and water quality requirements from the mechanical turbine seal manufacturer.

Cadyville Unit 1 and Unit 2 Turbine-Generator Cooling Water System Upgrade Project involves the following activities:

- Study to review current water requirements and future water requirements.
- Conceptual and detailed design of upgraded cooling water system and associated electric and control requirements.
- Personnel, equipment, and material to disassemble and upgrade cooling water system.
- Commissioning of cooling water system upon upgrade completion.

Funding identified is for project initiation, conceptual and detailed design, procurement of services and installation of the new cooling water system design. The project is presently forecasted to be complete in 2029.

Reasons and Benefits:

Cadyville Unit 1 and Unit 2 Turbine-Generator Cooling Water System Upgrade Project will allow for continued and increased use of river water in the generation of electricity. The current cooling water system, and water quality, cannot support the planned increase of water usage after installation of a mechanical turbine seal on Unit 1 turbine-generator. Upgrades will lead to increased operational reliability and reduce wear on critical components of the turbine assembly such as mechanical seals. Reliable operation of Cadyville turbine-generators will further support New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	385	490

NYSEG

High Falls Intake Upgrade Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG High Falls Hydroelectric Project (FERC Project No. P-2738) is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three (3) hydropower turbine-generating units that are remotely monitored and controlled with a rated capacity of 15.0 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

As a part of NYSEG's current 40-year Federal Energy Regulatory Commission (FERC) hydropower license for the Facility, which became effective on April 13, 2006, NYSEG is required to upgrade the existing intake trashracks from 2-inch clear space opening to 1-inch openings for fish protection per License Article 404, Section 3.4 of the Settlement Agreement, and condition B.10 of the New York State Department of Environmental Conservation (NYSDEC) 401 Water Quality Certification (WQC). Installation of the new intake trash racks at High Falls is to be completed by no later than January 19, 2026, as outlined in the Settlement Agreement and FERC License. Section 3.4 of the Settlement Agreement states as follows:

3.4 Fish Protection and Downstream Passage

3.4.1 Fish Protection

3.4.1.1 Replacement Trashracks

"The existing trashracks at the intakes for each development shall be replaced or modified with 1-inch clear spaced trashracks for fish-protection within the following specified time periods from license issuance: five years for the first development; ten years for the second development; fifteen years for the third development; and, twenty years for the fourth (last) development. Trashrack replacement/modification at all four developments will be completed within twenty years of license issuance. The order in which each development has trashracks replaced/modified - first, second, third and fourth - is at the Licensee's discretion. The Parties agree that the existing approach velocity with current intake structure configuration is acceptable at all four developments"

In addition to the intake rack upgrades, the project includes the following upgrades:

- Design and installation of a new automated trash rack raker to remove increased river debris accumulation due to reduction in intake trash rack openings from 2-inch to 1-inch.
- Reconfiguration and expansion of the intake structure to reduce intake flow velocities.
- Provisions adjacent to the upgraded intake structure and new rack raker for loading river debris into dump trucks and/or roll-off dumpster(s)
- Associated intake structural steel and concrete improvements to accommodate installation of the new rackraker and intake trashracks during operation of the facility.

Reasons and Benefits:

Upon completion of the NYSEG High Falls Intake Upgrade Project, NYSEG will fulfill its obligation to comply with License Article 404, Section 3.4 of the Settlement Agreement and condition B.10 of the NYSDEC 401 Water Quality Certification, as outlined in the April 13, 2006 FERC license, by reducing the intake trash rack clear space opening from 2-inches to 1-inches.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
5,584	5,048	139	0	0

NYSEG

High Falls Unit 2 Generator Rewind

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG High Falls Hydroelectric Project (FERC Project No. P-2738), is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three (3) hydropower turbine-generating units that are remotely monitored and controlled and are rated to produce a total of 15.0 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

During testing of Unit 2 generator in 2019, both generator stator and generator field revealed grounds / faults. Unit 2 generator has a capacity of 4.0 MW and was installed circa 1949. Based on the grounds identified in the generator stator and field, NYSEG has identified the need to review the generator.

High Falls Unit 2 Generator Rewind Project involves the following activities:

- Generator specialist to remove generator field poles and generator stator windings
- Rewind generator field poles, generator stator windings
- Reinstall generator field into stator along with associated generator structures and bearings
- Realign generator assembly with turbine and recouple
- Commission turbine-generator and return to service

Funding identified is for project initiation, procurement of services, removal of generator field poles and stator windings and rewinding of the associated generator components. The project is presently forecasted to be complete in 2027.

Reasons and Benefits:

High Falls Unit 2 Generator Rewind Project involves rewinding of both generator field and stator. Upon completion, 4.0 MW of capacity will be returned to service. Rewind of the generator field and stator, and returning the turbine-generator to service, supports New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
345	36	1,991	69	0

NYSEG

High Falls Unit 3 Turbine Rebuild & Draft Tube Upgrade Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

The NYSEG High Falls Hydroelectric Project (FERC Project No. P-2738), is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three hydropower turbine-generating units that are remotely monitored and controlled with a total rated capacity of 15.0 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

High Falls Unit 3 turbine-generator was originally installed circa 1956 and has a rated capacity of 7.0 MW. The purpose of the project is to rebuild Unit 3 turbine to address excessive bearing, journal, sealing surface wear, which will improve operational performance and efficiency upon project completion. NYSEG will also address and upgrade the U3 draft tube, which has deteriorated and is at end-of-life since its' original installation circa 1956. Rebuild of Unit 3 turbine and installation of a new draft tube is necessary to support New York State's Clean Energy Goals and initiatives.

High Falls Unit 3 Turbine Major Rebuild & Draft Tube Upgrade Project involves the following activities:

- Personnel, equipment, and material to disassemble turbine-generator assembly
- Inspection and measurement of all turbine (critical) components
- Upgrading of turbine assembly components, as deemed necessary, such as bottom ring, wicket gates, wicket gate bushings and sealing surfaces
- In-place machining of embedded components
- Installation of new bearing journals and rebabbitting of bearings
- Design and installation of new upgraded thrust bearing assembly
- Installation of new vibration monitoring system
- Reassembly and alignment of turbine-generator with new mechanical seal
- Upgrades to the draft tube, including potential relining or installation of new draft tube
- Commission turbine-generator and return to service

Funding identified is for project initiation, procurement of services, contract award, etc. in preparation for disassembly, inspection, testing of the turbine-generator components,

along with upgrade, overhaul, and reassembly of the turbine-generator. The project is presently forecasted to be complete in 2030.

Reasons and Benefits:

High Falls Unit 3 Turbine Major Rebuild and Draft Tube Upgrade will restore reliable available capacity of the 7.0MW turbine-generator and extend the useful life of the asset. Rebuild of Unit 3 turbine, and restoring reliable operation, is required to support New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	712	1,265

NYSEG

Kent Falls - Capital Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Kent Falls Hydroelectric Project (FERC Project No. P-2738) is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three (3) hydropower turbine-generating units that are remotely monitored and controlled with a total rated capacity of 13.68 MW. The Project has a high hazard dam used for impounding water for use in generation of clean renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

The purpose of NYSEG Kent Falls Capital Project is to address the following issues that will extend the life and reliable operation of the facility upon completion:

- The existing ring girders that support approximately 1,000 feet of penstock are creating pressure points on the steel penstocks resulting in stress cracks and water leakage. The penstock is at end-of-life. Installation of a new penstock and ring girder design will eliminate stress points and penstock cracking.
- The penstock trifurcation, which conveys water to each of the three turbine-generators is original to the plant (circa 1928), is of riveted construction and is at end-of-life. The trifurcation is leaking and requires routine repairs. Installation of a new penstock trifurcation will significantly reduce the need for further repairs and extend the life of the asset.
- Unit 1 & Unit 2 turbine penstock sections, which start at the outlet of the penstock trifurcation to the inlet of the turbine-generator isolation valves are original to the plant (circa 1928), are of riveted construction, and are at end-of-life. The penstock sections require routine inspection and repairs to address on-going leaks. Installation of new penstocks will eliminate the need for further repairs and extend the life of the asset.

Kent Falls Capital involves the following activities:

- Detailed inspection to confirm the extent of upgrades to the trifurcation and penstock sections to the turbine isolation valves
- Confirm detailed design of new ring girders to replace existing penstock support saddles, new trifurcation, and penstock sections

- Procurement of services, equipment, and material to implement the detailed design, which includes:
  - Removal of steel penstock support saddles (circa 1928), which are at end-of-life and support approximately 1,000 feet of penstock,
  - Installation of new ring girders to eliminate stress cracks and penstock leakage created by the existing penstock support saddles,
  - Removal and installation of a new trifurcated penstock section (fabricated circa 1928 and end- of-life),
  - Removal and installation of new penstock sections (fabricated circa 1928 and end-of-life) from the outlet of the trifurcation to the inlet to the turbine-generator isolation valves.

Funding identified is to review and update the current design, project permitting, procurement of construction services and implementation of the design. The project is presently forecasted to be complete in 2027.

Reasons and Benefits:

Kent Falls Capital Project involves installation of approximately 100-ft of new penstock, upgrading of penstock support saddles with new ringer girders, installation of a new trifurcated penstock and penstock sections. The existing infrastructure is at end-of-life. Upgrades to the Kent Falls water conveyance infrastructure will allow NYSEG to increase reliable operation of the facility, extend the useful life of the infrastructure, and continue NYSEG's responsibility and FERC's requirement for safe and reliable operation of the facility, which support New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
492	6,726	13,701	6,309	0

NYSEG

Kents Falls Dam Low Level Floodgate Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Kent Falls Hydroelectric Project (FERC Project No. P-2738) is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three (3) hydropower turbine-generating units that are remotely monitored and controlled with a total rated capacity of 13.68 MW. The Project has a high hazard dam used for impounding water for use in generation of clean renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

Kent Falls Dam Low Level Floodgate Project is the addition of a new concrete extension, to the downstream side of the dam, and two new low-level flood gate valves, including new motor operated valve operators, and resurfacing of the upstream side of the right dam abutment to reduce water leakage through the right abutment face. The flood gate valve's and manually operated gear driven valve operators are original to the dam and difficult to operate when called upon / opened for service during flood events. NYSEG is looking to add redundant gates downstream of the right abutment to improve operability and regulate the river elevation during dam inspection and maintenance activities.

Kent Falls Dam Low Level Floodgate Project involves the following activities:

- Inspection of the right dam abutment (upstream and downstream)
- Design of new concrete extension for new low level, upward raising gates
- Identification and specification of motor operated valve operators consistent with other NYSEG hydroelectric facilities for standardization purposes
- Conceptual and detailed design for installation of new floodgate valves, valve operators and resurfacing of the upstream side of the right dam abutment. Design to include all power and control upgrades to operate floodgates locally and remotely
- Procurement of services, equipment, and material to implement the detailed designs

Funding identified is for project initiation, conceptual and detailed design, procurement of construction services and initiation of construction activities to implement the design. The project is presently forecasted to be complete in 2027.

Reasons and Benefits:

Kent Falls Dam Low Level Floodgate Project will upgrade two original low level floodgates and install motor operated valve operators to improve opening and closing response time when placed into service. Upgrades will reduce the potential for personnel injury when compared to current means to open and close. Resurfacing of the upstream right abutment dam face will reduce leakage though the downstream dam face. The project will extend the useful life of the dam structure and continue NYSEG's responsibility and FERC's requirement for safe operation and maintenance of the high hazard dam and hydroelectric facility.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
281	336	1,491	100	0

NYSEG

Kent Falls Internal Riser Shaft and Tank Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Kent Falls Hydroelectric Project (FERC Project No. P-2738) is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three (3) hydropower turbine-generating units that are remotely monitored and controlled with a total rated capacity of 13.68 MW. The Project has a high hazard dam used for impounding water for use in generation of clean renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

Kent Falls Dam Internal Riser Shaft and Tank Project involves removal of the existing surge tank and installation of a new surge tank that include seismic upgrades compliant with current seismic requirements. The current surge tank is original construction, was installed circa 1928, requires routine maintenance to address leaks and is not compliant with current seismic requirements for the region.

In March 2017, the surge tank experienced significant leaks at the riveted construction joints. Further inspection of the tank (external and internal) revealed that a portion of construction joints were severely eroded, and a portion of the riser shaft had failed during operation and was at end-of-life. In 2020, an independent consultant (IC) conducted a safety inspection and analysis based on the Federal Energy Regulatory Commissions (FERC) Part 12D engineering guidance. The IC recommended that NYSEG perform a seismic analysis of the surge tank to confirm if the tank structure conforms with the current seismic requirements. The analysis concluded that the existing tank structure does not meet current seismic requirements.

Kent Falls Internal Riser Shaft and Tank Project involves the following activities:

- Conceptual and detailed design based on most cost-effective solution for removal and installation of a new surge tank
- Design to include upgrades to electrical, control and pneumatic systems required for safe operation and monitoring of the tank

Procurement of services, equipment, and material to implement the detailed designs / installation of a new surge tank.

Funding identified is for project initiation, conceptual and detailed design, procurement of services for installation of a new tank and start of construction. The project is presently forecasted to be complete in 2028.

Reasons and Benefits:

Kent Falls Internal Riser Shaft and Tank Project involves installation of a new surge tank based on the most economical solution. Installation of a new surge tank will allow NYSEG to restore full availability and capacity of the facility, extend the useful life of the facility, and continue NYSEG's responsibility and FERC's requirement for safe and reliable operation of the facility, which supports New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
129	3,114	3,128	224	98

NYSEG

Kents Falls Unit 1 Generator Rewind Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

The NYSEG Kents Falls Hydroelectric Project (FERC Project No. P-2738), is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three (3) hydropower turbine-generating units that are remotely monitored and controlled with a total rated capacity of 13.68 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

During testing of Unit 1 generator in 2022, both generator stator and generator field revealed grounds / faults. Unit 1 generator has a capacity of 3.84 MW and was installed circa 1928. Based on the grounds identified in the generator stator and field, Unit 1 generator stator and field require rewinding.

Kents Falls Unit 1 Generator Rewind Project involves the following activities:

- Personnel, equipment, and material to disassemble and remove the generator field / assembly.
- Generator specialist to remove generator field poles and generator stator windings
- Rewind generator field poles, generator stator windings
- Reinstall generator field into stator along with associated generator structures and bearings
- Realign generator assembly with turbine and recouple
- Commission turbine-generator and return to service

Funding identified is for project initiation, procurement of services, removal of generator field poles and stator windings and rewinding of the associated generator components. The project is presently forecasted to be complete in 2027.

Reasons and Benefits:

Kents Falls Unit 1 Generator Rewind Project involves rewinding of both generator field and stator. Upon completion, 3.84 MW of capacity will be returned to service Rewind of the generator field and stator, and returning the turbine-generator to service, supports New York State's Clean Energy Goal.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	379	590

NYSEG

Kents Falls Unit 2 Turbine-Generator Major Rebuild

Line of Business: Electric
Category: Hydro-Generation

Scope:

The NYSEG Kent Falls Hydroelectric Project (FERC Project No. P-2738), is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three hydropower turbine-generating units that are remotely monitored and controlled with a total rated capacity of 13.68 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

Kent Falls Unit 2 turbine-generator was originally installed circa 1928 and has a rated capacity of 3.84 MW. Unit 2 turbine-generator is currently out-of-service due to excessive wear of bearing journals and sealing surfaces required for safe, efficient, and reliable operation. The purpose of the project is to rebuild Unit 2 turbine-generator and return to service in support of New York State's Clean Energy Goals and initiatives.

Kent Falls Unit 2 Turbine-Generator Major Rebuild involves the following activities:

- Personnel, equipment, and material to disassemble turbine-generator assembly
- Inspection of all turbine components
- Testing of generator field, stator, and exciter
- Upgrading of turbine assembly components such as bottom ring, wicket gates and wicket gate bushings
- In-place machining of embedded components
- Installation of new bearing journals and rebabbitting of bearings
- Design and manufacture of new thrust bearing assembly
- Installation of new vibration monitoring system
- Reassembly and alignment of turbine-generator with new mechanical seal
- Commission turbine-generator and return to service

Funding identified is for project initiation, procurement of services, contract award, inspection, testing of turbine-generator components, along with upgrade, overhaul and reassembly of the turbine-generator. The project is presently forecasted to be complete in 2030.

Reasons and Benefits:

Kent Falls Unit 2 Turbine-Generator Major Rebuild will restore 3.84MW of reliable capacity to service and extend the useful life of the asset. Return of Unit 2 turbine-generator to service supports New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3	3	4	366	683

NYSEG

Kents Falls Unit 3 Turbine Major Rebuild with a New Turbine Runner

Line of Business: Electric
Category: Hydro-Generation

Scope:

The NYSEG Kent Falls Hydroelectric Project (FERC Project No. P-2738), is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three hydropower turbine-generating units that are remotely monitored and controlled with a total rated capacity of 13.68 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

Kent Falls Unit 3 turbine-generator was originally installed circa 1985 and has a rated capacity of 6.0 MW. The purpose of the project is to rebuild Unit 3 turbine with a new turbine runner, to address excessive bearing, journal, sealing surfaces wear, which will improve operational performance and efficiency upon project completion. Rebuild of Unit 3 turbine with a new turbine runner is necessary to support New York State's Clean Energy Goals and initiatives.

Kent Falls Unit 3 Turbine Major Rebuild with a new runner involves the following activities:

- Personnel, equipment, and material to disassemble turbine-generator assembly
- Inspection and measurement of all turbine (critical) components
- Upgrade of turbine assembly components, as deemed necessary, such as bottom ring, wicket gates, wicket gate bushings and sealing surfaces
- In-place machining of embedded components
- Installation of new bearing journals and rebabbitting of bearings
- Design and installation of new upgraded thrust bearing assembly
- Design, fabrication, and installation of a new turbine runner
- Installation of new vibration monitoring system
- Reassembly and alignment of turbine-generator with new mechanical seal
- Commission turbine-generator and return to service

Funding identified is for project initiation, procurement of services, contract award, etc. in preparation for disassembly, inspection, testing of the turbine-generator components, along with upgrade, overhaul, and reassembly of the turbine-generator. The project is presently forecasted to be complete in 2030.

Reasons and Benefits:

Kent Falls Unit 3 Turbine Major Rebuild with a new turbine runner will restore reliable capacity of the 6.0MW turbine-generator and extend the useful life of the asset. Rebuild of Unit 3 turbine, and restoring reliable operation, supports New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	290	773

NYSEG

Kents Falls Upstream Training Wall Extension Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Kent Falls Hydroelectric Project (FERC Project No. P-2738) is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three (3) hydropower turbine-generating units that are remotely monitored and controlled with a total rated capacity of 13.68 MW. The Project has a high hazard dam used for impounding water for use in generation of clean renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

Kent Falls Upstream Training Wall Extension Project is based on on-site observation during high river flow events resulting in the right-side training wall upstream of the dam overtopping and damaging / undermining penstock foundations downstream of the dam leading to compromising of the water retaining structures (upstream training wall and penstock). In 2020, an independent consultant (IC) conducted a safety inspection and analysis based on the Federal Energy Regulatory Commissions (FERC) Part 12D engineering guidance. The results of the IC engineering analysis concluded that the height of the right upstream training wall and left upstream dam abutment needs to be increased to prevent overtopping during high flow events.

Kent Falls Upstream Training Wall Extension Project involves the following activities:

- Complete hydraulic analysis of Saranac River
- Geological testing of soils and concrete behind and within existing right-side training wall
- Conceptual and detailed design based on analysis, and testing of soils and concrete of wall height extension on both right-side training wall and left abutment
- Procurement of services, equipment, and material to implement the detailed design

Reasons and Benefits:

Kent Falls Upstream Training Wall Extension Project is necessary to address overtopping of the river wall that occurs during high flow events. This requirement was concluded by NYSEG's independent consultant's safety inspection and engineering review when conducting the required 5-year FERC Part 12D engineering inspection. Raising of the right-side training wall and left dam abutment will prevent future overtopping during high river flow events and eliminate potential future damage and undermining of the right-side training wall and penstock foundations. The project will extend the useful life of the dam structure and continue NYSEG's responsibility and FERC's requirement for safe operation and maintenance of the high hazard dam and hydroelectric facility.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
2,529	24	0	0	0

NYSEG

Mechanicville Upstream Eel Ladder Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Upper Mechanicville Hydroelectric Project (FERC Project No. P-2934) is located on the Hudson River in Saratoga and Rensselaer Counties, in the Town of Stillwater, NY. The facility is unstaffed, with two (2) turbine-generating units that are remotely monitored and controlled with a generating capacity of 16.53 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

A requirement of the 50-year Federal Energy Regulatory Commission (FERC) hydropower license for the facility, which became effective on April 1, 2021, is for NYSEG to design and install an upstream eel ladder per Section 3.3.1.1 of the Settlement Agreement, as referenced I the FERC License. Section 3.3.1.1 of the Settlement Agreement states as follows:

3.3.1 General Agreements

3.3.1.1 Seasonal Upstream American Eel Ladder

“By the 2023 upstream migration season for American eel, on a seasonal basis, the Licensee will install a single ladder for the upstream movement of American eel in the Project’s tailrace (river right, looking downstream). The seasonal eel ladder will be installed and operated by April 1 of each year and will be removed or closed on or after November 30 of each year. The installation, removal and/or closure of the seasonal ladder will be performed when river flows and conditions allow for the safe execution of such activities. If river flows or safety conditions prevent the installation and operation of the seasonal ladder by April 1st or require the removal or closure of the ladder prior to November 30th, the Licensee will notify the NYSDEC and the USFWS within five business days, and such information will be documented in the Fishway Operation and Maintenance Report (FOMR) as defined in Section 3.3.3 of this Offer of Settlement.

The design of the seasonal upstream eel ladder will be based on the conceptual design and will be further designed and developed in consultation with the USFWS and the NYSDEC.

The purpose of the Upstream Eel Ladder Project involves the design, fabrication, and installation of a ladder system to safely (manually and automatically) convey American Eel that are present in the Hudson River from the hydroelectric facility tailrace (discharge) to a site upstream of the NYSCC Lock C-3 dam.

The project work scope involves the following:

1. Design and installation of an eel ladder, and associated infrastructure, to support manual and automated conveyance of American Eels from the tailrace of Upper Mechanicville hydroelectric facility to the impoundment, which is upstream of NYSCC Lock C-3 dam. Associated structures include, but is not limited to, electrical power, camera(s), walking platforms / stairs, lighting, means to remove during winter months, etc.
2. Collaboration with US Fish and Wildlife Service (USFWS) and NYS Department of Environmental Conservation (NYSDEC) is required as the design progresses and prior to installation. The design requires approval from US Fish and Wildlife Service (USFWS) and New York State Department of Environmental Conservation (NYSDEC) prior to installation.

Reasons and Benefits:

Installation of an upstream eel ladder in the tailrace of NYSEG's Upper Mechanicville hydroelectric facility is a requirement of the Settlement Agreement with USFWS and NYSDEC. Upon completion and implementation of the design, NYSEG will be compliant with Section 3.3.1.1 of the Settlement Agreement, as referenced in the FERC License.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
351	1,004	0	0	0

NYSEG

Mill C Powerhouse A Crane Upgrade Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Mill C Hydroelectric Project (FERC Project No. P-2738) is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three hydropower turbine-generating units that are remotely monitored and controlled with a total rated capacity of 6.05 MW, and a significant hazard dam used for impounding water for use in generation of clean renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

Mill C Powerhouse A was constructed circa 1922 and has the original overhead crane, which has been tagged out of service since 2021 after an inspection revealed the crane does not pass current inspection criteria for use. NYSEG performed an engineering analysis of the crane and building in 2022 and confirmed the crane and supporting structure does not meet current design standards. The overhead crane is required for maintenance of two turbine-generating units.

The Mill C Powerhouse A Crane Upgrade Project involves the following activities:

- Review existing drawings associated with the Powerhouse A crane
- Perform an analysis of the existing structure/crane (bridge, trolley, hoist, motor, etc) to identify opportunities for upgrades
- Detailed design of required modifications to implement an upgraded or new crane system, including upgraded controls and upgraded safety features
- Procurement of services, material, equipment, and hardware to remove the existing infrastructure and modify or install a new upgraded crane

Funding identified is for project initiation, review of crane drawings, conceptual and detailed engineering, and implementation of the design. The project is presently forecasted to be complete in 2030.

Reasons and Benefits:

NYSEG Mill C Powerhouse A Crane Upgrade Project involves the upgrade, or installation, of new crane since the existing crane does not meet, or pass, current inspection requirements. Upgrade, or installation, of a new crane will allow for continued maintenance of the existing turbine-generators in Powerhouse A, leading to increased and long-term reliable operation of the facility. The project is needed to continue NYSEG's production of clean renewable energy in support of New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	375	515	1,515

NYSEG

Mill C Spillway Concrete Improvements Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

The NYSEG Mill C Hydroelectric Project (FERC Project No. P-2738), is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three (3) hydropower turbine-generating units that are remotely monitored and controlled with a total rated capacity of 6.05 MW. The Project has a significant hazard dam used for impounding water for use in generation of clean renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

Mill C Spillway Concrete Improvement Project is a project to reconstruct and resurface the ogee section of the dam spillway, localized reconstruction, grouting and sealing of construction joints on the dam spillway and upgrading the dam drainage system to alleviate hydraulic pressure behind the dam. This resurfacing and restoration project is necessary to address several items identified during inspections and operation of equipment at the dam resulting in extending the life of the structure.

Mill C Spillway Concrete Improvement Project involves the following activities:

- Inspection and identification of area on the dam spillway requiring reconstruction
- Detailed design of upgrades to the spillway surface along with design of an upgraded dam drainage system
- Personnel, equipment, and material to implement the design upgrades

Reasons and Benefits:

The Mill C Spillway Concrete Improvement Project is a dam safety project that will address degradation of the dam ogee section and construction joints that will improve the overall dam spillway surface, structural integrity, and prolong the useful life of the spillway, which is necessary to pass river flows. Upon completion, the project will address concerns observed by the Federal Energy Regulatory Commission during their annual inspection in 2016 and conveyed to NYSEG.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
5	184	307	1,572	0

NYSEG

Minor Capital Program

Line of Business: Electric
Category: Hydro-Generation

Scope:
The NYSEG Hydro Minor Capital Program implements minor capital projects each year to address both planned and emergent projects that typically have a per project cost of less than $200,000. The minor capital program funds are allocated to specific minor projects, or as projects emerge. The NYSEG Minor Capital Program is in place to address multiple small capital investment projects, such as equipment upgrades needed to support generation of electricity, improve and maintain safe operation of the hydroelectric operating systems, as well as compliance upgrades (e.g. safety, regulatory, environmental) at NYSEG hydroelectric generating facilities.

Reasons and Benefits:
Projects are implemented to address a variety of electrical, mechanical, civil/structural, and compliance requirements at NYSEG hydroelectric generating facilities. Upon project completion, upgrades at the facilities improve and address compliance requirements along with supporting safe operation and generation of clean renewable energy.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,230	2,872	1,672	2,821	1,544

NYSEG

Overhead Crane Upgrade Project (Cadyville, Rainbow Falls)

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Cadyville Hydroelectric Project (FERC Project No. P-2738) is located on the Saranac River in Clinton County, west of Plattsburgh, NY. The facility is unstaffed, with three (3) hydropower turbine-generating units that are remotely monitored and controlled with a total rated capacity of 5.53 MW.

NYSEG Rainbow Falls Hydroelectric Project (FERC Project No. P-2835) is located on the Ausable River in the Town of Keeseville, New York. The facility, which was constructed circa 1926, is unstaffed, with two (2) – 1.32 MW turbine-generating units with a total capacity of 2.64 MW. The facility is remotely monitored and controlled.

Cadyville Powerhouse, which houses Unit 1 & 2 turbine-generating units, was constructed circa 1921, while Rainbow Falls Powerhouse was constructed circa 1926. Both facilities have the original overhead cranes, which are still in service. The purpose of the project is to upgrade the current cranes to remove operational hazards currently present (e.g., Cadyville load capacity under rated for lifting generator field). The NYSEG Cadyville Powerhouse Crane has been tagged out of service since 2023 after an inspection revealed the crane does not pass current inspection criteria for use. The NYSEG Rainbow Falls Crane has antiquated and unreliable controls that requires upgrades to bring it current with current technology.

Cadyville and Rainbow Falls Crane Upgrades Project involves the following activities:

- Review existing drawings associated with the Powerhouse cranes
- Performing an analysis of the existing structure/crane (bridge, trolley, hoist, motor, etc) to identify opportunities for upgrades
- Detailed design of required modifications to implement an upgraded crane system, including upgraded controls, upgraded safety features, and increased lifting capacity (Cadyville)
- Procurement of services, material, equipment, and hardware to remove the existing infrastructure and install designed upgrades

Funding identified is for project initiation, review of crane drawings, conceptual and detailed engineering, and implementation of the design. The project is presently

forecasted to be complete in 2030.

Reasons and Benefits:

NYSEG Crane Upgrades Project at Cadyville and Rainbow Falls Hydroelectric Facilities involves the upgrade of the existing cranes to address safety concerns, improve operational reliability, and increase lifting capacity. Upgrade of the crane will extend the operational life of the crane necessary for maintaining operation of the generating facilities, which will allow for NYSEG to maintain and continue production of clean renewable energy in support of New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
431	399	0	0	0

NYSEG

Rainbow Falls Dam Low Level Floodgate Upgrades

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Rainbow Falls Hydroelectric Project (FERC Project No. P-2835) is located on the Ausable River in the Town of Keeseville, New York. The facility, which was constructed circa 1926, is unstaffed, with two – 1.32 MW turbine-generating units with a total rated capacity of 2.64 MW. The facility is remotely monitored and controlled. The FERC classified significant hazard dam is used for impounding water for use in generation of clean renewable electricity. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

Rainbow Falls Dam Low Level Floodgate and Downstream Abutment Resurfacing Project is the upgrade of the existing low-level dam flood gate valve, along with installation of a new motor operated valve. The existing valve is original to the dam and is difficult to operate when called upon / opened for service. The existing concrete on the downstream side of the abutment is also severely degraded / deteriorated and is at end of life.

Rainbow Falls Dam Low Level Floodgate and Downstream Abutment Resurfacing Project involves the following activities:

- Analysis of the existing flood gate and opening to determine and specify the new valve size / style required to pass required flows
- Identification and specification of new motor operated valve assembly consistent with other NYSEG hydroelectric facilities for standardization purposes
- Conceptual and detailed design for removal and installation of new floodgate valve(s), valve operator(s), and reinforced concrete structure(s), as needed. Design to include all power and control upgrades to operate floodgates locally and remotely. Design to also include concrete resurfacing of the entire downstream left abutment face
- Procurement of contractor services, equipment, and material to implement the detailed design

Funding identified is for project initiation, conceptual and detailed design, and procurement

of construction services in preparation for construction activities to implement the design. The project is presently forecasted to be complete in 2030.

Reasons and Benefits:

Rainbow Falls Dam Low Level Floodgate Upgrade and Downstream Abutment Resurfacing Project will upgrade the low-level floodgate and left abutment on the significant hazard dam with a new motor operated valve, and operator, and new concrete. Upon completion of the project, the new motor operated valve assembly will improve valve opening and closing response time while reducing the potential for personnel injury when compared to current (manual) means to open and close. The project will extend the useful life of the dam structure and continue NYSEG's responsibility and FERC's requirement for safe operation and maintenance of the significant hazard dam and hydroelectric facility.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	254	341

NYSEG

Rainbow Falls Penstock Replacement Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Rainbow Falls Hydroelectric Project (FERC Project No. P-2835) is located on the Ausable River in the Town of Keeseville, New York. The hydroelectric generating facility is comprised of two-1.32 MW turbine-generating units with a total capacity of 2.64 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

The Rainbow Falls hydroelectric facility was constructed circa 1926 and the two original penstocks convey river water from the Rackhouse to the Powerhouse for use in generation of electric energy. The Rainbow Falls Penstock Replacement Project involves design of two new steel penstocks, including new air admission valves and thrust blocks, to upgrade and replace the existing penstocks that are at end of life.

The purpose of the project is to install 2 new penstocks, which require routine repair, to address leaks and prevent failure. Failure of either of the steel penstocks would pose a safety risk to the public and company personnel. Failure of either of the steel penstocks would pose a safety risk to the public and company personnel. NYSEG is required, per the FERC operating license, to maintain public whitewater access through the Rainbow Falls Project site. The penstocks are in the general vicinity of the public recreational access. Implementation of the new penstock design will require dewatering of the water conveyance system, which includes the penstocks, rackhouse, and intake canal.

Funding identified is to initiate the project, perform conceptual engineering and start detailed design. The project is presently forecasted to be complete in 2031.

Reasons and Benefits:

Installation of two new steel penstocks will extend the life of the water conveyance system. Proactive measures to upgrade the penstocks and air admission valves will address the on-going repairs due to the original penstocks being at end-of-life, reduce the potential for damage to the turbine-generators during operation, reduce the safety risk to the public, and allow for continued reliable operation of Rainbow Falls hydroelectric facility in support of New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	827	2,357

NYSEG

Rainbow Falls Power Canal and Gatehouse Upgrade Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Rainbow Falls Hydroelectric Project (FERC Project No. P-2835) is located on the Ausable River in the Town of Keeseville, New York. The hydroelectric generating facility is comprised of two-1.32 MW turbine-generating units with a total rated capacity of 2.64 MW. The plant is a Run-of-River operation, which means that a pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

The NYSEG Rainbow Falls Power Canal and Gatehouse/ Upgrade Project will include concrete upgrades to the existing deteriorated power canal and culvert, upgrades to the existing power canal low level gatehouse, low level gate and adjacent log sluice gate. The existing power canal low level gate is manually operated and often freezes up during winter operations. The gatehouse above the low level gate is also aging and has shown signs of deterioration. The upgrades project will install new concrete in the power canal, as required, and install a new automated power canal low level gate to replace and upgrade the existing aging gate structure. This project is a regulatory requirement as part of the existing Rainbow Falls Federal Energy Regulatory Commission (FERC) Hydropower Operating License from 2004. NYSEG is required to operate and maintain safe, efficient, and reliable electric service.

Reasons and Benefits:

Installation of upgrades to the Rainbow Falls power canal and low level gate will extend the life of the water conveyance system. Proactive measures to upgrade the power canal and low level gate structures will address the aging infrastructure, reduce the potential for damage to the turbine-generators during operation, reduce the safety risk to the public, and allow for continued reliable operation of Rainbow Falls hydroelectric facility.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	0	177

NYSEG

Rainbow Falls Powerhouse Entrance / Hill Stabilization Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Rainbow Falls Hydroelectric Project (FERC Project No. P-2835) is located on the Ausable River in the Town of Keeseville, New York. The hydroelectric generating facility is comprised of two-1.32 MW turbine-generating units with a total capacity of 2.64 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

Rainbow Falls Powerhouse Entrance Hill Stabilization Project involves installation of drainage, regrading of the access road, and stabilization of the existing rock slope to reduce erosion of the driveway and parking area, which is elevated above the powerhouse entrance.

The project scope is for conceptual engineering and an alternative analysis to determine the best option to stabilize the existing rock slope from the elevated driveway down to the NYSEG Rainbow Falls powerhouse. Review and redesign of the powerhouse entrance and access road slope and drainage is also required to reduce the water runoff / ice accumulation during the seasons that affect personnel safety (slippery surfaces, etc.) and stability of the existing rock slope down to the powerhouse. NYSEG will also look to implement an elevated platform near the Powerhouse for additional, safe parking for personnel. Upon finalizing the design, a contract will be executed to implement (drainage, regrading, rock anchors, fencing, platform, etc.).

Funding identified is for project initiation, conceptual and detailed design, procurement of contracted services to implement the design to stabilize the Rainbow Falls Powerhouse entrance and access roads. The project is presently forecasted to be complete in 2025.

Reasons and Benefits:

Rainbow Falls Powerhouse Entrance / Hill Stabilization Project involves regrading of the access road to the powerhouse, installation of drainage that redirects and reduces runoff and ice accumulation away from Rainbow Falls Powerhouse entrance, along with

stabilization of the rock slope from the driveway to the powerhouse. Upon project completion, the upgrades will significantly improve personnel and facility safety, public safety who access the area for white water rafting, and facility access.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,987	46	0	0	0

NYSEG

Roof Upgrades (Cadyville, Rainbow Falls)

Line of Business: Electric
Category: Hydro-Generation

Scope:

The NYSEG hydroelectric facilities (Cadyville, Rainbow Falls) were constructed in the early-to-mid 1900s. Facility roofing systems are showing signs of excess wear/degradation caused by many years of exposure to the elements. NYSEG has identified a need to perform full tear-off and replacement at the NYSEG Cadyville Powerhouse and NYSEG Rainbow Falls Rackhouse necessary to ensure the integrity of the facility infrastructure is adequately maintained and available for the continued safe, efficient, and reliable service of these existing hydroelectric facilities. The ability to maintain a watertight structure is critical to structural integrity and employee safety with an electric generating facility.

Reasons and Benefits:

Installation of a new, upgraded roofing systems at each hydroelectric facility (Cadyville, Rainbow Falls) will extend the life of the hydroelectric facility. Proactive measures to address these areas will reduce the potential for damage to the turbine-generator and associated equipment during operation and allow for continued reliable operation of renewable energy at Cadyville and Rainbow Falls hydroelectric facilities in support of New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
325	297	0	0	0

NYSEG

Saranac Plant Control Systems Upgrade Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

The NYSEG Saranac Hydroelectric Project (FERC Project No. P-2738) is located on the Saranac River in Clinton County, west of Plattsburgh, New York. The four hydroelectric generating facilities, which is comprised of High Falls, Cadyville, Mill C, and Kent Falls, are unstaffed and are remotely monitored and controlled. The twelve hydroelectric turbine-generating units have a combined generation capacity of 40.26MW. The plants are Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

The four hydroelectric facilities and turbine-generating units were constructed between 1921 and 1986. The latest plant control system was commissioned in 1986 after installation of Cadyville Unit 3 turbine-generator. The Saranac plant control systems are starting to fail leading to reduced operational reliability of the facility and turbine-generators. Original Equipment Manufacturer (OEM) replacement components are difficult to locate or require procurement of refurbished components or after-market parts to restore to service.

The purpose of the project is to upgrade the current plant control systems with state-of-the-art hardware and technology that brings the control systems in-line with current standards resulting in increased operational reliability and availability of parts.

The Saranac Plant Control System Upgrade Project involves:

- Review and updating of the existing plant control system drawings and operating equipment / systems for each hydroelectric facility
- Identifying current / state-of-the-art technology to replace, upgrade and standardize the existing plant control and generator protection systems.
- Detailed design of required modifications to implement the new plant control system upgrades.
- Procurement of services, material, equipment, and hardware to remove the existing infrastructure and install new plant control system hardware and cabinetry.

Funding identified is for project initiation, review of existing plant control system drawings, conceptual and detailed engineering, and implementation of the design. The project is presently forecasted to be complete in 2027.

Reasons and Benefits:

Saranac Plant Control System Upgrade Project involves the upgrade of aging, end-of-life plant control system and generator protection hardware and software at NYSEG's four Saranac hydroelectric facilities. Upgrading to state-of-the-art plant control and generator protection systems will support New York State's Clean Energy Goals and initiatives by improving operational performance and reliability of NYSEG's Saranac hydroelectric facilities.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
216	246	1,126	75	0

NYSEG

Upper Mechanicville Generator Protection and Controls Upgrade Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Upper Mechanicville Hydroelectric Project (FERC Project No. P-2934) is located on the Hudson River in Saratoga and Rensselaer Counties, in the Town of Stillwater, NY. The facility is unstaffed, with two (2) hydroelectric turbine-generating units that are remotely monitored and controlled with a total rated capacity of 16.53 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

NYSEG Upper Mechanicville hydroelectric facility was built circa 1981. Over 40 years of operation of the plant, generator protection systems and components, which are original to the facility, are starting to fail leading to reduced operational reliability of the turbine-generating units. Original Equipment Manufacturer (OEM) replacement components are difficult locate and require procurement of refurbished components or after-market parts to restore to service.

The purpose of the project is to upgrade the current generator protection and control hardware with state-of-the-art hardware and technology that brings it in-line with current standards resulting in increased operational reliability and availability of parts.

The Upper Mechanicville Generator Protection Upgrade Project involves the following activities:

- Review and updating of the existing plant generator protection drawings and operating equipment / systems,
- Identifying current / state-of-the-art technology to replace, upgrade, and standardize the existing generator protection systems.
- Detailed design of required modifications to implement the new generator protection and control hardware
- Procurement of services, material, equipment, and hardware to remove the existing infrastructure and install new control hardware and cabinetry .

Funding identified is for project initiation, review of existing generator protection and control system drawings, conceptual and detailed engineering, procurement of construction services, and implementation of the design. The project is presently forecasted to be complete in 2028.

Reasons and Benefits:

Upper Mechanicville Protection and Control Upgrade Project involves the upgrade of the existing generator protection and control systems for Unit 1 and Unit 2 generators due to aging, end-of-life hardware and software, and difficulty with locating OEM components necessary to restore generator protection systems to service. Upgrade of the generator protection and controls systems will extend the operational life and reliability of the generating facility which supports New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
0	202	240	596	69

NYSEG

Upper Mechanicville Intake Upgrades And Downstream Passage Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Upper Mechanicville Hydroelectric Project (FERC Project No. P-2934), is located on the Hudson River in Saratoga and Rensselaer Counties, in the Town of Stillwater, NY. The facility is unstaffed, with two (2) turbine-generating units that are remotely monitored and controlled with a generating capacity of 16.53 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

A requirement of the 50-year Federal Energy Regulatory Commission (FERC) hydropower license for the facility, which became effective on April 1, 2021, is for NYSEG to replace and upgrade the existing intake trashracks from 5.5-inch clear space opening to 0.75-inch clear space opening for protection of aquatic species, specifically American Eel. In addition, NYSEG is required to design and install a new structure to safely convey entrained aquatic species safely downstream of the facilities intake forebay.

Modification, upgrade, and installation of the intake structures is required to comply with Section 3.3.1.3 of the Settlement Agreement, as referenced in the FERC License.

In addition, the project includes the following upgrades:

- Design and installation of a new automated trash rack raker to remove increased river debris accumulation due to reduction in intake trash rack openings from 5.5-inches to 0.75-inches.
- Reconfiguration of the of intake structure to reduce intake flow velocities and new intake trash racks.

Funding identified is for project initiation, conceptual and detailed design along with procurement and implementation of services for the upgrade of the intake structure and structures to safely convey aquatic species safely downstream of the intake forebay. The project is presently forecasted to be complete in 2028.

Reasons and Benefits:

Upon completion of the NYSEG Upper Mechanicville Intake Upgrades and Downstream Passage Project, the intake trashracks clear spacing will be reduced from 5.5-inches to 0.75-inches and an alternative path for downstream passage of American eels will be installed. Upon completion, NYSEG will fulfill its obligation to comply with Section 3.3.1.3 of the Settlement Agreement, as referenced in the NYSEG's FERC Hydropower Operating License.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
17	447	647	6,871	7,340

NYSEG

Upper Mechanicville Plant Control System Upgrade Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

The NYSEG Upper Mechanicville Hydroelectric Project (FERC Project No. P-2934), is located on the Hudson River in Saratoga and Rensselaer Counties, in the Town of Stillwater, NY. The facility is unstaffed, with two hydroelectric turbine-generating units that are remotely monitored and controlled and are rated to produce a total of 16.53 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

NYSEG Upper Mechanicville hydroelectric facility was built circa 1981. Over 40 years of operation of the plant, plant control systems and components, which are original to the facility are starting to fail leading to reduced operational reliability of the facility and turbine-generators. Original Equipment Manufacturer (OEM) replacement components are difficult locate, require procurement of refurbished components or after-market parts to restore to service.

The purpose of the project is to upgrade the current plant control systems with state-of-the-art hardware and technology that brings the control systems in-line with current standards resulting in increased operational reliability and availability of parts.

The Upper Mechanicville Plant Control System Upgrade Project involves:

- Review and updating of the existing plant control system drawings and operating equipment / systems
- Identifying current / state-of-the-art technology to replace, upgrade, and standardize the existing plant control and generator protection systems
- Detailed design of required modifications to implement the new plant control system upgrades
- Procurement of services, material, equipment, and hardware to remove the existing infrastructure and install new plant control system hardware and cabinetry

Funding identified is for project initiation, review of existing plant control system drawings, conceptual and detailed engineering, and implementation of the design. The project is presently forecasted to be complete in 2028.

Reasons and Benefits:

Upper Mechanicville Control System Upgrade Project involves the updated of aging, end-of-life plant control system and generator protection hardware and software. Upgrading to state-of-the-art plant control and generator protection systems will support New York State's Clean Energy Goals and initiatives by improving operational performance and reliability of the facility.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	240	606	69

NYSEG

Upper Mechanicville Unit 1 Turbine-Generator Major Overhaul / Rebuild

Line of Business: Electric
Category: Hydro-Generation

Scope:

NYSEG Upper Mechanicville Hydroelectric Project (FERC Project No. P-2934), is located on the Hudson River in Saratoga and Rensselaer Counties, in the Town of Stillwater, NY. The facility is unstaffed, with two (2) turbine-generating units that are remotely monitored and controlled with a generating capacity of 16.53 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

Upper Mechanicville Unit 1 turbine-generator was originally installed circa 1983 and has a rated capacity of 8.265 MW. The purpose of the project is to overhaul and rebuild Unit 1 turbine-generator, to address excessive bearing, journal, and sealing surfaces wear, which will improve operational performance and efficiency upon project completion. Rebuild of Unit 1 turbine-generator is necessary to support New York State's Clean Energy Goals and initiatives.

Upper Mechanicville Unit 1 Turbine-Generator Major Overhaul / Rebuild Project involves the following activities:

- Personnel, equipment, and material to disassemble turbine-generator assembly
- Inspection and measurement of all turbine (critical) components
- Upgrade of turbine assembly components, as deemed necessary, such as bottom ring, wicket gates, wicket gate bushings and sealing surfaces
- In-place machining of embedded components
- Installation of new bearing journals and rebabbitting of bearings
- Installation of new vibration monitoring system
- Reassembly and alignment of turbine-generator with new mechanical seal
- Commission turbine-generator and return to service

Funding identified is for project initiation, procurement of services, contract award, etc. in preparation for disassembly, inspection, testing of the turbine-generator components, along with upgrade, overhaul, and reassembly of the turbine-generator. The project is presently forecasted to be complete in 2031.

Reasons and Benefits:

Upper Mechanicville Unit 1 Turbine-Generator Major Overhaul / Rebuild Project will restore reliable operation and improve efficiency and extend the useful life of the 8.265 MW turbine-generator. Rebuild of Unit 1 turbine-generator, and restoring reliable operation, supports New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	0	177

NYSEG

Upper Mechanicville Unit 2 Generator Rewind

Line of Business: Electric
Category: Hydro-Generation

Scope:

The NYSEG Upper Mechanicville Hydroelectric Project (FERC Project No. P-2934), is located on the Hudson River in Saratoga and Rensselaer Counties, in the Town of Stillwater, NY. The facility is unstaffed, with two hydroelectric turbine-generating units that are remotely monitored and controlled with a total rated capacity of 16.53 MW. The plant is a Run-of-River operation, which means that a pond level elevation is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

During testing of Unit 2 generator in 2022, both generator stator and generator field revealed grounds / faults. Unit 2 generator has a capacity of 8.3 MW and was installed circa 1983. Based on the grounds identified in the generator stator and field, NYSEG has identified the need to rewind the generator.

Upper Mechanicville Unit 2 Generator Rewind Project involves the following activities:

- Personnel, equipment, and material to disassemble and remove the generator field / assembly.
- Generator specialist to remove generator field poles and generator stator windings
- Rewind generator field poles, generator stator windings
- Reinstall generator field into stator along with associated generator structures and bearings.
- Realign generator assembly with turbine and recouple
- Commission turbine-generator and return to service.

Funding identified is for project initiation, procurement of services, removal of generator field poles and stator windings and rewinding of the associated generator components. The project is presently forecasted to be complete in 2030.

Reasons and Benefits:

Upper Mechanicville Unit 2 Generator Rewind Project involves rewinding of both generator field and stator. Upon completion, 8.3 MW of capacity will be returned to service. Rewind of the generator field and stator, and returning the turbine-generator to service, supports New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	0	622

Electric Hydro-Generation

RG&E

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RG&E

Hydro Generation Station 2 Modernization Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 2 Hydroelectric Project (FERC Project No. P-2582) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of one turbine-generating unit with a total capacity of 8.5 MW and a dam structure (Central Ave. Dam) at High Falls to impound water used for generation of renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy. Station 2 was constructed circa 1960. Sections of the penstock that fed the original Station 2 hydroelectric facility, constructed in early 1900's, were used in the construction of the current Station 2 hydroelectric facility. The penstock is at end-of-life and requires routine inspection and weld repairs to address cracking.

The purpose of Station 2 Modernization Project is to replace the existing 11-ft diameter penstock, which is at end of life, install a new 14-ft diameter bifurcated penstock that will improve reliable operation of Unit 1 turbine-generator, facilitate future expansion of the hydroelectric facility through the addition of a second turbine-generating unit, extend the useful life of the hydroelectric facility, upgrade the fish bypass conveyance system, and install a new turbine isolation valve for Unit 1.

Station 2 Modernization Project involves the following activities:

- Detailed design and construction to:
  - Remove the existing 11-ft diameter penstock, with portions dating back to early 1900's, which is at end of life
  - Upgrade existing fish bypass conveyance system to improve passage of aquatic species downstream of intake structure to comply with FERC License Amendment
  - Increase size of penstock to 14-ft diameter and bifurcate to prepare Station 2 hydroelectric facility for future expansion (addition of second generating unit)
  - Procurement and fabrication of 14-ft diameter bifurcated penstock
  - Removal of existing and installation of new penstock along with associated structures in addition to Unit 1 turbine isolation valve

Reasons and Benefits:

Station 2 Modernization Project includes removal of the existing 11-ft diameter penstock, which is at end of life, installation of a 14-ft diameter bi-furcated penstock, turbine isolation valve for Unit 1 and upgrade the fish bypass conveyance system. As outlined in FERC's Station 2 License Amendment, Section E.30 and 44.N, upgrades to the existing fish bypass conveyance system are required and will be incorporated with installation of the new penstock to fulfill RG&E's requirement. Installation of a new penstock, turbine isolation valve and fish bypass conveyance system will extend the useful life of the hydroelectric facility, increase operational reliability, and supports New York State's Clean Energy Goals for use of renewable energy.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
2,967	8,872	20,042	21,553	6,190

RG&E

Minor Capital Program

Line of Business: Electric
Category: Hydro-Generation

Scope:

The RG&E Hydro Minor Capital Program implements minor capital projects each year to address both planned and emergent projects that typically have a per project cost of less than $200,000. The minor capital program funds are allocated to specific minor projects, or as projects emerge. The RG&E Minor Capital Program is in place to address multiple small capital investment projects, such as equipment upgrades needed to support generation of electricity, improve and maintain safe operation of the hydroelectric operating systems, as well as compliance upgrades (e.g. safety, regulatory, environmental) at RG&E hydroelectric generating facilities.

Reasons and Benefits:

Projects are implemented to address a variety of electrical, mechanical, civil/structural, and compliance requirements at RG&E hydroelectric generating facilities. Upon project completion, upgrades at the facilities improve and address compliance requirements along with supporting safe operations and generation of clean renewable energy.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,615	4,008	2,329	6,096	3,480

RG&E

Roof Upgrades (Station 5, Station 26, Station 160)

Line of Business: Electric
Category: Hydro-Generation

Scope:

The RG&E hydroelectric facilities (Stations 5, 26, and 160) were constructed in the early-to-mid 1900s. Facility roofing systems are showing signs of excess wear/degradation caused by many years of exposure to the elements. RG&E has identified a need to perform full tear-off and replacement necessary to ensure the integrity of the facility infrastructure is adequately maintained and available for the continued safe, efficient and reliable service of these existing hydroelectric facilities. The ability to maintain a watertight structure is critical to structural integrity and employee safety with an electric generating facility.

Reasons and Benefits:

Installation of a new, upgraded roofing system at each hydroelectric facility (Station 5, 26, and 160) will extend the life of the hydroelectric facility. Proactive measures to address these areas will reduce the potential for damage to the turbine-generator and associated equipment during operation and allow for continued reliable operation of renewable energy at Station 5 and Station 26 hydroelectric facilities in support of New York State's Clean Energy Goals and initiatives.

Installation of a new roofing system at RG&E Station 160 will also extend the useful life of the facility and address RG&E's on-going responsibility for public and personnel safety of the facility.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	353	0	0	0

RG&E

Station 160 Toe Scour Upgrade Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

The RG&E Station 160 Dam is located on the Genesee River in Mount Morris, New York. The hydroelectric facility is retired from service however has an operational power reservoir. The Station 160 dam was constructed circa 1922.

The RG&E Station 160 Toe Scour Upgrades Project will include the installation of post tension anchors on existing masonry dam along with reinforcing the concrete on the spillway/dam and toe that is at reach end of life.

Station 160 Toe Scour Upgrade Project is a project to reconstruct the dam. Recent inspections noted areas of the dam toe with significant spalling and undermining and areas that are at end of life. The project will extend the life of the dam along with addressing RG&E's on-going responsibility for public safety on the Genesee River .

Station 160 Toe Scour Upgrade Project involves the following activities:

- Detailed inspection of the dam and toe structure with identification of area requiring reconstruction
- Detailed design of upgrades to the dam/toe structure
- Personnel, equipment, and material to implement the design upgrades

Funding identified is for project initiation, conceptual and detailed design, procurement of services and implementation of the design to reconstruct the dam toe and any other dam upgrades as identified by the detailed inspection. The project is presently forecasted to be complete in 2028.

Reasons and Benefits:

Station 160 Toe Scour Upgrade Project is a dam safety project that will reconstruct the dam to address degradation identified through inspections and will result in improved dam integrity, extend the useful life of the dam, and continue RG&E's responsibility for public safety on the Genesee River

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	399	425	2,341	112

RG&E

Station 170 Dam Resurfacing Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 170 (Wiscoy) Dam is a Class B - Intermediate hazard dam as classified by New York State Department of Environmental Conservation (NYSDEC Dam No. 030-0565), and is located on Wiscoy Creek in Hume, New York. The hydroelectric facility is retired from service however has an operational power reservoir. The Wiscoy dam was constructed circa 1922 and is located within the lower portion of the Wiscoy creek watershed just above the confluence of the Genesee River.

Station 170 Dam Resurfacing Project is a project to resurface the concrete gravity dam and adjacent spillways. Recent inspections identified areas of the dam and spillways with significant spalling and areas that are at end of life. The project will extend the useful life of the Wiscoy dam and continue RG&E's responsibility for public safety of those living along Wiscoy Creek while maintaining safe operation of the dam.

Station 170 Dam Resurfacing Improvement Project involves the following activities:

- Detailed inspection of the dam structures with identification of area requiring reconstruction
- Detailed design of upgrades to the dam structure
- Contract services, equipment, and material to implement the design upgrades

Funding identified is for project initiation, conceptual and detailed design, procurement of services to implement the design to reconstruct and resurface the dam and adjacent spillways. The project is presently forecasted to be complete in 2030.

Reasons and Benefits:

Station 170 Dam Resurfacing Project is a project to maintain the integrity and safety of the NYSDEC Class B dam. The project involves reconstruction of the dam to address areas of degradation identified through inspections. Upon project completion, the resurfacing and upgrades will extend the useful life of the dam and continue RG&E's on-going responsibility for public safety and operational management of the dam.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	722	152

RG&E

Station 2 Central Ave Dam Superstructure Modernization

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 2 Hydroelectric Project (FERC Project No. P-2582) is located on the Genesee River in Rochester, New York. The hydroelectric generating facility is comprised of one turbine-generating unit with a total capacity of 8.5 MW and a dam structure (Central Ave. Dam) at High Falls to impound water used for generation of clean renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy. Station 2 and Central Ave. Dam was constructed circa 1960.

Central Ave. Dam (CAD) is comprised of six 42-ft by 11-ft high cable and winch driven vertical steel gates that impounds water for use in generation of renewable energy at Station 2. Gate 1 is used to for supplying river water to Station 2, while Gates 2 through 6 provide aesthetic flows over High Falls, which is a requirement of RG&E's Station 2 FERC operating license, and is vital in preventing flooding of the City of Rochester during high flow events (all gates).

Recent detailed inspection of the gates, gate sheaves, cable and hoist system identified sheaves used in raising and lowering each gate are at end of useful life. A review of the engineering inspection results identified that the current design and equipment in use do not meet current factor of safety margins.

The purpose of the project is upgrade and modernize Central Ave Dam gate operating systems and superstructure to meet current factor of safety margins and improve operational reliability.

Station 2 Central Ave. Dam Superstructure Modernization Project involves the following activities:

- Conceptual design to modernize gate lifting system
- Specification of gate sheave and lifting means that meet current safety standards and margins
- Identify electric and control operating requirements to safely isolate and operate each gate independently
- Detailed design to modernize gate lifting and control system

- Procurement of services, material, etc. to implement design

Funding identified is for project initiation, conceptual and detailed design, procurement of services and beginning of the implementation of the required control and structural upgrades. The project is presently forecasted to be complete in 2027.

Reasons and Benefits:

Station 2 Central Ave. Dam Superstructure Modernization will bring the dam into current margin of safety requirements while improving safety of personnel performing maintenance and inspection activities. In addition, improvements to the superstructure, electric and control systems will result in increased operational reliability of the dam while maintaining public safety, which is a regulatory obligation and requirement under RG&E's FERC hydropower license.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
294	469	825	5,148	0

RG&E

Station 2 Generator Protection and Controls Upgrade Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 2 Hydroelectric Project (FERC Project No. P-2582) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of a single 8.5 MW turbine-generating unit. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

The Station 2 turbine-generating unit, including the existing generation protection and controls, are original to the plant and was constructed circa 1960. The Station 2 generation protection systems are starting to fail leading to reduced operational reliability of the facility and turbine-generator. Original Equipment Manufacturer (OEM) replacement components are difficult to locate, require procurement of refurbished components or after-market parts to restore to service.

The purpose of the project is to upgrade the current generator protection and controls hardware with state-of-the-art hardware and technology that brings it in-line with current standards resulting in increased operational reliability and availability of parts.

The Station 2 Generator Protection and Controls Upgrade Project involves the following activities:

- Review and updating of the existing generator projection and control system drawings
- Identifying current / state-of-the-art technology to replace, and upgrading and standardizing the existing generator protection systems
- Detailed design of required modifications to implement the new generator protection and control hardware
- Procurement of services, material, equipment, and hardware to remove the existing infrastructure and install new generator protection, control hardware and cabinetry

Funding identified is for project initiation, review of existing generator protection and control system drawings, conceptual and detailed engineering, and implementation of the design. The project is presently forecasted to be complete in 2027.

Reasons and Benefits:

Station 2 Generator Protection and Controls Upgrade Project involves the upgrade of the existing Unit 1 generator protection and control system due to aging and difficulty with locating OEM components that are at end-of-life. Upgrade of the generator protection and controls system will extend the operational life and reliability of the generating facility, and continue RG&E's production of renewable energy, which supports New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
200	209	614	44	0

RG&E

Station 2 Unit 1 Turbine Wicket Gate Bushing Upgrade

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 2 Hydroelectric Project (FERC Project No. P-2582) is located on the Genesee River in Monroe County, Rochester, New York. The facility is unstaffed with one hydropower turbine-generating unit that is remotely monitored and controlled with a rated capacity of 8.5 MW. The facility is a run-of-river operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

RG&E Station 2 Unit 1 Turbine Wicket Gate Bushing Upgrade Project will include the replacement and upgrade of the existing wicket gate bushing due to existing operational issues. RG&E is required to safely operate and maintain the facility per RG&E's FERC hydropower license.

RG&E Station 2 Unit 1 Turbine Wicket Gate Bushing Upgrade Project involves the following activities:

- Personnel, equipment, and material to disassemble turbine-generator assembly
- Inspection and measurement of all turbine (critical) components
- Upgrade of turbine assembly components, as deemed necessary, such as head cover and bottom ring wicket gate bushings, and sealing surfaces
- In-place machining of embedded components
- Installation of new vibration monitoring system
- Reassembly and alignment of turbine-generator
- Commission turbine-generator and return to service

Funding identified is for project initiation, procurement of services, contract award, etc. in preparation for disassembly, inspection, along with upgrade of wicket gate bushings, and reassembly of the turbine-generator. The project is presently forecasted to be complete in 2027.

Reasons and Benefits:

RG&E Station 2 Unit 1 Turbine Wicket Gate Bushing Upgrade will restore, extend useful life of the asset, and return 8.5 MW of reliable renewable electric generation to service. Restoring reliable operation of the turbine-generating unit is required to support New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
217	209	1,045	44	0

RG&E

Station 26 Generator Protection and Controls Upgrade Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 26 Hydroelectric Project (FERC Project No. P-2584) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of a single 3.0 MW turbine-generating unit. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

The turbine-generating unit and facility was constructed circa 1952 and has the original generator protection and controls, which are still in service. Original Equipment Manufacturer (OEM) replacement components are difficult to locate and requiring procurement of refurbished components or after-market parts to restore to service.

The purpose of the project is to upgrade the current generator protection and controls hardware with state-of-the-art hardware and technology that brings it in-line with current standards resulting in increased operational reliability and availability of parts.

Station 26 Generator Protection and Controls Upgrade Project involves the following activities:

- Review and updating of the existing generator protection and control system drawings
- Identifying current / state-of-the-art technology to replace, upgrade and standardize the existing generator protection and control systems
- Detailed design of required modifications to implement the new generator protection and control hardware
- Procurement of services, material, equipment, and hardware to remove the existing infrastructure and install new generator protection, control hardware and cabinetry

Funding identified is for project initiation, review of existing generator protection and control system drawings, conceptual and detailed engineering, and implementation of the design. The project is presently forecasted to be complete in 2028.

Reasons and Benefits:

Station 26 Generator Protection and Controls Upgrade Project involves the upgrade of the existing generator protection and control system due to aging and difficulty with locating OEM components that are end-of-life. Upgrade of the generator protection and controls system will extend the operational life of the generating facility, increase long-term reliable operation of the facility, and continue RG&E's production of renewable energy, which supports New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	188	222	578	47

RG&E

Station 26 Intake Deck Upgrades and Resurfacing

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 26 Hydroelectric Project (FERC Project No. P-2584) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of a single 3.0 MW turbine-generating unit. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

Station 26 Intake Deck Upgrades and Resurfacing Project is a project to reconstruct and resurface the concrete water intake structure. Recent inspections noted areas of the intake deck, including spandrel beams and support wall, with significant spalling and areas that are at end of life. The project will extend useful life of the intake deck that is necessary to maintain generation of hydroelectric energy.

Station 26 Intake Deck Resurfacing Project involves the following activities:

- Detailed inspection of the intake deck, including adjacent walls and beams, with identification of areas requiring reconstruction
- Detailed design of upgrades to the intake deck
- Contract services, equipment, and material to implement the design upgrades

Funding identified is for project initiation, conceptual and detailed design, and procurement services in preparation and support of implementation of the design to reconstruct and resurface the intake deck. The project is presently forecasted to be complete in 2030.

Reasons and Benefits:

Installation of new beams associated structural members along with resurfacing the intake deck at Station 26 will extend the life of the water conveyance system and hydroelectric facility. Proactive measures to address these areas will reduce the potential for damage to the turbine-generator during operation and allow for continued reliable operation of Station 26 hydroelectric facility in support of New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	439	733

RG&E

Station 26 Overhead Crane Upgrade Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 26 Hydroelectric Project (FERC Project No. P-2584) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of a single 3.0 MW turbine-generating unit. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

The turbine-generating unit and facility was constructed circa 1952 and has the original 40-ton overhead crane, which is still in service. The purpose of the project is to upgrade the current crane through increasing lifting capacity to remove operational hazards and limitations currently present.

Station 26 Crane Upgrades Project involves the following activities:

- Review existing drawings associated with the Powerhouse crane
- Perform an analysis of the existing structure/crane (bridge, trolley, hoist, motor, etc) to identify opportunities for upgrades
- Detailed design of required modifications to implement an upgraded crane system, including upgraded controls, upgraded safety features, and increased lifting capacity
- Procurement of services, material, equipment, and hardware to remove the existing infrastructure and install the new upgraded crane

Funding identified is for project initiation, review of crane drawings, conceptual and detailed engineering, and implementation of the design. The project is presently forecasted to be complete in 2030.

Reasons and Benefits:

Station 26 Crane Upgrade Project involves the upgrade of the existing crane to address safety concerns, improve operational reliability, and increase lifting capacity. Upgrade of the crane will extend the operational life of the crane necessary for maintaining operation of the generating facility, which will allow for RG&E to maintain and continue production of clean renewable energy in support of New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	132	0	0	0

RG&E

Station 5 Brewer Street Water Line and Paving Upgrade

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three turbine-generating units with a total plant capacity of 46.0 MW and a Headgate structure at Middle Falls to impound water used for generation of renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

RG&E Station 5 Brewer Street Water Line and Paving Upgrade Project involves upgrades to the current water and fire services leading to the Station 5 headgates/control house. In coordination with the City of Rochester, RG&E has identified the need to upgrade the water service to install a backflow preventer directly adjacent to the City of Rochester's shutoff valve and install a fire hydrant adjacent to the Station 5 headgates. Additionally, the Brewer Street access road to Station 5 Headgates is at end-of-life due to settling/eroding from extensive vehicle, bicycle, and pedestrian traffic. Brewer Street requires a full-depth upgrade, including regrading and implementation of drainage structures, to improve site access.

Station 5 Brewer Street Water Line and Paving Upgrade Project involves the following activities:

- Conceptual and detailed design of water service line, fire service line, and asphalt upgrades from top of Brewer Street leading down to Station 5 headgates.
- Procurement and implementation of detailed designs

Funding identified is to initiate the project and perform conceptual and detailed engineering and implement the designs. The project is presently forecasted to be complete in 2030.

Reasons and Benefits:

Station 5 Brewer Street Water Lines and Paving Upgrade Project involves the upgrade of the existing water service, and addition of a fire hydrant, to comply with the City of Rochester. Additionally, the upgrade of Brewer Street will improve access of equipment

and materials, and safety for personnel working at Station 5 Headgate, and the public use of the Genesee Greenway Trail.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	0	229

RG&E

Station 5 Gate 2 Rubplate, Bottom Seal, Hinge Upgrade, and Rock

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three turbine-generating units with a total plant capacity of 46.0 MW and a Headgate structure at Middle Falls to impound water used for generation of renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

Gate 2 is located at RG&E Station 5 Headgates Dam and is one of five gates (49.5 long by 13.75-ft high) used to impound river water that is used in the generation of electric energy.

Gate 2 Rubplate, Bottom Seal, Hinge Upgrade and Rock Stabilization Project includes the following scope:

- Removal and upgrading of the existing gate rub plate and bottom seal
- Installation of new glycol heating piping in the concrete sill directly upstream of the gate seals to reduce formation of ice during winter months
- Removal of the existing gate hinges, which are anchored into bedrock, and installation of a new hinge design and anchor system
- Stabilize and encapsulate the rock strata directly downstream of Crest Gate 2 to prevent further erosion and undermining of the concrete spillway

The gate seals prevent river water from leaking between the sides and bottom of the gate when the crest gate is raised and downstream of the headgate structure. Inspection of the seals on adjacent crest gates, which were installed circa 2004 to 2006, revealed degradation and cracking due to ultraviolet light and environmental conditions. Failure of, or significant leakage through, the seals could result in RG&E not maintaining impoundment elevations required of RG&E's FERC operating license and loss of renewable electric generation.

In January 2018, the hinges of two adjacent crest gates (Gate 4A & 4B) failed during operation as a result of extremely cold temperatures in the region resulting in the need to lower the impoundment and cease generation of energy. Since then, RG&E has been diligently working to redesign the gate hinge design and anchor system. The purpose of

the project is to upgrade the two hinges on Gate 2, along with installation of a new glycol heating system in the sill upstream of the seals, to bring them current with the upgraded design implemented on Gate 4A & 4B at Station 5 Headgates.

Furthermore, since installation of Station 5 Headgates circa 1917, rock strata directly downstream of Crest Gate 2 has been naturally eroding as a result of freeze / thaw cycles during the fall / winter seasons and when Gate 2 is open and passing water downstream of Station 5 Headgates. The rock strata erosion is rapidly encroaching and undermining the approximate 55-ft wide by 28-ft long concrete spillway.

The project scope will involve necessary equipment, material, and personnel for installation of a temporary cofferdam to isolate Gate 2, along with resources to upgrade the rubplates, bottom seals, gate hinges, sill concrete, and rock strata downstream of the gates.

Upon completion of the work, the gate will be recommissioned and returned to service after removal of the cofferdam. Funding identified is to initiate the project and perform conceptual and detailed engineering. The project is presently forecasted to be complete in 2029.

Reasons and Benefits:

Installation of new ultra-violet stable rubplate and bottom seals, new upgraded hinges, a new concrete sill heating system, and stabilization of rock strata on Gate 2 at Station 5 Headgates is a proactive measure to implement an upgraded design to reduce the potential for future failure during gate operation. Upgrades will allow RG&E to maintain operational compliance with the FERC license and continue to generate renewable energy in support of New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	467	580	4,300	247

RG&E

Station 5 Gate 3 Rubplate, Rubplate Seal and Breastwall Seal Upgrade

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three turbine-generating units with a total plant capacity of 46.0 MW and a Headgate structure at Middle Falls to impound water used for generation of renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

Sector Gate 3 is located at RG&E Station 5 Headgates Dam and is one of five gates (~100-ft long by 17-ft high) used to impound river water that is used in generation of electric energy. The purpose of the rub plate and upstream breast wall seals is to contain (and seal) water within the Gate 3 structure. The rub plate seals seal against the rub plates that are embedded are integral to the concrete piers.

The purpose of the project is to install new stainless steel rubplates and associated gate seals along with installation of a new breastwall seal to reduce water leakage into and out of the gate that negatively impacts gate performance and operability. Failure of the seals could result in RG&E not maintaining impoundment elevations required of RG&E's operating license with the FERC and reduction in loss of electric generation.

Gate 3 Rubplate, Rubplate and Breastwall Seal Upgrade Project is comprised of the following activities:

- Design and fabrications of two new stainless steel rubplates
- Procurement of new rub plate seals and 100-ft long breastwall seal
- Installation of ~100-ft long temporary cofferdam to isolate Gate 3 for removal and installation of new gate seal components and accessories
- Removal of the existing original steel rubplates (installed circa 1917), which are at end of life and integral to the concrete piers
- Removal of and upgrading of the existing gate rubplate seals, which were installed circa 1975 and at end-of-life
- Removal of the upstream breastwall seal, which is original to the Headgates construction, installed circa 1917, and at end of life
- Personnel, equipment, and material for installation of new rubplate, rubplate seals

and upstream breastwall seal
- Removal of the cofferdam upon completion and recommissioning of the gate prior to returning to service

Funding identified is to initiate the project and perform conceptual and detailed engineering. The project is presently forecasted to be complete in 2026.

Reasons and Benefits:

With the existing rubplates, rubplate seals and upstream breastwall seal at end of life with water leakage into and from the Gate 3 when in service, installation of new rubplates and seals is necessary for improved operational reliability. Installation will also allow RG&E to maintain operational compliance with RG&E's FERC operating license and continue to generate renewable energy in support of New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,319	140	0	0	0

RG&E

S5 Gate 5 Rubplate, Bottom Seal, Hinge Upgrade, and Rock Stabilize

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three turbine-generating units with a total plant capacity of 46.0 MW and a Headgate structure at Middle Falls to impound water used for generation of renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

Gate 5 is located at RG&E Station 5 Headgates Dam and is one of five gates (49.5 long by 13.75-ft high) used to impound river water that is used in generation of electric energy.

Gate 5 Rubplate, Bottom Seal, Hinge Upgrade and Rock Stabilization Project includes the following scope:

- Removal and upgrading of the existing gate rub plate and bottom seal.
- Installation of new glycol heating piping in the concrete sill directly upstream of the gate seals to reduce formation of ice during winter months
- Removal of the existing gate hinges, which are anchored into bedrock, and installation of a new hinge design and anchor system
- Stabilize and encapsulate the rock strata directly downstream of Crest Gate 5 to prevent further erosion and undermining of the concrete spillway.

The gate seals prevent river water from leaking between the sides and bottom of the gate when the crest gate is raised and downstream of the headgate structure. Inspection of the seals on adjacent crest gates, which were installed circa 2004 to 2006, revealed degradation and cracking due to ultraviolet light and environmental conditions. Failure of, or significant leakage through the seals, could result in RG&E not maintaining impoundment elevations required of RG&E's FERC operating license and loss of renewable electric generation.

In January 2018, the hinges of two adjacent crest gates (Gate 4A & 4B) failed during operation as a result of extremely cold temperatures in the region resulting in the need to lower the impoundment and cease generation of energy. Since then, RG&E has been diligently working to redesign the gate hinge design and anchor system. The purpose of

the project is to upgrade the two hinges on Gate 5, along with installation of a new glycol heating system in the sill upstream of the seals, to bring them current with the upgraded design implemented on Gate 4A & 4B at Station 5 Headgates.

Furthermore, since installation of Station 5 Headgates circa 1917, rock strata directly downstream of Crest Gate 5 has been naturally eroding as a result of freeze / thaw cycles during the fall / winter seasons and when Gate 5 is open and passing water downstream of Station 5 Headgates. The rock strata erosion is encroaching and undermining the approximate 55-ft wide by 28-ft long concrete spillway.

The project scope will involve necessary equipment, material, and personnel for installation of a temporary cofferdam to isolate Gate 5, along with resources to upgrade the rubplates, bottom seals, gate hinges, sill concrete, and rock strata downstream of the gates.

Upon completion of the work, the gate will be recommissioned and returned to service after removal of the cofferdam. Funding identified is to initiate the project and perform conceptual and detailed engineering. The project is presently forecasted to be complete in 2029.

Reasons and Benefits:

Installation of new ultra-violet stable rubplate and bottom seals, new upgraded hinges, a new concrete sill heating system, and stabilization of rock strata on Gate 5 at Station 5 Headgates is a proactive measure to implement an upgraded design to reduce the potential for future failure during gate operation. Upgrades will allow RG&E to maintain operational compliance with the FERC license and continue to generate renewable energy in support of New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	678	91	2,981

RG&E

Station 5 Generation Protection and Controls Upgrade Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three (3) turbine-generating units with a total plant capacity of 46.0 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

The turbine-generating unit and facility was constructed circa 1917 and has the original generator protection and controls, which are still in service. Original Equipment Manufacturer (OEM) replacement components are difficult to locate and require procurement of refurbished components or after-market parts to restore to service.

The purpose of the project is to upgrade the current generator protection and controls hardware with state-of-the-art hardware and technology that brings it in-line with current standards resulting in increased operational reliability and availability of parts.

Station 5 Generator Protection and Controls Upgrade Project involves the following activities:

- Review and updating of the existing generator protection and control system drawings
- Identifying current / state-of-the-art technology to replace, upgrade and standardize the existing generator protection and control systems
- Detailed design of required modifications to implement the new generator protection and control hardware
- Procurement of services, material, equipment, and hardware to remove the existing infrastructure and install new generator protection, control hardware and cabinetry

Funding identified is for project initiation, review of existing generator protection and control system drawings, conceptual and detailed engineering, procurement of construction services, and implementation of the design. The project is presently forecasted to be complete in 2027.

Reasons and Benefits:

Station 5 Generator Protection and Controls Upgrade Project involves the upgrade of the existing generator protection and control systems for Unit 1, Unit 2, and Unit 3 generators due to aging and difficulty with locating OEM components that are at end-of-life. Upgrade of the generator protection and controls system will extend the operational life and reliability of the generating facility, and continue RG&E's production of renewable energy, which supports New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	209	614	44	0

RG&E

Station 5 Headgates / Dam Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three turbine-generating units with a total plant capacity of 46.0 MW and a Headgate structure at Middle Falls to impound water used for generation of renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

RG&E Station 5 Headgates / Dam Project involves upgrade to crest gate 4A and 4B, gate hinges and hydraulic operating cylinders used to impound river water that is used in the generation of electric energy.

In January 2018, crest gate 4A and 4B hinges failed during operation due to extremely cold temperatures in the region. As a result of the hinge failures, Gate 4A hydraulic operating cylinders failed resulting in having to lower the impoundment, enact RG&E's Emergency Action Plan and cease generation of electricity at Station 5. As a result of the Gate 4A and 4B failure, RG&E initiated an insurance claim for the damage that was incurred. RG&E plans to receive final insurance reimbursement in 2024.

Since 2018, RG&E has been diligently working to redesign the gate hinge design and anchor system, upgrade gate 4A and 4B design to current standards and ordered new operating cylinders (two per gate) to replace the cylinders that failed and were damaged. Presently, four of five gates are operational, which allows for passing river flows produced from a 100-year flood event.

Station 5 Headgates / Dam Project involves the following activities:

- Installation of cofferdams to isolate Gate 4A and Gate 4B and allow restoration efforts to progress (complete)
- Design and upgrade Gate 4A and 4B hinges and hinge anchor system (complete)
- Redesign and fabrication of crest gate 4A and 4B (complete)
- Design and installation of glycol heating system to reduce ice formation in areas around gate hinges (complete)
- Equipment, material, and personnel to perform and execute scope of work

- Removal of damaged crest gates and hydraulic operating cylinders (complete)
- Installation of glycol system, new fabricated gates, and new hydraulic operating cylinders (complete)
- Commissioning of gates and operating systems after installation, prior to and after removal of cofferdam (complete)
- Project close-out (in-process)

Reasons and Benefits:

Upon completion of RG&E Station 5 Headgates / Dam (Gate 4A and 4B) Project, full capacity of the gates will be restored. Restoring full capacity of the gates is necessary to maintain public safety and reduce potential for upstream flooding, which is a requirement of RG&E's FERC operating license.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
276	0	0	0	0

RG&E

Station 5 Intake Stop Log Gantry Upgrade Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three turbine-generating units with a total plant capacity of 46.0 MW and a Headgate structure at Middle Falls to impound water used for generation of renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

Station 5 Headgates intake structure contains sixteen intake bays to convey water from the Genesee River into Station 5 water conveyance system (tunnel). The present intake stop log gantry was not designed to allow for installation and removal of the stop logs during plant operation or when there is a differential present across the intake trash racks. Installation of stop logs is necessary to safely and quickly isolate Station 5 water conveyance system. Currently, installation and removal of the stop logs requires mobilization of a barge and crane to perform.

The purpose of the Intake Stop Log Gantry Upgrade Project is to design and install a mobile intake gantry structure that will allow for maintenance of the stop logs, and installation and removal during a plant outage without having to mobilize a barge and crane.

Station 5 Intake Stop Log Gantry Upgrade Project includes the following activities:

- Conceptual and detailed design of steel structures and electrical infrastructure that will facilitate ease of accessibility and safe handling of stop logs during installation, removal and for maintenance purposes (complete)
- Fabrication of steel structure(s) to support removal, installation, and storage of stop logs
- Installation of cofferdam to isolate each intake bay, as needed, to support upgrades of intake structure to receive stop logs when installed
- Installation of steel structures and associated electrical upgrades to facilitate safe installation, removal, and maintenance of stop logs after project completion

Reasons and Benefits:

Design, fabrication, and installation of Station 5 Intake Stop Log Gantry along with associated concrete and electrical upgrades will facilitate safe and quick isolation of Station 5 water conveyance system during plant operation or when there is a differential across the intake trash racks without having to mobilize a barge and crane. When stop logs are not in use, the intake stop log gantry will allow for maintenance of the stop logs.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,860	47	0	0	0

RG&E

Station 5 Old House Stabilization Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583), which is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three turbine-generating units with a total plant capacity of 46.0 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

The objective of this project is to assess the structural integrity of the "Old Powerhouse" (a.k.a Old House) and based on the findings implement a comprehensive upgrade (or partial demolition) or a combination of the two. The powerhouse complex consists of the “Old Powerhouse” area at the south end and a “New Powerhouse” at the north and center areas of the overall structure. The Old Powerhouse was constructed in the late 1800’s and the New Powerhouse was constructed between 1917 and 1927. The Old Powerhouse is a multi-level structure situated between the river gorge wall and the east bank of the Genesee River. The southern wall of the Old Powerhouse is built into the gorge wall.

A preliminary engineering inspection in January 2024 determined the Old Powerhouse has severely deteriorated structural building members, significant water infiltration, and previously installed shoring that is compromised. RG&E will expeditiously reinforce/stabilize and/or partially demolish the building to avoid potential collapse.

RG&E Station 5 Old House Stabilization Project is comprised of the following activities:

- Detailed inspection/investigation of existing conditions of the Old House.
- Conceptual and detailed design of building stabilization measures, including upgrades to foundations, framing members, and/or building exterior.
- Conceptual and detailed design of improvements to the old intake adjacent to the Old House to improve site drainage and minimize water infiltration into the Old House.
- Implementation of detailed designs to stabilize/reinforce the Station 5 Old House and surrounding areas.

Funding identified is to initiate the project and perform conceptual and detailed engineering and implement the designs. The project is presently forecasted to be complete in 2029.

Reasons and Benefits:

Upon completion of RG&E Station 5 Old House Stabilization Project, the facility will be stabilized and fit for use. Restoring use of the Station 5 Old House is necessary to maintain public/personnel safety and reduce the potential for a collapse.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	729	0	0	0

RG&E

Station 5 Penstock Lining and Coating Upgrade Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three turbine-generating units with a total plant capacity of 46.0 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

Station 5 Water Conveyance System conveys river water impounded upstream of Station 5 Headgates dam to the powerhouse for use in generation of electric energy. Station 5 Penstock Lining and Coating Upgrade Project involves the design and install of a new reinforced liner in each of the three (3) penstocks from the penstock transition zone to each turbine isolation valve located in the powerhouse.

The purpose of the project is to address the areas in the water conveyance system that have been identified to be in poor condition and address prior to failure. Failure of any steel penstocks would pose a safety risk to the public and company personnel. RG&E is required, per the FERC operating license, to maintain public fishing access through the S5 site. The penstocks are in the general vicinity of the public recreational access. Implementation of the new penstock lining and coating requires dewatering of the water conveyance system, which includes the penstocks, tunnel, and intake.

Funding identified is to initiate the project, perform conceptual engineering detailed design, and implement the design. The project is presently forecasted to be complete in 2031.

Reasons and Benefits:

Installation of new liners on the penstocks will extend the life of the water conveyance system. Proactive measures to upgrade the penstocks will address the on-going repairs due to the original penstocks being at end-of-life, reduce the potential for damage to the turbine-generators during operation, reduce the safety risk to company personnel and the public, and allow for continued reliable operation of Station 5 hydroelectric facility in support of New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	275	566

RG&E

Station 5 Powerhouse Access Road Soldier Wall Installation Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three turbine-generating units with a total plant capacity of 46.0 MW and a Headgate structure at Middle Falls to impound water used for generation of renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

This project will implement a soldier wall along the eastern (upgradient) rock face adjacent to the Station 5 Powerhouse Access Road from Seth Green Drive. RG&E maintains operational responsibility of this access road and adjacent slopes through an access agreement executed with the City of Rochester in 1955. The Station 5 powerhouse access road is also a public fishing trail for access to the Genesee River. The current degradation of the rock face represents an ongoing maintenance burden (fallen rock removal) and a personnel and public safety concern. As part of the project, an engineering inspection will be performed to identify problematic locations, and a soldier wall will be designed to protect company personnel and the public against falling rock.

Station 5 Powerhouse Access Road Soldier Wall Install involves the following activities:

- Detailed inspection/investigation of the rock slopes adjacent to Station 5 Powerhouse access road, including locations of potential rockfall.
- Conceptual and detailed design of a new soldier wall along the entire length of Station 5 powerhouse access road (1 Seth Green Drive).
- Procurement and implementation of detailed designs.

Funding identified is to initiate the project and perform conceptual and detailed engineering and implement the designs. The project is presently forecasted to be complete in 2030.

Reasons and Benefits:

Station 5 Powerhouse Access Road Soldier Wall Installation Project involves the installation of soldier wall along the access road leading to the powerhouse. The soldier wall will improve personnel and public safety. Under RG&E's operating license issued by the FERC, RG&E has the responsibility to maintain public safety and safely operate and maintain hydroelectric structures and facilities

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	375	455	8,070

RG&E

Station 5 Powerhouse Backup Generator Upgrade

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three turbine-generating units with a total plant capacity of 46.0 MW and a Headgate structure at Middle Falls to impound water used for generation of renewable energy. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

The purpose of the project is to replace and upgrade the existing backup generator at the RG&E Station 5 Powerhouse with a new generator to support new and critical powerhouse loads during a station outage. An inspection in 2023 determined the existing generator has multiple issues and has been deemed near end-of-life.

RG&E Station 5 Powerhouse Backup Generator Upgrade is comprised of the following activities:

- Design, specification, and supply of a new natural gas backup generator for the RG&E Station 5 Powerhouse
- Conceptual and detailed design of foundations, oil containment, natural gas piping, etc. needed for new backup generator
- Removal of existing backup generator (including existing support framing and foundations)
- Installation of new backup generator, including new support framing, foundations, oil containment, natural gas piping, etc)

Funding identified is to initiate the project and perform conceptual and detailed engineering and implement the designs. The project is presently forecasted to be complete in 2030.

Reasons and Benefits:

Station 5 Powerhouse Backup Generator Upgrade involves the upgrade of the existing backup generator due to aging, the generator being at end-of-life, and to support new critical powerhouse loads. Upgrade of the backup generator address new critical powerhouse loads, address end-of-life conditions with the current generator resulting in

continued operational support of the facility during station outages.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	275	566

RG&E

Station 5 Powerhouse Rockfall Stabilization Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three (3) turbine-generating units with a total rated capacity of 46.0 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

The existing gorge wall adjacent to the Station 5 Powerhouse has shown excessive signs of scaling, significant rock fall, and continues to erode. The current degradation of the rock face represents an ongoing personnel and public safety concern along with routine maintenance to remove fallen rock. This project will implement long-term stabilization measures along the eastern (upgradient) rock face adjacent to the Station 5 Powerhouse to mitigate the on-going safety concern.

RG&E Station 5 Powerhouse Rockfall Stabilization Project is comprised of the following activities:

- Detailed inspection/investigation of existing rock face conditions at Station 5 Powerhouse.
- Conceptual and detailed design of rockfall stabilization measures
- Implementation of detailed designs to stabilize/reinforce the gorge wall immediately adjacent to the Station 5 Powerhouse and surrounding areas. The new stabilization measures will span from the surge tank outcropping to RG&E's northern property line.

Funding identified is to initiate the project and perform conceptual and detailed engineering and implement the design. The project is presently forecasted to be complete in 2029.

Reasons and Benefits:

Upon completion of RG&E Station 5 Powerhouse Rockfall Stabilization Project, the adjacent gorge wall will be stabilized and access behind the Station 5 Powerhouse will be restored. Restoring access on the east side of the Station 5 Powerhouse is necessary to maintain personnel safety, reduce potential for collapse, and prepare the facility for necessary upgrades to the underground water conveyance system.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	347	0	0	0

RG&E

Station 5 Powerhouse Turbine-Generator Rotating Equipment Guard Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583), which is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three turbine-generating units with a total plant capacity of 46.0 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

As found during an internal safety audit, RG&E is initiating a safety improvement project to install physical controls / barriers around RG&E Station 5 powerhouse turbine generating units to protect personnel from rotating equipment in accordance with OSHA.

Scope for the RG&E Station 5 Powerhouse Turbine-Generator Rotating Equipment Guard Project includes:

- Conceptual and detailed designs for rotating equipment guards around Units 1, 2, and 3
- Contract services, equipment, and material to implement the design upgrades.

Funding identified is for project initiation, conceptual and detailed design, and procurement services in preparation and support of implementation of the design to install the rotating equipment guards. The project is presently forecasted to be complete in 2024.

Reasons and Benefits:

Installation of new rotating equipment guards will improve personnel safety at Station 5 hydroelectric facility. Proactive measures to address these areas will reduce the potential for injury during operation and allow for continued reliable operation of Station 5 hydroelectric facility in support of New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
312	0	0	0	0

RG&E

Station 5 Surge Tank Expansion Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three turbine-generating units with a total plant capacity of 46.0 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

With relining of the water conveyance tunnel, which was completed in 2012, modeling of the new tunnel profile revealed that the existing surge tank could potentially overtop if an electrical disturbance occurred during operation of the hydroelectric facility at full load. Overtopping of the (50-ft diameter x 55-ft high) surge tank would result in potential harm to personnel around the surge tank along with damage to infrastructure around the facility, such as electrical distribution circuits from Station 5 powerhouse substation and the 13-ft diameter water conveyance penstocks.

The Station 5 Surge Tank Expansion Project involves updating of the water conveyance flow model, determining the height to raise the tank walls to prevent overtopping when operating a full load, design, and implementation of the required modification to raise the tank height. Output capacity of Station 5 hydroelectric facility is presently curtailed to prevent overtopping of the tank. Funding identified is for initiation of the project, conducting flow model and start conceptual engineering and detailed engineering. The project is presently forecasted to be complete in 2029.

Reasons and Benefits:

Expansion (raising) of the existing surge tank height is necessary to protect personnel and infrastructure in the event of a load rejection when operating Station 5 hydroelectric facility at full load. Upon completion of the project, Station 5 hydroelectric facility will be restored to safe (full) operating capacity. Restoring operational capacity of Station 5 will increase energy production at the facility, which supports New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	639	674	2,591

RG&E

Station 5 Unit 1, Unit 2 & Unit 3 Turbine-Generator Guide Bearing Water

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three turbine-generating units with a total plant capacity of 46.0 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate clean renewable hydroelectric energy.

Station 5 Unit 1 and Unit 2 turbine-generators were originally installed circa 1917, and Unit 3 turbine-generator was originally installed circa 1927. All three turbine-generators use domestic water for cooling of lubricating oil and bearing lubrication during generation of electricity. RG&E plans to utilize water from the Genesee River for the generation of electricity by implementation of a micron filtration system within the Station 5 Powerhouse.

Station 5 Unit 1, Unit 2, and Unit 3 Turbine-Generator Guide Bearing Lubricating Water Filtration System Installation Project involves the following activities:

- Conduct a study to review current facility water requirements and future water requirements
- Conceptual and detailed design of new water filtration system and associated electric and control requirements
- Contracted services, equipment, and material to install new water filtration system and associated modifications to tie into existing Unit 1, Unit 2, and Unit 3 turbine-generators
- Commissioning of filtration system upon upgrade completion

Funding identified is for project initiation, conceptual and detailed design, and procurement of services in preparation for installation of the new water filtration system design. The project is presently forecasted to be complete in 2030.

Reasons and Benefits:

RG&E's Station 5 currently relies on domestic water to support generation of electricity. Completion of Station 5 Unit 1, Unit 2 & Unit 3 Turbine-Generator Guide Bearing Water Filtration System Upgrade Project will allow for the use of river water (vs. domestic water) and eliminate the reliance on domestic water to support generation of electricity while maintaining reliable operation of Station 5 hydroelectric facility in support of New York State's Clean Energy Goals and initiatives. Station 5 hydroelectric facility presently uses an estimated 6.2M gallons of domestic water annually to support generation.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	208	172

RG&E

Station 5 Unit 3 Turbine-Generator New Turbine Isolation Valve

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three turbine-generating units with a total rated capacity of 46.0 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

Unit 3 turbine-generator has a generating capacity of 18.0MW and was installed circa 1927. The original turbine isolation valve, which is used to isolate river water from entering Unit 3 turbine-generator scroll case, was removed and minor upgrades performed circa 2009. The turbine isolation valve is closed and scroll case dewatered for the safety of personnel performing internal inspection and maintenance on the turbine-generator.

The purpose of Station 5 Unit 3 Turbine-Generator New Turbine Isolation Valve Project is to procure and install a new valve. In 2018 during isolation of Unit 3 turbine-generator, personnel were not able to successfully seal the valve to prevent water from entering the turbine scroll case. Water flows leaking around the existing valve seat and seals are significant enough that prevent safe access of personnel to perform inspection and maintenance on Unit 3 turbine runner in the turbine scroll case.

Station 5 Unit 3 New Turbine Isolation Valve Project involves design and fabrication of a new 11.5-ft diameter valve. Upon delivery of the valve, the Station 5 water conveyance tunnel will be dewatered, the existing valve removed, new valve installed and commissioned. Funding identified is to initiate the project, technical review of valves that could perform to the required operational requirements along with conceptual design for installation of the valve. The project is presently forecasted to be complete in 2029.

Reasons and Benefits:

Installation of a new turbine isolation valve for Unit 3 turbine-generator will create a safe isolated work area, by preventing water from entering the turbine scroll case, for personnel to safely access the turbine scroll case for inspection and maintenance activities.

Preventive and proactive maintenance and inspection of Unit 3 turbine-generator improves operational performance and reliability supports New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	466	824	2,070

RG&E

Station 5 Water Conveyance (Tunnel) System Project

Line of Business: Electric
Category: Hydro-Generation

Scope:

RG&E Station 5 Hydroelectric Project (FERC Project No. P-2583) is located on the Genesee River in the City of Rochester, New York. The hydroelectric generating facility is comprised of three turbine-generating units with a total plant capacity of 46.0 MW. The plant is a Run-of-River operation, which means that a consistent pond level is maintained, while utilizing the natural flow of the river to generate hydroelectric energy.

Station 5 Water Conveyance (Tunnel) System conveys river water impounded upstream of Station 5 Headgates dam to the powerhouse for use in the generation of electric energy. Station 5 Tunnel System Project involves the design of a new steel reinforced cast-in-place concrete liner to reline and upgrade the existing liner transition from the riverbed into the tunnel's intake shaft (20-ft diameter), transition of the surge tank riser shaft (19-ft diameter) to the surge tank foundation and address miscellaneous construction joints throughout the 1,400-ft long by 16-ft diameter power tunnel system.

The purpose of the project is to address the areas in the water conveyance system that have been identified to be in poor condition and address this prior to failure. Failure of the liner in these areas could lead to concrete being ingested into the turbine-generators during operation causing damage.

Implementation of the designs require dewatering of the water conveyance tunnel, installation of temporary infrastructure (lighting, compressed air, air monitoring systems, etc.) and equipment inside and outside of the tunnel system to support the work activities. Due to the location of the tunnel system and limited access and egress points, an on-site confined space rescue team is required in the event there is a medical and/or rescue emergency. Funding identified is to initiate the project, perform conceptual engineering and start detailed design. The project is presently forecasted to be complete in 2030.

Reasons and Benefits:

Installation of new steel reinforced cast-in-place concrete at the intake shaft transition from the riverbed, surge tank riser shaft to surge tank foundation and miscellaneous construction joints throughout the power tunnel system will extend the life of the water conveyance system. Proactive measures to address these areas will reduce the potential for damage to the turbine-generators during operation and allow for continued reliable operation of Station 5's three hydroelectric turbine-generators in support of New York State's Clean Energy Goals and initiatives.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	623	589	955

Electric Advanced Metering Infrastructure (AMI)

NYSEG

AMI Project 594

NYSEG

AMI Project

Line of Business: Electric
Category: AMI

Scope:

NY AMI will install smart meters and associated equipment in NYSEG territory.

Reasons and Benefits:

NY AMI is an essential foundational system in realizing Reforming the Energy Vision (REV) goals to empower customers through new tools and information to effectively manage and reduce usage, establish, and animate new markets to promote the implementation of Distributed Energy Resources (DER's), and minimize environmental impacts of power generation and energy consumption. NYSEG will gain early outage detection to assist with restoration efforts as well as streamline internal business processes.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
57,974	36,043	5,296	6,619	8,274

Electric Advanced Metering Infrastructure (AMI)

RG&E

AMI Project 596

RG&E

AMI Project

Line of Business: Electric
Category: AMI

Scope:

NY AMI will install smart meters and associated equipment in RG&E territory.

Reasons and Benefits:

NY AMI is an essential foundational system in realizing Reforming the Energy Vision (REV) goals to empower customers through new tools and information to effectively manage and reduce usage, establish, and animate new markets to promote the implementation of Distributed Energy Resources (DER's), and minimize environmental impacts of power generation and energy consumption. RG&E will gain early outage detection to assist with restoration efforts as well as streamline internal business processes.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
27,962	21,057	0	0	0

Gas Asset Condition

NYSEG

CGI Standardization Program 598
Distribution Main Replacement 599
Gas Operations Departmental 600
Regulator Modernization and Automation Program 601
Vienna Road Regulator Station 602

NYSEG

CGI Standardization Program

Line of Business: Gas
Category: Asset Condition

Scope:

The objective is to standardize Combustible Gas Indicator (CGI) units across Gas territories. Currently, there is inconsistency due to varied manufacturers and functionalities. A significant number of these units are aging and due for replacement, providing an opportunity to standardize across the business. Standardizing CGI units improves efficiency, safety, and collaboration among OpCo's and departments.

Reasons and Benefits:

The scope of the CGI Standardization Program is to replace and standardize the existing CGI units across Gas territories, addressing the current inconsistencies in manufacturers and functionality. CGI units are the first line of defense in leak detection and are used by all first responders for emergency response as well as routine work. The company is working to standardize to a single unit across OpCo's. The scope of 2024 is to replace about 1/5th of the existing CGI units in NYSEG with the new version at an average cost of $5,000/unit.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
255	144	141	140	0

NYSEG

Distribution Main Replacement

Line of Business: Gas
Category: Asset Condition

Scope:

This program replaces gas mains as required due to several factors including, but not limited to, poor conditions, conflicts with existing or proposed structures and utilities, short sections of main that do not meet the definition of leak prone main but are included within a larger leak prone main project and other miscellaneous field conditions discovered as part of normal operations or other construction and inspection activities.

Reasons and Benefits:

These main replacements project aim to improve operational safety and reliability for the gas distribution system. When part of a larger leak prone main project, including these sections of main leads to fewer joints as well as fewer material types and ages along a main which helps to minimize operational errors and reduced O&M costs. Fewer joints lead to fewer areas of potential methane leaks which is good for the environment. Portions of the investment in this program are performed within this Disadvantage Community as defined by the Climate Justice Working Group of CLCPA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,573	3,766	4,096	4,578	5,196

NYSEG

Gas Operations Departmental

Line of Business: Gas
Category: Asset Condition

Scope:

The Gas Operations Departmental expenditures are related to the purchase of tools and equipment needed and used by gas field employees daily or by special need to inspect, operate, maintain, repair, or construct the gas distribution system. Equipment purchases are based on business needs including safety, systematic replacement (end of life or damage), geographic location of equipment and availability in emergency situations or workload, new technology or regulatory requirements, increased workload or scope of responsibility.

Reasons and Benefits:

This program allows the Company to meet safety and OSHA requirements through replacement of tools and equipment at the end of their useful lives. Reasons for replacement are included/ but not limited to; end of life, obsolescence, new technologies, regulatory requirements and broken/damaged tool or equipment.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
965	939	945	968	1,031

NYSEG

Regulator Modernization and Automation Program

Line of Business: Gas
Category: Asset Condition

Scope:

This program includes improvements to regulator and gate stations within the NYSEG gas system. There are several types of typical upgrades, including the removal of regulators, filters, chart recorders, valves, inlet and outlet piping and enclosures due primarily to obsolesces of or end of life of the equipment. The noted equipment is replaced with standardized modern equipment, piping and associated fittings and includes corrosion protection for both equipment and piping. This program also includes the installation of remote terminal units (RTU) and other automation improvements that allow remote monitoring and reporting.

Reasons and Benefits:

These improvements enhance system reliability associated with corroded piping, fittings and end-of-life equipment. Additional benefits of this program include the reduction of potential outages due to equipment failures, improvement of equipment standardization and safety. This will also support annual inspections required by 16NYSCRR Part 255 by correcting deficiencies and modernizing to current standards. Additionally, portions of this work take place in Disadvantage Community as defined by the Climate Justice Working Group of CLCPA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,656	2,623	2,638	3,291	3,735

NYSEG

Vienna Road Regulator Station

Line of Business: Gas
Category: Asset Condition

Scope:

Vienna Road Regulator Station is critical for NYSEG Gas Control to balance daily nominations between National Fuel and DETI. The station has been in operation for over 60 years, with much of the equipment at or beyond its service life. The overpressure protection relief valves and regulators are obsolete and replacement parts are no longer available. The existing heater is experiencing issues multiple times in the coldest points during the heating season, requiring manual restart of the equipment. The flow meter that measures the gas coming from the Arcadia Gate station is in a vault below grade and prone to flooding which in turn leads to intermittent signal loss. This station serves the majority of gas into the northern part of the NYSEG Geneva franchise and is a critical component of ensuring reliable service to approximately 27,000 customers.

Reasons and Benefits:

This project will upgrade equipment, modernize facilities, increase operational efficiencies, eliminate potential environmental concerns as the primary stations feeding the northern portion of the NYSEG Geneva franchise. These improvements will provide a safe and reliable natural gas supply to existing customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	5,694	0	0

Gas Asset Condition

RG&E

Caledonia Station Rebuild 604
CGI Standardization Program 605
CM-1 Pipeline Section 4 Chili GS To Ballantyne Road 606
Distribution Main Replacement 607
Gas Operations Departmental 608
Mendon Gate Station 609
Regulator Modernization and Automation Program 610

RG&E

Caledonia Station Rebuild

Line of Business: Gas
Category: Asset Condition

Scope:

This project will rebuild the Caledonia Gate Station which will involve a new building, equipment, valves and associated pipe and fittings for flow and pressure control functions, odorization and Remote Terminal Unit (RTU) monitoring. The work will also include installation of a back-up generator and exterior lighting on the property. Site and security work will also involve a new driveway extension and updated fencing and gates to meet RG&E security requirements.

Reasons and Benefits:

The Caledonia Gate Station is the primary gas supply source to the RG&E system and supplies gas to the western and eastern portions of the franchise. The RG&E franchise requires upgrades to this gate station aiming to improve the safe, reliable and efficient operation of the franchise's systems and to address aging facilities and equipment. The upgrades and replacements associated with this project are necessary to avoid potentially significant and costly future maintenance.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	24,417	0

RG&E

CGI Standardization Program

Line of Business: Gas
Category: Asset Condition

Scope:

The objective is to standardize Combustible Gas Indicator (CGI) units across Gas territories. Currently, there is inconsistency due to varied manufacturers and functionalities. A significant number of these units are aging and due for replacement, providing an opportunity to standardize across the business. Standardizing CGI units improves efficiency, safety, and collaboration among OpCo's and departments.

Reasons and Benefits:

The scope of the CGI Standardization Program is to replace and standardize the existing CGI units across Gas territories, addressing the current inconsistencies in manufacturers and functionality. CGI units are the first line of defense in leak detection and are used by all first responders for emergency response as well as routine work. The company is working to standardize to a single unit across OpCo's. The scope of 2024 is to replace about 1/5th of the existing CGI units in RGE with the new version at an average cost of $5,000/unit.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
144	133	141	133	0

RG&E

CM-1 Pipeline Section 4 Chili GS To Ballantyne Road

Line of Business: Gas
Category: Asset Condition

Scope:

This project will replace the existing 22 1/2-inch gas main parallel with CM-5 pipeline (Chili Gate Station to Ballantyne Road) with 23,400 linear feet of 16-inch WRST, to be built with a 124-psig maximum allowable operating pressure (MAOP). This pipeline replacement will also be designed as high-pressure distribution and will be tied in to the existing MF120 Western Monroe pressure system at Ballantyne Road. The pipeline will be designed to operate at less than 20% SMYS (Specified Minimum Yield Strength).

Reasons and Benefits:

This project addresses asset condition by replacing transmission pipe installed in the 1950s that has leak potential as identified by RG&E's IMP (Integrity Management Program). This project aims to improve the transmission system and distribution system reliability and safety.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	16,717	0	0

RG&E

Distribution Main Replacement

Line of Business: Gas
Category: Asset Condition

Scope:

This program replaces gas mains as required due to several factors including, but not limited to, poor conditions, conflicts with existing or proposed structures and utilities, short sections of main that do not meet the definition of leak prone main but are included within a larger leak prone main project and other miscellaneous field conditions discovered as part of normal operations or other construction and inspection activities.

Reasons and Benefits:

These main replacements project aim to improve operational safety and reliability for the gas distribution system. When part of a larger leak prone main project, including these sections of main leads to fewer joints as well as fewer material types and ages along a main which helps to minimize operational errors and reduced O&M costs. Fewer joints lead to fewer areas of potential methane leaks which is good for the environment. Portions of the investment in this program are performed within this Disadvantage Community as defined by the Climate Justice Working Group of CLCPA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,708	1,660	1,763	1,942	2,214

RG&E

Gas Operations Departmental

Line of Business: Gas
Category: Asset Condition

Scope:

The Gas Operations Departmental expenditures are related to the purchase of tools and equipment needed and used by gas field employees daily or by special need to inspect, operate, maintain, repair, or construct the gas distribution system. Equipment purchases are based on business need including safety, systematic replacement (end of life or damage), geographic location of equipment and availability in emergency situations or workload, new technology or regulatory requirements, increased workload, or scope of responsibility.

Reasons and Benefits:

This program allows the Company to meet safety and OSHA requirements through replacement of tools and equipment at the end of their useful lives. Reasons for replacement are included/ but not limited to; end of life, obsolescence, new technologies, regulatory requirements and broken/damaged tool or equipment.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
342	324	355	344	378

RG&E

Mendon Gate Station

Line of Business: Gas
Category: Asset Condition

Scope:

This project will upgrade the existing equipment and facilities at the 29 year old Mendon Gate Station and includes replacement of heaters, heater building heating, ventilation, and air conditioning (HVAC), monitoring equipment upgrades, regulation building HVAC and monitoring equipment upgrades, replacement of the odorant tank and associated injection lines, replacement of odorizer building, remote terminal unit (RTU) building upgrades, back-up generator replacement, upgrades to site security and additional Gas Control/ECC remote controls.

Reasons and Benefits:

The Mendon Gate Station was installed and activated in 1995. This station feeds the CM2, CM2B and CM3 system operating at a Maximum Allowable Operating Pressure (MAOP) of 250 psig. Mendon Station is fed from the Empire Pipeline (National Fuel) operating at 1440 psig MAOP and has a minimum inlet pressure of 570 psig. Mendon station is a major feed to the eastern portion of the RG&E franchise.

Mendon Station has operated for over 29 years and the existing equipment is at end-of-life replacement/upgrades or will require significant future maintenance. Site security upgrades are needed.

These improvements aim to improve the safe and reliable natural gas supply to approximately 50,000 existing customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,484	11,759	0	0	0

RG&E

Regulator Modernization and Automation Program

Line of Business: Gas
Category: Asset Condition

Scope:

This program includes improvements to regulator and gate stations within the RG&E gas system. There are several types of typical upgrades, including the removal of regulators, filters, chart recorders, valves, inlet and outlet piping and enclosures due primarily to obsolesces of or end of life of the equipment. The noted equipment is replaced with standardized modern equipment, piping and associated fittings and includes corrosion protection for both equipment and piping. This program also includes the installation of remote terminal units (RTU) and other automation improvements that allow remote monitoring and reporting.

Reasons and Benefits:

These improvements enhance system reliability associated with corroded piping, fittings and end-of-life equipment. Additional benefits of this program include the reduction of potential outages due to equipment failures, improvement of equipment standardization and safety. This will also support annual inspections required by 16NYSCRR Part 255 by correcting deficiencies and modernizing to current standards. Additionally, portions of this work take place in Disadvantage Community as defined by the Climate Justice Working Group of CLCPA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
5,084	4,657	4,817	5,924	6,753

Gas Mandatory

NYSEG

Distribution Mains New Business 612
Gas Meters 613
Government Jobs 614
Large Government Jobs 615
New Services 616
Non - Leak Prone Service Replacement Program 617
Regulators 618

NYSEG

Distribution Mains New Business

Line of Business: Gas
Category: Mandatory

Scope:

This program installs new gas mains to customers in accordance with tariff. This program is required to extend new gas mains to new customers to comply with the Company's obligation to provide service.

Reasons and Benefits:

This program is necessary to remain in compliance with tariffs.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,214	3,191	3,224	3,604	4,090

NYSEG

Gas Meters

Line of Business: Gas
Category: Mandatory

Scope:

This program is for the purchase and installation of gas meters to replace existing, aged meters as they are removed from service as well as for new installations.

Reasons and Benefits:

Gas meters are exchanged for annual PSC required programs including statistical sampling and remediation programs and for other various reasons including relocation, load increases, meter damage, special testing and replacing non-temperature-compensating (TC) meters. The programs help to ensure accurate recording of customers usage and results in accurate customer billing.

This program is applicable to all communities and is implemented for all customers regardless of location.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,946	3,062	3,203	3,319	3,763

NYSEG

Government Jobs

Line of Business: Gas
Category: Mandatory

Scope:

This program is required by New York State Law to replace gas mains in conflict with elements of municipal street and highway reconstruction projects in accordance with terms and conditions to occupy public right-of-way. Projects that cost less than $750K are completed within this program.

Reasons and Benefits:

This is a program for work mandated by government entities and is necessary to comply with the terms and conditions to occupy public right-of-way. Depending on the municipality where the project is located, portions of this work may be completed in Disadvantage Community as defined by the Climate Justice Working Group of CLCPA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
898	891	901	1,007	1,143

NYSEG

Large Government Jobs

Line of Business: Gas
Category: Mandatory

Scope:

This program replaces gas mains in conflict with street reconstruction projects in accordance with terms and conditions to occupy public right-of-way as well as other projects requested by municipalities requesting to natural gas infrastructure relocated. Projects in this program are greater than $750K and tend to be larger and/or complex projects. Once a project is identified that fits the criteria above, an individual project is created and planned, executed, tracked and managed as an individual project.

Reasons and Benefits:

This is a program for work mandated by government entities and is necessary to comply with the terms and conditions to occupy public right-of-way as well as meeting the needs of municipal projects. Depending on the municipality where the project is located, portions of this work may be completed in Disadvantage Community as defined by the Climate Justice Working Group of CLCPA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,019	567	679	846	970

NYSEG

New Services

Line of Business: Gas
Category: Mandatory

Scope:

This program installs new gas services to new customers (residential or business customers) in accordance with tariff. This program extends new gas service lines to new customers to comply with the Company's obligation to serve.

Reasons and Benefits:

This program is necessary to connect businesses and residences that request gas service in accordance with tariffs and the Company's obligation to serve.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,434	3,409	3,445	3,851	4,370

NYSEG

Non - Leak Prone Service Replacement Program

Line of Business: Gas
Category: Mandatory

Scope:

This program replaces or ties-over any service associated with a gas main replacement project that does not qualify as a leak prone service in accordance with Distribution Integrity Management Program (DIMP).

Reasons and Benefits:

The replacement of non-leak prone services is performed when services are not connected to leak prone main or where a service that does not need to be replaced is moved (tied-in) from a leak prone main to a replaced main. Replacement of facilities is a recognized practice to effectively mitigate risk and address threats to pipeline systems. Infrastructure replacement affords relocation of Company assets to locations that can potentially reduce future O&M expenses and ensure safe, reliable service to customers in accordance with regulatory requirements. Replacement of non-state of the art facilities is an industry recognized means to reduce methane emissions from leakage and serves to support Federal methane emission reduction initiatives and NY CLCPA requirements.

The work associated with this program includes, but is not limited to, replacement of gas services in conflict with street reconstruction projects in accordance with terms and conditions to occupy public rights-of-way and non-leak prone gas main replacements per rate cases and tariff or code requirements, etc. Portions of this work may be completed in Disadvantage Community as defined by the Climate Justice Working Group of CLCPA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,132	3,631	3,932	4,095	4,648

NYSEG

Regulators

Line of Business: Gas
Category: Mandatory

Scope:

This program is for the purchase and installation of gas regulators for new installations and some replacements. This equipment is used for both residential and industrial installations.

Reasons and Benefits:

A gas regulator is necessary equipment that is used to maintain the pressure on the system and at the customers' location so that the gas services operate within specific ranges, so their appliances and equipment operate correctly and safely.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
400	425	450	450	475

Gas Mandatory

RG&E

Distribution Mains New Business 620
Gas Meters 621
Government Jobs 622
Large Government Jobs 623
New Services 624
Non - Leak Prone Service Replacement Program 625
Regulators 626

RG&E

Distribution Mains New Business

Line of Business: Gas
Category: Mandatory

Scope:

This program installs new gas mains to customers in accordance with tariff. This program is required to extend new gas mains to new customers to comply with the Company's obligation to provide service.

Reasons and Benefits:

This program is necessary to remain in compliance with tariffs.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,946	1,787	1,854	2,042	2,328

RG&E

Gas Meters

Line of Business: Gas
Category: Mandatory

Scope:

This program is for the purchase and installation of gas meters to replace existing, aged meters as they are removed from service as well as for new installations.

Reasons and Benefits:

Gas meters are exchanged for annual PSC required programs including statistical sampling and remediation programs and for other various reasons including relocation, load increases, meter damage, special testing and replacing non-temperature-compensating (TC) meters. The programs help to ensure accurate recording of customers usage and results in accurate customer billing.

This program is applicable to all communities and is implemented for all customers regardless of location.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,575	2,764	3,342	3,152	3,755

RG&E

Government Jobs

Line of Business: Gas
Category: Mandatory

Scope:

This program is required by New York State Law to replace gas mains in conflict with elements of municipal street and highway reconstruction projects in accordance with terms and conditions to occupy public right-of-way. Projects that cost less than $750K are completed within this program.

Reasons and Benefits:

This is a program for work mandated by government entities and is necessary to comply with the terms and conditions to occupy public right-of-way. Depending on the municipality where the project is located, portions of this work may be completed in Disadvantage Community as defined by the Climate Justice Working Group of CLCPA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,055	967	1,003	1,105	1,260

RG&E

Large Government Jobs

Line of Business: Gas
Category: Mandatory

Scope:

This program replaces gas mains in conflict with street reconstruction projects in accordance with terms and conditions to occupy public right-of-way as well as other projects requested by municipalities requesting to natural gas infrastructure relocated. Projects in this program are greater than $750K and tend to be larger and/or complex projects. Once a project is identified that fits the criteria above, an individual project is created and planned, executed, tracked, and managed as an individual project.

Reasons and Benefits:

This is a program for work mandated by government entities and is necessary to comply with the terms and conditions to occupy public right-of-way as well as meeting the needs of municipal projects. Depending on the municipality where the project is located, portions of this work may be completed in Disadvantage Community as defined by the Climate Justice Working Group of CLCPA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,319	2,324	2,703	3,017	3,710

RG&E

New Services

Line of Business: Gas
Category: Mandatory

Scope:

This program installs new gas services to new customers (residential or business customers) in accordance with tariff. This program extends new gas service lines to new customers to comply with the Company's obligation to serve.

Reasons and Benefits:

This program is necessary to connect businesses and residences that request gas service in accordance with tariffs and the Company's obligation to serve.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,838	1,688	1,751	1,929	2,199

RG&E

Non - Leak Prone Service Replacement Program

Line of Business: Gas
Category: Mandatory

Scope:

This program replaces or ties-over any service associated with a gas main replacement project that does not qualify as a leak prone service in accordance with Distribution Integrity Management Program (DIMP).

Reasons and Benefits:

The replacement of non-leak prone services is performed when services are not connected to leak prone main or where a service that does not need to be replaced is moved (tied-in) from a leak prone main to a replaced main. Replacement of facilities is a recognized practice to effectively mitigate risk and address threats to pipeline systems. Infrastructure replacement affords relocation of Company assets to locations that can potentially reduce future O&M expenses and ensure safe, reliable service to customers in accordance with regulatory requirements. Replacement of non-state of the art facilities is an industry recognized means to reduce methane emissions from leakage and serves to support Federal methane emission reduction initiatives and NY CLCPA requirements.

The work associated with this program includes, but is not limited to, replacement of gas services in conflict with street reconstruction projects in accordance with terms and conditions to occupy public rights-of-way and non-leak prone gas main replacements per rate cases and tariff or code requirements, etc. Portions of this work may be completed in Disadvantage Community as defined by the Climate Justice Working Group of CLCPA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,709	1,693	1,799	1,982	2,259

RG&E

Regulators

Line of Business: Gas
Category: Mandatory

Scope:

This program is for the purchase and installation of gas regulators for new installations and some replacements. This equipment is used for both residential and industrial installations.

Reasons and Benefits:

A gas regulator is necessary equipment that is used to maintain the pressure on the system and at the customers' location so that the gas services operate within specific ranges, so their appliances and equipment operate correctly and safely.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
140	160	180	200	220

Gas Modernization

NYSEG

Track and Trace 628

NYSEG

Track and Trace

Line of Business: Gas
Category: Modernization

Scope:

Existing or recently adopted Geographic Information Systems (GIS) are in place to maintain spatial and historic data relating to pipelines and related components under the jurisdiction of gas distribution utilities. Track and Traceability allows for geospatial location and specification data to be collected and added to the GIS during the installation process thus allowing for on demand retrieval of this data for a variety of needs.

Track and Traceability functionality fundamentally consists of the development of a GIS compatible digital application which allows for data capture as pipe and piping appurtenance installations occur. Leveraging the Track and Traceability over multiple areas and providing custom interface to the various GIS packages in use today will allow for the most economic approach to this end. Specialized data capture equipment used by construction resources as installation work is performed is also required to ensure collection of accurate geospatial data through the use of pre-prepared bar code labels.

Reasons and Benefits:

The benefits of adopting a robust Track and Traceability system in coordination with GIS are many to gas pipeline operators. Having a reliable historically accurate record of piping and related components facilitates not only system maintenance activities but is well suited to support organizational asset management efforts. Although not yet mandated, it is likely that regulators will, at some point, adopt PHMSA based DIMP as law. Proactive development and implementation of Track and Traceability will posture gas pipeline operators for timely compliance in this arena when called upon to do so.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	1,787	275	0

Gas Modernization

RG&E

Track and Trace 630

RG&E

Track and Trace

Line of Business: Gas
Category: Modernization

Scope:

Existing or recently adopted Geographic Information Systems (GIS) are in place to maintain spatial and historic data relating to pipelines and related components under the jurisdiction of gas distribution utilities. Track and Traceability allows for geospatial location and specification data to be collected and added to the GIS during the installation process thus allowing for on demand retrieval of this data for a variety of needs.

Track and Traceability functionality fundamentally consists of the development of a GIS compatible digital application which allows for data capture as pipe and piping appurtenance installations occur. Leveraging the Track and Traceability over multiple areas and providing custom interface to the various GIS packages in use today will allow for the most economic approach to this end. Specialized data capture equipment used by construction resources as installation work is performed is also required to ensure collection of accurate geospatial data through the use of pre-prepared bar code labels.

Reasons and Benefits:

The benefits of adopting a robust Track and Traceability system in coordination with GIS are many to gas pipeline operators. Having a reliable historically accurate record of piping and related components facilitates not only system maintenance activities but is well suited to support organizational asset management efforts. Although not yet mandated, it is likely that regulators will, at some point, adopt PHMSA based DIMP as law. Proactive development and implementation of Track and Traceability will posture gas pipeline operators for timely compliance in this arena when called upon to do so.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	555	923	0

Gas Reliability

NYSEG

Boswell Hill 124 Psig Bare Steel Leak Prone Main 632
Canandaigua Feeder Main Reinforcement Project 634
Critical Valve Installations, Binghamton 635
Hebron Station and Line J Retirement 636
Leak Prone Main Replacement Program 637
Leak Prone Service Replacement Program 638
Pleasant Grove Road Leak Prone Main 640
Winney Hill Leak Prone Main 45# 642
Winney Hill Leak Prone Main 60# 643
Winney Hill Regulator Station Rebuild 644

NYSEG

Boswell Hill 124 Psig Bare Steel Leak Prone Main

Line of Business: Gas
Category: Reliability

Scope:

The Boswell Hill 124-psig Bare Steel Leak Prone Main (LPM) project is located in the Village of Endicott and the Town of Vestal. It includes the replacement of approximately 6,180 feet of pipe (c. 1947) that is defined as leak prone by the Company's IMP. The main will be replaced with 12-inch steel pipe. The existing gas main is unprotected steel and undersized for system reliability and pressures. This project will replace sections over a three-year period with the tie-in and abandonment of the unprotected steel to take place in the third year.

The replacement is to be executed in four sections:

- Section A - from Leon Dr 3,021 linear feet south to (near) Day Hollow Rd
- Section B - Nanticoke Creek 817 linear feet directional drill bore south from Meadowbrook St to June St. This portion of the project includes a bore under a creek and US Army Corps of Engineers flood control dike
- Section C - Susquehanna River 1,758 linear feet directional drill bore from E. Valley St south to the Southern Tier Expressway
- Section D - NYS Rt 434 Vestal Parkway 583 linear feet directional drill bore south from the westbound side to the eastbound side.

The retirement and replacement work aims to maintain reliable and safe service to the existing customers in the Village of Endicott and the Town of Vestal.

Reasons and Benefits:

The gas main replacement aims to maintain a distribution system that is safe, reliable and decreases greenhouse emissions. The Company is mandated to replace 27 miles of main that is defined as leak prone by the Company's IMP. The portion of the work within the Village of Endicott qualifies as investment in a Disadvantaged Community as defined by the Climate Justice Working Group of CLCPA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,274	3,637	0	0	0

NYSEG

Canandaigua Feeder Main Reinforcement Project

Line of Business: Gas
Category: Reliability

Scope:

This project will install approximately 8,700 linear feet of 8-inch-high density polyethylene (HDPE) gas main, from the intersection of Rte. 21 and Schutt Road to the existing pipeline crossing at North Road (approximately 1,200 linear feet southwest of Andrews Road). The project is within the Town of Canandaigua.

Reasons and Benefits:

The project will alleviate the flow and resultant pressure drop through the existing 124-psig feeder main from the Hopewell Gate Station to Canandaigua. The endpoint pressure (at the inlet to the Brickyard Road district regulator station) will increase from approximately 73-psig (59% MAOP) to 94-psig (76% MAOP) at Design Day conditions. The project will reinforce and improve system reliability and will support forecasted residential development and related growth in the area. Without this project, there will likely be moratoriums in the area.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,912	0	0	0	0

NYSEG

Critical Valve Installations, Binghamton

Line of Business: Gas
Category: Reliability

Scope:

This project will strategically install gas valves throughout parts of the Binghamton medium-pressure systems which were upgraded from low-pressure as parts of prior projects. The valve locations will be determined based on customer counts for sectionalizing the system for emergency response and in accordance with the Company's Operation & Maintenance (O&M) Procedures.

Reasons and Benefits:

This project will bring the Binghamton gas distribution system into compliance with O&M Section 7.500 regarding isolation of pre-determined numbers of customers in emergency situations. Due to past pressure up ratings from low to medium pressure in areas previously owned by Columbia Gas that were constructed prior to current regulatory requirements (grandfathered) these areas have insufficient valves to sectionalize customers for emergency operations per Section 7.500.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
74	73	74	75	78

NYSEG

Hebron Station and Line J Retirement

Line of Business: Gas
Category: Reliability

Scope:

This project, located in the City of Olean, will retire the existing Hebron Regulator Station and rebuild it at a new location. Additionally, the project will also retire a portion of the aging 250 psig and 85 psig feeder mains (Line J) and install a new 85 psig main to tie the new station to the existing 85 psig main feeding Pepsi regulation station (85 psig/59 psig).

Reasons and Benefits:

This project will address the end-of-life infrastructure and maintain safe and reliable service throughout the Olean gas system. The existing Line J has required significant and costly repair work in recent years to maintain a safe and reliable main and is also defined as a leak prone main within the Company's IMP program. Approximately 7,500 existing customers will benefit from this project within this Disadvantage Community as defined by the Climate Justice Working Group of CLCPA. Replacement of the Hebron station and the main will provide a safe and reliable natural gas supply to these existing customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	6,162	0	0	0

NYSEG

Leak Prone Main Replacement Program

Line of Business: Gas
Category: Reliability

Scope:

This compliance program replaces gas mains identified as leak prone in accordance with the Company's Leak Prone Main Criteria and Distribution Integrity Management Program (DIMP). The Leak Prone Main Criteria includes mains prioritized to replace due to conditions such as leaks, manufacturing and construction defects, type of materials (i.e., bare steel, wrought iron, etc.). This work includes, but is not limited to, replacing gas mains and services that meet the leak prone criteria that conflict with street reconstruction projects in accordance with terms and conditions to occupy public right-of-way; leak prone gas main replacements; tariff or code requirements; and actively leaking mains. Larger and more complex leak prone main projects are moved outside of this program and are planned, executed, managed and tracked as individual projects, but are included in the overall mileage cut dead during each year.

Reasons and Benefits:

The leak prone main replacement program improves distribution safety and reliability by replacing gas mains in poor asset condition at high risk for failure. The gas mains are prioritized for replacement in accordance with Distribution Integrity Management Plan (DIMP) regulations and leak information. The gas main replacements result in a distribution system that is safer and more reliable. Replacement of facilities is a recognized practice to effectively mitigate risk and address threats to pipeline systems. Infrastructure replacement affords relocation of Company assets to locations that can minimize future O&M expenses and ensure safe, reliable service to customers in accordance with regulatory requirements. Replacement of leak prone main is an industry recognized means to reduce methane emissions from leakage and serves to support Federal methane emission reduction initiatives and NY CLCPA requirements. Additionally, portions of the Leak Prone Main Replacement program are performed with Disadvantaged Communities as defined by the Climate Justice Working Group of CLCPA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
28,210	26,206	35,751	30,518	34,637

NYSEG

Leak Prone Service Replacement Program

Line of Business: Gas
Category: Reliability

Scope:

This program replaces services that are associated with the Leak Prone Main program. The Leak Prone Service Criteria includes services to replace based upon conditions such as leaks, manufacturing and construction defects, type of materials (i.e. bare steel, wrought iron, etc.). This work includes, but is not limited to, leak prone gas main replacements, tariff or code requirements and actively leaking services.

Reasons and Benefits:

Leak prone gas services are required to be replaced by various regulations to keep customers and their properties safe from potential gas leaks. Replacement of these facilities is a recognized practice to effectively mitigate risk and address threats to pipeline systems and customer assets. Infrastructure replacement aims to maintain safe, reliable service to customers in accordance with regulatory requirements. Replacement of vintage facilities is an industry recognized means to reduce methane emissions from leakage and serves to support Federal methane emission reduction initiatives and NY CLCPA requirements. Additionally, this program makes investments in Disadvantage Communities as defined by the Climate Justice Working Group of CLCPA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
5,717	6,025	6,554	7,324	8,313

NYSEG

Low Pressure Relief Valve Program

Line of Business: Gas
Category: Reliability

Scope:

This project will add relief valves to approximately 30 low-pressure district regulator stations that currently only have monitor regulators for over pressure protection (OPP). Low pressure systems do not have regulators on residential or commercial services, which means those customers receive line-pressure, so the only form of OPP for a low-pressure system is what is provided at the district regulator stations. Currently there exists stations feeding low pressure systems which rely on monitor regulators as the OPP and in an event where both the worker and monitor regulators fail, higher pressure gas would then be introduced to the system and downstream customers similar to what happened in the Merrimack Valley, MA incident which resulted in loss of property and life. This project seeks to add another layer of overpressure protection by installing relief valves on low pressure stations where the only OPP is a monitor-regulator setup. The scope of work varies based on station needs, from the addition of relief valves to the full rebuild of the station. These stations are located within the Elmira, Olean and Binghamton Divisions on the gas systems previously owned by Columbia Gas.

Reasons and Benefits:

The additional over-pressure protection equipment provides additional safety under an emergency condition that would affect both worker-monitor in series.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
204	215	222	232	247

NYSEG

Pleasant Grove Road Leak Prone Main

Line of Business: Gas
Category: Reliability

Scope:

The Pleasant Grove Rd LPM project is located in the Village of Cayuga Heights and extends from Hanshaw Road south to the Village line. The project will retire approximately 2,930' of 8" SWP installed in 1954 and 70' of 2" MDPE installed in 1989 and 1996. The proposed install includes approximately 2,978' of 12" HDPE, 24' of 8" PE, 4' of 8" SWP and 51' of 2" PE. There are twelve gas services that will be addressed. This project is scheduled to be completed prior to the Village's reconstruction plans set for construction in 2025.

Reasons and Benefits:

Benefits of this project include improved distribution safety and reliability by replacing gas mains in poor asset condition and at risk for failure. The gas mains are prioritized for replacement in accordance with Distribution Integrity Management (DIMP) regulations and leak information. The gas main replacements result in a distribution system that is focused on safety and reliability.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
930	0	0	0	0

NYSEG

State Route 90 Leak Prone Main

Line of Business: Gas
Category: Reliability

Scope:

The State Route 90 leak prone main projects include the replacement of approximately 5,532 linear feet of 6-inch gas main along NYS Route 90 in the Town of Aurelius in order to cut dead 5,700 of 4-inch pipe that is designated as leak prone main per the Distribution Integrity Management (DIMP). Construction method is designed as horizontal directional drilling with some open trenching as needed. There are 63 natural gas services associated with this project.

Reasons and Benefits:

Benefits of this project include improved distribution safety and reliability by replacing gas mains in poor asset condition and at risk for failure. The gas mains are prioritized for replacement in accordance with Distribution Integrity Management (DIMP) regulations and leak information. The gas main replacements result in a distribution system that is focused on safety and reliability.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
344	0	0	0	0

NYSEG

Winney Hill Leak Prone Main 45#

Line of Business: Gas
Category: Reliability

Scope:

The Winney Hill leak prone main project includes the replacement of approximately 6,550 linear feet of medium-pressure leak prone main (c. 1953-1954) with new 12-inch main. The pipeline extends from the Winney Hill Regulator Station, east and south, to the City of Oneonta and is critical to maintaining reliability to the existing customers in the Town and City of Oneonta. The portion of main replacement along West Main Street is being coordinated with a planned municipal paving-related project.

Reasons and Benefits:

This project aims to improve the safety and reliability of the main through its replacement. This main is defined as leak prone as determined by the Company's DIMP (Distribution Integrity Management Plan). The portion of the project occurring within the City of Oneonta will qualify as work within a Disadvantaged Community as defined by the Climate Justice Working Group of CLCPA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,859	0	0	0	0

NYSEG

Winney Hill Leak Prone Main 60#

Line of Business: Gas
Category: Reliability

Scope:

The Winney Hill leak prone main project includes the replacement of approximately 6,550 linear feet of medium pressure leak prone main (c. 1953-1954) with new 12-inch main. The pipeline extends from the Winney Hill Regulator Station, east and south, to the City of Oneonta and is critical to maintaining reliability to the existing customers in the City and Town of Oneonta. The portion of main replacement along West Main Street is related to a planned municipal paving-related project.

Reasons and Benefits:

Benefits of this project include improved distribution safety and reliability by replacing gas mains in poor asset condition and at risk for failure. The gas mains are prioritized for replacement in accordance with the Distribution Integrity Management (DIMP) regulations and leak information. The gas main replacements result in a distribution system that will aid in maintaining its safety and reliability.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
859	0	0	0	0

NYSEG

Winney Hill Regulator Station Rebuild

Line of Business: Gas
Category: Reliability

Scope:

This project will install new upstream equipment including an in-line heater and filtration system, remove existing intermediary pressure cut, rebuild both the 45-psig and 60-psig district regulator stations, and install site and security improvements in accordance with Company standards.

Reasons and Benefits:

This project aims to improve reliability for the two medium pressure systems, 45-psig and 60-psig, which are the sole feeds of gas into the Town of Norwich. The project replaces obsolete over-pressure protection devices and modernizes the pressure control equipment. An inline heater will be installed to address freeze-off concerns and increase station reliability. Currently, due to the pressure cut from 300 psig to 45/60 psig, ice buildup on the regulators, piping and ground occurs. This ice build-up poses a safety risk to field personnel servicing the station and increases operational risk to the station equipment.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
4,345	0	0	0	0

Gas Reliability

RG&E

Leak Prone Main Replacement Program 646
Leak Prone Service Replacement Program 647
Paul Road Leak Prone Main 648

RG&E

Leak Prone Main Replacement Program

Line of Business: Gas
Category: Reliability

Scope:

This compliance program replaces gas mains identified as leak prone in accordance with the Company's Leak Prone Main Criteria and Distribution Integrity Management Program (DIMP). The Leak Prone Main Criteria includes mains prioritized to replace due to conditions such as leaks, manufacturing and construction defects, type of materials (i.e. bare steel, wrought iron, etc.). This work includes, but is not limited to, replacing gas mains and services that meet the leak prone criteria that conflict with street reconstruction projects in accordance with terms and conditions to occupy public right-of-way; leak prone gas main replacements; tariff or code requirements; and actively leaking mains. Larger and more complex leak prone main projects are moved outside of this program and are planned, executed, managed and tracked as individual projects, but are included in the overall mileage cut dead during each year.

Reasons and Benefits:

The leak prone main replacement program improves distribution safety and reliability by replacing gas mains in poor asset condition at high risk for failure. The gas mains are prioritized for replacement in accordance with Distribution Integrity Management (DIMP) regulations and leak information. The gas main replacements result in a distribution system that is safer and more reliable. Replacement of facilities is a recognized practice to effectively mitigate risk and address threats to pipeline systems. Infrastructure replacement affords relocation of Company assets to locations that can minimize future O&M expenses and ensure safe, reliable service to customers in accordance with regulatory requirements. Replacement of leak prone main is an industry recognized means to reduce methane emissions from leakage and serves to support Federal methane emission reduction initiatives and NY CLCPA requirements. Additionally, portions of the Leak Prone Main Replacement program are performed with Disadvantaged Communities as defined by the Climate Justice Working Group of CLCPA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
21,414	22,801	24,455	19,821	22,598

RG&E

Leak Prone Service Replacement Program

Line of Business: Gas
Category: Reliability

Scope:

This program replaces services that are associated with the Leak Prone Main program. The Leak Prone Service Criteria includes services to replace based upon conditions such as leaks, manufacturing and construction defects, type of materials (i.e. bare steel, wrought iron, etc.). This work includes, but is not limited to, leak prone gas main replacements, tariff or code requirements and actively leaking services.

Reasons and Benefits:

Leak prone gas services are required to be replaced by various regulations to keep customers and their properties safe from potential gas leaks. Replacement of these facilities is a recognized practice to effectively mitigate risk and address threats to pipeline systems and customer assets. Infrastructure replacement aims to maintain safe, reliable service to customers in accordance with regulatory requirements. Replacement of vintage facilities is an industry recognized means to reduce methane emissions from leakage and serves to support Federal methane emission reduction initiatives and NY CLCPA requirements. Additionally, this program makes investments in Disadvantage Communities as defined by the Climate Justice Working Group of CLCPA.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,419	3,319	3,526	3,884	4,429

RG&E

Paul Road Leak Prone Main

Line of Business: Gas
Category: Reliability

Scope:

This project will replace approximately 4,300 feet of 12” wrapped steel pipe that was installed in 1913. The main will be replaced with 12” wrapped steel pipe and will continue to operate at 120 psig. This project will be included in the achievement of replacing 27 miles of leak prone main during 2024.

Reasons and Benefits:

This work aims to maintain a safe and reliable gas system. Additionally, the main has been defined as leak prone per the Company's IMP. The Company has a regulatory mandate to replace 27 miles of pipeline that is defined as leak prone per the Company’s IMP.

Five Year Capital Plan

All amounts shown below in thousands ($000’s)

2024	2025	2026	2027	2028
2,868	0	0	0	0

Gas Advanced Metering Infrastructure (AMI)

NYSEG

AMI Project 650

NYSEG

AMI Project

Line of Business: Gas
Category: AMI

Scope:

NY AMI will install smart meters and associated equipment in NYSEG territory.

Reasons and Benefits:

NY AMI is an essential foundational system in realizing Reforming the Energy Vision (REV) goals to empower customers through new tools and information to effectively manage and reduce usage, establish, and animate new markets to promote the implementation of Distributed Energy Resources (DER's), and minimize environmental impacts of power generation and energy consumption. NYSEG will gain early outage detection to assist with restoration efforts as well as streamline internal business processes.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
14,416	10,867	0	0	0

Gas Electric Advanced Metering Infrastructure (AMI)

RG&E

AMI Project 652

RG&E

AMI Project

Line of Business: Gas
Category: AMI

Scope:

NY AMI will install smart meters and associated equipment in Rochester Gas & Electric (RG&E) territory.

Reasons and Benefits:

NY AMI is an essential foundational system in realizing Reforming the Energy Vision (REV) goals to empower customers through new tools and information to effectively manage and reduce usage, establish, and animate new markets to promote the implementation of Distributed Energy Resources (DER's), and minimize environmental impacts of power generation and energy consumption. RG&E will gain early outage detection to assist with restoration efforts as well as streamline internal business processes.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
10,075	7,587	0	0	0

Common Building and Facilities

NYSEG

Auburn HVAC Upgrades 654
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Waterville Roof 693

NYSEG

Auburn HVAC Upgrades

Line of Business: Common
Category: Buildings and Facilities

Scope:

This project will upgrade the HVAC system in the Auburn Service Center. The scope of this project includes removal of Air Handling Units (AHU) 3 and 4 along with associated circulation pumps, ducts, and VAVs . Replace with a new AHU serving all zones, with all associated ductwork, 4 new VAVs, Building Management System controls, new pump assemblies, new power distribution, new drives, and testing/commissioning

Reasons and Benefits:

The benefits of this project include reduced maintenance and down time and savings in the operation costs, improved air quality, and system efficiency improvements. Units are end of life and required a large amount of investment to repair.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
100	0	0	0	0

NYSEG

Auburn Service Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

Auburn projects consist of new Heating, Ventilation, and Air Conditioning (HVAC) equipment (heat pumps, pipes, ducts, etc.) above the fleet garage, new exterior storage for fleet and equipment, new interior lighting, new roof, and interior renovations. This will also support interior renovations that will align with our standards, which will allow us to get efficiencies in the office layouts.

Reasons and Benefits:

Benefits of these renovations would be to increase the building and systems life, HVAC and LED upgrades increase efficiency, reduce maintenance and utility usage, increase safety of employees, and will allow us to further consolidate office space with an interior renovation of the second floor to our progressive office standard.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,050	0	2,775	150	1,000

NYSEG

BMS System

Line of Business: Common
Category: Buildings and Facilities

Scope:

The scope of this project is to design and install a new Building Management System (BMS) system throughout all high and medium priority facilities. These priority ratings are based on a representation of risk based on the number of employees and functions managed within the facility across multiple occupied facilities. The BMS system will provide local / remote access to control and monitor all building system including, but not limited to heating equipment, cooling equipment, temperature balancing, electrical switchgear, electrical loads, uninterrupted power supply (UPS), generators, lighting, overhead doors, elevators, sumps, oil water separators, fuel levels, fire panel monitoring and utility monitoring. The system will allow for automatic alarm monitoring and alerting to maintenance technicians. The system will be based on the latest technology available and be based on an open protocol interface allowing for non-proprietary maintenance and support.

Reasons and Benefits:

The current systems are end of life and no longer supported by IT. The systems are only throughout a small portion of our facilities. They are proprietary and require sole source contracts. The new system will consolidate multiple systems into one thus creating reliability and efficiency. A new system allows for monitoring of air quality, air flow, and utility management. It will reduction OPEX by minimizing maintenance and eliminating current service contracts. Installation of the new systems allows for data collection and real time monitoring that can be used for benchmarking and key performance indicators (KPIs). The new system / technology will be expandable to allow for the installation in future sites as NYSEG portfolio changes and its expandable allowing interface with security systems, fire and life safety systems, and certain aspects of IT systems.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
750	750	500	0	0

NYSEG

Brewster Generator

Line of Business: Common
Category: Buildings and Facilities

Scope:

This project will undertake the design, removal, and installation of an upgraded backup generator for the Brewster Service Center. Scope will include the installation of the associated new distribution panels, a new automatic transfer switch, and electrical recircuiting.

Reasons and Benefits:

The NYSEG Brewster Service Center is a high priority location for Network Operations supporting the needs of a large customer base. The Service Center staffing requires safe and reliable power supply during all potential events: storms, outages, and blue-sky events. A new generator for the service center is needed for back-up emergency power, redundancy for staff needs and continuity of life safety equipment. The existing generator is end of life and undersized for the capacity needed to support the load of the site.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
150	0	0	0	0

NYSEG

Brewster HVAC

Line of Business: Common
Category: Buildings and Facilities

Scope:

This project will design, remove, and upgrade the Heating, Ventilation, and Air Conditioning (HVAC) system at the Brewster Service Center. The scope includes boilers, chillers, cooling towers, air handling units, pumps, piping, power, and controls.

Reasons and Benefits:

The Brewster Service Center is a high priority location for Network Operations supporting the needs of a large customer base. The Service Center staffing requires safe and reliable heating and cooling systems during all potential events: storms, outages, and blue-sky events. The current HVAC system is end of life and undersized for the capacity needed to support the load of the site. An HVAC system is critical to maintain COVID requirements (filtration and air exchanges), maintaining building temperatures, condition Information Technology infrastructure, and maintaining building reliability during multi-day storm restoration efforts. The new systems will be energy efficient and integrated with the Building Management System (BMS) system.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,000	0	0	0	0

NYSEG

Brewster Service Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

Brewster projects consist of new exterior storage for fleet and equipment, new interior lighting, and interior renovations. These renovations will align with our standards, which will allow us to get efficiencies in the office layouts.

Reasons and Benefits:

Benefits of these renovations would be to increase the building and systems life, LED upgrades increase efficiency, reduce maintenance and utility usage, increase safety of employees and will allow us to maximize our space utilization within the building to meet growth projections from the Departments.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,500	500	0	1,350	0

NYSEG

Brewster Truck Garage

Line of Business: Common
Category: Buildings and Facilities

Scope:

Build a new Pre-Engineered Metal Building (PEMB) with six bays, heat and power.

Reasons and Benefits:

New trucks provided by Fleet are too tall and/or too long to fit into existing enclosures, leaving trucks exposed to the elements such as ice, wind, etc. Currently, the trucks are being stored in structures not originally meant for trucks (no doors, no heat, no electricity, no wash bay, etc.) The benefits of this truck garage include

- Safety Enhancement & Risk Mitigation associated to the falls and accidents related with snow and ice. NYSEG holds high standards for safety and is consideration and a priority for every project and site modification.
- Monetary Savings - Fuel saving for unnecessary idle and hydraulic system wear and tear.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
800	0	0	0	0

NYSEG

Chatham Chiller

Line of Business: Common
Category: Buildings and Facilities

Scope:

Replace the current 60 ton Chiller with a new unit and all associated work, including plumbing, electric, and rigging.

Reasons and Benefits:

The current Chiller is at the end of life, working less than 20% of capacity, and cannot provide enough cooling needed in the facility. The new unit will provide the cooling needed, reducing maintenance, down time, and savings in the operation costs, improving air quality, and system efficiency improvements. Units are end of life and required a large amount of investment to repair.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
250	0	0	0	0

NYSEG

Consolidation Ithaca

Line of Business: Common
Category: Buildings and Facilities

Scope:

The project includes the consolidation of three existing facilities in Ithaca, the General Office, Service Center, and Trumansburg Service Center into one strategically located Service Center. All locations would be sold as part of the consolidation.

The current Service Center and General Office building are physically connected with a sky-bridge and share Heating, Ventilation, and Air Conditioning (HVAC) and electrical power. These shared services would require separation, as part of a sale leaseback project. This would ensure both locations are independent of each other.

NYSEG will implement the needed updates to the Service Center and use sale proceeds to offset those costs. After the initial renovation, the lease structure would place the responsibility for building/site capital upgrades on the owner, saving future operational and maintenance costs to enhance the property.

Reasons and Benefits:

The General Office portion of the location is vacant and has been sitting unused. It is no longer a critical component of our operation. Using dollars from a sale to offset an investment into the existing Service Center, would benefit our operation and rate payers greater than continuing to support office space that is no longer utilized.

The Consolidation project will achieve the following goals:

- Reduce the number of locations and buildings from three to one, consolidating locations and increasing efficiencies.
- Modernize the Service Center to better align with operation's needs, improve building efficiency, reduce emissions and operating expenses.
- Save future capital and OPEX investment in the buildings, which will allow investment in other core areas of the business.
- Allow employees to continue to provide the best service possible to our customers, with a cost-effective modern facility to meet growing needs of the business.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,500	500	0	0	0

NYSEG

Consolidation KGO

Line of Business: Common
Category: Buildings and Facilities

Scope:

Renovations in the Kirkwood General Office (KGO) facility as part of the consolidation. All renovation will align to the Avangrid standards for electrical (led lights) and mechanical (HVAC) systems. The areas include the backup Energy Control Center (ECC), atrium, bathrooms, customer services area, executive area and Cafeteria. The renovations include new ceiling tiles, carpet and furniture. In addition, current data center will be extended to accommodate the new IT cabinets.

Reasons and Benefits:

Benefits include space optimization and better utilization of office space. New electrical and mechanical systems will reduce OPEX expenses. KGO is a critical facility housing our major customer service teams, back up Energy Control Center (ECC) and data center. It must be maintained to meet operational and regulatory requirements, to be able to service our business and customer needs.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,500	0	0	0	0

NYSEG

ECC Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

The Energy Control Centers (ECC) projects consist of new Heating, Ventilation, and Air Conditioning (HVAC) and Electrical upgrades including new exterior lighting, new interior lighting, new backup generator, re-circuiting, new communication cabling, wireless communication devices, new roof top unit, and new variable air units (VAV). This project will also support interior renovations. These renovations will align with our standards, which will allow us to get efficiencies in the office layouts.

Reasons and Benefits:

The ECC is a critical infrastructure building to NYSEG. The building supports the Energy Control Center, Transmission and Distribution Operations groups.

Benefits of these renovations would be to increase the building and systems life, HVAC and LED upgrades increase efficiency, reduce maintenance and utility usage, increase safety of employees and will allow us to maximize our space utilization within the building to absorb growth projections from Departments.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
570	325	0	800	0

NYSEG

Elmira Service Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

Elmira projects consist of new Heating, Ventilation, and Air Conditioning (HVAC) and Electrical upgrades, new roof, new interior lighting, and interior renovations. These renovations will align with our standards, which will allow us to get efficiencies in the office layouts.

Reasons and Benefits:

Benefits of these renovations would be to increase the building and systems life, HVAC, Electrical Panels and LED upgrades increase efficiency, reduce maintenance and utility usage, increase safety of employees, and will allow us to maximize our space utilization within the building to absorb growth projections from Departments.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
425	100	0	700	0

NYSEG

EV Chargers

Line of Business: Common
Category: Buildings and Facilities

Scope:

Comprehensive program to install approximately 478 EV Charges across all NYSEG locations to support electrification of fleet and employee vehicles. The comprehensive project will include location assessment for capacity, solar usage and battery storage for generation/reliability to maintain power 24 hours per day and 7 days per week. In order to support the Environmental Social and Governance (ESG) strategies. In addition, Biodiesel above grounds tanks will be installed.

	Planned Installations	
Year	**EV Chargers**	**Biodiesel Tanks**
2024	12	3
2025	60	3
2026	100	
2027	102	
2028	204	
Total	478	6

Reasons and Benefits:

Project benefits include supporting electrification of our fleet vehicles to reduce emissions, reliance on fossil fuels, maintenance costs, and align with the company's ESG strategies.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
0	3,250	1,000	0	0

NYSEG

Geneva HVAC and Lighting Upgrades

Line of Business: Common
Category: Buildings and Facilities

Scope:

Upgrade the Heating, Ventilation, and Air Conditioning (HVAC) System at the Geneva Service Center. Scope includes removal of Air Handled Units (AHU) with associated circulation pumps, ducts, and Variable Air Volume (VAV). Replace with a new AHU serving all zones with all associated ductwork, VAVs, Building Management System (BMS) controls, new heat pump, new power distribution, new drives, and testing/commissioning.

Reasons and Benefits:

The HVAC system is in the end of ifs life cycle, with one AHU being 40 years old. The benefits of this project include reduced maintenance and down time, savings in the operation costs, improved air quality and system efficiency. Units are end of life and required a large amount of investment to repair.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
100	0	0	0	0

NYSEG

Geneva Service Center East Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

Complete overhaul (design, removal, installation, and resources) of the buildings on the East Side including interior renovations, Heating, Ventilation, and Air Conditioning (HVAC), electrical, controls, civil, structural, doors, windows, and facades.

Reasons and Benefits:

All components and systems require upgrades throughout the facility based on equipment failures, end of life assets, increased maintenance expenses, and reliability risks.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,500	1,500	0	0	0

NYSEG

Geneva Service Center West Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

Replacement of the current roof and replacement of all windows at the NYSEG Geneva Service Center.

Reasons and Benefits:

The current roof is at the end of life and leaking in some areas, causing damages to the inside of the building. The roof requires many repairs and additional maintenance each year. A new roof will save maintenance costs and prevent further water damage. Windows are not sealing properly and have damage around the edges creating drafts, temperature fluctuations, water damage and mildew.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
100	0	0	0	0

NYSEG

Gowanda Site Improvements

Line of Business: Common
Category: Buildings and Facilities

Scope:

The purpose of this project is to improve site access to address the safety issues for staff. The Gowanda site has a very unusual property line. Over the years, neighboring businesses have begun parking on the property, which does not give ample parking for staff, contractors and company assets. Project will be done in two phases; first phase will be in 2023 addressing the safety issue with the pole yard and the remaining work completed in 2024. Engineer will need to further survey the property and provide various options of resolution.

Reasons and Benefits:

NYSEG has the liability to provide a safe work environment when accessing needed equipment in various scenarios covering day to day business or during storms. A safety issue with the location of the pole brow must be addressed to provide unobstructed access to the various classes of poles. Other areas, including dumpster, storage yard and any additional parking will be part of a phased approach.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
100	0	0	0	0

NYSEG

Hamburg Operations Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

The Hamburg Operations Center projects include the overhaul (design, removal, installation, and resources) of the building's west side. The work includes interior renovations, Heating, Ventilation, and Air Conditioning (HVAC), electrical, Building Management System (BMS) controls, elevator, civil work (parking lot), structural, and facades.

Reasons and Benefits:

All components and systems require upgrades throughout the facility based on equipment failures, end of life assets, increased maintenance expenses, and reliability risks.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,750	750	0	100	1,000

NYSEG

Hornell Service Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

Hornell Service Center projects include replacement of the building's boiler and backup generator. Project to include design, remove, and upgrade of the backup generator for the site with associated new distribution panels, new automatic transfer switch, and electrical recircuiting. The current boiler will be replaced, along with associated circulation pumps. Project to include Project Management and Construction Management services.

Reasons and Benefits:

The current boiler system is at the end of life and undersized for the capacity needed to support the load of the site. This site is a high priority service center for Operations supporting the needs of a large customer base. The Service Center staffing requires safe and reliable systems during all potential events: storms, outages, and blue-sky events. A reliable Heating, Ventilation, and Air Conditioning (HVAC) and generator system are critical to maintain COVID requirements (filtration and air exchanges), building temperatures, condition Information Technology infrastructure, and maintain building reliability during multi-day storm restoration efforts.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
100	300	0	0	0

NYSEG

KGO Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

The Kirkwood General Office (KGO) projects consist of new Heating, Ventilation, and Air Conditioning (HVAC), electrical upgrades, and parking lot upgrades, new exterior lighting, new interior lighting, new backup generator, new Uninterrupted Power Supply (UPS) system, recircuiting, new communication cabling, wireless communication devices, new roof top unit, and new heat pump units. This will also support interior renovations to align with our standards, which will allow us to get efficiencies in the office layouts .

Reasons and Benefits:

KGO is a critical infrastructure building for NYSEG. The building supports the backup Energy Control Center (ECC), Customer Call Center, Transmission and Distribution Management groups, and NYSEG Senior Management.

Benefits of these renovations would be to increase the building and systems life, HVAC and LED upgrades increase efficiency, reduce maintenance and utility usage, increase safety of employees, and will allow us to maximize our space utilization within the building to absorb growth projections from Network Departments.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,610	100	50	0	0

NYSEG

Lancaster Service Center Garage Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

Lancaster garage is approximately 19,206 square feet in size. This location requires updates including the replacement of the Exterior Finish Insulation System (EFIS), roof replacement, and replacement of two Air Handling Units (AHU).

Reasons and Benefits:

Exterior shell needs a substantial number of repairs and replacement is needed to insure a tight building envelope with no leaks. The AHUs are 30 years old and at end-of-life. Increased repairs have occurred over the last several years and require replacement.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
100	350	75	100	1,765

NYSEG

Lancaster Service Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

This project at Lancaster Service Center is an owned property and is approximately 68,611 square feet. The building will require replacement of the roof, interior renovations including new windows, office space, furniture, and flooring. Replacement of three boilers, three chillers with upgrades to electrical systems to support new units and building systems.

Reasons and Benefits:

To assure the reliability of the building in support of all departments, improve safety, increase efficiency and the management of the space. Building systems are end of life and interior requires a substantial investment for upgrades, repairs, and code compliance enhancements

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
150	1,500	0	400	525

NYSEG

Liberty Service Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

Liberty projects consist of major interior and exterior upgrades to the facility, with upgrades to Heating, Ventilation, and Air Conditioning (HVAC) systems, lighting, electrical panels, generator replacement, storage for fleet and equipment and exterior site upgrades.

Reasons and Benefits:

The current site needs substantial renovations with many deteriorating areas. Benefits of these renovations would be to increase the building and systems life, HVAC and LED upgrades increase efficiency, reduce maintenance and utility usage, and increase safety of employees with a more reliable building and systems.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,000	0	0	0	0

NYSEG

Lockport Service Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

Installation of new Storm and Sanitary System through the facility, including a new Oil Water Separator system and lateral tie-ins to municipal systems. Design, remove, and upgrade the existing system with associated new underground mains, catch basins, interior laterals, Building Management System (BMS) tie-ins for alarms, and all necessary permitting. Project to include Project Management and Construction Management services.

Reasons and Benefits:

The current system is non-compliant with state and local environmental requirements. Storm systems cannot be tied into the same systems as sewer system if two separate municipal systems exist in the township. Also, oil water separator systems need to be functional, inspected annually, and tied into the approved municipal system.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
100	0	0	1,695	0

NYSEG

Long Lake Building Expansion

Line of Business: Common
Category: Buildings and Facilities

Scope:

This project will increase the square footage of the NYSEG Long Lake facility to accommodate additional headcount and larger vehicles. Expansion is based on an increase of staff and size/quantity of vehicles, which are longer by two to three feet as compared to current vehicles being used by Line Operations. This would include an extension on the line bays, an addition bay, new overhead doors, new man doors, lighting, Heating, Ventilation, and Air Conditioning (HVAC), and all civil structural requirements.

Reasons and Benefits:

NYSEG Long Lake facility is too small based on the number of employees working at this site and the size/quantities of vehicles. It currently poses operational and safety concerns to the employees and customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
200	250	1,250	0	0

NYSEG

Low Risk Buildings Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

The projects include mechanical and electrical upgrades throughout the facility based on equipment failures, end of life assets, increased maintenance expenses, and reliability risks.

Reasons and Benefits:

Mechanical and Electrical upgrades throughout the facility are based on equipment failures, end of life assets, increased maintenance expenses, and reliability risks. Upgrades will increase building life span, reduce costs, CO2 emission and create efficiencies.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
820	250	250	80	80

NYSEG

Mechanicville Service Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

The projects consist of new Heating, Ventilation, and Air Conditioning (HVAC) and Electrical upgrades: new exterior lighting, new interior lighting, new backup generator, recircuiting, new communication cabling, wireless communication devices, new roof top unit, new heat pump units. These renovations will align with our standards, which will allow us to get efficiencies in the office layouts .

Reasons and Benefits:

Mechanicville Service Center is a critical infrastructure building to NYSEG. The building supports the Electric and Gas Operations groups and supports a large customer base.

Benefits of these renovations would be to increase the building and systems life, HVAC and LED upgrades increase efficiency, reduce maintenance and utility usage, increase safety of employees, and will allow us to maximize our space utilization within the building to absorb growth projections from Departments. These renovations also align with our new Progressive Office model encouraging a culture of open conversation among staff and providing flexible working space which will allow us to maximize our space utilization.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,497	600	300	0	1,600

NYSEG

Minor Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

The Minor capital projects are improvements to upgrade existing systems in NYSEG facilities due to end of life, failures associated with mechanical, electrical, building structures, control systems, etc., efficiency improvements reducing energy consumption, reducing greenhouse emissions, etc., or addressing security, and safety issues. These minor projects are in a range of $1k to $99k per project.

Reasons and Benefits:

Minor Projects are necessary on an annual basis to address assets reaching the end of their life cycle (end of life), failures, employee changes, storms, and a multitude of emergency needs that can occur.

These projects create saving in the OPEX maintenance costs for the building, create reliability, extends end of life usage, avoids disruption to Line and Gas Operations, supports green and sustainable initiatives, and creates an overall safer building.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,548	3,500	3,500	4,000	4,000

NYSEG

Norwich Operations Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

The projects consist of new Heating, Ventilation, and Air Conditioning (HVAC) and Electrical upgrades: new exterior lighting, new interior lighting, new backup generator, recircuiting, new communication cabling, wireless communication devices, new roof top unit, new heat pump units, and interior renovation . These renovations will align with our standards, which will allow us to get efficiencies in the office layouts.

Reasons and Benefits:

The building supports the Electric and Gas Operations groups and supports a large customer base.

Benefits of these renovations would be to increase the building and systems life, HVAC and LED upgrades increase efficiency, reduce maintenance and utility usage, increase safety of employees, and will allow us to maximize our space utilization within the building to absorb growth projections from Network Departments.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	50	0	400	0

NYSEG

Norwich Truck Storage

Line of Business: Common
Category: Buildings and Facilities

Scope:

Purpose of this project is to create storage for fleet trucks to shield from snow and cold. The solution for this location is to build a new Pre-Engineered Metal Building (PEMB) with six bays, heat and power

Reasons and Benefits:

New trucks provided by Fleet are too tall and/or too long to fit into existing enclosures, leaving trucks exposed to the elements such as ice, wind, etc. Currently, the trucks are being stored in structures not originally meant for trucks (no doors, no heat, no electricity, no wash bay, etc.) The benefits of this truck garage include

- Safety Enhancement & Risk Mitigation associated to the falls and accidents related with snow and ice. NYSEG holds high standards for safety and is consideration and a priority for every project and site modification.
- Monetary Savings - Fuel saving for unnecessary idle and hydraulic system wear and tear.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
600	0	0	0	0

NYSEG

Oneonta Service Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

The projects consist of new Heating, Ventilation, and Air Conditioning (HVAC) and Electrical upgrades: new exterior lighting, new interior lighting, new backup generator, recircuiting, new communication cabling, wireless communication devices, new roof top unit, new heat pump units. This will also support interior renovations that will align with our standards, which will allow us to get efficiencies in the office layouts.

Reasons and Benefits:

Oneonta Service Center is a critical infrastructure building for NYSEG. The building supports the Electric and Gas Operations groups and supports a large customer base.

Benefits of these renovations would be to increase the building and systems life, HVAC and LED upgrades increase efficiency, reduce maintenance and utility usage, increase safety of employees, and will allow us to maximize our space utilization within the building to absorb growth projections from Departments.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,500	1,500	0	0	0

NYSEG

Plattsburgh Service Center

Line of Business: Common
Category: Buildings and Facilities

Scope:

The projects consist of new Heating, Ventilation, and Air Conditioning (HVAC) and electrical upgrades, new exterior lighting, new interior lighting, new backup generator, recircuiting, new communication cabling, wireless communication devices, new roof top unit, and new heat pump units. This will also support interior renovations that will align with our standards, which will allow us to get efficiencies in the office layouts .

Reasons and Benefits:

Plattsburgh Service Center is a critical infrastructure building for NYSEG. The building supports the Electric and Gas Operations groups and supports a large customer base.

Benefits of these renovations would be to increase the building and systems life, HVAC and LED upgrades increase efficiency, reduce maintenance and utility usage, increase safety of employees, and will allow us to maximize our space utilization within the building to absorb growth projections from Departments.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
450	0	410	0	0

NYSEG

Plattsburgh Site Upgrades

Line of Business: Common
Category: Buildings and Facilities

Scope:

The project will focus on lighting upgrades in all the areas at the NYSEG Plattsburgh location. The exterior and interior lighting will be replaced with LEDs.

Reasons and Benefits:

The exterior and interior lights at Plattsburgh Service Center need replacement due to failure as they are at the end of life. New lights will maximize building life, improve efficiency, and improve safety of employees and materials in and around the building.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
100	0	0	0	0

NYSEG

Solar Panels

Line of Business: Common
Category: Buildings and Facilities

Scope:

Install solar panel arrays throughout NYSEG locations focusing on locations with the largest electrical usage, maximization of solar array installations, and prioritize Electric Vehicle (EV) charger demand. Current estimates show the ability to generate 5,700,000 Kw a year in locations that meet these criteria. The main locations are Brewster, Chatham, Clifton Park, Hornell, Horseheads, Ithaca, Kirkwood, Lancaster, Lockport, Oneonta, and Vestal.

Reasons and Benefits:

This is to offset electric usage and requirements, align with sustainability goals and with fleet vehicle electrification/EV charger installation for constant power requirements and reliability. Solar panel installations will reduce our electric usage, reduce emissions and help meet our Environmental Social and Governance (ESG) commitments.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	3,000	3,000	0	0

NYSEG

Stamford Operations Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

The projects consist of new Heating, Ventilation, and Air Conditioning (HVAC) and electrical upgrades, new exterior lighting, new interior lighting, new backup generator, recircuiting, new communication cabling, wireless communication devices, new roof top unit, and new heat pump units. This will also support interior renovations that will align with our standards and will allow us to get efficiencies in the office layouts.

Reasons and Benefits:

The building supports the Electric and Gas Operations groups and supports a large customer base.

Benefits of these renovations would be to increase the building and systems life, HVAC and LED upgrades increase efficiency, reduce maintenance and utility usage, increase safety of employees, and will allow us to maximize our space utilization within the building to absorb growth projections from Network Departments.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
455	150	0	0	0

NYSEG

Vestal Energy Control Center Upgrade

Line of Business: Common
Category: Buildings and Facilities

Scope:

Upgrade Uninterrupted Power Supply (UPS) 1 and 2, and associated Battery Banks at the Vestal Energy Control Center (ECC). Provide and install a new Lithium Battery UPS system (Train A and Train B) to replace existing UPS/batteries that are at end of life and failing. Also included is the upgrade of the electric distribution system to include a new Automatic Transfer Switch (ATS) to operate system needs and provide a greater level of redundancy.

Reasons and Benefits:

The existing systems are end-of-life and batteries are currently in need of replacement.

Benefits include:

1) Minimize risk to servers, computers, and monitors
2) Replace end of life equipment
3) Redundancy
4) Reliability
5) Reduce OPEX (maintenance/replacement of battery system in kind)

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
100	0	0	0	0

NYSEG

Walton Service Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

The projects consist of new Heating, Ventilation, and Air Conditioning (HVAC) and electrical upgrades, new exterior lighting, new interior lighting, new backup generator, recircuiting, new communication cabling, wireless communication devices, new roof top unit, new heat pump units. This will also support interior renovations that will align with our standards and allow us to get efficiencies in the office layouts .

Reasons and Benefits:

The building supports the Electric and Gas Operations groups and supports a large customer base.

Benefits of these renovations would be to increase the building and systems life, HVAC and LED upgrades increase efficiency, reduce maintenance and utility usage, increase safety of employees, and will allow us to maximize our space utilization within the building to absorb growth projections from Network Departments.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
500	0	0	0	0

NYSEG

Waterville Roof

Line of Business: Common
Category: Buildings and Facilities

Scope:

Replace the current rubber flat roof of the Waterville facility and all associated work, including flashing, pipe ventilation, and new insulation .

Reasons and Benefits:

The current roof is at the end of life and leaking in some areas, causing damages to the inside of the building. It requires many repairs and additional maintenance each year. A new roof will save maintenance costs and prevent further damage.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
700	0	0	0	0

Common Building and Facilities

RG&E

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50 Airpark Drive 696
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RG&E

3 City Center

Line of Business: Common
Category: Buildings and Facilities

Scope:

Renovate 107,000 square feet of a multi-tenant office space to accommodate RG&E employees from our East Avenue, West Avenue, and Scottsville Road RG&E buildings in Rochester area.

The scope includes fully renovating the first five floors. This newly renovated space will accommodate approximately 600 staff and will represent the main office building in the Rochester area. The lower level includes installation of new HVAC systems, ceilings, LED lights, flooring, furniture, and network to accommodate an IT lab and mail room. A small auditorium is planned for the fifth floor.

Reasons and Benefits:

This renovation will provide a first class building with quality and safety in mind. It will replace underutilized and aging buildings, reducing the maintenance and operating cost along with poor building efficiencies. It will also provide space from our West Ave facility which currently have safety issues based on the location of this facility and high operating costs. These renovations also align with our new progressive office model encouraging a culture of open conversation among staff and providing flexible working space which will allow us to maximize our space utilization

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
136	50	50	50	50

RG&E

50 Airpark Drive

Line of Business: Common
Category: Buildings and Facilities

Scope:

RG&E will lease 50 Airpark Drive in Rochester, NY, which is a single-story flex building with garage bays in the back and a two-story office in the front. The lease includes an option to purchase, providing flexibility to RG&E being located directly next to our Scottsville Road location. We will complete a full renovation to the facility, starting with vehicle and equipment storage in the back and renovations to the office portion in the front. Interior renovations will include new LED lighting, electrical, plumbing, HVAC, concrete, elevators, finishes and furniture. Exterior renovations will include new LED lighting, site work, drainage, and parking to connect the two lots for our employees and operations. The site is intended to be used for Gas Operations.

Reasons and Benefits:

50 Airpark is located directly next to our RG&E Scottsville Road Operation Hub. Leasing this building with an option to purchase, provides flexibility with the location, while promoting efficiencies between the two buildings. Gas Operations will occupy the new location, freeing up internal and external space at Scottsville Road for Electrical Operations, storage, and additional room for the Operational Smart Grids SCADA team, which requires room for employees and data center space to accommodate vacating 89e Ave.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,500	0	0	0	0

RG&E

BMS System

Line of Business: Common
Category: Buildings and Facilities

Scope:

The scope of this project is to design and install a new Building Management System (BMS) system throughout all high and medium priority facilities. These priority ratings are based on a representation of risk based on the number of employees and functions managed within the facility across multiple occupied facilities. The BMS system will provide local / remote access to control and monitor all building system including, but not limited to heating equipment, cooling equipment, temperature balancing, electrical switchgear, electrical loads, Uninterrupted Power Supply (UPS), generators, lighting, overhead doors, elevators, sumps, oil water separators, fuel levels, fire panel monitoring and utility monitoring. The system will allow for automatic alarm monitoring and alerting to maintenance technicians. The system will be based on the latest technology available and be based on an open protocol interface allowing for non-proprietary maintenance and support.

Reasons and Benefits:

The current systems are end of life and no longer supported by IT. The systems are only throughout a small portion of our facilities. They are proprietary and require sole source contracts. The new system will consolidate multiple systems into one thus creating reliability and efficiency. A new system allows for monitoring of air quality, air flow, and utility management. It will reduction OPEX by minimizing maintenance and eliminating current service contracts. Installation of the new systems allows for data collection and real time monitoring that can be used for benchmarking and key performance indicators (KPIs). The new system / technology will be expandable to allow for the installation in future sites as NYSEG portfolio changes and its expandable allowing interface with security systems, fire and life safety systems, and certain aspects of IT systems.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
300	300	100	0	0

RG&E

Canandaigua Truck Garage Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

The Canandaigua Truck Garage location is 11,585 square feet and is utilized by the Electric Transmission, Distribution, and Gas Operations departments. The existing 10KW generator and electrical panels will need to be upgraded due to their age and increasing maintenance expense. The generator was originally installed in the early 1990's.

Reasons and Benefits:

This upgrade will allow for continuous and reliable service, reduce equipment failure, and decrease maintenance expenses. Replacement is imperative to provide the garage with constant power during a storm or outage to meet the needs of our customers.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	100	0	0

RG&E

Eastern Monroe Operations Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

The Eastern Monroe Operations Center owned location is 27,316 square feet and is utilized by the Electric Transmission and Distribution, Gas Engineering, and Gas Operations departments. One hot water tank and eight unit-heaters will need to be replaced as they are at the end of their life cycle.

Reasons and Benefits:

These assets are aged and at end-of-life with increasing maintenance expenses and increasing equipment failures. The hot water tank is over 40 years old, and all unit heaters are over 25 years old. Replacement is necessary to reduce the increased maintenance expenses and repairs to provide consistent reliability during various storm events.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	105	0	50	0

RG&E

EV Chargers

Line of Business: Common
Category: Buildings and Facilities

Scope:

Comprehensive program to install approximately 146 EV Charges across all RG&E locations to support electrification of fleet and employee vehicles. The comprehensive project will include location assessment for capacity, solar usage and battery storage for generation/reliability to maintain power 24 hours per day and 7 days per week. In order to support the Environmental Social and Governance (ESG) strategies. In addition, Biodiesel above grounds tanks will be installed as part of this project.

	Planned Installations	
Year	**EV Chargers**	**Biodiesel Tanks**
2024	4	2
2025	0	2
2026	29	
2027	83	
2028	30	
Total	146	4

Reasons and Benefits:

Project benefits include supporting electrification of our fleet vehicles to reduce emissions, reliance on fossil fuels, maintenance costs, and align with the company's ESG strategies

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
0	1,250	0	0	0

RG&E

Fillmore Operations Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

Fillmore Operations Center is an RG&E Service Center for walk-in customer service. It is considered a small office, with less than 500 square feet in space. The upgrades include removal of cubicles, purchase of new furniture, new carpet, and new layout to align with the standards model. The upgrades will also include a new ceiling cassette (part of the Heating, Ventilation, and Air Condition (HVAC) system) and new ceiling tiles.

Reasons and Benefits:

The office was remodeled in the 1990's and is need of upgrade to increase the building and systems life. The HVAC cassette is at the end of life and needs to be replaced. Upgrades to the office will allow more efficiency of the space.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	75	0	0	0

RG&E

Low Risk Building Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

The projects include mechanical and electrical upgrades throughout the facility based on equipment failures, end of life assets, increased maintenance expenses, and reliability risks.

Reasons and Benefits:

Mechanical and Electrical upgrades throughout the facility are based on equipment failures, end of life assets, increased maintenance expenses, and reliability risks. Upgrades will increase building life span, reduce costs, CO2 emission and create efficiencies.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
100	100	100	100	100

RG&E

Minor Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

The Minor capital projects are improvements to upgrade existing systems in RG&E facilities due to end of life, failures associated with mechanical, electrical, building structures, control systems, etc., efficiency improvements reducing energy consumption, reducing greenhouse emissions, etc., or addressing security, and safety issues. These minor projects are in a range of $1k to $99k per project.

Reasons and Benefits:

Minor Projects are necessary on an annual basis to address assets reaching the end of their life cycle (end of life), failures, employee changes, storms, and a multitude of emergency needs that can occur.

These projects create savings in the OPEX maintenance costs for the building, create reliability, extends end of life usage, avoids disruption to Line and Gas Operations, supports green and sustainable initiatives, and creates an overall safer building.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,150	1,150	1,150	1,200	1,200

RG&E

Mushroom Blvd Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

This project will upgrade the Mechanical and Electrical systems throughout the RG&E facility at Mushroom Boulevard. Systems are original to the building (1987 vintage) and end of life and inefficient. This includes rooftop air handling units, exhaust fans, unit heaters, radiant heaters, main switchgear, main breaker, distribution panels, and step-down transformers.

Reasons and Benefits:

Mechanical and Electrical upgrades throughout the facility are based on equipment failures, end of life assets, increased maintenance expenses, and reliability risks. Upgrades will reduce maintenance costs, extend the building life cycle, create efficiencies, and reduce CO2 emissions.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	750	0	150

RG&E

Scottsville Rd Service Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

Scottsville Road projects consist of exterior site improvements including added employee parking, redesigning and replacement of the existing parking lot and driveway. In addition, new exterior storage and covered garages for fleet and equipment, new interior lighting, and interior renovations to meet space plans for incoming staff from our East Ave and West Ave office buildings. These interior renovations will include newly constructed walls, rework of existing ductwork and replacement of old and worn roof top units and heat pumps to properly heat and cool the building.

Reasons and Benefits:

Benefits of these renovations include extending building and systems life, Heating, Ventilation, and Air Conditioning (HVAC) and LED upgrades increased efficiency, reduced maintenance and utility usage, increased safety of employees, and will allow us to maximize our space utilization within the building to absorb growth projections from Departments. These renovations will align with our standards, which will allow us to get efficiencies in the office layouts

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,000	0	0	0	0

RG&E

Sodus Service Center Projects

Line of Business: Common
Category: Buildings and Facilities

Scope:

This project will replace an onsite 20Kw generator and Heating, Ventilation, and Air Conditioning (HVAC) split systems at the Sodus Service Center.

Reasons and Benefits:

The generator and HVAC split systems are end of life and replacement is planned for 2025. This will increase reliability, safety and efficiency of systems at this location.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	110	0	0	150

RG&E

Solar Panels

Line of Business: Common
Category: Buildings and Facilities

Scope:

Install solar panel arrays throughout RG&E locations focusing on locations with the largest electrical usage, maximization of solar array installations, and prioritize Electric Vehicle (EV) charger demand. Current estimates show the ability to generate 2,500,000 Kw a year in locations that meet these criteria, with our prioritization of Scottsville Road, 3 City Center, Mushroom Blvd, and Atlantic Ave.

Reasons and Benefits:

This is to offset electric usage and requirements, align with sustainability goals and with fleet vehicle electrification/EV charger installation for constant power requirements and reliability. Solar panel installations will reduce our electric usage, reduce emissions and help meet our Environmental Social and Governance (ESG) commitments.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	1,250	500	0	0

Common Customer Service

NYSEG

Distributed Generation Billing Program 709
Energy Manager Enhancements 710
Lab Equipment 712
CX Digital Journey 713
Orchestration Platform - Customer Journey 715
Regulatory Driven Efforts 717
S4-HANNA-Implemention 719

NYSEG

Distributed Generation Billing Program

Line of Business: Common
Category: Customer Service

Scope:

CDG Billing Automation - Phase 2

- 01/12/2024 – An RFP for a System Integrator was released for bid.
- 02/14/2024 – Bid proposals received.
- 04/30/2024 – Select and on-board system Integrator

The selected system integrator is expected to provide integration services to lead and implement system enhancements for the following:

- Phase II Value Stack enhancements by year end 2024
- Volumetric Net Crediting by year end 2025
- Value Stack Multiple Net Crediting Savings Rate by year end 2025
- Continue to deliver Distributed Generation Billing Program enhancements to meet Regulatory Compliance

Reasons and Benefits:

Regulatory compliance requirement. The risks of not doing this work include penalties and non-compliance.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,226	2,376	1,801	1,801	1,801

NYSEG

Energy Manager Enhancements

Line of Business: Common
Category: Customer Service

Scope:

Energy Manager Enhancements to take the Advanced Metering Infrastructure (AMI) metering data from our customers and be able to digest it into the Energy Manager platform so that we can send weekly and monthly bill updates to our customers. This alert will empower the customer with insights specifically designed to help them reduce their energy usage or what tools/services we can offer to help the customer stay on track and not overspend on their energy.

These tools/services will be a mixture of home energy efficiency recommendations along with Conservation Load & Management (CLM) programs or rebates that may be available to the customer. The scope will be for the build, setup, and configuration of this system and alerts.

These widget and integrations will include usage and comparison graphs, home surveys, energy efficiency advice, bill update communications, bill comparisons, near real-time interval data, and rates comparisons. The scope will be for the integration implementation and configuration.

Reasons and Benefits:

-Required to help us improve our customer experience and satisfaction as well as digital adoption across all our customer touch points.

-Reduce high bill complaints, increase customer satisfaction, and enhance our proactive notifications for our customers to help them make informed decisions about their energy usage.

-Improve gap in JD Power Customer Satisfaction (CSAT) scores for Easy to Business with - simple tools for managing my usage and utility costs.

-Decrease contact center call volumes for high bill complaints and reduce overall number of complaints.

-This will naturally increase overall enrollment in many programs due to being able to link a customer's energy usage more effectively to CLM programs and efficiency advice on their mobile devices.

Risks if not approved:

-Customers who receive high bills will continue to raise complaints and have zero context given as to why their energy usage or bill amount has increased. Customers will fail to be educated into how to manage energy usage proactively and efficiently in their home.

-Customers may rank us lower in JD Power metrics for not having key digital functionality as this drastically affects the User Experience (UX) for our mobile app customers.

-Platform becomes outdated, customers are not provided with the latest in technology to support functionality for easier and most relevant solutions, system becomes unreliable with frequent outages. Decreased customer satisfaction and Net Promoter Scores (NPS), increased call volumes and increased customer complaints.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
100	100	100	100	0

NYSEG

Lab Equipment

Line of Business: Common
Category: Customer Service

Scope:

Various types of Labs and Field Measurement Equipment for gas and electric measurement operations support.

Reasons and Benefits:

Equipment used by field personnel is required by PSC, American Society for Testing and Materials (ASTM), American National Standards Institute (ANSI) and other entities to be calibrated and maintained to operate correctly when field personnel need to use it. The lab performs calibrations and repairs on this equipment. The Company needs to purchase and upgrade lab equipment such as pressure calibration equipment, electric and gas calibration equipment, and meter testing equipment for PSC and safety regulations as well as measurement/metering regulations.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
250	250	250	300	300

NYSEG

CX Digital Journey

Line of Business: Common
Category: Customer Service

Scope:

Driving exceptional customer satisfaction by delivering seamless digital experiences for customers through innovation, operational efficiency, and personalized interactions.

- Expand the launch of Moving Home, Outage and New Connections journeys across NYSEG. Redesign of new high-volume digital journeys including Energy Usage and control, Customer requests and Collections.
- Increase mobile payments with the launch of Apple Pay and expand launch of Google Pay.
- Offer self-service tools on the Web and App with Webchat/Chatbot and an improved support center/site search.
- New Mobile App with critical functionality to support the increasing mobile customer base of > 1 million.
- New Advanced Metering Infrastructure (AMI) powered Energy Manager platform to provide personalized energy usage and insight to mitigate customer calls and complaints.
- Drive Google traffic to new Digital tools with enhanced Search Engine Optimization (SEO).
- Launch push notifications in the mobile app to proactively communicate to customers.
- Increased Telephony deflection tactics by introducing direct SMS links to digital tools.

Reasons and Benefits:

- Moving Home - from 9% self-service to 41% self-service
- New Connections - from 24% self-service to 68% self-service
- Outage Management/Alerts - from 84.3% to 86% enrollment
- Mobile App downloads - from 539K to 648K
- Online My Account - from 73.9% to 75.8% enrollment
- E-billing - from 40.8% to 44.64% enrollment
- Digital Payments - from $760M to $832M collection

Risks if not completed:

- Increased cost to serve and slower pace of self-service channel adoption.
- Need to hire additional resources/agents to cope with increased call volumes.
- Deterioration of Customer Satisfaction (CSAT) and Net Promoter Score (NPS).

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
3,421	1,525	1,550	1,618	0

NYSEG

Orchestration Platform - Customer Journey

Line of Business: Common
Category: Customer Service

Scope:

This platform will digest data from all our customer touch points across digital, call center, billing, and offline channels to allow the Company to easily segment and develop individual rules and campaigns that create personalized engagements and experiences with the Company.

These personalized experiences will be tailored towards the individual customer's current journey, situation or account state and will enable the Company to proactively communicate and display relevant content to the customers regarding next best actions and recommendations.

This will allow us to truly get a 360-degree view of our customers and how they engage with us so we can provide a proactive and personalized experience.

Reasons and Benefits:

The project allows the business to truly understand and segment our customer base to give them personalized experiences. No more will we only be able to segment our customers geographically, or by payment types. We will be able to segment our customers based on how they engage with us digitally, or if they choose to do one action on one platform and another action on a different platform, or if they are having an issue and are displaying certain behaviors, and really stich together a journey for them to make dealing with the Company seamless and empowering.

Once segmented we will be able to communicate with these customers via chosen contact channels. For example, set up rules that if we know they have not logged into the mobile app in the past six months, then do not send a push notification, try, and send an email or Short Message Service (SMS) instead to relay important account information.

We will also be able to set up real time rules so when customers are engaging with us digitally, we can change the messaging and content on our website so that it is tailored to them and their current needs. Such as a customer who has recently called the contact center and then logged in, we could pre-populate their next best action on the website or

app so that it is a natural follow on from the conversation they just had with us via the contact center. Bringing our customer touch points together is key to increasing customer satisfaction across all our engagements.

We will also be able to track successes or errors in our end-to-end journeys to address them before the customer experiences an issue. This will in turn reduce complaints, improve customer satisfaction, and improve the analytics of our offline and online journeys. This also allows us to optimize our journeys to ensure we are always meeting the needs of our customers and their changing behaviors before it is too late.

Risks if not approved: We will not be able to fully understand how our customers engage with us since data and touch points will continue to be spread across multiple backend systems that do not communicate to each other. We will be unable to segment and personalize journeys for any of our customers so they will not receive a digital experience that they should expect from a modern utility company. We will fail to improve the customer satisfaction and continue to have a low JD Power ranking for utility companies.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	515	0

NYSEG

Regulatory Driven Efforts

Line of Business: Common
Category: Customer Service

Scope:

This program covers SAP and other software system upgrades and enhancements that are required by New York regulatory mandates and rate case initiatives that will be funded by the business.

On an annual basis, there are anticipated regulatory requests which require business, internal IT, and external SWF (Software Factory) resources to develop and implement the necessary system changes. Forecasted work is planned for system impacts to the areas of Billing, Retail Access, Front Office, Device, and Financials and Contract Accounting (FICA)/Credit & Collection based on current and expected mandates.

Specific retail access initiatives: re-automate aggregation and customer detail file requests for Community Choice Aggregation (CCA) programs, revisions to transaction ZMASS to allow for mass processing of Energy Supply Company (ESCO) enrollments or drops with changes in the market place, change reject reason segment codes in Electronic Data Interchange (EDI) 824 transactions to match EDI standards when ESCO charges are rejected for dual billed customers, revised EDI transactions for ESCOs to include a segment to notify an ESCO when an account is Net Metering, automate a “would be” utility supply price to compare per invoice for retail access customers, and creation of EDI transaction 503 to communicate the “would be” utility supply price to ESCOs for the purpose of guaranteeing savings for mass market customers. Price to compare, guarantee savings for mass market customers, net metering/EDI indicator, CCA/Community Distributed Generation (CDG) Opt-out programs, CCA phase 3 and phase 4, automate net credit payments to CDG projects, and Distribution Energy Resource (DER) flag functionality and blocking process.

Specific billing initiatives: Stand By/Buy Back Rates, Revenue Decoupling Mechanism (RDM) for Stand By Customers Only, Street Light Dimming Pilot (New Burn Hour Calendars), Customer Benefit Contribution (CBC) Charge, Electric Vehicle Charging Stations - Incentive to Customers & Surcharges for Cost Recovery, Add more agile billing solution for new surcharges, Value of Distributed Energy Services (VDER) Price Keys for NYSEG Mandatory Hourly Pricing (MHP) Customers, Western NY (WNY)/Recharge NY (RNY) Load Splitter related to the New York Power Authority (NYPA) programs, and Statewide Solar For All Program.

Specific Device initiatives: Develop calling campaign to inform customers for which a bi-monthly meter read was not achieved, that a meter reading attempt was made was unsuccessful; campaign combination of call, e-mail, or text.

Specific Front Office initiatives: Preferred Name/Pronoun changes in SAP and web/mobile application avenues.

Specific FICA initiatives: Streetlight dimming pilot, Energy Affordability Guarantee Pilot Program, New York State Energy Bill Credit Program, Host Community Benefit Program, National Automated Clearing House Association (NACHA) Compliance changes for SAP Automated Clearing House (ACH) payments.

The forecasted estimates are based on the expected development required along with historical hours/costs of similar complexity for system changes.

Reasons and Benefits:

Regulatory and rate case compliance requirement. Risks of not doing this work include penalties and non-compliance.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
827	912	764	886	913

NYSEG

S4-HANNA-Implemention

Line of Business: Common
Category: Customer Service

Scope:

1. Assessment and Planning:
   - Conduct a detailed assessment of the current SAP Customer Service (CS) landscape to identify customizations, integrations, and data structures.
   - Develop a migration strategy that minimizes downtime and ensures data integrity.

2. System Upgrade and Configuration:
   - Upgrade the SAP environment to S/4 HANA, focusing on the CS modules such as Service Orders, Service Contracts, Complaints and Returns Management, and Installed Base Management.
   - Configure the new functionalities and enhancements specific to S/4 HANA, aligning with best practices for customer service.

3. Data Migration:
   - Migrate all relevant data from the existing system to the S/4 HANA platform, ensuring data accuracy and completeness.
   - Perform data cleansing and deduplication to improve data quality in the new system.

4. Integration:
   - Ensure seamless integration of the S/4 HANA CS modules with other modules (e.g., Sales and Distribution, Material Management) and external systems (e.g., CRM platforms, billing systems).
   - Configure and test Application Program Interfaces (APIs) and middleware for real-time data exchange.

5. User Experience Enhancement:
   - Implement SAP Fiori apps for customer service functions to provide an intuitive and responsive user interface.
   - Customize Fiori apps as per business requirements to improve efficiency and user satisfaction.
   -

6. Testing:

- Conduct comprehensive testing, including unit testing, integration testing, and user acceptance testing (UAT), to ensure the system's functionality and performance meet the business requirements.

7. Training and Change Management:

- Develop and execute a training program for customer service representatives and managers on the new S/4 HANA functionalities.
- Implement change management strategies to facilitate a smooth transition to the new system.

8. Post-Implementation Support:

- Provide post-implementation support to address any issues and ensure system stability.
- Establish a feedback mechanism to continuously improve system performance and user experience.

Reasons and Benefits:

- Process unification across NYSEG
- Improvement in call center productivity
- Improved Customer Experience
- Improvement in self-service adoption
- Faster Implementation of new programs/rates

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
3,705	12,175	14,220	13,960	6,650

Common Customer Service

RG&E

Distributed Generation Billing Program 722
Energy Manager Enhancements 723
Lab Equipment 725
Orchestration Platform - Customer Journey 726
Regulatory Driven Efforts 728
CX Digital Journey 730
S4 HANA Implementation 732

RG&E

Distributed Generation Billing Program

Line of Business: Common
Category: Customer Service

Scope:

CDG Billing Automation - Phase 2

- 01/12/2024 – An RFP for a System Integrator was released for bid.
- 02/14/2024 – Bid proposals received.
- 04/30/2024 – Select and on-board system Integrator

The selected system integrator is expected to provide integration services to lead and implement system enhancements for the following:

- Phase II Value Stack enhancements by year end 2024
- Volumetric Net Crediting by year end 2025
- Value Stack Multiple Net Crediting Savings Rate by year end 2025
- Continue to deliver Distributed Generation Billing Program enhancements to meet Regulatory Compliance

Reasons and Benefits:

Regulatory compliance requirement. Risks of not doing this work include penalties and non-compliance.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
612	1,191	901	901	901

RG&E

Energy Manager Enhancements

Line of Business: Common
Category: Customer Service

Scope:

Energy Manager Enhancements to take the Advanced Metering Infrastructure (AMI) metering data from our customers and be able to digest it into the Energy Manager platform so that we can send weekly and monthly bill updates to our customers. This alert will empower the customer with insights specifically designed to help them reduce their energy usage or what tools/services we can offer to help the customer stay on track and not overspend on their energy.

These tools/services will be a mixture of home energy efficiency recommendations along with Conservation Load & Management (CLM) programs or rebates that may be available to the customer. The scope will be for the build, setup, and configuration of this system and alerts.

These widget and integrations will include usage and comparison graphs, home surveys, energy efficiency advice, bill update communications, bill comparisons, near real-time interval data, and rates comparisons. The scope will be for the integration implementation and configuration.

Reasons and Benefits:

-Required to help us improve our customer experience and satisfaction as well as digital adoption across all our customer touch points.

-Reduce high bill complaints, increase customer satisfaction, and enhance our proactive notifications for our customers to help them make informed decisions about their energy usage.

-Improve gap in JD Power Customer Satisfaction (CSAT) scores for Easy to Business with - simple tools for managing my usage and utility costs.

-Decrease contact center call volumes for high bill complaints. Reduce overall number of complaints.

-This will naturally increase overall enrollment in many programs due to being able to link a customer's energy usage more effectively to CLM programs and efficiency advice on their mobile devices.

Risks if not approved:

-Customers who receive high bills will continue to raise complaints and have zero context given as to why their energy usage or bill amount has increased. Customers will fail to be educated into how to manage energy usage proactively and efficiently in their home.

-Customers may rank us lower in JD Power metrics for not having key digital functionality as this drastically affects the User Experience (UX) for our mobile app customers.

-Platform becomes outdated, customers are not provided with the latest in technology to support functionality for easier and most relevant solutions, system becomes unreliable with frequent outages. Decreased customer satisfaction and Net Promoter Scores (NPS), increased call volumes and increased customer complaints.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
500	500	500	450	0

RG&E

Lab Equipment

Line of Business: Common
Category: Customer Service

Scope:

Various types of Labs and Field Measurement Equipment for gas and electric measurement operations support.

Reasons and Benefits:

Equipment used by field personnel is required by PSC, American Society for Testing and Materials (ASTM), American National Standards Institute (ANSI), and other entities to be calibrated and maintained to operate correctly when field personnel need to use it. The lab performs calibrations and repairs on this equipment. The Company needs to purchase and upgrade lab equipment such as pressure calibration equipment, electric and gas calibration equipment, and meter testing equipment for PSC and safety regulations as well as measurement/metering regulations.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
250	250	250	300	300

RG&E

Orchestration Platform - Customer Journey

Line of Business: Common
Category: Customer Service

Scope:

A platform to digest data from all our customer touch points across digital, call center, billing, and offline channels to allow us to easily segment and develop individual rules and campaigns that create personalized engagements and experiences with us.

These personalized experiences will be tailored towards the individual customer's current journey, situation, or account state, and they will enable us to proactively communicate and display relevant content to the customers regarding next best actions and recommendations.

This will allow us to truly get a 360-degree view of our all customers and how they engage with us so we can provide a proactive and personalized experience.

Reasons and Benefits:

The project allows the business to truly understand and segment our customer base to give them personalized experiences. No more will we only be able to segment our customers geographically, or by payment types. We will be able to segment our customers based on how they engage with us digitally, or if they choose to do one action on one platform and another action on a different platform, or if they are having an issue and are displaying certain behaviors, and really stich together a journey for them to make dealing with their energy company seamless and empowering.

Once segmented we will be able to communicate with these customers via chosen contact channels. For example, set up rules that if we know they have not logged into the mobile app in the past 6 months, then do not send a push notification, try, and send an email or Short Message Service (SMS) instead to relay important account information.

We will also be able to set up real time rules so when customers are engaging with us digitally, we can change the messaging and content on our website so that it is tailored to them and their current needs. Such as a customer who has recently called the contact

center and then logged in, we could pre-populate their next best action on the website or app so that it is a natural follow on from the conversation they just had with us via the contact center. Bringing our customer touch points together is key to increasing customer satisfaction across all our engagements.

We will also be able to track successes or errors in our end-to-end journeys to address them before the customer experiences an issue. This will in turn reduce complaints, improve customer satisfaction, and improve the analytics of our offline and online journeys. This also allows us to optimize our journeys to ensure we are always meeting the needs of our customers and their changing behaviors before it is too late.

Risks if not approved: We will not be able to fully understand how our customers engage with us since data and touch points will continue to sit spread across multiple different backend systems that do not talk to each other. We will be unable to segment and personalize journeys for any of our customers so they will not receive a digital experience that they should expect from a global utility company. We will fail to overall improve the customer satisfaction and still be bottom of the JD Power ranking for utility companies.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	239	0

RG&E

Regulatory Driven Efforts

Line of Business: Common
Category: Customer Service

Scope:

This program covers SAP and other software system upgrades and enhancements that are required by New York regulatory mandates and rate case initiatives that will be funded by the business.

On an annual basis, there are anticipated regulatory requests which require business, internal IT, and external SWF (Software Factory) resources to develop and implement the necessary system changes. Forecasted work is planned for system impacts to the areas of Billing, Retail Access, Front Office, Device, and Financials and Contract Accounting (FICA)/Credit & Collection based on current and expected mandates.

Specific retail access initiatives: re-automate aggregation and customer detail file requests for Community Choice Aggregation (CCA) programs, revisions to the ERP (SAP) transaction ZMASS to allow for mass processing of Energy Supply Company (ESCO) enrollments or drops with changes in the market place, change reject reason segment codes in Electronic Data Interchange (EDI) 824 transactions to match EDI standards when ESCO charges are rejected for dual billed customers, Revised EDI transactions for ESCOs to include a segment to notify an ESCO when an account is Net Metering, automate a “would be” utility supply price to compare per invoice for retail access customers, and creation of EDI transaction 503 to communicate the “would be” utility supply price to ESCOs for the purpose of guaranteeing savings for mass market customers. Price to compare, guarantee savings for mass market customers, net metering/EDI indicator, CCA/Community Distributed Generation (CDG) Opt-out programs, CCA phase 3 and phase 4, automate net credit payments to CDG projects, and Distribution Energy Resource (DER) flag functionality and blocking process.

Specific billing initiatives: Stand By/Buy Back Rates, Revenue Decoupling Mechanism (RDM) for Stand By Customers Only, Street Light Dimming Pilot (New Burn Hour Calendars), Customer Benefit Contribution (CBC) Charge, Electric Vehicle Charging Stations - Incentive to Customers & Surcharges for Cost Recovery, Add more agile billing solution for new surcharges, Value of Distributed Energy Services (VDER) Price Keys for NYSEG Mandatory Hourly Pricing (MHP) Customers, Western NY (WNY)/Recharge NY (RNY) Load Splitter related to the New York Power Authority (NYPA) programs, and Statewide Solar For All Program.

Specific Device initiatives: Develop a calling campaign to inform customers for which a bi-monthly meter read was not achieved, that a meter reading attempt was made was unsuccessful; campaign combination of call, e-mail, or text.

Specific Front Office initiatives: Preferred Name/Pronoun changes in SAP and web/mobile application avenues.

Specific FICA initiatives: Streetlight dimming pilot, Energy Affordability Guarantee Pilot Program, New York State Energy Bill Credit Program, Host Community Benefit Program, National Automated Clearing House Association (NACHA) Compliance changes for SAP Automated Clearing House (ACH) payments.

The forecasted estimates are based on the expected development required along with historical hours/costs of similar complexity for system changes.

Reasons and Benefits:

Regulatory and Rate Case Compliance Requirement. Risks of not doing this work are penalties and non-compliance.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
827	912	764	886	913

RG&E

CX Digital Journey

Line of Business: Common
Category: Customer Service

Scope:

Driving exceptional customer satisfaction by delivering seamless digital experiences for customers through innovation, operational efficiency, and personalized interactions.

- Expand the launch of Moving Home, Outage and New Connections journeys across RGE.
- Redesign of new high-volume digital journeys including Energy Usage and control, Customer requests and Collections.
- Increase mobile payments with the launch of Apple Pay and expand launch of Google Pay.
- Offer self-service tools on the Web and App with Webchat/Chatbot and an improved support center/site search.
- New Mobile App with critical functionality to support the increasing mobile customer base of > 1 Million.
- New Advanced Metering Infrastructure (AMI) powered Energy Manager platform to provide personalized energy usage and insight to mitigate customer calls and complaints.
- Drive Google traffic to new Digital tools with enhanced Search Engine Optimization (SEO).
- Launch push notifications in the mobile app to proactively communicate to customers.
- Increased Telephony deflection tactics by introducing direct SMS links to digital tools.
- Introduce a new my account registration tool for Customer Service Representatives (CSR) to drive customer sign-ups.

Reasons and Benefits:

- Moving Home - from 9% self-service to 41% self-service
- New Connections - from 24% self-service to 68% self-service
- Outage Management/Alerts - from 84.3% to 86% enrollment
- Mobile App downloads - from 539K to 648K
- Online My Account - from 73.9% to 75.8% enrollment
- E-billing - from 40.8% to 44.6% enrollment
- Digital Payments - from $760M to $832M collection

Risks if not completed:

- Increased cost to serve and slower pace of self-service channel adoption.
- Need to hire additional resources/agents to cope with increased call volumes.
- Deterioration of Customer Satisfaction (CSAT) and Net Promoter Score (NPS).

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
315	685	696	727	0

RG&E

S4 HANA Implementation

Line of Business: Customer Service
Category: Common

Scope:

1. Assessment and Planning:

- Conduct a detailed assessment of the current SAP Customer Service (CS) landscape to identify customizations, integrations, and data structures.
- Develop a migration strategy that minimizes downtime and ensures data integrity.

2. System Upgrade and Configuration:

- Upgrade the SAP environment to S/4 HANA, focusing on the CS modules such as Service Orders, Service Contracts, Complaints and Returns Management, and Installed Base Management.
- Configure the new functionalities and enhancements specific to S/4 HANA, aligning with best practices for customer service.

3. Data Migration:

- Migrate all relevant data from the existing system to the S/4 HANA platform, ensuring data accuracy and completeness.
- Perform data cleansing and deduplication to improve data quality in the new system.

4. Integration:

- Ensure seamless integration of the S/4 HANA CS modules with other modules (e.g., Sales and Distribution, Material Management) and external systems (e.g., CRM platforms, billing systems).
- Configure and test Application Program Interfaces (APIs) and middleware for real-time data exchange.

5. User Experience Enhancement:

- Implement SAP Fiori apps for customer service functions to provide an intuitive and responsive user interface.
- Customize Fiori apps as per business requirements to improve efficiency and user satisfaction.

6. Testing:

- Conduct comprehensive testing, including unit testing, integration testing, and user acceptance testing (UAT), to ensure the system's functionality and performance meet the business requirements.

7. Training and Change Management:

- Develop and execute a training program for customer service representatives and managers on the new S/4 HANA functionalities.
- Implement change management strategies to facilitate a smooth transition to the new system.

8. Post-Implementation Support:

- Provide post-implementation support to address any issues and ensure system stability.
- Establish a feedback mechanism to continuously improve system performance and user experience.

Reasons and Benefits:

- Process unification across RG&E
- Improvement in call center productivity
- Improved Customer Experience
- Improvement in self-service adoption
- Faster implementation of new programs/rates

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
1,920	5,210	6,380	6,270	2,990

RG&E

Common Fleet

NYSEG

Fleet Replacement Program 735
Global Telematics Solution 737

NYSEG

Fleet Replacement Program

Line of Business: Common
Category: Fleet

Scope:

This is a program to replace light-, medium- and heavy-duty fleet vehicles and vehicular construction equipment. Light-duty vehicles consist of passenger cars, light trucks, minivans, passenger vans, pickup trucks, and sport utility vehicles. These vehicles have a gross vehicle weight rating (GVWR) of under 10,000 pounds. Medium-duty equipment includes vehicles such as dump trucks, stake trucks, step vans and other vehicles with a GVWR between 10,000 and 26,000 pounds. Heavy-duty equipment includes vehicles such as bucket trucks, digger derricks, semi-tractors, large dump trucks and other vehicles with a GVWR greater than 26,000 pounds. Vehicular construction equipment includes equipment such as back hoes, excavators, all-terrain vehicles, forklifts, tracked digger, cargo trailers, flatbed trailer and pole dollies.

Reasons and Benefits:

The Fleet Replacement Program will provide a safe, reliable, regulatory compliant and cost-effective fleet of vehicles and equipment to NYSEG, enabling the Company to deliver optimum network performance and customer service.

Fleet Services strives to achieve economies of scale that result in cost reduction opportunities by utilizing national contracts, standardized or “Off the Shelf” specifications and, wherever feasible, to take advantage of preferential purchasing terms in accordance with procurement guidelines.

The annual Fleet Replacement Program is based on unit age and/or usage (Miles/Hours). Understanding that units achieving the replacement criteria based on age and/or mileage are proposed for replacement and the results checked and collated to form the Fleet Replacement Matrix. This criterion ensures that the optimum combination of age and mileage is attained, while also taking into consideration the total cost of ownership.

Model year advancements by the vehicle and equipment manufacturers are factored into the acquisition process to ensure that the latest technical and safety features are included when applicable. Changes in operational requirements are also considered, based on feedback from the end-users of the fleet.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
18,875	18,875	18,875	18,633	21,000

NYSEG

Global Telematics Solution

Line of Business: Common
Category: Fleet

Scope:

Upgrade and replace all telematics devices with new telematics devices. All NYSEG light, medium, and heavy-duty fleet vehicles are equipped with telematics devices and will need to be replaced with new devices in 2026. As of January, 2024, 1,170 NYSEG vehicles are equipped with telematics. The scope of this project will replace the old and outdated telematics technology with new technology. Project includes hardware and installation cost.

Reasons and Benefits:

Telematics captures real time data from the vehicles including but not limited to mileage, fuel consumption, GPS location, speed, idling and engine diagnostics to name a few. This data can be used to optimize vehicle usage and assignment, reduce idling, locate vehicles in real time, monitor driving behavior and identify coaching opportunities and compliment the fleet maintenance program.

Benefits include:

1) Increase health and safety for our drivers
2) Reduce fuel consumption and CO2 emissions
3) Maximize vehicle utilization and productivity
4) Improve vehicle maintenance monitoring
5) Determine feasibility of alternate fuel vehicles such as electric vehicles
6) Improve/enhance real time vehicle tracking

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	749	0

Common Fleet

RG&E

Fleet Replacement Program 739
Global Telematics Solution 741

RG&E

Fleet Replacement Program

Line of Business: Common
Category: Fleet

Scope:

This is a program to replace light-, medium- and heavy-duty fleet vehicles and vehicular construction equipment. Light-duty vehicles consist of passenger cars, light trucks, minivans, passenger vans, pickup trucks, and sport utility vehicles. These vehicles have a gross vehicle weight rating (GVWR) of under 10,000 pounds. Medium-duty equipment includes vehicles such as dump trucks, stake trucks, step vans and other vehicles with a GVWR between 10,000 and 26,000 pounds. Heavy-duty equipment includes vehicles such as bucket trucks, digger derricks, semi-tractors, large dump trucks and other vehicles with a GVWR greater than 26,000 pounds. Vehicular construction equipment includes equipment such as back hoes, excavators, all-terrain vehicles, forklifts, tracked digger, cargo trailers, flatbed trailer and pole dollies.

Reasons and Benefits:

The Fleet Replacement Program will provide a safe, reliable, regulatory compliant and cost-effective fleet of vehicles and equipment to RG&E, enabling the Company to deliver optimum network performance and customer service.

Fleet Services strives to achieve economies of scale that result in cost reduction opportunities by utilizing national contracts, standardized or “Off the Shelf” specifications and, wherever feasible, to take advantage of preferential purchasing terms in accordance with procurement guidelines.

The annual Fleet Replacement Program is based on unit age and/or usage (Miles/Hours). Understanding that units achieving the replacement criteria based on age and/or mileage are proposed for replacement and the results checked and collated to form the Fleet Replacement Matrix. This criterion ensures that the optimum combination of age and mileage is attained, while also taking into consideration the total cost of ownership.

Model year advancements by the vehicle and equipment manufacturers are factored into the acquisition process to ensure that the latest technical and safety features are included when applicable. Changes in operational requirements are also considered, based on feedback from the end-users of the fleet.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
7,287	5,500	5,592	10,188	7,305

RG&E

Global Telematics Solution

Line of Business: Common
Category: Fleet

Scope:

Upgrade and replace all telematics devices with new telematics devices. All RG&E light, medium, and heavy-duty fleet vehicles are equipped with telematics devices and will need to be replaced with new devices in 2026. As of January, 2024, 385 RG&E vehicles are equipped with telematics. The scope of this project will replace the old and outdated telematics technology with new technology. Project includes hardware and installation cost.

Reasons and Benefits:

Telematics captures real time data from the vehicles including but not limited to mileage, fuel consumption, GPS location, speed, idling and engine diagnostics to name a few. This data can be used to optimize vehicle usage and assignment, reduce idling, locate vehicles in real time, monitor driving behavior and identify coaching opportunities and compliment the fleet maintenance program.

Benefits include:

1) Increase health and safety for our drivers
2) Reduce fuel consumption and CO2 emissions
3) Maximize vehicle utilization and productivity
4) Improve vehicle maintenance monitoring
5) Determine feasibility of alternate fuel vehicles such as electric vehicles
6) Improve/enhance real time vehicle tracking

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	256	0

Common Information Technology

NYSEG

Client Project Requests And Integration Projects 743
CYBER-SIEM 744
End User Life Cycle 745
Esri UN Deployment 746
Infrastructure Security 748
Mobility Apps Enhancement 749
NETENG Life Cycle 750
NETSEC Life Cycle 751
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Storage Life Cycle 754
Supply Chain Digitization 756
Unix Life Cycle 757
Wifi Site Enhancement 759
Wintel Life Cycle 760

NYSEG

Client Project Requests And Integration Projects

Line of Business: Common
Category: Information Technology

Scope:

The program is for business initiatives identified by the Networks business areas for future efficiency projects. NYSEG has a rigorous process of identifying the technology needs of the business, gathering information, vetting the project list, and prioritizing based on need, business value and resource availability. The Project Demand Planning cycle runs annually and involves collating the requirements across all business areas for projects requiring Information Technology (IT) expenditure. Projects are prioritized by the Vice Presidents in each business area before completing the estimation and capacity planning process. This process runs from the beginning of May through the end of August each year. The final portfolio is then presented back to senior management at the end of August for acceptance. Given the above timetable the final project list for 2025 and beyond does not exist at the time of this filing.

Reasons and Benefits:

This program allows for process improvements within the different business areas for NYSEG.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,044	3,579	0	7,207	9,190

NYSEG

CYBER-SIEM

Line of Business: Common
Category: Information Technology

Scope:

This project is for the deployment of hardware for security servers and heavy forwarders supporting the upgrade of the current Security Information and Event Management (SIEM) solution. Project includes both hardware, software and vendor installation/configuration support.

Reasons and Benefits:

Evolution of the monitoring strategy and alignment to the Company's current technology strategy. Benefits include:

- Ability to detect and investigate security incidents.
- Direct relationship with regulatory requirements.
- Cloud native solution in Amazon Web Services (AWS).
- Drastically simplifies the number of on-prem appliances, reducing the operational cost of the current SIEM solution.
- Ease of use allows operators to deploy and manage thousands of nodes with centralized management.
- Reduced cost and people hours of monitoring sprawling modern environments vs. supporting multiple open-source agents.
- Consolidate multiple piece-meal agents to reduce complexity and risk with a vendor-neutral agent.
- Eliminate vendor lock-in to compliment, onboard or migrate tools.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
75	0	0	0	0

NYSEG

End User Life Cycle

Line of Business: Common
Category: Information Technology

Scope:

The overall goal of this project is to refresh NYSEG's computing devices following the refresh lifecycle defined for the company (four years) for users in scope. This project also provides personal computers (PC) in support of new hires and refresh demand requirements enterprise wide.

Reasons and Benefits:

Replace aged equipment with new PCs to avoid service disruptions due to PCs not working properly due to their age. New computers will provide higher computing capabilities. This project also provides PCs in support of new hires and refresh demand requirements.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,705	1,238	2,263	1,891	1,265

NYSEG

Esri UN Deployment

Line of Business: Common
Category: Information Technology

Scope:

This project will replace the Company's current GIS system with the Utility Network Model (UNM). The existing data model is to be retired by the vendor in 2026. This will change the data model used by the Electric and Gas line of business and move to a more modern, utility specific model.

The scope of the project will be to install the new version of GIS and to convert the data to the new Utility Network Model.

Reasons and Benefits:

Migration of the current GIS geometric data models to the Utility Network model will prevent obsolescence as the old data model is being retired and replaced by the vendor in 2026. Upgrading will address the end of life and provide NYSEG with a fully supported solution.

Additional benefits of moving to the UNM include;

- A rule-based engine that supports and enforces higher quality data entry, reduced data latency between enterprise systems due to native service-oriented architecture, new branch versioning structure reduces performance impacts of long-running designs, and this addresses current GIS software's end-of-life timeline.
- For Asset Management, a higher fidelity data model enables more granular tracking of real-world assets, such as substation internals, SCADA, and AMI equipment and controllers as well as Gas devices and network assets.
- Enhanced capabilities for modeling network data with greater detail and real-world representation of connectivity via use of associations. ArcGIS Pro is the new generation professional desktop application from Esri used to manage the network with Utility Network Model.
- This application provides exponential performance improvements in startup, saving, edits and redrawing compared to traditional ArcMap.
- Enhanced Operations and Field Work through platform-integrated mobile applications supporting common GIS workflows.
- Inherent information security, with single user identity authorizes platform access

across desktop, web, and mobile use cases.

- The solution has an improved data exchange, with flexible schema and standard export functions by feeder/pressure zone are designed to better support OMS, ADMS and planning solutions.
- The Utility Network model allows for a programmatically created schematic view of the network.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
1,822	1,822	1,822	0	0

NYSEG

Infrastructure Security

Line of Business: Common
Category: Information Technology

Scope:

The purpose of this project is to consolidate and strengthen NYSEG's security posture through the deployments of security solutions and technologies. The key areas of focus include Network Security, Workplace Server and Endpoint Security, Cloud Security, Application Security, Identity and Access Security, and Security Operations

The project will provide infrastructure solution to allow the company facing new threats; and continuing NYSEG's protection evolution by leveraging new technologies and available capabilities.

Reasons and Benefits:

This project is required to provide NYSEG with the necessary Information Technology (IT) infrastructure security capabilities to improve Security posture and keep pace with the increasing security threats towards the United States, the industry, and the company.

In 2024 and ongoing, this project will continue the deployment of security controls and measures in relevant assets and services of the company, with special focus on Internet applications and PII (Personally Identifiable Information). It will address new risks and threats relevant to the company, spread of intrusions and infections; protection of applications exposed on the Internet; protection of personal and regulated information. Leverage new technologies and capabilities available, such as: intrusion detection and simulation tools; real-time protection of applications; vulnerability scanning in cloud environments, mobile devices and applications.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
390	388	396	405	413

NYSEG

Mobility Apps Enhancement

Line of Business: Common
Category: Information Technology

Scope:

The scope of the project is to adapt and enhance the applications deployed on the new single device platform in 2023. Existing applications, like Field Workforce Mobility (FWM), will be enhanced to take advantage of the new capabilities of the new device, like LTE connectivity, new push notification and other Android capabilities. New applications like Kaffa and Salesforce Mobile will also be deployed in mobility platforms.

Reasons and Benefits:

The project will improve user experience, provide additional reporting and dashboarding capabilities to support process optimization (process, quality and time).

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
239	252	0	0	0

NYSEG

NETENG Life Cycle

Line of Business: Common
Category: Information Technology

Scope:

The objective of the Network Engineering Lifecycle program is to plan and implement a continuous improvement and refresh process every seven years, such that NYSEG's network infrastructure meets or exceeds established availability requirements. The lifecycle plan is also the company's mechanism for ensuring that the network infrastructure is scalable, meeting the increasing demands of our business users.

The following infrastructure is included under this program: Cisco Switches, routers, switches, WiFi access points and WiFi controllers.

Reasons and Benefits:

This project ensures network company infrastructure is run under support, with hardware within the defined lifecycle period for this technology. This minimizes the risk of hardware failures that may lead to outages, and users not being able to access corporate resources or applications. The project seeks to avoid service disruptions due to aged hardware not properly working. The project also seeks to maximize efficiency by adding the selection of the most appropriate technology transformation into the refresh process.

Additionally, this program supplies new devices, equipment and new technology as necessary to follow company growth.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
591	588	600	612	624

NYSEG

NETSEC Life Cycle

Line of Business: Common
Category: Information Technology

Scope:

This program entails refreshing NYSEG's network security devices following the seven-year refresh lifecycle defined for the company. Network security devices include primarily Firewalls, Proxies, Intrusion Preventions Systems (IPS), Anti Distributed Denial of Service (AntiDDos) technologies or Secure Socket Layer (SSL) decryption devices. This project also provides network equipment to support new offices or company assets that require secure corporate connectivity.

Reasons and Benefits:

Avoid Company's security degradation by replacing aged equipment with new network devices to avoid service disruptions due to hardware malfunction or failure. The project also seeks to maximize efficiency by adding the selection of the most appropriate technology transformation into the refresh process.

New devices and new technology also provide higher network security capabilities and provide network equipment to support company growth.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
278	280	283	286	293

NYSEG

NY Gas Inspections

Line of Business: Common
Category: Information Technology

Scope:

New York DPS Safety Staff and other regulatory bodies have identified that the Gas networks companies are not adequately inspecting or tracking regulator inspections and multiple metered services, and because of this they are requiring the following:

- Identification of multiple customers with gas meters served from a single regulator.
- Track locations for inspection process.
- Define the inspection documentation and tracking process of all service regulators and regulated multiple meters services.

Reasons and Benefits:

This is a regulatory compliance requirement that has not been addressed/resolved before. The project will implement a new field solution for NYSEG Gas operations to inspect and track regulator inspections and multiple metered services.

In review of the Residential Service Regulator and Vent Inspection procedures, a 20-year inspection must be completed for all service regulators and for multi-meter installations. Currently NYSEG has various service regulator inspections, none of which are sufficiently documented and reportable. NYSEG should be able to become a full-scale inventory and tracking platform within customer service SAP system. Tracking and inspecting will include Regulators, Inside Service Lines, Fixed Factor & multi meter sets, and other inspection work (for corrosion, safety, etc.).

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
262	0	0	0	0

NYSEG

S4 HANA Global SAP

Line of Business: Common
Category: Information Technology

Scope:

The S4/HANA transformation initiative is part of the IT strategy, aiming to place technology platforms in a strategic position that enables the business to maximize digitalization, innovation, and growth in an agile and efficient way.

Networks business shows an interest to develop a Digital Transformation project taking advantage of the evolution of the current platform to S4HANA, based on the following guiding principles:

- User Experience: Seating people in the center of this transformation. Understanding the issues and pain points, then challenging and defining innovative solutions that improve the experience in the new system. Maximizing user satisfaction and minimizing the effort within the new process.
- Process Transformation: Using technology as an opportunity to analyze and adapt the business processes. Challenging the requirements or existing processes, to keep a simple and standardized solution. Defining realistic transformation goals.
- Simple Solution: Keeping solution simplicity as a designing principle. Maximizing the usage of the capabilities of the new SAP platform. Challenging the need to adapt the solution and building a business case for every solution that is not aligned to SAP standard.

Reasons and Benefits:

Per SAP product roadmap, current version will not be supported after 2027, extra cost will be needed if AVANGRID extends the support until 2030. SAP is a key application to and must be supported by vendor to mitigate any interruption on our core process.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	2,363	2,363	0

NYSEG

Storage Life Cycle

Line of Business: Common
Category: Information Technology

Scope:

The overall goal of this project is to refresh all data storage equipment following the five-year refresh lifecycle defined for NYSEG. Storage equipment includes primarily storage virtual switches, Storage Area Network (SAN) directors and switches, storage arrays, file storage, and backup units.

This storage will be used to provide data storage capabilities to the company applications, and company data network shared drivers. It includes the hardware required to ensure company data is correctly stored and backed up, allowing data recovery when necessary

Reasons and Benefits:

This project ensures Storage infrastructure remains under support, with hardware in the defined lifecycle period for this technology. This minimizes the risk of hardware failures that may lead to application outages and data loss. The project seeks to avoid service disruptions due to aged hardware not properly working.

Replacing aged equipment with new storage equipment and new technology avoids application performance issues or service disruptions. New devices and technology also provide higher performance and capabilities for a better application performance.

Another benefit of this project is the refresh and growth of company data backup infrastructure, including data protection. This allows data to be restored from an earlier point in time to help the business recover from an unplanned event. Storing the copy of the data on separate mediums is critical to protect against primary data loss or corruption.

Additionally, this program supplies new devices and equipment as necessary to follow company growth.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
709	724	739	755	771

NYSEG

Supply Chain Digitization

Line of Business: Common
Category: Information Technology

Scope:

The scope of the project is to optimize and digitize the Supply Chain processes. Digitization will provide a user-friendly interface that delivers critical data and provides for ease of data entry. Implementation includes a material QRC scanner to capture and transport data into SAP transaction fields and/or SAP records. This optimization will provide cross connected transactions, data entry carry-over screen to screen to eliminate cut/paste and/or re-entry of data.

Reasons and Benefits:

The Supply Chain digitization will bring significant process improvement and optimization to the material forecast and plan. It will be used for all critical logistics and material functions used by warehouse users and administrative staff. It will also be used by the Material Planning staff as their main tool to optimize and manage the supply chain.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
473	561	0	0	0

NYSEG

Unix Life Cycle

Line of Business: Common
Category: Information Technology

Scope:

This program entails refreshing NYSEG's Unix equipment following the five-year refresh lifecycle defined for NYSEG. Unix equipment includes primarily IBM AIX (Advanced Interactive eXecutive) Frames and HMC (Human Machine Controller) controllers. This project also provides UNIX equipment in support to company growth.

Reasons and Benefits:

This project ensures UNIX company infrastructure runs under support, with hardware within the defined lifecycle period for this technology. This minimizes the risk of hardware failures that may lead to applications outages. The project seeks to avoid service disruptions due to aged hardware not properly working.

Replacing aged equipment with new Unix equipment avoids application performance issues or service disruptions. New devices also provide higher performance and capabilities for a better application performance.

Additionally, this program supplies new devices and equipment as necessary to follow company growth.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
916	925	1,140	980	396

NYSEG

Virtualization Evolution

Line of Business: Common
Category: Information Technology

Scope:

The goal of this project is to provide application virtualization technology platform refresh. The current solution based on-premise hardware, installed in Datacenter, is due for hardware refresh. The refresh will seek technology transformation rather than a one-to-one migration to the same technology with newer hardware.

Reasons and Benefits:

This project ensures company virtual infrastructure run under support, keeping hardware within the defined lifecycle period for this technology. This minimizes the risk of hardware failures that may lead to outages and users not being able to access Virtual Applications. The project also seeks to maximize efficiency by adding the selection of the most appropriate technology transformation into the refresh process.

Additionally, this project supplies new capacity, equipment, and new technology as necessary to follow company growth.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
290	0	0	0	0

NYSEG

Wifi Site Enhancement

Line of Business: Common
Category: Information Technology

Scope:

This project will procure and deploy Cisco WiFi infrastructure in the Data Center to properly accommodate the increase of approximately 220 Wireless Access points (WAPs) throughout the company Storm sites, and to enhance WiFi coverage in critical company Storm locations.

Reasons and Benefits:

Accommodate the increased demand for WiFi access in critical company Service Centers and remote offices. Focus on Storm locations. Demand increase is driven primarily by Single Devices deployment in NYSEG used by personnel to manage field operations.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
230	0	0	0	0

NYSEG

Wintel Life Cycle

Line of Business: Common
Category: Information Technology

Scope:

This program entails refreshing NYSEG's Wintel infrastructure following the five-year refresh lifecycle defined for NYSEG. Wintel infrastructure includes primarily servers, chassis, and server blades. This infrastructure primarily hosts NYSEG applications and Structured Query Language (SQL) databases. This will provide Wintel Infrastructure that supports the company's organic growth.

Reasons and Benefits:

This project ensures Wintel company infrastructure operates under support of Wintel, with hardware within the defined lifecycle period for this technology. This minimizes the risk of hardware failures that may lead to applications outages and data loss. The project seeks to avoid service disruptions by refreshing aging hardware.

Replacing aged equipment with new Wintel equipment and technology avoids application performance issues or service disruptions. New devices and transformed solutions also provide higher performance and capabilities for a better application performance.

Additionally, this program supplies new devices and equipment as necessary to follow company growth.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
835	839	853	868	882

Common Information Technology

RG&E

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Unix Life Cycle 777
Virtualization Evolution 778
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RG&E

Client Project Requests And Integration Projects

Line of Business: Common
Category: Information Technology

Scope:

The program is for business initiatives identified by the Networks business areas for future efficiency projects. RG&E has a rigorous process of identifying the technology needs of the business, gathering information, vetting the project list, and prioritizing based on need, business value and resource availability. The Project Demand Planning cycle runs annually and involves collating the requirements across all business areas for projects requiring Information Technology (IT) expenditure. Projects are prioritized by the Vice Presidents in each business area before completing the estimation and capacity planning process. This process runs from the beginning of May through the end of August each year. The final portfolio is then presented back to senior management at the end of August for acceptance. Given the above timetable the final project list for 2025 and beyond does not exist at the time of this filing.

Reasons and Benefits:

This program allows for process improvements within the different business areas for RG&E.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,183	1,905	0	3,808	4,856

RG&E

CYBER-SIEM

Line of Business: Common
Category: Information Technology

Scope:

This project is for the deployment of hardware for security servers and heavy forwarders supporting the upgrade of the current Security Information and Event Management (SIEM) solution. Project includes both hardware, software and vendor installation/configuration support

Reasons and Benefits:

Evolution of the monitoring strategy and alignment to the Company's current technology strategy. Benefits include:

- Ability to detect and investigate security incidents. Direct relationship with regulatory requirements.
- Cloud native solution in Amazon Web Services (AWS).
- Drastically simplifies the number of on-prem appliances, reducing the operational cost of the current SIEM solution.
- Ease of use allows operators to deploy and manage thousands of nodes with centralized management.
- Reduced cost and people hours of monitoring sprawling modern environments vs. supporting multiple open-source agents.
- Consolidate multiple piece-meal agents to reduce complexity and risk with a vendor-neutral agent.
- Eliminate vendor lock-in to compliment, onboard or migrate tools.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
38	0	0	0	0

RG&E

DER Market Management System

Line of Business: Common
Category: Information Technology

Scope:

The scope of the project entails commencing activities related to gathering business requirements, procurement, technology development, configuration, training, deployment, and support. The specific business requirements will be developed after the NY Market Design and Integration Working Group completes deliverables. The implementation of the technology platform will enable the recording and reconciling of distribution market transactions between producers/suppliers and consumers of the product or service. The Distributed Energy Resources (DER) Market Management System (MMS) will be deployed to work closely with the Distributed Energy Resource Management System (DERMS) to utilize the to-be-defined distribution market structures to animate DER capacity on the Distribution System to meet the system needs identified by the DERMS and/or Advanced Distribution Management Systems (ADMS). The DER MMS will estimate market capability, issue market signals to participants, perform market settlement, and measure and verify participating DER performance.

Reasons and Benefits:

Upon completion of this project, the Company will be the provider of a secure Distribution System Platform that will record and reconcile distribution level services and products among produces/suppliers and end use consumers of the products and services.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	0	750	750

RG&E

End User Life Cycle

Line of Business: Common
Category: Information Technology

Scope:

The overall goal of this project is to refresh RG&E's computing devices following the refresh lifecycle defined for the company (four years) for users in scope. This project also provides personal computers (PC) in support of new hires and refresh demand requirements enterprise wide.

Reasons and Benefits:

Replace aged equipment with new PCs to avoid service disruptions due to PCs not working properly due to their age. New computers also provide higher computing capabilities. This project also provides PCs in support of new hires and refresh demand requirements.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,124	923	738	953	700

RG&E

Esri UN Deployment

Line of Business: Common
Category: Information Technology

Scope:

This project will replace the Company's current GIS system with the Utility Network Model (UNM). The existing data model is to be retired by the vendor in 2026. This will change the data model used by the Electric and Gas line of business and move to a more modern, utility specific model.

The scope of the project will be to install the new version of GIS and to convert the data to the new Utility Network Model.

Reasons and Benefits:

Migration of the current GIS geometric data models to the Utility Network model will prevent obsolescence as the old data model is being retired and replaced by the vendor in 2026. Upgrading will address the end of life and provide RG&E with a fully supported solution.

Additional benefits of moving to the UNM include;

- A rule-based engine that supports and enforces higher quality data entry, reduced data latency between enterprise systems due to native service-oriented architecture, new branch versioning structure reduces performance impacts of long-running designs, and this addresses current GIS software's end-of-life timeline.
- For Asset Management, a higher fidelity data model enables more granular tracking of real-world assets, such as substation internals, SCADA, and AMI equipment and controllers as well as Gas devices and network assets.
- Enhanced capabilities for modeling network data with greater detail and real-world representation of connectivity via use of associations. ArcGIS Pro is the new generation professional desktop application from Esri used to manage the network with Utility Network Model.
- This application provides exponential performance improvements in startup, saving, edits and redrawing compared to traditional ArcMap.
- Enhanced Operations and Field Work through platform-integrated mobile applications supporting common GIS workflows.

- Inherent information security, with single user identity authorizes platform access across desktop, web, and mobile use cases.
- The solution has an improved data exchange, with flexible schema and standard export functions by feeder/pressure zone are designed to better support OMS, ADMS and planning solutions.
- The Utility Network model allows for a programmatically created schematic view of the network.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
801	801	801	0	0

RG&E

Infrastructure Security

Line of Business: Common
Category: Information Technology

Scope:

The purpose of this project is to consolidate and strengthen RG&E's security posture through the deployments of security solutions and technologies. The key areas of focus include Network Security, Workplace Server and Endpoint Security, Cloud Security, Application Security, Identity and Access Security, and Security Operations

The project will provide infrastructure solutions to allow the company facing new threats; and continuing RG&E's protection evolution by leveraging new technologies and available capabilities.

Reasons and Benefits:

This project is required to provide RG&E with the necessary Information Technology (IT) infrastructure security capabilities to improve Security posture and keep pace with the increasing security threats towards the United States, the industry, and the company.

In 2024 and ongoing, this project will continue the deployment of security controls and measures in relevant assets and services of the company, with special focus on Internet applications and PII (Personally Identifiable Information). It will address new risks and threats relevant to the company, spread of intrusions and infections; protection of applications exposed on the Internet; protection of personal and regulated information. Leverage new technologies and capabilities available, such as: intrusion detection and simulation tools; real-time protection of applications; vulnerability scanning in cloud environments, mobile devices and applications.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
217	222	227	231	236

RG&E

Mobility Apps Enhancement

Line of Business: Common
Category: Information Technology

Scope:

The scope of the project is to adapt and enhance the applications deployed on the new single device platform in 2023. Existing applications, like Field Workforce Mobility (FWM), will be enhanced to take advantage, of the new capabilities of the new device like LTE connectivity, new push notification and other Android capabilities. New applications like Kaffa and Salesforce Mobile will also be deployed in mobility platforms.

Reasons and Benefits:

The project will improve user experience, provide additional reporting and dashboarding capabilities to support process optimization (process, quality and time).

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
13	128	0	0	0

RG&E

NETENG Life Cycle

Line of Business: Common
Category: Information Technology

Scope:

The objective of the Network Engineering Lifecycle program is to plan and implement a continuous improvement and refresh process every seven years, such that RG&E's network infrastructure meets or exceeds established availability requirements. The lifecycle plan is also the Company's mechanism for ensuring that the network infrastructure is scalable, meeting the increasing demands of our business users.

The following infrastructure is included under this program: Cisco Switches, routers, switches, WiFi access points and WiFi controllers.

Reasons and Benefits:

This project ensures network company infrastructure is run under support, with hardware within the defined lifecycle period for this technology. This minimizes the risk of hardware failures that may lead to outages, and users not being able to access corporate resources or applications. The project seeks to avoid service disruptions due to aged hardware not properly working. The project also seeks to maximize efficiency by adding the selection of the most appropriate technology transformation into the refresh process.

Additionally, this program supplies new devices, equipment and new technology as necessary to follow company growth.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
146	220	225	229	234

RG&E

NETSEC Life Cycle

Line of Business: Common
Category: Information Technology

Scope:

This program entails refreshing RG&E's network security devices following the seven-year refresh lifecycle defined for the company. Network security devices include primarily Firewalls, Proxies, Intrusion Preventions Systems (IPS), Anti Distributed Denial of Service (AntiDDos) technologies or Secure Socket Layer (SSL) decryption devices. This project also provides network equipment to support new offices or company assets that require secure corporate connectivity.

Reasons and Benefits:

Avoid Company's security degradation by replacing aged equipment with new network devices to avoid service disruptions due to hardware malfunction or failure. The project also seeks to maximize efficiency by adding the selection of the most appropriate technology transformation into the refresh process.

New devices and new technology also provide higher network security capabilities and provide network equipment to support company growth

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
344	347	363	367	375

RG&E

NY Gas Inspections

Line of Business: Common
Category: Information Technology

Scope:

New York DPS Safety Staff and other regulatory bodies have identified that the Gas networks companies are not adequately inspecting or tracking regulator inspections and multiple metered services, and because of this they are requiring the following:

- Identification of multiple customers with gas meters served from a single regulator.
- Track locations for inspection process.
- Define the inspection documentation and tracking process of all service regulators and regulated multiple meters services.

Reasons and Benefits:

This is a regulatory compliance requirement that has not been addressed/resolved before. The project will implement a new field solution for RG&E Gas Operations inspect and track regulator inspections and multiple metered services.

In review of the Residential Service Regulator and Vent Inspection procedures, a 20-year inspection must be completed for all service regulators and for multi-meter installations. Currently RG&E has various service regulator inspections, none of which are sufficiently documented and reportable. RG&E should be able to become a full-scale inventory and tracking platform within customer service SAP system. Tracking and inspecting will include Regulators, Inside Service Lines, Fixed Factor & multi-meter sets, and other inspection work (for corrosion, safety, etc.).

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
130	0	0	0	0

RG&E

S4 HANA Global SAP

Line of Business: Common
Category: Information Technology

Scope:

The S4/HANA transformation initiative is part of the IT strategy, aiming to place technology platforms in a strategic position that enables the business to maximize digitalization, innovation, and growth in an agile and efficient way.

Networks business shows an interest to develop a Digital Transformation project taking advantage of the evolution of the current platform to S4HANA, based on the following guiding principles:

- User Experience: Seating people in the center of this transformation. Understanding the issues and pain points, then challenging and defining innovative solutions that improve the experience in the new system. Maximizing user satisfaction and minimizing the effort within the new process.
- Process Transformation: Using technology as an opportunity to analyze and adapt the business processes. Challenging the requirements or existing processes, to keep a simple and standardized solution. Defining realistic transformation goals.
- Simple Solution: Keeping solution simplicity as a designing principle. Maximizing the usage of the capabilities of the new SAP platform. Challenging the need to adapt the solution and building a business case for every solution that is not aligned to SAP standard.

Reasons and Benefits:

Per SAP product roadmap, current version will not be supported after 2027, extra cost will be needed if AVANGRID extends the support until 2030. SAP is a key application to and must be supported by vendor to mitigate any interruption on our core process.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	1,202	1,202	0

RG&E

Storage Life Cycle

Line of Business: Common
Category: Information Technology

Scope:

The overall goal of this project is to refresh all data storage equipment following the five-year refresh lifecycle defined for the RG&E. Storage equipment include primarily storage virtual switches, Storge Area Network (SAN) directors and switches, storage arrays, file storage, and backup units.

This storage will be used to provide data storage capabilities to the company applications, and company data network shared drivers. It included the hardware required to ensure company data is correctly stored and backed up, allowing data recovery when necessary.

Reasons and Benefits:

This project ensures storage infrastructure remains under support, with hardware in the defined lifecycle period for this technology. This minimizes the risk of hardware failures that may lead to application outages and data loss. The project seeks to avoid service disruptions due to aged hardware not properly working.

Replacing aged equipment with new storage equipment and new technology avoids application performance issues or service disruptions. New devices and technology also provide higher performance and capabilities for a better application performance.

Another benefit of this project is the refresh and growth of company data backup infrastructure, including data protection. This allows data to be restored from an earlier point in time to help the business recover from an unplanned event. Storing the copy of the data on separate mediums is critical to protect against primary data loss or corruption.

Additionally, this program supplies new devices and equipment as necessary to follow company growth.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
383	392	400	408	417

RG&E

Supply Chain Digitization

Line of Business: Common
Category: Information Technology

Scope:

The scope of the project is to optimize and digitize the Supply Chain processes. Digitization will provide a user-friendly interface that delivers critical data and provides for ease of data entry. Implementation includes a material QRC scanner to capture and transport data into SAP transaction fields and/or SAP records. This optimization will provide cross connected transactions, data entry carry-over screen to screen to eliminate cut/paste and/or re-entry of data.

Reasons and Benefits:

The Supply Chain digitization will bring significant process improvement and optimization to the material forecast and plan. It will be used for all critical logistics and material functions used by warehouse users and administrative staff. It will also be used by the Material Planning staff as their main tool to optimize and manage the supply chain.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
240	285	0	0	0

RG&E

Unix Life Cycle

Line of Business: Common
Category: Information Technology

Scope:

This program entails refreshing RG&E's Unix equipment following the five-year refresh lifecycle defined for RG&E. Unix equipment includes primarily IBM AIX (Advanced Interactive eXecutive) Frames and HMC (Human Machine Controller) controllers. This project also provides UNIX equipment in support to company growth.

Reasons and Benefits:

This project ensures UNIX company infrastructure runs under support, with hardware within the defined lifecycle period for this technology. This minimizes the risk of hardware failures that may lead to applications outages. The project seeks to avoid service disruptions due to aged hardware not properly working.

Replacing aged equipment with new Unix equipment avoids application performance issues or service disruptions. New devices also provide higher performance and capabilities for a better application performance.

Additionally, this program supplies new devices and equipment as necessary to follow company growth.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
466	471	569	499	198

RG&E

Virtualization Evolution

Line of Business: Common
Category: Information Technology

Scope:

The goal of this project is to provide application virtualization technology platform refresh. The current solution based on-premise hardware, installed in Datacenter, is due for hardware refresh. The refresh will seek technology transformation rather than a one-to-one migration to the same technology with newer hardware.

Reasons and Benefits:

This project ensures company virtual infrastructure run under support, keeping hardware within the defined lifecycle period for this technology. This minimizes the risk of hardware failures that may lead to outages and users not being able to access Virtual Applications. The project also seeks to maximize efficiency by adding the selection of the most appropriate technology transformation into the refresh process.

Additionally, this project supplies new capacity, equipment, and new technology as necessary to follow company growth.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
113	0	0	0	0

RG&E

Wifi Site Enhancement

Line of Business: Common
Category: Information Technology

Scope:

This project will procure and deploy Cisco WiFi infrastructure in the Data Center to properly accommodate the increase of approximately 220 Wireless Access points (WAPs) throughout the company Storm sites, and to enhance WiFi coverage in critical company Storm locations.

Reasons and Benefits:

Accommodate the increased demand for WiFi access in critical company Service Centers and remote offices. Focus on Storm locations. Demand increase is driven primarily by Single Devices deployment in RG&E used by personnel to manage field operations.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
123	0	0	0	0

RG&E

Wintel Life Cycle

Line of Business: Common
Category: Information Technology

Scope:

This program entails refreshing RG&E's Wintel infrastructure following the five-year refresh lifecycle defined for RG&E. Wintel infrastructure includes primarily servers, chassis, and server blades. This infrastructure primarily hosts RG&E applications and Structured Query Language (SQL) databases. This will provide Wintel Infrastructure that supports the company's organic growth.

Reasons and Benefits:

This project ensures Wintel company infrastructure operates under support of Wintel, with hardware within the defined lifecycle period for this technology. This minimizes the risk of hardware failures that may lead to applications outages and data loss. The project seeks to avoid service disruptions by refreshing aging hardware.

Replacing aged equipment with new Wintel equipment and technology avoids application performance issues or service disruptions. New devices and transformed solutions also provide higher performance and capabilities for a better application performance.

Additionally, this program supplies new devices and equipment as necessary to follow company growth.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
459	456	464	472	480

Common Operational Smart Grids

NYSEG

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NYSEG

Communications Tower, Shelter Facility Improvements (Com)

Line of Business: Common
Category: Operational Smart Grids

Scope:

Tower and Communication Shelter new builds and repairs

Reasons and Benefits:

NYSEG Operational Smart Grids (OSG) remote communication tower and shelter locations house critical communication network elements. Each location has specific needs to support critical network equipment for fiber, microwave, radio systems. These systems include AC and DC backup power systems, cabling, heating, ventilation, and cooling systems (HVAC), single point grounding systems and security access systems. They also provide for a redundant and diverse design for the network. Failures associated with these components will cause failures to critical communications circuits needed for reliable energy delivery and their associated monitoring systems. Additionally, failure to critical wireless networks that support day to day field operational voice systems, and worker health and safety monitoring systems. Through ongoing wireless and fiber expansion project efforts, NYSEG will build communication facilities (towers and shelters) for NYSEG OSG communications equipment. The new facilities will be security enhanced com huts, indoor racks and cabinets, outdoor enclosures. The facility will include the building structure, AC and DC power plant, HVAC, racks, inside plant fiber / wireless network elements, and ancillary equipment to establish the OSG equipment as operational and functional on the network.

Additional initiatives will include enhancements to ensure the reliability and availability of the OSG Com systems. This includes upgrades to 8 locations every year. The efforts include: 1. Replacement of HVAC systems 2. Cable segment upgrades 3. UPS and DC Power system upgrades 4. Grounding upgrades. 5. Com shelter / room reconfiguration and expansion.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	576	900	1,125	1,406

NYSEG (New York State Electric & Gas)

Data Center Consolidation

Line of Business: Common
Category: Operational Smart Grids

Scope:

This project will standardize hardware, software, and applications for all the Operational Smart Grids (OSG) data centers and consolidate and reduce the overall total number of data centers.

The program includes 4 projects:

1. Data Center 2 (DC2/Station 80) Relocation – move Data Avangrid Secure Domain (ASD) Data Center to Kirkwood.
2. West Ave Relocation – move Operational Smart Grids (OSG) Data Centers to designated site to vacate this property.
3. Data Center Consolidation – reduce the overall total number of data centers.
4. Operations Technology (OT) Application Disaster Recovery (DR) Testing – implement required updates to Telecom & Infrastructure to ensure that OSG applications are prepared with offsite Data Center Disaster Recovery.

Reasons and Benefits:

Standardize hardware, software, and applications for all the OSG Data Centers and consolidate and reduce the overall total number of Data Centers. Resources can be shared across New York State Electric & Gas (NYSEG) to provide additional support capabilities when needed, efficiencies gained, and reduced maintenance.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,471	7,558	548	16,510	29,966

NYSEG

ECC Life cycle

Line of Business: Common
Category: Operational Smart Grids

Scope:

This is a program to replace and Enhance Energy Control systems (ECC). Continue the program for TRW 9550 to DNP Remote Terminal Units (RTU) protocol conversion to migrate them to reliable telecommunication channels and EMS front end equipment replacement that are end of life. Also, additional EMS functionalities development in the Energy Management System (EMS), Alarm optimization and other enhancements to make the EMS System more reliable.

Reasons and Benefits:

This program allows the Companies to achieve critical systems uptime of 99.90% of availability and cyber compliance targets. This is the life cycle program for the frontend of the NY SCADA/EMS system. NYSEG can potentially be fined by NPCC if it does not complete project as the infrastructure will not be supported by the vendors and will not provide security patches. Hardware failures may not have spare parts for the equipment as the vendor no longer manufactures them, can potentially affect remote operations by ECC and Realtime assessment functionality which is a Compliance requirement.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,100	1,250	1,320	1,650	2,063

NYSEG

Energy Control Systems Infrastructure

Line of Business: Common
Category: Operational Smart Grids

Scope:

NY Energy Control Systems Infrastructure encompasses incremental hardware refresh activities and technology upgrades as well as improvements to Electric, Gas and Business Area systems. The lifecycle or refresh of technology in the datacenters include but not limited to multiple environments in Critical Infrastructure Protection (CIP) and Non-CIP. These areas usually contain Development (testing), Quality Assurance Systems (QAS) (like production), and Production.

High level schedule:

2023 – Backup appliances, compute storage, data center specific equipment, network switches, routers, and firewalls.

2024 - HCI (hyper-converged Infrastructure), DCIM (Data Center Inventory Mgmt.), Operations video wall, control room workstations, and network devices.

2025 – data center specific equipment, Operations video wall

2026 – Database Virtualization hardware, HCI, data center specific equipment

2027 – Backup appliances, data center specific equipment, substation firewalls.

Reasons and Benefits:

These improvements are necessary to keep support, security and reliability at appropriate levels required by the demands of high availability of Supervisory Control and Data Acquisition (SCADA) environments. This program allows to lifecycle or technical refresh end of life or out of support and aging data center infrastructure that supports the Networks Business in CIP and Non-CIP technology.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
6,593	2,142	5,053	10,112	17,386

NYSEG

FAN + mobile technology refresh and expansion

Line of Business: Common
Category: Operational Smart Grids

Scope:

Enhance, explore, refresh NYSEG wireless broadband systems to allow for technology diversity, provide high-speed, reliable, and cost-effective communication alternatives to public carriers, Public switched telephone network (PTSN) services, as well as provide diversity and redundancy to public carrier circuits for critical applications that require it.

Reasons and Benefits:

NYSEG Operational Smart Grids (OSG) Field Area Network (FAN) refresh and expansion of wireless broadband systems provides the wireless network infrastructure for the distribution, Supervisory Control and Data Acquisition (SCADA) and Advanced Metering Infrastructure (AMI) radio systems and the grid and distribution automation applications. NYSEG utilizes wireless technologies that have demonstrated the promise to deliver high performance for critical application needs while not requiring direct line of sight between antennas. These technologies provide wireless access to remote gas and electric assets back to the core network. The wireless broadband infrastructure enhancements and technology refresh efforts are ongoing and will continue through 2028.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,200	1,800	1,800	2,250	2,813

NYSEG

FCC License Radio Spectrum purchase

Line of Business: Common
Category: Operational Smart Grids

Scope:

The purchase of Spectrum.

Reasons and Benefits:

The purchase of Spectrum will provide NYSEG Operational Smart Grids (OSG) long term capabilities for enhancing wireless systems supporting Supervisory Control and Data Acquisition (SCADA) control, monitoring, open and close functions, and station to station tele-protection application needs, enable expandability for field area network expansions, provide for redundant and diverse designs for the network elements and monitoring systems. Additional spectrum allows for enhancement of critical daily operational voice systems used to communicate to field operations and monitor the health and safety of NYSEG field teams.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	600	500	500

NYSEG (New York State Electric & Gas)

Historian And Analytic Upgrades Program

Line of Business: Common
Category: Operational Smart Grids

Scope:

To deploy PI Historian system and integrate the Energy Management System data across New York State Electric & Gas (NYSEG).

Reasons and Benefits:

The project will create a common platform for historian and operational real-time analytics for all operating companies while improving user access and cross-company visibility to critical data/system information in a secure and reliable manner. In addition, the project will ensure data quality, enable automated regulatory compliance, enhance data governance capabilities, and upgrade legacy systems and software while improving data security by introducing modern security controls and secure interfaces.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,232	481	353	192	151

NYSEG

Microsoft Licensing

Line of Business: Common
Category: Operational Smart Grids

Scope:

Licensing of Microsoft operating systems, databases and applications supported by Operational Smart Grids (OSG). This keeps our Microsoft products under support and in compliance with Microsoft licensing requirements.

Reasons and Benefits:

In order to stay in good standing with Microsoft and to have access to Microsoft products these costs need to be kept up to date and under contract.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
746	0	0	0	0

NYSEG

NMC Solar Winds

Line of Business: Common
Category: Operational Smart Grids

Scope:

SolarWinds is software for the Telecomm Networks Management Center. Over the next three years, the telecom group will purchase the remaining licenses necessary to complete the SolarWinds implementation and associated services for all network elements within New York State Electric & Gas (NYSEG). SolarWinds licenses purchased are for the software being used in the monitoring and management of the AVANGRID Security Domain (ASD) network. In addition to monitoring, the software will be used as a performance management tool for the network and with troubleshooting and fault management. The ASD servers, routers, switches, and other data points are fed into the SolarWinds software as a major management piece of the Network Management Center (NMC).

Reasons and Benefits:

The need to optimize and further expand the Management of the ASD and Operational Smart Grids (OSG) networks relies on continued engineering efforts and additional license purchases. Delay of this project will place us further behind in the addition of new nodes in to the NMC monitoring, as well as the need for engineering to assist with the migration of the OSG on to the ASD transport network.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
220	335	175	379	379

NYSEG

NY AMI Lifecycle

Line of Business: Common
Category: Operational Smart Grids

Scope:

This project is a transition and implementation plan to cover infrastructure hardware, physical data center requirements, support agreements, internal and external resource alignment for the next Advanced Metering Infrastructure (AMI) Head End System lifecycle replacement

Reasons and Benefits:

This project will address asset condition replacement, efficiency, and strategic initiative for transitioning the AMI Head End System responsibility to Smart Grids

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	6,928	8,660	10,825

NYSEG

OMS Alignment ABB-Spectrum

Line of Business: Common
Category: Operational Smart Grids

Scope:

Streamline Outage Management System (OMS) functionality and integration across all systems. This includes integration with Mobility, Work Force Mobility (WFM) and damages assessments. This will enable the use of the same OMS platform. The process to achieve this will involve performing a detailed analysis of best-in-class functionality, interfaces, and technology on both the ABB OMS and the Spectrum OMS systems and then working to combine those technologies.

See steps below:

Determine differences between ABB OMS solution, the Siemens OMS implementation and new mobility solution slated to be implemented

Define functional and technical specifications

Define Infrastructure and Cyber Security requirements

Develop solution.

Reasons and Benefits:

Full benefits and efficiency of best-in-class OMS system which will align and standardize process and technological platform across all AVANGRID companies. This will bring efficiencies and better support for all companies. More specifically, this alignment will allow us to have the same OMS platform to help AVANGRID to leverage technology, resources and reduce licenses cost.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	240	0	0	0

NYSEG

OMS Enhancements

Line of Business: Common
Category: Operational Smart Grids

Scope:

The overall scope of this project is to continue to implement the highest priority enhancements that will improve OMS system efficiency and provide an expanded toolset for Operators, dispatchers and various others to use to accurately identify outages, dispatch crews to fix the outage, report on the numbers and manage the overall restoration process. The Spectrum OMS enhancement work includes 2 large software releases and 2 to 4 smaller upgrades per year. Each large upgrade contains about 25 enhancements, which include AMI functionality/performance improvements, ETR logic and colorization improvements, enhancing application health checks for better application reliability, system performance improvements. Given that this core OMS system is integrated into the Spectrum EMS/SCADA system, it's critical to possess the expertise in both technologies to ensure seamless functionality along with the automation. The iCDS web-based OMS system enhancement work includes between 4 and 6 large system releases and 3 to 5 smaller upgrades per year. Each large upgrade includes about 10 – 15 enhancements including backup OMS functionality (to replace aging BOMS system), upgraded filtering, map symbology improvements, AMI functionality additions, system performance updates. The overall resource requirement for this work is approximately two highly skilled External FTE equivalents and one Internal FTE equivalent. The external project roles that comprise the FTEs include Sr. Software Engineer(s), a Control Software architect, a Business Analyst. The internal roles include Lead Programmer(s), a Lead Applications Architect, a Principal Analyst. Also, enhancements to improve system performance are included in this project, which impact reliability, customer satisfaction and are required by the PSC. For example, system needs to perform during a worst-case storm taking out most of the customer base.

Reasons and Benefits:

The efficient restoration of Electric outages and Gas/Electric trouble jobs (including gas leaks, pole/wired down) is highly critical to the business in terms of safety, reliability and customer satisfaction. Given this, it's extremely important for the OMS related applications and underlying tools continue to improve and adapt to evolving technology. This requires a commitment to continuous functionality improvement as well as integrating with the latest systems (such as AMI, Mobility, DA, …). The current NYSEG and RGE OMS (and EMS/SCADA) solutions were derived from the Iberdrola Global solution that began over 20 years ago and continues to evolve as well. This solution is centered around the ability

to utilize all forms of automation (SCADA, AMI) to improve outage detection and restoration vs. customer calls/outage predictions alone. The NY Spectrum OMS/iCDS solution went live approximately 5 years ago and has improved significantly but requires additional commitment to realize the full benefits and efficiencies these systems provide.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
375	360	188	375	375

NYSEG

Rochester Consolidation

Line of Business: Common
Category: Operational Smart Grids

Scope:

New York State Electric & Gas (NYSEG) and Rochester Gas & Electric (RG&E) are consolidating operations to reduce locations in the Rochester area. One facility being vacated is the East Avenue location. Within this facility, there are data centers that support critical electric and gas network communication and control systems for both New York State Electric & Gas (NYSEG) and Rochester Gas & Electric (RG&E). These Data Centers (Avangrid Secure Domain (ASD) & the Supervisory Control and Data Acquisition (SCADA) need to be removed from the East Avenue location and relocated to other facilities (Vestal NY & Scottsville Rd). Due to the critical nature of the systems, the equipment is not able to be taken offline and moved to the new locations. Therefore, some new equipment will need to be purchased, installed and operational in the new locations and all applications moved. This will be followed by the de-certification, decommission, and removal of all equipment prior to vacating the 89 East Avenue building.

Reasons and Benefits:

To meet corporate requirement to vacate Rochester East Avenue location as the property has been vacated and sold. Therefore, the Data Centers (Avangrid Secure Domain (ASD) and the Supervisory Control and Data Acquisition (SCADA) need to be decommissioned, removed, disposed and/ or repurposed.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
53	0	0	0	0

NYSEG

Telecomm Fiber

Line of Business: Common
Category: Operational Smart Grids

Scope:

The purpose of purchasing fiber optic cable is to enhance our connectivity and create high bandwidth communications and backhaul points. New fiber will be constructed, or existing dark fiber pairs will be purchased through local carriers, to provide connectivity for substations and service centers across our footprint. Wherever viable, the fiber will be deployed in redundant rings with unique entrances into our facilities. This will allow for connectivity with routers and Ethernet switching equipment to dynamically reroute traffic in the event of a fiber failure.

Reasons and Benefits:

This project will maximize the resiliency and throughput of the network and scale the capability of the broadband wireless network.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,439	2,520	1,171	4,576	4,118

NYSEG

Telecomm Infrastructure

Line of Business: Common
Category: Operational Smart Grids

Scope:

This project will continue to deploy and expand telecom infrastructure to enhance communications capabilities and connectivity throughout the NYSEG territory for distribution automation and monitoring activity. Routers and Ethernet switches will be deployed utilizing a mix of fiber, copper, and wireless technologies for interconnections with redundancy and diversity. Various protocols will be implemented to support dynamic rerouting of traffic in the event of a transport or circuit failure.

The current Private Land Mobile Radio Systems (LMR) systems are at or beyond end-of-life, this project will also support the lifecycle replacement of the existing LMR with a new digital mobile radio solution.

Reasons and Benefits:

Expand network communications infrastructure for improved capacity, reliability, and functionality for operation of gas and electric networks.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
4,062	6,702	3,028	9,425	9,425

NYSEG

Telecomm Vertical Builds

Line of Business: Common
Category: Operational Smart Grids

Scope:

The building of vertical infrastructure is necessary to support our deployment of wireless, cellular, and land mobile radio technologies. These will serve primary locations for broadband wireless base stations and microwave backhaul supporting services for all traffic types. This project will consist of extending the life of existing assets and enhancing capabilities.

Reasons and Benefits:

These towers will provide better overall coverage for wireless communications and reach for future technologies.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,870	1,305	730	2,459	2,459

NYSEG

Telecomm WAN Expansion

Line of Business: Common
Category: Operational Smart Grids

Scope:

NY WAN (Wide Area Network) Expansion involves providing broadband connectivity to unserved or underserved substations, service center, and distribution assets utilizing wired or microwave deployments to support automation activities at NYSEG. These will primarily involve a wireless point-to-multipoint setup which includes the deployment of a Base Station (with associated network backhaul) and multiple end point devices to provide service for Supervisory Control and Data Acquisition (SCADA) and Advanced Metering Infrastructure (AMI) data.

Reasons and Benefits:

The NY WAN Expansion project is a conceptualized network to support smart grid communication equipment deployments as an end-to-end solution to meet requirements for communication paths and provide a flexible solution for the company.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
5,450	4,846	2,356	5,500	5,500

Common Operational Smart Grids

RG&E

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RG&E

Communications Tower, shelter Facility Improvements (Com)

Line of Business: Common
Category: Operational Smart Grids

Scope:

Tower and Communication Shelter new builds and repairs

Reasons and Benefits:

RG&E Operational Smart Grids (OSG) remote communication tower and shelter locations house critical communication network elements. Each location has specific needs to support critical network equipment for fiber, microwave, radio systems. These systems include AC & DC backup power systems, cabling, heating, ventilation, and cooling systems (HVAC), single point grounding systems and security access systems. They also provide for a redundant and diverse design for the network. Failures associated with these components will cause failures to critical communications circuits needed for reliable energy delivery and their associated monitoring systems. Additionally, failure to critical wireless networks that support day to day field operational voice systems, and worker health and safety monitoring systems. Through ongoing wireless and fiber expansion project efforts, RG&E will build communication facilities (towers and shelters) for RG&E OSG communications equipment. The new facilities will be security enhanced com huts, indoor racks and cabinets, outdoor enclosures. The facility will include the building structure, AC and DC power plant, HVAC, racks, inside plant fiber / wireless network elements, and ancillary equipment to establish the OSG equipment as operational and functional on the network.

Additional initiatives will include enhancements to ensure the reliability and availability of the OSG Com systems. This includes upgrades to 8 locations every year. The efforts include: 1. Replacement of HVAC systems 2. Cable segment upgrades 3. UPS and DC Power system upgrades 4. Grounding upgrades. 5. Com shelter / room reconfiguration and expansion.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	400	700	750	0

Rochester Gas & Electric (RG&E)

Data Center Consolidation

Line of Business: Common
Category: Operational Smart Grids

Scope:

This program will standardize hardware, software, and applications for all the Operational Smart Grids (OSG) data centers and consolidate and reduce the overall total number of data centers.

This program includes 4 projects:

5. Data Center 2 (DC2/Station 80) Relocation – move Data Center to Kirkwood.
6. West Ave Relocation – move Data Centers to designated site to vacate this property.
7. Data Center Consolidation – reduce the overall total number of data centers.
8. Operations Technology (OT) Application Disaster Recovery (DR) Testing – implement required updates to Telecom & Infrastructure to ensure that Operational Smart Grids (OSG) applications are prepared with offsite Data Center Disaster Recovery.

Reasons and Benefits:

Standardize hardware, software, and applications for all the OSG Data Centers and consolidate and reduce the overall total number of Data Centers. Resources can be shared across Rochester Gas & Electric (RG&E) to provide additional support capabilities when needed, efficiencies gained, and reduced maintenance.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
985	4,715	656	9,850	17,878

RG&E

ECC Life cycle

Line of Business: Common
Category: Operational Smart Grids

Scope:

This is a program to replace and Enhance Energy Control systems (ECC). Consist of Energy Management System (EMS) and Supervisory Control And Data Acquisition (SCADA) front- end equipment replacement that is end of life. Also, additional EMS functionalities development in the Energy Management System (EMS), Alarm optimization and other enhancements to make the EMS System more reliable.

Reasons and Benefits:

This program allows the Companies to achieve critical systems uptime of 99.90% of availability and cyber compliance targets. This is the life cycle program for the frontend of the NY SCADA/EMS system. RG&E can potentially be fined by NPCC if it does not complete project as the infrastructure will not be supported by the vendors and will not provide security patches. Hardware failures may not have spare parts for the equipment as the vendor no longer manufactures them, can potentially affect remote operations by ECC and Realtime assessment functionality which is a Compliance requirement.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
160	200	700	875	1,094

RG&E

Energy Control Systems Infrastructure

Line of Business: Common
Category: Operational Smart Grids

Scope:

NY Energy Control Systems Infrastructure encompasses incremental hardware refresh activities and technology upgrades as well as improvements to Electric, Gas and Business Area systems. The lifecycle or refresh of technology in the datacenters include but not limited to multiple environments in Critical Infrastructure Protection (CIP) and Non-CIP. These areas usually contain Development (testing), Quality Assurance Systems (QAS) (like production) and Production.

High level schedule:

2023 – Backup appliances, compute storage, data center specific equipment, network switches, routers, and firewalls.

2024 - HCI (hyper-converged Infrastructure), DCIM (Data Center Inventory Management), Operations video wall, control room workstations, and network devices.

2025 – Data center specific equipment, Operations video wall.

2026 – Database Virtualization hardware, HCI, data center specific equipment.

2027 – Backup appliances, data center specific equipment, substation firewalls.

Reasons and Benefits:

These improvements are necessary to keep support, security and reliability at appropriate levels required by the demands of high availability of Supervisory Control and Data Acquisition (SCADA) environments. This program allows to lifecycle or technical refresh end of life or out of support and aging data center infrastructure that supports the Networks Business in CIP and Non-CIP technology.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,575	1,749	384	480	600

RG&E

FAN + mobile technology refresh and expansion

Line of Business: Common
Category: Operational Smart Grids

Scope:

Enhance, explore, refresh RG&E wireless broadband systems to allow for technology diversity, provide high-speed, reliable, and cost-effective communication alternatives to public carriers, Public switched telephone network (PTSN) services, as well as provide diversity and redundancy to public carrier circuits for critical applications that require it.

Reasons and Benefits:

RG&E Operational Smart Grids (OSG) Field Area Network (FAN) refresh and expansion of wireless broadband systems provides the wireless network infrastructure for the distribution, Supervisory Control and Data Acquisition (SCADA) and Advanced Metering Infrastructure (AMI) radio systems and the grid and distribution automation applications. RG&E utilizes wireless technologies that have demonstrated the promise to deliver high performance for critical application needs while not requiring direct line of sight between antennas. These technologies provide wireless access to remote gas and electric assets back to the core network. The wireless broadband infrastructure enhancements and technology refresh efforts are ongoing and will continue through 2028.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,500	425	1,425	1,781	2,227

RG&E

FCC License Radio Spectrum purchase

Line of Business: Common
Category: Operational Smart Grids

Scope:

The purchase of Spectrum.

Reasons and Benefits:

The purchase of spectrum will provide RG&E Operational Smart Grids (OSG) long term capabilities for enhancing wireless systems supporting Supervisory Control and Data Acquisition (SCADA) control, monitoring, open and close functions, and station to station tele-protection application needs, enable expandability for field area network expansions, provide for redundant and diverse designs for the network elements and monitoring systems. Additional spectrum allows for enhancement of critical daily operational voice systems used to communicate to field operations and monitor the health and safety of RG&E field teams.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	1,000	0	0

RG&E

Historian And Analytic Upgrades Program

Line of Business: Common
Category: Operational Smart Grids

Scope:

To deploy PI Historian system and integrate the Energy Management System data across Rochester Gas & Electric (RG&E).

Reasons and Benefits:

The project will create a common platform for historian and operational real-time analytics for all operating companies while improving user access and cross-company visibility to critical data/system information in a secure and reliable manner. In addition, the project will ensure data quality, enable automated regulatory compliance, enhance data governance capabilities, and upgrade legacy systems and software while improving data security by introducing modern security controls and secure interfaces.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,691	290	384	93	75

RG&E

Microsoft Licensing

Line of Business: Common
Category: Operational Smart Grids

Scope:

Licensing of Microsoft operating systems, databases and applications supported by Operational Smart Grids (OSG). This keeps our Microsoft products under support and in compliance with Microsoft licensing requirements.

Reasons and Benefits:

In order to stay in good standing with Microsoft and to have access to Microsoft products these costs need to be kept up to date and under contract.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
446	446	0	0	0

RG&E

NMC Solar Winds

Line of Business: Common
Category: Operational Smart Grids

Scope:

SolarWinds is software for the Telecomm Networks Management Center. Over the next three years, the telecom group will purchase the remaining licenses necessary to complete the SolarWinds implementation and associated services for all network elements within Rochester Gas & Electric (RG&E). SolarWinds licenses purchased are for the software being used in the monitoring and management of the AVANGRID Security Domain (ASD) network. In addition to monitoring, the software will be used as a performance management tool for the network and with troubleshooting and fault management. The ASD servers, routers, switches, and other data points are fed into the SolarWinds software as a major management piece of the Network Management Center (NMC).

Reasons and Benefits:

The need to optimize and further expand the Management of the ASD and Operational Smart Grids (OSG) networks relies on continued engineering efforts and additional license purchases. Delay of this project will place us further behind in the addition of new nodes in to the NMC monitoring, as well as the need for engineering to assist with the migration of the OSG on to the ASD transport network.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
156	229	229	229	229

RG&E

NY AMI Lifecycle

Line of Business: Common
Category: Operational Smart Grids

Scope:

This project is a transition and implementation plan to cover infrastructure hardware, physical data center requirements, support agreements, internal and external resource alignment for the next Advanced Metering Infrastructure (AMI) Head End System lifecycle replacement

Reasons and Benefits:

This project will address asset condition replacement, efficiency, and strategic initiative for transitioning the AMI Head End System responsibility to Smart Grids

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	4,059	5,074	6,343

RG&E

OMS Alignment ABB-Spectrum

Line of Business: Common
Category: Operational Smart Grids

Scope:

Streamline Outage Management System (OMS) functionality and integration across all systems. This includes integration with Mobility, Work Force Mobility (WFM) and damages assessments. This will enable the use of the same OMS platform. The process to achieve this will involve performing a detailed analysis of best-in-class functionality, interfaces, and technology on both the ABB OMS and the Spectrum OMS systems and then working to combine those technologies.

See steps below:

Determine differences between ABB OMS solution, the Siemens OMS implementation and new mobility solution slated to be implemented

Define functional and technical specifications

Define Infrastructure and Cyber Security requirements

Develop solution

Reasons and Benefits:

Full benefits and efficiency of best-in-class OMS system which will align and standardize process and technological platform across all AVANGRID companies. This will bring efficiencies and better support for all companies. More specifically, this alignment will allow us to have the same OMS platform to help AVANGRID to leverage technology, resources and reduce licenses cost.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	83	0	0	0

RG&E

OMS Enhancements

Line of Business: Common
Category: Operational Smart Grids

Scope:

The overall scope of this project is to continue to implement the highest priority enhancements that will improve OMS system efficiency and provide an expanded toolset for Operators, dispatchers and various others to use to accurately identify outages, dispatch crews to fix the outage, report on the numbers and manage the overall restoration process. The Spectrum OMS enhancement work includes 2 large software releases and 2 to 4 smaller upgrades per year. Each large upgrade contains about 25 enhancements, which include AMI functionality/performance improvements, ETR logic and colorization improvements, enhancing application health checks for better application reliability, system performance improvements. Given that this core OMS system is integrated into the Spectrum EMS/SCADA system, it's critical to possess the expertise in both technologies to ensure seamless functionality along with the automation. The iCDS web-based OMS system enhancement work includes between 4 and 6 large system releases and 3 to 5 smaller upgrades per year. Each large upgrade includes about 10 – 15 enhancements including backup OMS functionality (to replace aging BOMS system), upgraded filtering, map symbology improvements, AMI functionality additions, system performance updates. The overall resource requirement for this work is approximately two highly skilled External FTE equivalents and one Internal FTE equivalent. The external project roles that comprise the FTEs include Sr. Software Engineer(s), a Control Software architect, a Business Analyst. The internal roles include Lead Programmer(s), a Lead Applications Architect, a Principal Analyst. Enhancements to improve system performance are included in this project, which impact reliability, customer satisfaction and are required by the PSC. For example, system needs to perform during a worst-case storm taking out most of the customer base.

Reasons and Benefits:

The efficient restoration of Electric outages and Gas/Electric trouble jobs (including gas leaks, pole/wired down) is highly critical to the business in terms of safety, reliability and customer satisfaction. Given this, it's extremely important for the OMS related applications and underlying tools continue to improve and adapt to evolving technology. This requires a commitment to continuous functionality improvement as well as integrating with the latest systems (such as AMI, Mobility, DA, etc). The current NYSEG and RGE OMS (and EMS/SCADA) solutions were derived from the Iberdrola Global solution that began over 20 years ago and continues to evolve as well. This solution is centered around the ability

to utilize all forms of automation (SCADA, AMI) to improve outage detection and restoration vs. customer calls/outage predictions alone. The NY Spectrum OMS/iCDS solution went live approximately 5 years ago and has improved significantly but requires additional commitment to realize the full benefits and efficiencies these systems provide.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
125	125	125	125	125

RG&E

Rochester Consolidation

Line of Business: Common
Category: Operational Smart Grids

Scope:

Rochester Gas & Electric (RG&E) is consolidating operations to reduce locations in the Rochester area. One facility being vacated is the East Avenue location. Within this facility, there are data centers that support critical electric and gas network communication and control systems for both New York State Electric & Gas (NYSEG) and Rochester Gas & Electric (RG&E). These Data Centers (Avangrid Secure Domain (ASD) & the Supervisory Control and Data Acquisition (SCADA) need to be removed from the East Avenue location and relocated to other facilities (Vestal NY & Scottsville Rd). Due to the critical nature of the systems, the equipment is not able to be taken offline and moved to the new locations. Therefore, some new equipment will need to be purchased, installed and operational in the new locations and all applications moved. This will be followed by the de-certification, decommission, and removal of all equipment prior to vacating the 89 East Avenue building.

Reasons and Benefits:

To meet corporate requirement to vacate Rochester East Avenue location as the property has been vacated and sold. Therefore, the Data Centers (Avangrid Secure Domain (ASD) and the Supervisory Control and Data Acquisition (SCADA) need to be decommissioned, removed, disposed and/ or repurposed.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
32	0	0	0	0

RG&E

Telecomm Fiber

Line of Business: Common
Category: Operational Smart Grids

Scope:

The purpose of purchasing fiber optic cable is to enhance our connectivity and create high bandwidth communications and backhaul points. New fiber will be constructed, or existing dark fiber pairs will be purchased through local carriers, to provide connectivity for substations and service centers across our footprint. Wherever viable, the fiber will be deployed in redundant rings with unique entrances into our facilities. This will allow for connectivity with routers and Ethernet switching equipment to dynamically reroute traffic in the event of a fiber failure.

Reasons and Benefits:

This project will maximize the resiliency and throughput of the network and scale the capability of the broadband wireless network.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,226	1,098	984	1,034	930

RG&E

Telecomm Infrastructure

Line of Business: Common
Category: Operational Smart Grids

Scope:

This project will continue to deploy and expand telecom infrastructure to enhance communications capabilities and connectivity throughout the RG&E territory for distribution automation and monitoring activity. Routers and Ethernet switches will be deployed utilizing a mix of fiber, copper, and wireless technologies for interconnections with redundancy and diversity. Various protocols will be implemented to support dynamic rerouting of traffic in the event of a transport or circuit failure.

The current Private Land Mobile Radio Systems (LMR) systems are at or beyond end-of-life, this project will also support the lifecycle replacement of the existing LMR with a new digital mobile radio solution.

Reasons and Benefits:

Expand network communications infrastructure for improved capacity, reliability, and functionality for operation of gas/electric networks.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,222	2,063	2,092	3,553	3,553

RG&E

Telecomm Vertical Builds

Line of Business: Common
Category: Operational Smart Grids

Scope:

The building of vertical infrastructure is necessary to support our deployment of wireless, cellular, and land mobile radio technologies. These will serve primary locations for broadband wireless base stations and microwave backhaul supporting services for all traffic types. This project will consist of extending the life of existing assets and enhancing capabilities.

Reasons and Benefits:

These towers will provide better overall coverage for wireless communications and reach for future technologies.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
959	934	959	459	459

RG&E

Telecomm WAN Expansion

Line of Business: Common
Category: Operational Smart Grids

Scope:

NY WAN (Wide Area Network) Expansion involves providing broadband connectivity to unserved or underserved substations, service center, and distribution assets utilizing wired or microwave deployments to support automation activities at RG&E. These will primarily involve a wireless point-to-multipoint setup which includes the deployment of a Base Station (with associated network backhaul) and multiple end point devices to provide service for Supervisory Control and Data Acquisition (SCADA) and Advanced Metering Infrastructure (AMI) data.

Reasons and Benefits:

The NY WAN Expansion project is a conceptualized network to support smart grid communication equipment deployments as an end-to-end solution to meet requirements for communication paths and provide a flexible solution for the company.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,824	1,323	1,330	2,200	2,200

Common Security

NYSEG

ASD Security System Installation 820
AVANGRID Security Domain Infrastructure 822
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DRAGOS 827
Fire Protection 829
Global Cybersecurity Directors Plan 831
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Security Operations Center Program 835
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NYSEG

ASD Security System Installation

Line of Business: Common
Category: Security

Scope:

The Avangrid Security Domain (ASD) Security Systems Installation program relates to security work on various facilities to continue implementing the five-year Security Deployment plan. Systems to be installed are based on a security tier for each facility based on risk. Tier 1 and 2 facilities (e.g., bulk substations) receive card access control systems, Public Address (PA) systems, video surveillance, video analytics and thermal cameras (Tier 1 also receive additional physical hardening due to critical nature). Tier 3 facilities (e.g., large office/service center, cash office, hydro) receive card access control systems, video surveillance and video analytics. Tier 4 facilities (e.g., small offices, store yards) receive card access control systems and video surveillance. Additional work includes the enhancement of communication networks to allow for the transport of video back to the Security Operations Center (SOC) for remote monitoring of security network, access control and video monitoring systems. to allow for the transport of video back to the SOC for remote monitoring of security network, access control and video monitoring systems.

Reasons and Benefits:

Compliance with the North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) standards, including:

CIP-002 BES Cyber System Categorization
CIP-003 Security Management Controls
CIP-004 Personnel & Training
CIP-006 Physical Security of BES Cyber Systems
CIP-011 Information Protection
CIP-013 Supply Chain Risk Management
CIP-014 Physical Security

In addition, this program is designed to meet regulations defined by Homeland Security, and other State, local and Federal laws to maintain security of personnel and asset protection.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
6,986	0	0	0	0

NYSEG

AVANGRID Security Domain Infrastructure

Line of Business: Common
Category: Security

Scope:

The Avangrid Security Domain Infrastructure program involves the replacement of data center equipment that is nearing its end-of-life. The equipment requiring replacement is (Hyper converged Infrastructure – virtualized servers) storage arrays, network equipment (routers and switches), and firewalls. These are devices that serve hundreds of applications services. We rotate lifecycle based on security zones and the end of their useful life.

To stay current with technology, the lifecycle of system tools is required to provide the appropriate protections and adhere to the strict compliance requirements associated with the NERC-CIP regulations. Not all systems fall under the NERC-CIP requirements, but through leveraging a centralized security solution, the other areas that do not fall under the purview of the compliance requirements leverage the benefits of this centralized solution. This comprehensive approach to security provides standards to provide more capability and efficiency to our customers.

There is not just one tool or system that can provide the needed security measures and controls to properly protect critical systems. A collection of tools and systems are required to work together to meet the challenges associated with cybersecurity. Therefore, many tools are needed with compatibility across the tools to properly perform the various protection controls to secure systems.

Below is the list of equipment that is associated with the CA&C area (not exhaustive) to provide effective security measures and proper lifecycle for continued relevant support of our cybersecurity controls and systems.

- Firewalls
- Anti-Virus/ Anti-Malware
- Baseline Configuration Management
- Asset Management
- Configuration and Change Management
- Ticketing

- Identity Management
- Access Management
- Automation of Manual Processes
- Protected Information Repositories
- Quality Assurance
- Networking Detection and Anomaly Analytics
- Cybersecurity Systems Operational Center (CSOC)
- Network Deduplication and Deep Packet Inspection
- Cyber Vulnerability Scanning
- NERC-CIP compliance
- Data Diodes
- SEIM
- Etc.

Reasons and Benefits:

The Avangrid Security Domain Program is designed to provide a secure infrastructure and centralized Physical security system. This includes the professional services and hardware/software lifecycle of all direct and auxiliary systems which is comprised of advanced cybersecurity technologies and capabilities. In all the capabilities listed below, the goal is to standardize and expand capabilities across common platforms.

- Increased Centralized Cybersecurity Monitoring: Centralizing the cybersecurity monitoring, optimizes resources and avoids redundancy across operating companies. Accomplished through the implementation of Dragos and LogRhythm NetMon.
- Increased Situational Awareness Across AVANGRID: Consolidating cybersecurity monitoring and providing analysts with a single pane of glass will allow AVANGRID to gain a higher degree of situational awareness across the organization and its operating companies. Accomplished through the implementation of Dragos and LogRhythm Platform Manager.
- Increased Efficiency and Enablement: Cybersecurity monitoring within the ASD is driven by Meet-Me-Points (MMP), which provide traffic aggregation, deduplication, and decryption capabilities, without increasing the load on the network infrastructure. Accomplished through the implementation of Dragos, LogRhythm NetMon, Gigamon, and Cisco equipment.
- Increased Network Detection and Anomaly Analytics Capabilities: The Dragos platform was deployed across all ASD environments and network interfaces for improved visibility of ASD network activity against expected traffic flow baselines for anomaly detection.
- Engineered baseline configuration and monitoring tool: Design completed to put

Tripwire into ASD environments.

- Service management solution: Completed the planning for the Service Management (ticketing, asset, change) system to be deployed in the ASD and leveraged by all operating companies.

In addition to the above benefits, this program includes technical refresh or replacement of the underlying infrastructure that ages out or goes end of life. This program keeps data center equipment (servers, switches, routers, backup appliances, storage arrays, firewalls, and other data center-centric equipment) that services, physical security, telecom, and cyber security are current and under manufacturer support. Without this constant refreshment of aging computer equipment, these products would become obsolete.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
2,488	0	3,107	3,884	4,855

NYSEG

AVANGRID Security Domain Telecommunications

Line of Business: Common
Category: Security

Scope:

Continued development of the telecommunications network for Avangrid Networks.

- Internet Protocol/ Multiprotocol Label Switching (IP/MPLS routing)
- Dense Wavelength-division Multiplex (DWDM) optical transport
- Management of the services and nodes

Reasons and Benefits:

- Flexible telecommunications network that supports multiple services at once allowing as well for service isolation and self-healing resiliency.
- Increased Optical Fiber Optimization: by means of DWDM technology several 10G services can share the same strands of fibers.
- Decreased time to execution: by means of Reconfigurable optical add-drop multiplexer- Dense Wavelength-division Multiplex (ROADM DWDM) technology new optical lambdas can be deployed from the Network Management Center without rolling out trucks
- Using IP/MPLS technology, services are isolated ones from the others
- Increased Service Flexibility: by means of IP/MPLS routing technology, new services can be deployed on the network without disrupting existing services
- Service management solution: Completed the planning for Service (ticketing, asset, change) management system to be deployed in the ASD and leveraged by all operating companies.

The ASD Program is designed to cover technical refresh (Lifecycle) of existing hardware infrastructure and expansion of core cybersecurity tools/capabilities.

Examples of equipment include Network (switches, routers, load balancers, taps, firewalls, data diodes, Network Time Protocol -NTP- GPS clocks) Servers (HCI, bare metal, storage arrays, backup appliances) Workstations (PCs, Laptops (TCAs), Monitors, peripherals) Data Center environmental equipment (DCIM, Racks, Patch Panels)

As legacy equipment becomes obsolete, we no longer have vendor support coverage and will affect system reliability which will affect the stability of the operation.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
3,562	2,940	1,531	1,914	2,392

NYSEG

DRAGOS

Line of Business: Common
Category: Security

Scope:

DRAGOS brings advance analytics and visualization to industrial protocols on private networks via on-premises solutions and ability to share anonymized observations with government, peer utility and private sector partners. Additionally, the proactive and continuous intelligence and threat landscape monitoring provides real-time threat alerts for actionable internal response.

AVANGRID Operational Smart Grids (OSG) has 11 datacenters in which to implement mitigation, supporting 14 lines of businesses, where 126 third party interconnections must be mitigated. Critical Infrastructure Protection (CIP) must be separate implementation per interpretation from the ERO.

Our firewalls may allow many unmonitored connections without sufficient intrusion detection and threat analytics capabilities. Continuous monitoring suffers from a lack of visibility for these interfaces today. Action is required immediately, given the warnings from US Government intelligence reports, USA Office of the President Executive Orders in flight, the near daily news of attacks in the USA, and a need to have the right narrative for reliability and the life-safety of our customers.

Critical CIP-Medium substations and remote sites are vulnerable to insider cyber sabotage, attacks via removable media, vulnerabilities in software, potentially poor configuration or backdoors and gaps via wireless communication. Taken together, this represents a significant risk where there are no existing tools capable of monitoring at that level of depth. Actions are required to bolster security at the edge and ensure CIP-Medium assets are protected.

Reasons and Benefits:

- Mitigate cyber risk registered and managed by Corporate Risk. Comply with Corporate Governance and Cybersecurity Policy and Rules as sponsored by the Board of Directors.
- Establish a leadership position for grid security and build confidence in the AVANGRID Brand among stakeholders, regulatory authorities, agencies, peer utilities and whole of government Incident response.

- Provide network visibility where there are few tools or technologies capable of monitoring while providing both proactive coverage via continuous network monitoring as well as reactive (yet agile) response to identified threats that may have evaded traditional or 'IT-centric' technologies

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
0	222	116	2,502	512

NYSEG

Fire Protection

Line of Business: Common
Category: Security

Scope:

Design and installation/replacement of smoke detector/fire alarm system, mass notification systems, automated extinguisher monitoring systems, and fire suppression systems.

NYSEG's Fire Protection Program makes risk-based investments in the protection of people and assets based upon the following priorities:

High Priority: North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) locations. Fire Protection investments for NERC CIP locations reduce the risk of adverse impact to the electrical grid from fire events, especially to disadvantaged areas in NYSEG's service area. Critical gas operations are also classified as high priority investments given the high reliance on gas as a heating/energy source for NYSEG's customers.

Medium Priority: Service Centers and equipment supporting grid/gas infrastructure.

Low Priority: All other locations not identified as high/medium priority locations.

Reasons and Benefits:

This program addresses fire protection system projects to ensure the safety of our facilities as well as ensuring our systems are up to date and in compliance with local and federal requirements as well as the National Fire Protection Association (NFPA) Standards. Applicable Standards and Regulations for the State of New York are:

2020 Fire Code of New York State:

- Part 1228 of Title 19 New York Codes Rules &. Regulations (NYCRR) Section 1228.4 Carbon Monoxide Detection in Commercial Buildings
- OSHA 1910.38 Emergency Action Plans
- OSHA 1910.157 Portable fire extinguishers.
- NFPA 1, Fire Code
- NFPA 10, Standard for Portable Fire Extinguishers

- NFPA 13, Standard for the Installation of Sprinkler Systems.
- NFPA 12, Standard for the installation of Carbon Dioxide Extinguishing Systems
- NFPA 70, National Electric Code
- NFPA 72, National Fire Alarm and Signal Code
- NFPA 75, Standard for the Fire Protection of Informational Technology Equipment (Data Centers).
- NFPA 110, Standard for Emergency & Standby Power
- NFPA 111, Standard on Stored Electrical Energy
- NFPA 750, Standard for the installation of Water Mist Fire Protection Systems.
- NFPA 850, Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations.
- NFPA 851, Recommended Practice for Fire Protection for Electric Generating Plants and Current Converter Stations.
- NFPA 855, Standard for the Installation of Stationary Energy Storage Systems
- NFPA 2001, Standard for Clean Agent Fire Extinguishing Systems.
- NFPA 2010, Standard for the installation of Fixed Aerosol Fire-Extinguishing Systems

Fire protection projects include the design and installation/replacement of smoke detector/fire alarm systems, mass notification systems, automated extinguisher monitoring systems and fire suppression systems. Compliance with local and federal laws as well as applicable NFPA Standards reduces fire risk and loss to Company infrastructure by increasing resiliency to maintain operations. This improves AVANGRID's ability to maintain excellence in customer service through critical asset protection.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
2,300	2,300	2,300	2,875	3,019

NYSEG

Global Cybersecurity Directors Plan

Line of Business: Common
Category: Security

Scope:

All Operational Smart Grids (OSG) assets and systems for electric and gas transmission and distribution to improve the cybersecurity posture.

Reasons and Benefits:

On May 12, 2021, President Biden signed Executive Order 14028, “Improving the Nation’s Cybersecurity” to support our nation’s cybersecurity and protect the critical infrastructure and Federal Government networks underlying our nation’s economy and way of life.

To increase the cybersecurity posture to the organizations people, processes and technology, a Global Cybersecurity Directors Plan was initiated with a vision to increase the cybersecurity maturity using the National Institute of Standards and Technology (NIST) Cybersecurity Framework (NIST CSF). The initiative includes interviewing stakeholders throughout the company and assessing AVANGRID’s current state and producing a current state score. AVANGRID’s cybersecurity appetite was to reach a 3.0 or higher on a scale of 0 to 4.0 where 3.0 is to implement repeatable cybersecurity processes. The firm that conducted the initial assessment then produced a plan on how to get to the desired maturity level through the following projects: Governance, Policies, and Processes (GPP); Asset Management (ASM); Risk Management, Strategy, and Compliance (RMSC); Supply Chain (SC); Identity Management and Access Control (IMAC); Systems Security (SS); Network Security (NS); Data Security (DS); Security Training and Awareness (STA); Physical Security and Safety (PSS); Threat and Vulnerability Management (TVM); Security Monitoring and Detection (SMD); and Resilience, Incident Response and Recovery (RIRR).

Overall, the reason to further mature the organizations cybersecurity posture is to keep up with the growing demand to protect the company’s critical assets by utilizing a nationally accepted framework, allowing the company to further prepare for cyber-attacks to the critical energy industry in an era of growing geopolitical tensions and activists. The program allows the Operations Technologies department to make necessary enhancements, including supporting staff to ensure productivity, operations, and communications flow appropriately prior to, during, and after a cyber event occurs.

The benefits include better collaboration between subject matter experts, mid-level management, and company executives and streamlining event handling and case management from an event to an investigation, throughout an incident, and post-incident on an Operations Technology level – protecting the crown jewels of the organization. In addition, it adds in a comprehensive security team that includes Cyber Architecture; Cyber Governance and Risk Management (including Training and Awareness), Cyber Operations, Cyber Identity and Access Management (including Asset and Change Management), Cyber Detection and Response (including Monitoring), Cyber Recovery, Cyber Relations and Cyber Program Management Office (Financials).

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
6,468	4,868	2,872	3,589	4,487

NYSEG

Security Operations Center

Line of Business: Common
Category: Security

Scope:

A robust Security Operations Center (SOC) will enable Corporate Security to effectively deploy the organizational structures, redundancy, and capabilities needed and is critical in cost avoidance, business, and operational risk reduction, and in the protection of our employees, customers, and vendors.

Reasons and Benefits:

Currently, AVANGRID Corporate Security's Security Operation Center is operating as an extremely limited, primarily reactive "guards and gates" SOC. It possesses primitive ability to provide security support services across the AVANGRID footprint, which encompasses contracted security guards conducting physical security alarm management (alarms, cameras, etc.).

To determine the need to construct a SOC, AVANGRID Corporate Security conducted a variety of comprehensive analyses, by internal and external third-party experts, to assess the current SOC's maturity as well as necessary enhancements for optimization. In addition to conducting an internal analysis, AVANGRID hired the Security Executive Council (SEC), an analytics firm specialized in SOC operations, to assess AVANGRID's current SOC structure and broader maturity. The SEC gave AVANGRID a SOC maturity rating of 1 out of 5, encapsulating limited, reactive, and manually intensive physical security event remediation (i.e., alarm monitoring and response, camera, badge management), which is highly ineffective and labor intensive. Corporate Security personnel also conducted extensive benchmarking with energy peers, locally (i.e., Eversource), regionally (i.e., Con Edison, PSE&G), and nationally (i.e., Duke Energy). Resourcing, capability limitations, lacking redundancy capabilities and insufficient tools and technologies were glaringly apparent.

Benefits from the SOC assessment includes the following:

- Centralized Real -Time Threat Monitoring: Centralizing all salient security data points across the Company into one central database or 'pane of glass', with the capability to analyze and detect key threat trends in-real time enhances our ability to prevent and/or mitigate key security events (physical, cyber, intersectional, etc.). In terms of incident response, the modernized SOC will support accelerated

identification of security events and potential incidents with an emphasis on reducing response times and maintaining incident metrics to meet notification and reporting requirements at the state and federal levels (i.e., SEC RIN 3235-AM89 Cybersecurity Risk Management, Strategy, and Governance rules – a cybersecurity incident must be disclosed within four (4) days of determining the incident is 'material').

- Needed Redundancy and Resilience: At present, the company only has one SOC located in Rochester, New York, capable of limited monitoring of physical security movements, including rudimentary alarm, badge, and camera management. This presents acute redundancy/resiliency risks, particularly if that one SOC is rendered non-operational due to natural or manmade events. The implementation of a second SOC, with full interoperability between both locations, provides functional reciprocity, which is an industry standard of best practice. This modernized configuration will allow the Company to maintain alarm management, badge access and continuity of critical services during an event.

AVANGRID's current SOC capabilities have not matured to the same standard of best practice as industry peers. As a case in point, physical security attacks against substations have reached a ten-year high while 2022 cyber-attacks increased by 40% and are expected to surpass those numbers in 2023 (including data breach impacts averaging $4.5 million in company costs[1]). AVANGRID's ability to improve its threat picture through improved data centralization will streamline the company's analysis and response times, in a field where seconds can reduce millions of dollars in company cost. Not augmenting the current SOC configuration with an additional SOC will leave the Company exposed to rapidly expanding attacks, will hamper the Company's ability to provide un-interrupted security services and reduces the company's ability to fully leverage recently installed physical security system enhancements, completed during the ASD (AVANGRID Secure Domain) project.

[1] Anderson, Joy LePree. "Global cyberattacks increased 38% in 2022", *Security Magazine* (January 20, 2023), https://www.securitymagazine.com/articles/98810-global-cyberattacks-increased-38-in-2022#:~:text=New%20data%20on%20cyberattack%20trends,according%20to%20Check%20Point%20Research.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
792	0	0	0	0

NYSEG

Security Operations Center Program

Line of Business: Common
Category: Security

Scope:

Replacement and expansion of aged and obsolete security systems at the Security Operations Center (SOC). The SOC will serve as the confluence of all AVANGRID's security capabilities and data feeds, serving as the "nerve center" for real-time organizational security management, including threat monitoring, analysis, threat mitigation, and response.

Reasons and Benefits:

Equipment projected to have reached end of life status (i.e., lifecycle planning costs on depreciated and/or non-useful assets) and must be replaced to maintain useful deployment. Additionally installing new state-of-the-art surveillance and detection technology will improve NYSEG's risk posture. New technology will give the SOC a better way to monitor and detect potential threats to critical infrastructure.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	6	11	23	45

NYSEG

Security Program Planning

Line of Business: Common
Category: Security

Scope:

Replacement and expansion of aged and obsolete security systems at occupied work sites, such as operations centers and critical North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) infrastructure sites, such medium rated NERC/CIP electrical substations. Additionally, the program includes implementation of security systems at sites where security systems are not in place such as low rated NERC/CIP electrical substations and natural gas gate stations.

Reasons and Benefits:

Equipment that is projected to have reached end of life status (i.e., lifecycle planning costs on depreciated and/or non-useful assets) and is required to be replaced to maintain useful deployment. Additionally, installing security equipment at locations where it does not currently exist will improve NYSEG's risk posture with technology updates, increased, and situational awareness at important locations throughout our electric and gas networks.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	8,081	5,262	9,146	9,146

NYSEG

Tripwire Implementation

Line of Business: Common
Category: Security

Scope:

Three major factors drive the needs for this project. First, compliance procedures and toolsets are different at all Operational Smart Grids (OSG) Infrastructure operating companies. In many cases, solutions involving manual processes are deployed to fit a specific need. This creates compliance silos which increases reporting complexity and creates inefficiencies and reduces accuracy. Second, lack of visibility into core system performance and configuration metrics reduces overall Bulk Energy System (BES) Reliability. Finally, environments outside of the highly regulated Electric systems often have inadequate or missing Cyber Security controls. To arrive at the selection of the Tripwire Suite, an evaluation of the current toolsets used across the infrastructure group was performed. Proof of Concept (POCs) were done for product suites that met the need for addressing the above issues and the Tripwire Suite was found to be the best fit.

Reasons and Benefits:

Key Benefits:

1. Improved Visibility and Enhancements to Cyber Security for all OSG Infrastructure managed systems. Direct impacts on BES Reliability.
2. NERC Critical Infrastructure Protection (CIP) Compliance Automation
3. Toolset Standardization and Consolidation

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	0	1,318	1,648	2,059

Common Security

RG&E

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Security Operations Center Program 854
Security Program Planning 855

RG&E

ASD Security System Installation

Line of Business: Common
Category: Security

Scope:

The Avangrid Security Domain (ASD) Security Systems Installation program relates to security work on various facilities to continue implementing the five-year Security Deployment plan. Systems to be installed are based on a security tier for each facility based on risk. Tier 1 and 2 facilities (e.g., bulk substations) receive card access control systems, Public Address (PA) systems, video surveillance, video analytics and thermal cameras (Tier 1 also receive additional physical hardening due to critical nature). Tier 3 facilities (e.g., large office/service center, cash office, hydro) receive card access control systems, video surveillance and video analytics. Tier 4 facilities (e.g., small offices, store yards) receive card access control systems and video surveillance. Additional work includes the enhancement of communication networks to allow for the transport of video back to the Security Operations Center (SOC) for remote monitoring of security network, access control and video monitoring systems. to allow for the transport of video back to the SOC for remote monitoring of security network, access control and video monitoring systems.

Reasons and Benefits:

Compliance with the North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) standards, including:

CIP-002 BES Cyber System Categorization
CIP-003 Security Management Controls
CIP-004 Personnel & Training
CIP-006 Physical Security of BES Cyber Systems
CIP-011 Information Protection
CIP-013 Supply Chain Risk Management
CIP-014 Physical Security

In addition, this program is designed to meet regulations defined by Homeland Security, and other State, local and Federal laws to maintain security of personnel and asset protection.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
994	0	0	0	0

RG&E

AVANGRID Security Domain Infrastructure

Line of Business: Common
Category: Security

Scope:

- The Avangrid Security Domain Infrastructure program involves the replacement of data center equipment that is nearing its end-of-life. The equipment requiring replacement is (Hyper converged Infrastructure – virtualized servers) storage arrays, network equipment (routers and switches), and firewalls. These are devices that serve hundreds of applications services. We rotate lifecycle based on security zones and the end of their useful life.

- To stay current with technology, the lifecycle of system tools is required to provide the appropriate protections and adhere to the strict compliance requirements associated with the NERC-CIP regulations. Not all systems fall under the NERC-CIP requirements, but through leveraging a centralized security solution, the other areas that do not fall under the purview of the compliance requirements leverage the benefits of this centralized solution. This comprehensive approach to security provides standards to provide more capability and efficiency to our customers.

- There is not just one tool or system that can provide the needed security measures and controls to properly protect critical systems. A collection of tools and systems are required to work together to meet the challenges associated with cybersecurity. Therefore, many tools are needed with compatibility across the tools to properly perform the various protection controls to secure systems.

- Below is the list of equipment to provide effective security measures and proper lifecycle for continued relevant support of our cybersecurity controls and systems.

    - Firewalls
    - Anti-Virus/ Anti-Malware
    - Baseline Configuration Management
    - Asset Management
    - Configuration and Change Management
    - Ticketing
    - Identity Management
    - Access Management

- Automation of Manual Processes
- Protected Information Repositories
- Quality Assurance
- Networking Detection and Anomaly Analytics
- Cybersecurity Systems Operational Center (CSOC)
- Network Deduplication and Deep Packet Inspection
- Cyber Vulnerability Scanning
- NERC-CIP compliance
- Data Diodes
- SEIM

Reasons and Benefits:

The Avangrid Security Domain Program is designed to provide a secure infrastructure and centralized Physical security system. This includes the professional services and hardware/software lifecycle of all direct and auxiliary systems which is comprised of advanced cybersecurity technologies and capabilities. In all the capabilities listed below, the goal is to standardize and expand capabilities across common platforms.

- Increased Centralized Cybersecurity Monitoring: Centralizing the cybersecurity monitoring, optimizes resources and avoids redundancy across operating companies. Accomplished through the implementation of Dragos and LogRhythm NetMon.
- Increased Situational Awareness Across AVANGRID: Consolidating cybersecurity monitoring and providing analysts with a single pane of glass will allow AVANGRID to gain a higher degree of situational awareness across the organization and its operating companies. Accomplished through the implementation of Dragos and LogRhythm Platform Manager.
- Increased Efficiency and Enablement: Cybersecurity monitoring within the ASD is driven by Meet-Me-Points (MMP), which provide traffic aggregation, deduplication, and decryption capabilities, without increasing the load on the network infrastructure. Accomplished through the implementation of Dragos, LogRhythm NetMon, Gigamon, and Cisco equipment.
- Increased Network Detection and Anomaly Analytics Capabilities: The Dragos platform was deployed across all ASD environments and network interfaces for improved visibility of ASD network activity against expected traffic flow baselines for anomaly detection.
- Engineered baseline configuration and monitoring tool: Design completed to put Tripwire into ASD environments.
- Service management solution: Completed the planning for the Service Management (ticketing, asset, change) system to be deployed in the ASD and leveraged by all operating companies.

In addition to the above benefits, this program includes technical refresh or replacement of the underlying infrastructure that ages out or goes end of life. This program keeps datacenter equipment (servers, switches, routers, backup appliances, storage arrays, firewalls, and other data center centric equipment) that services, physical security, telecom, and cyber security current and under manufacturers support. Without this constant refreshment of ageing computer equipment these products would become obsolete.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
2,688	1,344	246	307	384

RG&E

AVANGRID Security Domain Telecommunications

Line of Business: Common
Category: Security

Scope:

Continued development of the telecommunications network for AVANGRID Networks.

- Internet Protocol/ Multiprotocol Label Switching (IP/MPLS routing)
- Dense Wavelength-division Multiplex (DWDM) optical transport
- Management of the services and nodes

Reasons and Benefits:

- Flexible telecommunications network that supports multiple services at once allowing as well for service isolation and self-healing resiliency.
- Increased Optical Fiber Optimization: by means of DWDM technology several 10G services can share the same strands of fibers.
- Decreased time to execution: by means of Reconfigurable optical add-drop multiplexer- Dense Wavelength-division Multiplex (ROADM DWDM) technology new optical lambdas can be deployed from the Network Management Center without rolling out trucks
- Using IP/MPLS technology, services are isolated ones from the others
- Increased Service Flexibility: by means of IP/MPLS routing technology, new services can be deployed on the network without disrupting existing services
- Service management solution: Completed the planning for Service (ticketing, asset, change) management system to be deployed in the ASD and leveraged by all operating companies.

The ASD Program is designed to cover technical refresh (Lifecycle) of existing hardware infrastructure and expansion of core cybersecurity tools/capabilities.

Examples of equipment include Network (switches, routers, load balancers, taps, firewalls, data diodes, Network Time Protocol -NTP- GPS clocks) Servers (HCI, bare metal, storage arrays, backup appliances) Workstations (PCs, Laptops (TCAs), Monitors, peripherals) Data Center environmental equipment (DCIM, Racks, Patch Panels)

As legacy equipment becomes obsolete, we no longer have vendor support coverage and will affect system reliability which will affect the stability of the operation.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
1,677	1,377	1,142	0	0

RG&E

DRAGOS

Line of Business: Common
Category: Security

Scope:

DRAGOS brings advance analytics and visualization to industrial protocols on private networks via on-premises solutions and ability to share anonymized observations with government, peer utility and private sector partners. Additionally, the proactive and continuous intelligence and threat landscape monitoring provides real-time threat alerts for actionable internal response.

AVANGRID Operational Smart Grids (OSG) has 11 datacenters in which to implement mitigation, supporting 14 lines of businesses, where 126 third party interconnections must be mitigated. Critical Infrastructure Protection (CIP) must be separate implementation per interpretation from the ERO.

Our firewalls may allow many unmonitored connections without sufficient intrusion detection and threat analytics capabilities. Continuous monitoring suffers from a lack of visibility for these interfaces today. Action is required immediately, given the warnings from US Government intelligence reports, USA Office of the President Executive Orders in flight, the near daily news of attacks in the USA, and a need to have the right narrative for reliability and the life-safety of our customers.

Critical CIP-Medium substations and remote sites are vulnerable to insider cyber sabotage, attacks via removable media, vulnerabilities in software, potentially poor configuration or backdoors and gaps via wireless communication. Taken together, this represents a significant risk where there are no existing tools capable of monitoring at that level of depth. Actions are required to bolster security at the edge and ensure CIP-Medium assets are protected.

Reasons and Benefits:

- Mitigate cyber risk registered and managed by Corporate Risk. Comply with Corporate Governance and Cybersecurity Policy and Rules as sponsored by the Board of Directors.
- Establish a leadership position for grid security and build confidence in the

AVANGRID Brand among stakeholders, regulatory authorities, agencies, peer utilities and whole of government Incident response.

- Provide network visibility where there are few tools or technologies capable of monitoring while providing both proactive coverage via continuous network monitoring as well as reactive (yet agile) response to identified threats that may have evaded traditional or 'IT-centric' technologies.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	140	140	1,175	58

RG&E

Fire Protection

Line of Business: Common
Category: Security

Scope:

Design and installation/replacement of smoke detector/fire alarm system, mass notification systems, automated extinguisher monitoring systems and fire suppression systems:

RG&E's Fire Protection Program makes risk-based investments in the protection of people and assets based upon the following priorities:

High Priority: North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) locations. Fire Protection investments for NERC CIP locations reduce the risk of adverse impact to the electrical grid from fire events, especially to disadvantaged areas in RG&E's service area. Critical gas operations are also classified as high priority investments given the high reliance on gas as a heating/energy source for RG&E's customers.

Medium Priority: Service Centers and equipment supporting grid/gas infrastructure.

Low Priority: All other locations not identified as high/medium priority locations.

Reasons and Benefits:

This program addresses fire protection system projects to ensure the safety of our facilities as well as ensuring our systems are up to date and in compliance with local and federal requirements as well as the National Fire Protection Association (NFPA) Standards. Applicable Standards and Regulations for the State of New York are:

2020 Fire Code of New York:

- Part 1228 of Title 19 New York Codes Rules &. Regulations (NYCRR) Section 1228.4 Carbon Monoxide Detection in Commercial Buildings
- OSHA 1910.38 Emergency Action Plans
- OSHA 1910.157 Portable fire extinguishers.
- NFPA 1, Fire Code
- NFPA 10, Standard for Portable Fire Extinguishers

- NFPA 13, Standard for the Installation of Sprinkler Systems.
- NFPA 12, Standard for the installation of Carbon Dioxide Extinguishing Systems
- NFPA 70, National Electric Code
- NFPA 72, National Fire Alarm and Signal Code
- NFPA 75, Standard for the Fire Protection of Informational Technology Equipment (Data Centers).
- NFPA 110, Standard for Emergency & Standby Power
- NFPA 111, Standard on Stored Electrical Energy
- NFPA 750, Standard for the installation of Water Mist Fire Protection Systems.
- NFPA 850, Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations.
- NFPA 851, Recommended Practice for Fire Protection for Electric Generating Plants and Current Converter Stations.
- NFPA 855, Standard for the Installation of Stationary Energy Storage Systems
- NFPA 2001, Standard for Clean Agent Fire Extinguishing Systems.
- NFPA 2010, Standard for the installation of Fixed Aerosol Fire-Extinguishing Systems

Fire protection projects include the design and installation/replacement of smoke detector/fire alarm systems, mass notification systems, automated extinguisher monitoring systems and fire suppression systems. Compliance with local and federal laws as well as applicable NFPA Standards reduces fire risk and loss to Company infrastructure by increasing resiliency to maintain operations. This improves AVANGRID's ability to maintain excellence in customer service through critical asset protection.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
690	690	690	1,363	1,431

RG&E

Global Cybersecurity Directors Plan

Line of Business: Common
Category: Security

Scope:

All Operational Smart Grids (OSG) assets and systems for electric and gas transmission and distribution to improve the cybersecurity posture.

Reasons and Benefits:

On May 12, 2021, President Biden signed Executive Order 14028, “Improving the Nation’s Cybersecurity” to support our nation’s cybersecurity and protect the critical infrastructure and Federal Government networks underlying our nation’s economy and way of life.

To increase the cybersecurity posture to the organizations people, processes and technology, a Global Cybersecurity Directors Plan was initiated with a vision to increase the cybersecurity maturity using the National Institute of Standards and Technology (NIST) Cybersecurity Framework (NIST CSF). The initiative includes interviewing stakeholders throughout the company and assessing AVANGRID’s current state and producing a current state score. AVANGRID’s cybersecurity appetite was to reach a 3.0 or higher on a scale of 0 to 4.0 where 3.0 is to implement repeatable cybersecurity processes. The firm that conducted the initial assessment then produced a plan on how to get to the desired maturity level through the following projects: Governance, Policies, and Processes (GPP); Asset Management (ASM); Risk Management, Strategy, and Compliance (RMSC); Supply Chain (SC); Identity Management and Access Control (IMAC); Systems Security (SS); Network Security (NS); Data Security (DS); Security Training and Awareness (STA); Physical Security and Safety (PSS); Threat and Vulnerability Management (TVM); Security Monitoring and Detection (SMD); and Resilience, Incident Response and Recovery (RIRR).

Overall, the reason to further mature the organizations cybersecurity posture is to keep up with the growing demand to protect the company’s critical assets by utilizing a nationally accepted framework, allowing the company to further prepare for cyber-attacks to the critical energy industry in an era of growing geopolitical tensions and activists. The program allows the Operations Technologies department to make necessary enhancements, including supporting staff to ensure productivity, operations, and communications flow appropriately prior to, during, and after a cyber event occurs.

The benefits include better collaboration between subject matter experts, mid-level management, and company executives and streamlining event handling and case

management from an event to an investigation, throughout an incident, and post-incident on an Operations Technology level – protecting the crown jewels of the organization. In addition, it adds in a comprehensive security team that includes Cyber Architecture; Cyber Governance and Risk Management (including Training and Awareness), Cyber Operations, Cyber Identity and Access Management (including Asset and Change Management), Cyber Detection and Response (including Monitoring), Cyber Recovery, Cyber Relations and Cyber Program Management Office (Financials).

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	**2025**	**2026**	**2027**	**2028**
3,959	3,037	3,440	0	0

RG&E

Security Operations Center

Line of Business: Common
Category: Security

Scope:

A robust Security Operations Center (SOC) will enable Corporate Security to effectively deploy the organizational structures, redundancy, and capabilities needed and is critical in cost avoidance, business, and operational risk reduction, and in the protection of our employees, customers, and vendors.

Reasons and Benefits:

Currently, AVANGRID Corporate Security's Security Operation Center is operating as an extremely limited, primarily reactive "guards and gates" SOC. It possesses primitive ability to provide security support services across the AVANGRID footprint, which encompasses contracted security guards conducting physical security alarm management (alarms, cameras, etc.).

To determine the need to construct a SOC, AVANGRID Corporate Security conducted a variety of comprehensive analyses, by internal and external third-party experts, to assess the current SOC's maturity as well as necessary enhancements for optimization. In addition to conducting an internal analysis, AVANGRID hired the Security Executive Council (SEC), an analytics firm specialized in SOC operations, to assess AVANGRID's current SOC structure and broader maturity. The SEC gave AVANGRID a SOC maturity rating of 1 out of 5, encapsulating limited, reactive, and manually intensive physical security event remediation (i.e., alarm monitoring and response, camera, badge management), which is highly ineffective and labor intensive. Corporate Security personnel also conducted extensive benchmarking with energy peers, locally (i.e., Eversource), regionally (i.e., Con Edison, PSE&G), and nationally (i.e., Duke Energy). Resourcing, capability limitations, lacking redundancy capabilities and insufficient tools and technologies were glaringly apparent.

Benefits from the SOC assessment includes the following:

- Centralized Real -Time Threat Monitoring: Centralizing all salient security data points across the Company into one central database or 'pane of glass', with the capability to analyze and detect key threat trends in-real time enhances our ability to prevent and/or mitigate key security events (physical, cyber, intersectional, etc.). In terms of incident response, the modernized SOC will support accelerated

identification of security events and potential incidents with an emphasis on reducing response times and maintaining incident metrics to meet notification and reporting requirements at the state and federal levels (i.e., SEC RIN 3235-AM89 Cybersecurity Risk Management, Strategy, and Governance rules – a cybersecurity incident must be disclosed within four (4) days of determining the incident is 'material').

- Needed Redundancy and Resilience: At present, the company only has one SOC located in Rochester, New York, capable of limited monitoring of physical security movements, including rudimentary alarm, badge, and camera management. This presents acute redundancy/resiliency risks, particularly if that one SOC is rendered non-operational due to natural or manmade events. The implementation of a second SOC, with full interoperability between both locations, provides functional reciprocity, which is an industry standard of best practice. This modernized configuration will allow the Company to maintain alarm management, badge access and continuity of critical services during an event.

AVANGRID's current SOC capabilities have not matured to the same standard of best practice as industry peers. As a case in point, physical security attacks against substations have reached a ten-year high while 2022 cyber-attacks increased by 40% and are expected to surpass those numbers in 2023 (including data breach impacts averaging $4.5 million in company costs[1]). AVANGRID's ability to improve its threat picture through improved data centralization will streamline the company's analysis and response times, in a field where seconds can reduce millions of dollars in company cost. Not augmenting the current SOC configuration with an additional SOC will leave the Company exposed to rapidly expanding attacks, will hamper the Company's ability to provide un-interrupted security services and reduces the company's ability to fully leverage recently installed physical security system enhancements, completed during the ASD (AVANGRID Secure Domain) project.

[1] Anderson, Joy LePree. "Global cyberattacks increased 38% in 2022", *Security Magazine* (January 20, 2023), https://www.securitymagazine.com/articles/98810-global-cyberattacks-increased-38-in-2022#:~:text=New%20data%20on%20cyberattack%20trends,according%20to%20Check%20Point%20Research.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
400	0	0	0	0

RG&E

Security Operations Center Program

Line of Business: Common
Category: Security

Scope:

Replacement and expansion of aged and obsolete security systems at the Security Operations Center (SOC). The SOC will serve as the confluence of all AVANGRID's security capabilities and data feeds, serving as the "nerve center" for real-time organizational security management, including threat monitoring, analysis, threat mitigation, and response.

Reasons and Benefits:

Equipment projected to have reached end of life status (i.e., lifecycle planning costs on depreciated and/or non-useful assets) and must be replaced to maintain useful deployment. Additionally installing new state-of-the-art surveillance and detection technology will improve RG&E's risk posture. New technology will give the SOC a better way to monitor and detect potential threats to critical infrastructure.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	3	6	11	23

RG&E

Security Program Planning

Line of Business: Common
Category: Security

Scope:

Replacement and expansion of aged and obsolete security systems at occupied work sites, such as operations centers and critical North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) infrastructure sites, such medium rated NERC/CIP electrical substations. Additionally, the program includes implementation of security systems at sites where security systems are not in place such as low rated NERC/CIP electrical substations and natural gas gate stations.

Reasons and Benefits:

Equipment that is projected to have reached end of life status (i.e., lifecycle planning costs on depreciated and/or non-useful assets) and is required to be replaced to maintain useful deployment. Additionally installing security equipment at locations where it does not currently exist will improve RG&E's risk posture with technology updates, increased, and situational awareness at important locations throughout our electric and gas networks.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
0	2,325	2,778	2,118	2,118

Common Training

NYSEG

Training – Fleet 857
Training Equipment And Tools 858
Training Facility 859
Training Technology Projects 861

NYSEG

Training – Fleet

Line of Business: Common
Category: Training

Scope:

Fleet vehicles and equipment will be purchased for the training yard specifically. Electric and Gas vehicles are in scope for this project. Equipment includes a gas van, mini-excavator, small off-road equipment as well as other additions prioritized by training requirement.

Reasons and Benefits:

New additions to fleet will provide for realistic re-creation of day-to-day scenarios for trainees on equipment used in the field. These real-world simulations provide for greater speed to mastery and increased safety through practice. Training with fleet used as part of trainee's job enhances efficiency for the customer and helps lead to better emergency response. New vehicles also create increased student engagement when presenting familiar scenarios to those seen in the field.

Equipment such as side by side vehicles and scissor lifts enhance the training product. The ability to move tools and equipment around the training yard more efficiently ensures efficiency when training apprentices on site at training yards. Scissor lifts can be utilized not only to complete work tasks, but also allow trainers to provide more in-depth education to students while climbing or performing rescue competencies.

There are also direct advantages with respect to safety. New fleet have increased safety features to demonstrate as well as increase safety during training activities. This fleet would also be more environmentally safe as there is decreased risk for leaking fluids due to breakage.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
78	78	78	419	0

NYSEG

Training Equipment And Tools

Line of Business: Common
Category: Training

Scope:

This is a project to replace and enhance equipment for the training department. Equipment replacements include, but are not limited to, McElroy Tapping equipment, PowerComm PLC application simulator for substation and meter training, Mueller tapping equipment, Adapter test sets, Megger PQ analyzer kits, 3 Phase Recloser for training, Doble Sets, Rangefinder for electric field, and safety related equipment such as Timpson Trainer to give safe live line training scenarios. Scope will continuously be defined to align with operational changes with regard to equipment and tooling.

Reasons and Benefits:

Alignment with mandated compliance training to build field trainee competence. Training with equivalent tooling to what is used in the field promotes confidence and shorter time mastery. Concepts with tools are relevant, but many tools and equipment have subtle differences in operation that effect the learners time to mastery. Pending regulations require gas training prior to being qualified. Project is in collaboration with Gas and Electric Operations. Increased realistic training scenarios at training yard provide for a safer and more qualified workforce when performing work in the field. Project includes cash flows to recreate real world scenarios in a controlled and safe environment allowing students to actively learn with reduced consequence to life, property, and infrastructure.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
150	188	188	250	250

NYSEG

Training Facility

Line of Business: Common
Category: Training

Scope:

Project includes construction of new two-story state of the art training facility to house Electric, Gas, and Field Customer Service Training in Johnson City, NY and any supplemental work required to construct building. Including an ancillary enclosed structure for 12 poles at 30-feet in height with a total clearance of 40-feet and a maximum capacity of 75 people to conduct pole top training.

All components of the project are focused on safety and building/maintaining a qualified workforce. Electric, Field Customer Service, and Gas Training are in scope for this project. Current Electric, Gas, and Field Customer Service training facilities are scattered throughout the 40+ acre yard. The new facility will bring all these areas together at one location to better leverage synergies amongst the programs in NY.

Reasons and Benefits:

Current training facilities are scattered throughout the 40-acre property causing logistical and safety concerns. Further, the capacity of the current facility is 50-60 students, the increased throughput at the facility improves safety and training concerns by accommodating approximately 220 students.

Benefits include added synergies across programs with workforce reporting to and training out of one facility. Safety concerns are decreased through advanced systems and facilities built to accommodate increased capacity. This includes parking, classroom size, classroom location with relation to outdoor facilities, emergency needs, etc.

Construction of a new building provides opportunities for significant advancements with training technology including several mixed reality platforms. With the available space and technology these platforms can be tested and deployed at scale to the field further creating a safer and more efficient workforce.

The facility will allow trainees a greater speed to mastery benefiting the customer by increase workforce capacity to reduce outage time as well an increase in public safety.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
263	263	375	0	0

NYSEG

Training Technology Projects

Line of Business: Common
Category: Training

Scope:

This project will develop an immersive learning experience for Electric and Gas Operations and Customer Service. Immersive learning includes Augmented Reality (AR) and Virtual Reality (VR) along with other mixed reality immerging technologies to support Technical Training in a repetitive safe environment. This project will purchase the headsets, related computing devices to support AR, VR and mixed reality creation and execution as well as the equipment to support the immersive learning environment initiative. Devices also include specialized cameras for digital twin model capture.

Reasons and Benefits:

The addition of technology enhancers for progression training will increase speed to mastery and reduce travel for training. In addition, there are added benefits related to reputational value (alignment w/peers), talent attraction and retention. The student benefits from being able to practice scenarios that they do not get to experience often in the field with great repetition. These technologies also provide a medium for testing, which can be leveraged as part of current Operator Qualification Regulations if approved. The Company is also working to enhance employee situational awareness to enhance the workforce. This directly impacts the customer through more robust/safe emergency response and customer service.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
19	8	23	320	320

Common Training

RG&E

Training Equipment And Tools 863
Training Technology Projects 864

RG&E

Training Equipment And Tools

Line of Business: Common
Category: Training

Scope:

This is a project to replace and enhance equipment for the training department. Equipment replacements include, but are not limited to, McElroy Tapping equipment, PowerComm PLC application simulator for substation and meter training, Mueller tapping equipment, Adapter test sets, Megger PQ analyzer kits, 3 Phase Recloser for training, Doble Sets, Rangefinder for electric field, and safety related equipment such as Timpson Trainer to give safe live line training scenarios. Scope will continuously be defined to align with operational changes with regard to equipment and tooling.

Reasons and Benefits:

Alignment with mandated compliance training to build field trainee competence. Training with equivalent tooling to what is used in the field promotes confidence and shorter time mastery. Concepts with tools are relevant, but many tools and equipment have subtle differences in operation that effect the learners time to mastery. Pending regulations require gas training prior to being qualified. Project is in collaboration with Gas and Electric Operations. Increased realistic training scenarios at training yard provide for a safer and more qualified workforce when performing work in the field. Project includes cash flows to recreate real world scenarios in a controlled and safe environment allowing students to actively learn with reduced consequence to life, property, and infrastructure.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
38	94	0	125	0

RG&E

Training Technology Projects

Line of Business: Common
Category: Training

Scope:

This project will develop an immersive learning experience for Electric and Gas Operations and Customer Service. Immersive learning includes Augmented Reality (AR) and Virtual Reality (VR) along with other mixed reality immerging technologies to support Technical Training in a repetitive safe environment. This project will purchase the headsets, related computing devices to support AR, VR and mixed reality creation and execution as well as the equipment to support the immersive learning environment initiative. Devices also include specialized cameras for digital twin model capture.

Reasons and Benefits:

The addition of technology enhancers for progression training will increase speed to mastery and reduce travel for training. In addition, there are added benefits related to reputational value (alignment w/peers), talent attraction and retention. The student benefits from being able to practice scenarios that they do not get to experience often in the field with great repetition. These technologies also provide a medium for testing, which can be leveraged as part of current Operator Qualification Regulations if approved. The Company is also working to enhance employee situational awareness to enhance the workforce. This directly impacts the customer through more robust/safe emergency response and customer service.

Five Year Capital Plan

All amounts shown below in thousands ($000's)

2024	2025	2026	2027	2028
10	7	2	80	80

Appendix C - Disadvantaged Communities

NYSEG Electric Projects 866
RG&E Electric Projects 872
NYSEG Gas Projects 875
RG&E Gas Projects 876
NYSEG Common Projects 877
RG&E Common Projects 881

NYSEG Electric Projects

NYSEG Electric Projects by Disadvantaged Communities
City of Binghamton
Substation Modernization - Noyes Island
City of Columbia
Craryville New Substation Breaker And Circuit Upgrade
City of Elmira
Hillcrest Transformer Replacement
City of Ithaca
Ithaca Electrification Project Phase 1
Ithaca Reliability Projects Phase 2 (Electrification)
Town of Amenia
North Brewster Reinforcement
Town of Arietta
Line 890 Rebuild
Town of Ausable
Line 880 Rebuild
Minor Capital Program
Overhead Crane Upgrades Project (Cadyville, Rainbow Falls)
Rainbow Falls Low Level Floodgate Upgrades & Downstream Abutment Resurfacing Project
Rainbow Falls Penstock Replacement Project
Rainbow Falls Power Canal and Gatehouse Upgrade Project
Rainbow Falls Powerhouse Entrance Hill Stabilization
Roof Upgrades (Cadyville, Rainbow Falls)
Town of Bradford
Bradford Concrete Spillway And Toe Resurfacing Improvement Project
Bradford Dam Automation Project
Town of Cheektowaga
Sloan Substation Load Relief
Town of Chesterfield
Line 880 Rebuild
Town of Indian Lake
Line 890 Rebuild
Town of Java
Java SS Microgrid BESS
Town of Long Lake
Line 890 Rebuild
Substation Modernization - Raquette Lake
Town of New Lebanon
Line 620 Rebuild - 34.5 kV
Town of North Dansville
Meyer Substation Rebuild
Town of Perry
South Perry New Sub & Trans Line Upgrade

NYSEG Electric Projects by Disadvantaged Communities
Town of Plattsburgh
Cadyville and Mill C Penstock Vent Valve House Upgrade Project
Mill C Powerhouse A Crane Upgrade Project
Mill C Spillway Concrete Improvements Project
Minor Capital Program
Saranac Plant Control Systems Upgrade Project
Town of Saranac
High Falls Intake Upgrade Project
High Falls Unit 2 Generator Rewind
High Falls Unit 3 Turbine Rebuild & Draft Tube Upgrade Project
Minor Capital Program
Saranac Plant Control Systems Upgrade Project
Town of Schaghticoke
Minor Capital Program
Town of Schuyler Falls
Cadyville and Kents Falls Facility and Window Upgrades
Cadyville and Mill C Penstock Vent Valve House Upgrade Project
Cadyville Right Abutment Spillway Improvements Project
Cadyville Switchgear And Generator Protection Upgrade Project
Cadyville Unit 1 Turbine Major Overhaul
Cadyville Upgrade Unit 1 & Unit 2 Turbine-Generator Cooling Water System Upgrade Project
Kents Falls - Capital Project
Kents Falls Dam Low Level Floodgate Project
Kents Falls Internal Riser Shaft and Tank Project
Kents Falls Unit 1 Generator Rewind Project
Kents Falls Unit 2 Turbine-Generator Major Rebuild
Kents Falls Unit 3 Turbine Major Rebuild with a New Turbine Runner
Kents Falls Upstream Training Wall Extension Project
Minor Capital Program
Overhead Crane Upgrades Project (Cadyville, Rainbow Falls)
Roof Upgrades (Cadyville, Rainbow Falls)
Saranac Plant Control Systems Upgrade Project
Town of Stephentown
Line 620 Rebuild - 34.5 kV
Town of Stillwater
Mechanicville Upstream Eel Ladder Project
Minor Capital Program
Upper Mechanicville Generator Protection and Controls Upgrade Project
Upper Mechanicville Intake Upgrades And Downstream Passage Project
Upper Mechanicville Plant Control System Upgrade Project
Upper Mechanicville Unit 1 Turbine-Generator Major Overhaul / Rebuild Project
Upper Mechanicville Unit 2 Generator Rewind
Town of West Seneca

NYSEG Electric Projects by Disadvantaged Communities
Gardenville Substation Rebuild
Town of Willsboro
Line 880 Rebuild
Village of Brewster
Dingle Ridge - 2nd Bank and 13.2 kV Conv
Village of Owego
Substation Modernization - South Owego
Village of Penn Yan
Milo Substation Rebuild
Village of Sloan
Sloan Substation Load Relief
Implementations/enhancements are system wide and not community specific.
AMI Integration for ISO
AMI Project
Animal Guard Program
Application Interface Upgrades
Battery Program
BES - Baker Hill
BES - Big Tree Road
BES - Border City
BES - Colliers
BES - Coopers Corners
BES - East Norwich
BES - Erie St
BES - Frog Valley
BES - Fuller Hollow / Langdon Rd
BES - Klinekill
BES - L981
BES - Sleight Rd
BES - South Oneonta Area - Fraser
BES - Ten Mile River to
BES Program - FERC Compliance
Breaker Replacement Program
Capital Automation NAT
CDG Billing Automation SAP
Circuit Sensor Implementation
CLCPA Phase 1 - 115 kV Line 961 Rebuild
CLCPA Phase 1 - Clarks Corners
CLCPA Phase 1 - Coddington 115/34.5 kV Substation Upgrades
CLCPA Phase 1 - Etna 115/34.5/4.8 kV Substation Full Rebuild
CLCPA Phase 1 - Jennison 115 46 kV Substation Upgrades
CLCPA Phase 1 - Lounsberry 115 12.5 kV Substation Full Rebuild
CLCPA Phase 1 - Oakdale Westover Solution

NYSEG Electric Projects by Disadvantaged Communities
CLCPA Phase 1 - Robinson Road 230/115/34.5 kV Substation Upgrades
CLCPA Phase 1 - Stolle Road 345/230/115/34.5 kV Substation Upgrades
CLCPA Phase 1 - Trans Line - 946 Rebuild
CLCPA Phase 1 - Trans Line - 949 Rebuild
CLCPA Phase 1 - Trans Line - 982 Rebuild
CLCPA Phase 1 - Trans Line 115kv - 962 Rebuild
CLCPA Phase 1 - Transmission Projects
CLCPA Phase 2 - Hickling RR
CLCPA Phase 2 - SS - Bath
CLCPA Phase 2 - SS - Bennett
CLCPA Phase 2 - SS - Eelpot
CLCPA Phase 2 - SS - Greenidge
CLCPA Phase 2 - SS - Hickling
CLCPA Phase 2 - SS - Hillside
CLCPA Phase 2 - SS - Montour Falls
CLCPA Phase 2 - SS - Stoney Ridge
CLCPA Phase 2 - SS - Terminal Upgrades
CLCPA Phase 2 - SS - Watercure
CLCPA Phase 2 Lines - Line 539
CLCPA Phase 2 Lines - Line 542
CLCPA Phase 2 Lines - Line 546
CLCPA Phase 2 Lines - Line 565
CLCPA Phase 2 Lines - Line 67
CLCPA Phase 2 Lines - Line 68
CLCPA Phase 2 Lines - Line 69
CLCPA Phase 2 Lines - Line 711
CLCPA Phase 2 Lines - Line 712
CLCPA Phase 2 Lines - Line 72
CLCPA Phase 2 Lines - Line 722
CLCPA Phase 2 Lines - Line 723
CLCPA Phase 2 Lines - Line 724
CLCPA Phase 2 Lines - Line 932
CLCPA Phase 2 Lines - Line 934
CLCPA Phase 2 Lines - Line 935
CLCPA Phase 2 Lines - Line 953
CLCPA Phase 2 Lines - Line 963
CLCPA Phase 2 Lines - Line 965
CLCPA Phase 2 Lines - Line 968
CLCPA Phase 2 Lines - Line 978
CLCPA Phase 2 Lines - Willis-Malone -Line 910
Cobble Hill Transformer Replacement
Cost Sharing
CYME Server - Hardware & Software NYSEG

NYSEG Electric Projects by Disadvantaged Communities
DER-ICCP connection to NYISO
Distribution Automation
Distribution Line
Distribution Line Deficiencies
Distribution Load Relief Program
DSIP - ADMS
DSIP - Enterprise Analytics
DSIP - GIS Enhancements GMEP
DSIP - Grid Automation
Electric Betterments
Electric Meters
Electric Reliability Application (ERA) Integration
FERC 881 Regulatory Compliance
FERC Order 2222
General Equipment - Ops-SO
General Equipment - Ops-T&D
Government Highway
IEDR Phase 2
IEDR Phase I
IEE Service Mode
Industrial and Commercial Service Connections
iTOA Implementation
LED Streetlighting
Line 803 - Croton to Tilly Foster Rebuild
Make Ready
Microgrid Management System
Mobile #2 Replacement
Mobile #4 Replacement
NERC Alert Priority III
NERC CIP Asset Transition
NERC Compliance Projects
New Scheduler
New York 21st Century Grid Plan (Cheektowaga)
NY Energy Storage RFP
NYSEG Transmission GIS and GIS Interface optimization
PCB Transformer Replacements
Pole Replace (WPIT) Program
Residential Line
Resiliency Automation, Hardening And Topology
REV - Electric Vehicles
Sackett Lake Replace Transformer
SCADA Automation
Service Connect

NYSEG Electric Projects by Disadvantaged Communities
Siemens Spectrum Upgrade to V7
Spectrum Planned Work Module
Storms Electric
Street Light
Substation Major Program
Substation Minor Capital
Substation Modernization - Clark Street
Substation Modernization - Wright Avenue
Swift Street - Stryker Avenue Load Transfer
T&S Asset Condition Replacement Program
TLD Replacements
Transmission Line
Transmission Reinforcement Program
Trip Saver
URD Replacement Program
Not going to Disadvantaged communities
DSIP - Advanced Planning Tools
FICS Scalability Plan
Homer City Capital Breakers & Upgrades
Oneonta Roxbury Run URD Rebuild
SMSI Field Deployment
Stephentown BESS
Wales Center Energy Storage
Wood Street New 3rd 345 115 kV Trans

RG&E Electric Projects

RG&E Electric Projects by Disadvantaged Communities
City of Canandaigua
GMI-Station 168 Service Area Reinforcements
City of Rochester
Aqueduct Re-Imagined
Genesee Street
Hydro Generation Station 2 Modernization Project
Minor Capital Program
Roof Upgrades (Station 5, Station 26, Station 160)
Station - Circuit 261
Station 2 Central Ave Dam Superstructure Modernization
Station 2 Generator Protection and Controls Upgrade Project
Station 2 Unit 1 Turbine Wicket Gate Bushing Upgrade
Station 210 - Circuit 207
Station 26 Generator Protection and Controls Upgrade Project
Station 26 Intake Deck Upgrades and Resurfacing
Station 26 Overhead Crane Upgrades Project
Station 29 Modernization Project
Station 34 Modernization Project
Station 37 Modernization Project
Station 43 Modernization Project
Station 5 Brewer Street Water Line and Paving Upgrade
Station 5 Gate 2 Rubplate, Bottom Seal, Hinge Upgrade and Rock Stabilization Project
Station 5 Gate 3 Rubplate, Rubplate Seal And Breastwall Seal Upgrade Project
Station 5 Gate 5 Rubplate, Bottom Seal, Hinge Upgrade and Rock Stabilization Project
Station 5 Generation Protection and Controls Upgrade Project
Station 5 Headgates / Dam Project
Station 5 Intake Stop Log Gantry Upgrade Project
Station 5 Old House Stabilization Project
Station 5 Penstock Lining and Coating Upgrade Project
Station 5 Powerhouse Access Road Soldier Wall Installation Project
Station 5 Powerhouse Backup Generator Upgrade
Station 5 Powerhouse Rock Scaling and Stabilization Project
Station 5 Powerhouse Turbine-Generator Rotating Equipment Guard Project
Station 5 Substation Mod
Station 5 Surge Tank Expansion Project
Station 5 Unit 1, Unit 2 & Unit 3 Turbine-Generator Guide Bearing Water Filtration Upgrade
Station 5 Unit 3 Turbine-Generator New Turbine Isolation Valve
Station 5 Water Conveyance (Tunnel) System Project
Town of Brighton
Station 82 Upgrades
Town Of Brighton Arc Light Conversion
Town of Farmington
Station 156 Circuit Upgrades
Station 156 Transf. Facilities Upgrade
Town of Greece
Station 46 - Replace #1 #3 Transf. Banks
Town of Hume
Minor Capital Program
Station 170 Dam Resurfacing Project
Town of Irondequoit
Station 51

RG&E Electric Projects by Disadvantaged Communities
Town of Mount Morris
Minor Capital Program
Station 160 Toe Scour Upgrade Project
Town of Perinton
Station 117
Village of Brewster
Webster Area Projects
Village of Sodus
Station 210 Modernization
Village of Wolcott
Station 192 Trans Facilities Upgrade
Implementations/enhancements are system wide and not community specific.
AMI Integration for ISO
AMI Project
Animal Guard Program
Application Interface Upgrades
Battery Program
BES - Hook Rd Upgrades (ST 127)
BES - L947
BES - Line 949 115 kV Line Addition
BES - Station 056 Reconfiguration
BES Program - FERC Compliance
Breaker Replacement Program
Capital Automation NAT
CDG Billing Automation SAP
Circuit Sensor Implementation
CLCPA Phase 2 - Lines - Line 906 CAPEX
CLCPA Phase 2 - SS - Terminal Upgrades
CLCPA Phase 2 - Transmission Projects
Comprehensive Area Studies
Cost Sharing
CYME Server - Hardware & Software RG&E
DER-ICCP connection to NYISO
Distribution Line
Distribution Line Deficiencies
Distribution Load Relief Program
DSIP - ADMS
DSIP - Enterprise Analytics
DSIP - GIS Enhancements GMEP
DSIP - Grid Automation
Electric Betterments
Electric Meters Program
Electric Reliability Application (ERA) Integration
FERC 881 Regulatory Compliance
FERC Order 2222
General Equipment - Ops-SO
General Equipment - Ops-T&D
Government Highway
Government Highway Majors Cap
IEDR Phase 2
IEDR Phase I
IEE Service Mode
Industrial and Commercial Service Connections

RG&E Electric Projects by Disadvantaged Communities
iTOA Implementation
LED Streetlighting
Make Ready
Microgrid Management System
NERC CIP Asset Transition
New Scheduler
NY Energy Storage RFP
PCB Transformer Replacements
Pole Replace (WPIT) Program
Replace DC Pilot Wire System
Residential Line
Resiliency Automation, Hardening And Topology
REV - Electric Vehicles
SCADA Automation
Service Connect
Siemens Spectrum Upgrade to V7
Spectrum Planned Work Module
Station 192 Circuit Upgrades
Station 43 Circuit Upgrades
Station 49 4KV to 12KV Upgrade
Storm Electric
Street Light
Substation Major Program
Substation Minor Program
TLD Replacements
Transmission GIS and GIS Interface optimization
Transmission Line
Transmission Reinforcement Program
Trip Saver
UG Cable Replacements
URD Replacement Program
Webster Area Substation
Not going to Disadvantaged communities
DSIP - Advanced Planning Tools
FICS Scalability Plan
SMSI Field Deployment

NYSEG Gas Projects

NYSEG Gas Projects by Disadvantaged Communities
City of Binghamton
Critical Valve Installations, Binghamton
City of Oneonta
Winney Hill Leak Prone Main 45#
Winney Hill Regulator Station Rebuild
Winney Hill Leak Prone Main 60#
Town of Maine
Boswell Hill 124 Psig Bare Steel Leak Prone Main
Town of Union
Boswell Hill 124 Psig Bare Steel Leak Prone Main
Town of Vestal
Boswell Hill 124 Psig Bare Steel Leak Prone Main
Village of Endicott
Boswell Hill 124 Psig Bare Steel Leak Prone Main
Implementations/enhancements are system wide and not community specific.
Regulators
Gas Meters
Gas Operations Departmental
Low Pressure Relief Valve Program
Regulator Modernization And Automation Program
Leak Prone Service Replacement Program
Government Jobs
New Services
Distribution Main Replacement
Large Government Jobs
Non Leak Prone Service Replacement Program
Distribution Mains New Business
AMI Project
Leak Prone Main Replacement Program
CGI Standardization Program
Track and Trace
Not going to Disadvantaged communities
Canandaigua Feeder Main Reinforcement Project
Vienna Road Regulator Station
Hebron Station Line J Retirement
Pleasant Grove Road Leak Prone Main
State Route 90 Leak Prone Main

RG&E Gas Projects

RG&E Gas Projects by Disadvantaged Communities
City of Rochester
Paul Road Leak Prone Main
Implementations/enhancements are system wide and not community specific.
Regulators
Gas Meters
Gas Operations Departmental
Regulator Modernization And Automation Program
Leak Prone Service Replacement Program
Government Jobs
New Services
Distribution Main Replacement
Large Government Jobs
Non Leak Prone Service Replacement Program
Distribution Mains New Business
AMI Project
Leak Prone Main Replacement Program
CGI Standardization Program
Track and Trace
Not going to Disadvantaged communities
CM-1 Pipeline Section 4 Chili GS To Ballantyne Road
Caledonia Station Rebuild
Mendon Gate Station

NYSEG Common Projects

NYSEG Common Projects by Disadvantaged Communities
City of Auburn
ASD Security System Installation
Auburn HVAC Upgrades
Auburn Service Center Projects
Fire Protection
Telecomm Vertical Builds
City of Binghamton
ASD Security System Installation
Consolidation KGO
ECC Projects
KGO Projects
City of Cortland
ASD Security System Installation
City of Elmira
ASD Security System Installation
Elmira Service Center Projects
Fire Protection
Geneva HVAC and Lighting Upgrades
Geneva Service Center East Projects
Geneva Service Center West Projects
City of Hornell
Hornell Service Center Projects
Solar Panels
City of Ithaca
ASD Security System Installation
Consolidation Ithaca
Solar Panels
Telecomm Vertical Builds
City of Lockport
Lockport Service Center Projects
Solar Panels
Telecomm Vertical Builds
City of Mechanicville
Mechanicville Service Center Projects
City of Norwich
Norwich Operations Center Projects
Norwich Truck Storage
City of Oneonta
Oneonta Service Center Projects
Solar Panels
City of Rochester
Rochester Consolidation
City of Utica
Waterville Roof
Town of Chatham
Chatham Chiller
Solar Panels
Town of Clifton Park
Solar Panels
Town of Henrietta
Rochester Consolidation

NYSEG Common Projects by Disadvantaged Communities
Town of Horseheads
Solar Panels
Town of Kirkwood
Solar Panels
Town of Lancaster
Fire Protection
Hamburg Operations Center Projects
Lancaster Service Center Garage Projects
Lancaster Service Center Projects
Solar Panels
Town of Liberty
Fire Protection
Liberty Service Center Projects
Town of Long Lake
Long Lake Building Expansion
Town of Lowville
Fire Protection
Town of Plattsburgh
Plattsburgh Service Center
Plattsburgh Site Upgrades
Town of Stamford
Stamford Operations Center Projects
Town of Vestal
Fire Protection
Solar Panels
Vestal Energy Control Center Upgrade
Town of Walton
Fire Protection
Walton Service Center Projects
Village of Albion
Telecomm Vertical Builds
Village of Brewster
Brewster Generator
Brewster HVAC
Brewster Service Center Projects
Brewster Truck Garage
Solar Panels
Village of Clinton
Telecomm Vertical Builds
Village of Cooperstown
Fire Protection
Village of Dresden
Fire Protection
Village of Elbridge
Fire Protection
Village of Gowanda
Gowanda Site Improvements
Telecomm Vertical Builds
Village of Johnson City
Training – Fleet
Training Equipment And Tools
Training Facility
Training Technology Projects

NYSEG Common Projects by Disadvantaged Communities
Village of Marcellus
Fire Protection
Village of Newark
Fire Protection
Village of Penn Yan
Fire Protection
Village of Trumansburg
Fire Protection
Village of Walden
Fire Protection
Village of Wolcott
ASD Security System Installation
Implementations/enhancements are system wide and not community specific.
AVANGRID Security Domain Infrastructure
AVANGRID Security Domain Telecommunications
BMS System
Client Project Requests And Integration Projects
Communications Tower, shelter Facility Improvements (Com)
CX Digital Journey
CYBER-SIEM
Data Center Consolidation
Distributed Generation Billing Program
DRAGOS
ECC Life cycle
End User Life Cycle
Energy Control Systems Infrastructure
Energy Manager Enhancements
Esri UN Deployment
EV Chargers
FAN + mobile technology refresh and expansion
FCC License Radio Spectrum purchase
Fleet Replacement Program
Global Cybersecurity Directors Plan
Global Telematics Solution
Historian And Analytic Upgrades Program
Infrastructure Security
Lab Equipment
Microsoft Licensing
Minor Projects
Mobility Apps Enhancement
NETENG Life Cycle
NETSEC Life Cycle
NMC Solar Winds
NY AMI Lifecycle
NY Gas Inspections
OMS Alignment ABB-Spectrum
OMS Enhancements
Orchestration Platform - Customer Journey
Regulatory Driven Efforts
S4 HANA Global SAP
S4 HANA Implementation
Security Operations Center
Security Operations Center Program

NYSEG Common Projects by Disadvantaged Communities
Security Program Planning
Storage Life Cycle
Supply Chain Digitization
Telecomm Fiber
Telecomm Infrastructure
Telecomm WAN Expansion
Tripwire Implementation
Unix Life Cycle
Virtualization Evolution
Wifi Site Enhancement
Wintel Life Cycle
Not going to Disadvantaged communities
Low Risk Buildings Projects

RG&E Common Projects

RG&E Common Projects by Disadvantaged Communities
City of Canandaigua
Canandaigua Truck Garage Projects
Fire Protection
City of Rochester
3 City Center
50 Airpark Drive
ASD Security System Installation
Fire Protection
Rochester Consolidation
Scottsville Rd Service Center Projects
Solar Panels
Telecomm Vertical Builds
Town of Chilli
Fire Protection
Town of Henrietta
Fire Protection
Mushroom Blvd Projects
Rochester Consolidation
Town of Hume
Fire Protection
Town of Pavillion
Fire Protection
Town of Webster
Eastern Monroe Operations Center Projects
Village of Fillmore
Fillmore Operations Center Projects
Village of Johnson City
Training Equipment And Tools
Training Technology Projects
Village of Sodus
ASD Security System Installation
Fire Protection
Sodus Service Center Projects
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AVANGRID Security Domain Telecommunications
BMS System
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Communications Tower, shelter Facility Improvements (Com)
CX Digital Journey
CYBER-SIEM
Data Center Consolidation
DER Market Management System
Distributed Generation Billing Program
DRAGOS
ECC Life cycle
End User Life Cycle
Energy Control Systems Infrastructure
Energy Manager Enhancements
Esri UN Deployment
EV Chargers

RG&E Common Projects by Disadvantaged Communities
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Not going to Disadvantaged communities
Low Risk Building Projects