

BEFORE THE
NEW YORK STATE
PUBLIC SERVICE COMMISSION

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Proceeding on Motion of the Commission as to the
Rates, Charges, Rules and Regulations of
New York State Electric & Gas Corporation
for Electric Service

Case 22-E- ____

Proceeding on Motion of the Commission as to the
Rates, Charges, Rules and Regulations of
New York State Electric & Gas Corporation
for Gas Service

Case 22-G- ____

Proceeding on Motion of the Commission as to the
Rates, Charges, Rules and Regulations of
Rochester Gas and Electric Corporation
for Electric Service

Case 22-E- ____

Proceeding on Motion of the Commission as to the
Rates, Charges, Rules and Regulations of
Rochester Gas and Electric Corporation
for Gas Service

Case 22-G- ____

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**DIRECT TESTIMONY OF
ELECTRIC AND COMMON CAPITAL
EXPENDITURES PANEL**

**James Cole
Christopher Herrmann
Christopher Malone
Juan Martinez
Alfonso Mugueta**

May 26, 2022

**DIRECT TESTIMONY OF ELECTRIC AND COMMON CAPITAL EXPENDITURES
PANEL**

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I. INTRODUCTION

Q. Please state the names of the members of the Electric and Common Capital Expenditures Panel (the “Panel”).

A. We are James Cole, Christopher Herrmann, Christopher Malone, Juan Martinez, and Alfonso Mugueta.

Q. Mr. Cole, please state your title and business address.

A. I am the Vice President of Projects. My business address is 100 Marsh Hill Road, Orange, Connecticut 06477.

Q. Please summarize your work experience and educational background.

A. My work experience includes utility operations, engineering, and construction. I have held numerous roles within Avangrid of increasing responsibilities. I hold a BS in Electric Engineering, an MBA, and a registered Professional Engineer certification in the State of Connecticut. My Curriculum Vitae (“CV”) is set forth in Exhibit __ (CCE-1).

Q. Have you previously testified in other proceedings before the New York State Public Service Commission (“PSC” or the “Commission”) or any other state or federal regulatory agency?

A. Yes. I testified in Cases 19-E-0378 et al. (the “2019 Rate Case”).

Q. Mr. Herrmann, please state your title and business address.

A. I am the Senior Manager of Investment Planning. My business address is 1300 Scottsville Road, Rochester, New York 14624.

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1 Q. Please summarize your work experience and educational background.

2 A. I am a Licensed Professional Engineer in the State of New York and have over 33 years
3 of professional experience, ten of which has been with RG&E. I have a BS in Civil
4 Engineering and an MBA. My CV is set forth in Exhibit __ (CCE-1).

5 Q. Have you previously testified in other proceedings before the Commission or any other
6 state or federal regulatory agency?

7 A. Yes, I testified on several occasions before the Commission and submitted testimony in
8 the 2019 Rate Case. In addition, I testified before the regulatory commission in Maine.

9 Q. Mr. Malone, please state your title and business address.

10 A. I am the Senior Director of Integrated System Planning for New York. My business
11 address is 100 Marsh Hill Road, Orange, Connecticut 06477.

12 Q. Please summarize your work experience and educational background.

13 A. I have worked in the electric utility business for 15 years and most of my experience has
14 been in the field of transmission planning. For the last few years, I have overseen
15 project/solution development activities across our portfolio of Transmission & Substation
16 (“T&S”) assets. This role is responsible for performing comprehensive planning
17 analyses, which includes the identification of all disparate needs, developing cost-
18 effective solution alternatives to address those needs, and memorializing the analyses in
19 the appropriate format in support of the Companies’ capital investment plan. I received
20 my undergraduate degree from SUNY Buffalo in the field of Electrical Engineering. I
21 also have an MBA, and a Master of Engineering degree in the field of Power Systems.
22 My CV is set forth in Exhibit __ (CCE-1).

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1 Q. Have you previously testified in other proceedings before the Commission or any other
2 state or federal regulatory agency?

3 A. No.

4 Q. Mr. Martinez, please state your title and business address.

5 A. I am the Senior Director of Advanced Planning. My business address is 180 South
6 Clinton Avenue, Rochester, New York 14604.

7 Q. Please summarize your work experience and educational background.

8 A. I have a Bachelor's degree of Industrial Engineering and majored in Electronic and
9 Automatic Systems and a Master's degree in Project Construction and Maintenance of
10 High Voltage Infrastructure. I have more than 13 years of experience in the utility
11 planning business (distribution and transmission) for RG&E and NYSEG and globally
12 within Iberdrola Networks. My CV is set forth in Exhibit __ (CCE-1).

13 Q. Have you previously testified in other proceedings before the Commission or any other
14 state or federal regulatory agency?

15 A. Yes. I testified on prior occasions before the Commission and submitted testimony in the
16 2019 Rate Case. In addition, I testified before the regulatory commission in Maine.

17 Q. Mr. Mugueta, please state your title and business address.

18 A. I am the Vice President of Planning & Coordination. My business address is 162 Canco
19 Road, Portland, Maine 04103.

20 Q. Please summarize your work experience and educational background.

21 A. I have almost 30 years working in the electric utility sector, developing substation and
22 transmission projects in Spain, Brazil, and the United States. My experience is in the

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1 areas of engineering design, planning, project management, construction, commissioning,
2 permitting, and quality. I am an Electrical Engineer with an MBA, and a Master's degree
3 in Management for Business Competitiveness. My CV is set forth in Exhibit __ (CCE-
4 1).

5 Q. Have you previously testified in other proceedings before the Commission or any other
6 state or federal regulatory agency?

7 A. No.

8 **II. OVERVIEW OF TESTIMONY**

9 Q. Please provide an overview of the Panel's testimony.

10 A. The Companies propose a total of \$8.73 billion in capital expenditures for the period
11 2022 through 2026 to address the most critical capital needs and to continue to provide
12 safe, secure, reliable, and resilient service to our customers. These investments are
13 designed to improve overall system reliability and resiliency, meet the needs of our
14 customers, and advance the targets laid out in the Climate Leadership and Community
15 Protection Act ("CLCPA").¹

16 Q. How is the Panel's testimony organized?

17 A. Our testimony is organized as follows: Section I is the introductory section; Section II
18 provides an overview of the Panel's testimony; Section III identifies the exhibits used to
19 support this testimony; Section IV provides a summary of key objectives of the
20 Companies' electric business, including an overview of the proposed capital requirements
21 to meet these objectives; Section V explains each of the principal categories of the

¹ Chapter 106 of the Laws of 2019 (N.Y).

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Companies' capital plans for the years 2022-2026; Section VI describes the major areas of electric capital investments under each category; Section VII describes the major areas of generation investments; Section VIII describes the major areas of common investments; Section IX describes the Companies' capital investment planning process; and Section X provides a summary conclusion.

Q. Are the principal categories discussed in Section V of your testimony the same categories utilized by the Companies in their most recent five year capital investment plan?

A. Yes. These principal categories are consistent with those presented in the NYSEG and RG&E Five Year Capital Investment Plan 2022-2026 ("Five Year Plan") submitted to the Commission on April 1, 2022, which is included as Exhibit __ (CCE-2). Detailed category descriptions can be found in Section V of the testimony.

Q. Is the amount of capital investment proposed in the Five Year Plan identical to the capital investment and common expenditures presented in your testimony?

A. No. The Five Year Plan identified a total NYSEG plus RG&E Electric, Gas, and Common capital spend of \$12.2 billion, which reflected the overall needs of the Companies' business areas to address existing and known needs across our systems. These investments are considered to be critical for 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. However, the Panel recognized the impact that this level of capital spend would have on customer rates, and therefore, we are proposing as part of this rate case filing a reduced five-year capital spend of \$8.73 billion dollars. This reduced capital spend was a result of several prioritization discussions since the

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1 April 1, 2022 filing of the Five Year Plan with each of the Companies' business areas to
2 identify which projects and programs were most critical for advancement over the current
3 five-year period. Factors including, but not limited to, project maturity, system reliability
4 impacts, compliance requirements, and resource constraints were evaluated and helped
5 guide the prioritization decision making process. For example, given the interplay
6 between the Bulk Electric System ("BES") Suite of Projects and the CLCPA Phase 1
7 Transmission Projects, the Panel re-prioritized the BES execution schedule to focus only
8 on those projects that were in advanced stages of execution (e.g., construction,
9 procurement). This will allow the Companies to continue to advance these projects while
10 also dedicating the appropriate level of resources to execute on the very aggressive
11 CLCPA Phase 1 project schedule.

12 Q. What is the amount of capital spend that the Companies are deferring out of Rate Year 1
13 (the "Rate Year" or "RY1") (i.e., the 12 months ended April 30, 2024) as compared to
14 what was presented in the Five Year Plan?

15 A. The Companies are deferring approximately \$531 million from RY1 to future periods.
16 The deferral decision-making process followed the prioritization strategy discussed
17 above. It should be noted that the Panel was able to reduce capital spend for RY1 by
18 24%, which is consistent with the 15-30% anticipated reduction identified in the Five
19 Year Plan.

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Q. How is the capital investment associated with Generation and Common expenditures presented?

A. The Generation category provides the capital requirements to replace obsolete, damaged, and aged infrastructure, addresses items included in Federal Energy Regulatory Commission (“FERC”) Licensing requirements, and provides capital expenditures to improve these assets. The Common expenditures are grouped into Building and Facilities, Customer Service, Fleet, Information Technology, Operational Smart Grids, Physical and Cyber Security, and Training.

III. SUMMARY AND IDENTIFICATION OF EXHIBITS

Q. Is this Panel sponsoring any exhibits?

A. Yes. This Panel is sponsoring the exhibits identified below (Table 1). Additionally, a copy of the Panel’s workpapers along with an index of such workpapers will be provided to the New York State Department of Public Service Staff (“Staff”).

Table 1: Exhibit Listing

Exhibit ID	Description
CCE-1	CVs of the Panel
CCE-2	Companies’ Five-Year Plan, filed April 1, 2022
CCE-3	Actual expenditures for 2019-2021
CCE-4	New Gardenville Substation Rebuild
CCE-5	NYSEG Substation Modernization - Noyes Island
CCE-6	South Perry Substation Upgrades
CCE-7	NYSEG Substation Modernization - South Owego
CCE-8	Meyer New 2nd 115/34.5kV Transformer
CCE-9	NYSEG Substation Modernization - Clark Street
CCE-10	Line 880 (34.5 kV) Rebuild
CCE-11	Line 890 (34.5 kV) Rebuild
CCE-12	Station 156 Transf./Facilities upgrade

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Exhibit ID	Description
CCE-13	Station 192 Trans Facilities Upgrade
CCE-14	Station 208 - Modernization Project
CCE-15	Station 43 Modernization Project
CCE-16	Station 5 Substation Modernization Project
CCE-17	Station 51
CCE-18	Station 82 Upgrades
CCE-19	Station 29 Modernization Project
CCE-20	Station 34 Modernization Project
CCE-21	Station 37 Modernization Project
CCE-22	Webster Area Projects
CCE-23	Station 46 - Replace #1 #3 Transf. Banks
CCE-24	GMI-Station 168 Srvc Area Reinforcements
CCE-25	Station 117
CCE-26	Station 49 4KV to 12KV Upgrade
CCE-27	Sta 210 Modernization Prj
CCE-28	Mechanicville Intake Upgrades and Downstream Passage Project
CCE-29	Kent Falls - CAPITAL Project
CCE-30	High Falls Intake Upgrades Project
CCE-31	Mechanicville Upstream Eel Ladder Project
CCE-32	KF Dam Left Abutment & Drainage Improvement
CCE-33	Saranac Plant Control Systems Upgrade Project
CCE-34	Keuka/Bradford Concrete Spillway and Toe Resurfacing Repairs/Improvements
CCE-35	KF Internal Riser Shaft and Tank
CCE-36	Kents Falls Upstream Training Wall Extension
CCE-37	Cadyville Right Abutment / Spillway Improvements Project
CCE-38	Mill C Spillway Concrete Improvements Project
CCE-39	Mechanicville Bay A, Bay B, Bay C Bag Replacement Program & Inclinometer Upgrade
CCE-40	Kents Falls Low Level Floodgate
CCE-41	Hydro Generation S2 Modernization
CCE-42	S5 Intake Stop Log Gantry Upgrade Project
CCE-43	S2 Central Ave Dam Superstructure Modernization
CCE-44	NYSEG-RGE 2023-2026 Resiliency Plan

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IV. KEY OBJECTIVES AND CAPITAL INVESTMENT PLAN OVERVIEW

Q. What are the key objectives of the Companies' Five Year Plan?

A. The Companies are committed to providing a safe and reliable electric system and operating environment for their employees, customers, and the public. To that end, in planning capital investments, the Companies consider the following strategic objectives:

- Maintaining safety and security;
- Meeting customers' electrical needs;
- Achieving service reliability and quality targets;
- Replacing and renewal of assets and facilities based on condition and obsolescence;
- Improving the network's effectiveness and efficiency;
- Sustaining the environment; and
- Enhancing system capabilities to accommodate the increased proliferation of clean energy resources in support of the CLCPA and local municipality decarbonization initiatives (e.g., "electrification").

The Five Year Plan includes the projects and programs that are most critical in the continued improvement and enhancement of system performance, with a focus on key factors such as system reliability, resiliency, renewal of aged assets, and grid enhancements to accommodate an increased level of clean energy resource penetration.

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1 Q. What are the Electric capital requirements necessary to achieve the Companies' business
2 objectives in the Rate Year and moving forward?

3 A. To support the CLCPA targets,² meet the needs of customers, improve reliability and
4 resiliency, and strengthen the system against the adverse effects of major and minor
5 storms, the Companies use a capital investment planning process that assesses the system
6 needs and introduces projects and programs to address those needs in relation to the
7 strategic objectives of the Companies. The result is a comprehensive capital investment
8 plan that includes projects and programs such as asset condition replacement, reliability
9 improvements, resiliency, compliance, clean energy transformation, customer focus,
10 modernization, gas safety, and innovation. In addition, the Companies also review the
11 capital investments needed to support these functions such as information technology,
12 fleet, facilities, security, operational technology, and other common projects.

13 A more detailed description of the capital investment planning process can be found in
14 Section IX. The following charts provide the planned electric and generation
15 expenditures for the period 2022-2026 for NYSEG (Table 2) and RG&E (Table 3).

16 These figures include the common expenditures attributable to each company. Of the
17 total common investments planned for NYSEG, the electric portion is 80.26% and at
18 RG&E the electric portion of common investments is 71.39%.

² As it relates to clean energy, the CLCPA requires that: (1) by 2030, 70% of statewide electric generation shall be generated by renewable energy systems; and (2) by 2040, the statewide electric grid will be zero-emissions. The CLCPA also mandates a 40% reduction in greenhouse gas emissions by 2030 and an 85% reduction in greenhouse gas emissions by 2050.

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Table 2: NYSEG Electric, Generation, and Common Capital Investment Forecast for
2022-2026

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>	2022	2023	2024	2025	2026	Total 2022-2026
1 Asset Condition		\$ 124,185	\$ 158,569	\$ 239,638	\$ 314,148	\$ 355,180	\$ 1,191,720
2 Reliability		76,364	53,658	61,478	66,477	37,736	295,713
3 Resiliency		69,050	78,485	68,915	72,400	73,262	362,111
4 Compliance		78,463	117,456	84,279	45,508	14,716	340,421
5 Clean Energy Transformation		2,001	5,943	20,233	-	-	28,177
6 Customer Focus		106,968	129,274	131,119	142,595	146,223	656,179
7 Modernization		62,638	63,226	68,115	44,698	17,899	256,576
8 Innovation		10,615	11,768	30,786	62,267	75	115,511
9 Hydro-Generation		7,525	7,353	19,742	24,905	57,838	117,363
10 Subtotal Electric Capital		537,808	625,733	724,306	772,998	702,928	3,363,773
11							
12 Common Allocation to Electric Business		102,808	112,352	124,562	91,272	85,941	516,935
13 Subtotal Electric Capital		640,616	738,085	848,868	864,270	788,869	3,880,708
14							
15 NYSEG Projects - CLCPA Transmission and Ithaca Electrification CAPEX							
16 CLCPA Transmission Projects - Phase I		125,700	188,200	305,000	310,300	429,100	1,358,300
17 CLCPA Transmission Projects - Phase II		24,800	310,200	330,200	417,600	545,400	1,628,200
18 Ithaca Electrification Projects - Phase 1		100	3,000	6,000	10,000	6,000	25,100
19 Ithaca Electrification Projects - Phase 2		-	-	10,000	10,000	10,000	30,000
20 Subtotal CLCPA Transmission, Ithaca CAPEX		150,600	501,400	651,200	747,900	990,500	3,041,600
21 Total NYSEG Electric Capital		\$ 791,216	\$ 1,239,485	\$ 1,500,068	\$ 1,612,170	\$ 1,779,369	\$ 6,922,308

Table 3: RG&E Electric, Generation and Common Capital Investment Forecast for 2022-
2026

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>	2022	2023	2024	2025	2026	Total 2022-2026
1 Asset Condition		\$ 50,170	\$ 75,736	\$ 102,384	\$ 137,464	\$ 107,090	\$ 472,844
2 Reliability		41,811	56,100	66,749	68,164	47,236	280,060
3 Resiliency		19,073	17,226	12,956	20,304	22,209	91,767
4 Compliance		16,364	32,338	47,000	47,186	34,571	177,459
5 Clean Energy Transformation		-	-	-	-	-	-
6 Customer Focus		32,338	54,169	63,697	68,387	69,599	288,189
7 Modernization		26,247	25,630	28,176	15,699	5,863	101,615
8 Innovation		6,289	6,247	16,350	29,462	75	58,424
9 Hydro-Generation		9,791	7,253	24,945	19,090	9,278	70,357
10 Subtotal Electric Capital		202,083	274,699	362,256	405,757	295,920	1,540,715
11							
12 Common Allocation to Electric Business		46,261	40,079	45,425	40,481	46,798	219,044
13 Subtotal RG&E Electric Capital		248,344	314,778	407,681	446,238	342,718	1,759,759
14							
15 RG&E Project - CLCPA Transmission CAPEX							
16 CLCPA Transmission Projects - Phase II		600	7,100	6,100	10,000	25,300	49,100
17 Subtotal RG&E CLCPA Transmission		600	7,100	6,100	10,000	25,300	49,100
18 Total RG&E Electric Capital		\$ 248,944	\$ 321,878	\$ 413,781	\$ 456,238	\$ 368,018	\$ 1,808,859

Key projects and programs in each of the capital categories, shown in the tables above, are described later in more detail in Sections VI, VII, and VIII of this testimony. Projects and programs with supporting exhibits are noted within their respective sections.

Additionally, Exhibit __ (CCF-3) provides the actual expenditures for 2019-2021 along with the Forecast expenditures for 2022-2026 for the Electric, Generation, and Common for NYSEG and RG&E's electric businesses.

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1 Q. What is the Companies' outlook regarding long-term investment needs?

2 A. The Companies will continue to focus on addressing system needs and the Companies'
3 commitment to provide safe and reliable service to customers. Customer and obligatory
4 state and municipal relocations will always be necessary and investment to address these
5 actions will continue. A critical component of the Five Year Plan relates to improving
6 the condition of existing assets across our system. Whether focused on asset condition
7 that impacts hardening the system or addressing assets that are beyond their optimal life
8 expectancy, there is substantial work required to address assets deemed obsolete or
9 beyond their useful life. In addition, the Five Year Plan includes projects and programs
10 that are designed to address underlying reliability and capacity needs and proposes
11 system upgrades to accommodate the increased penetration of large-scale renewable
12 resources in support of CLCPA goals. These projects and programs are an important
13 aspect of operating reliably and safely and will be needed for the foreseeable future.

14 **V. PROJECT/PROGRAM CATEGORIZATION**

15 Q. Would the Panel please describe the principal categories that were used for each of the
16 projects and programs listed in the Five Year Plan?

17 A. The following is a list of principal categories that were applied across the portfolio of
18 projects and programs with associated descriptions for each. It should be noted that these
19 categories are not listed in priority order. While a project could have aspects of one or
20 more categories, a project has been assigned to one and only one category that reflects the
21 most predominant underlying system need being addressed.

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1 **Asset Condition** – This category includes those projects and programs that are needed to
2 address assets deemed to be beyond their useful operating life expectancy. These
3 projects and programs are identified as a result of various Planning studies, ongoing
4 Maintenance programs, and immediate needs brought forth by System Operations.

5 **Reliability** – This category includes those projects and programs that are needed to
6 address immediate and long-term system needs such as thermal/capacity overloads,
7 voltage, and loss-of-load violations.

8 **Resiliency** – This category includes those projects and programs that are needed to
9 improve system restoration capabilities following any number of unplanned transmission
10 and distribution contingency events. These projects and programs seek to improve
11 overall system flexibility and provide system operators with the appropriate visibility and
12 field infrastructure to quickly restore power and minimize customer exposure following a
13 contingency event.

14 **Compliance (Electric Only)** – This category includes those projects and programs that
15 are needed to address compliance requirements/criteria, mandates, orders, or other
16 regulatory governmental direction.

17 **Clean Energy Transformation** – This category includes those projects and programs
18 that are needed to enhance system capabilities and accommodate an increased level of
19 renewable resource penetration and support proposed local municipality grid
20 modification initiatives (e.g., “electrification”). This category includes the suite of New
21 York CLCPA Transmission Projects that were recently developed in support of the
22 CLCPA and filed in two separate petitions in Case 20-E-0197.

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Customer Focus – This category includes those projects and programs that are needed to meet the needs of our customers. This category 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 includes projects and programs designed to address outdated business systems, metering infrastructure, etc.

Innovation – This category includes projects that introduce a new or significantly improved product or process, a new marketing method, or a new organizational method in business practices, workplace organization, or external relations.

VI. MAJOR AREAS OF ELECTRIC CAPITAL INVESTMENTS

Q. Would the Panel briefly describe the Companies’ electric capital investment requirements for each of the categories shown in Table 2 and Table 3.

A. Yes. In the following subsections, we discuss key projects and programs included in each category as identified previously in Table 2 and Table 3.

Q. Would the Panel briefly describe the current state assessment for NYSEG and RG&E as it relates the condition of major transmission and distribution (“T&D”) equipment asset classes, substation automation capabilities, and transmission and distribution reliability violations necessitating the proposed investments in the Five Year Plan?

A. Yes. The following data more fully explains the overall state of our system and supports the advancement of projects and programs listed within this section of the testimony. It should be noted that the basis for all projects and programs listed within the Five Year

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Plan are intended to address the systems' needs. Projects and programs are continually re-evaluated and prioritized based on newly obtained data identified through various channels including T&S surveys, analytical study assessments, System Maintenance/Operations assessments and other data inputs related to the system.

Specific system needs are described below:

Major Asset Class Assessment: The information below provides a high-level summary of the Companies' T&S assets determined to be beyond their optimal life expectancy (i.e., obsolete assets in need of replacement). The category includes the overall age distribution of T&S facilities, which can indicate when facilities are in need of replacement.³ The asset condition needs have been identified as a result of various assessment efforts and are broken down by their associated major asset class type (e.g., power transformers, circuit breakers, transmission lines, distribution lines). The Companies have also implemented a comprehensive substation survey program ("T&S Asset Condition Replacement Program") which is designed to assess all substation components (e.g., foundations, structures, P&C equipment). The results of this program, coupled with prior published asset class assessments, allows for the establishment of a more holistic New York-wide and prioritized asset replacement strategy as opposed to a division-by-division replacement strategy. Table 4 below shows the breakdown of major asset class types that are deemed to be beyond their optimal life expectancy. Most notable is the large number of aged/obsolete circuit breakers (1,437) on our system which

³ Although multiple factors are considered when determining the health of an asset, T&S equipment with an age exceeding 60 years is an indicator of assets approaching end-of-life.

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1 tend to be impactful to customers and negatively impacts reliability metrics. In 2021, the
2 Companies experienced a total of 28 non-storm related breaker failure events which
3 impacted a total of 44,265 customers. The average age of NYSEG breakers identified in
4 Table 4 is 58 years old with an age range between 41 and 82 years old. Of these
5 breakers, 92% are oil circuit breakers, which is considered an obsolete breaker
6 technology. The average age of RG&E breakers identified in Table 4 is 62 years old with
7 an age range between 42 and 94 years old. Of these breakers, 49% are also oil circuit
8 breakers. In addition, as a result of our most recent asset class assessments, a total of 65
9 power transformers and 62 line segments have been identified to be beyond their useful
10 operating life and are in need of upgrades. Table 5 below shows the total outstanding
11 number of transmission and distribution line (asset condition) needs,⁴ which can include
12 any number of needs such as cross arm, structural integrity, and insulator types. The
13 figures below show the age distribution of substation and T&D line assets across our
14 territory. Most notable are the large number of NYSEG and RG&E substations over 61
15 years old (70% of total) and T&D line facilities over the age of 51 years old. These data
16 indicate that resources should be focused on renewing or replacing existing substation
17 and T&D line assets, which will ultimately require an increase in investments focusing on
18 addressing these outstanding asset condition needs.

⁴ These needs have been identified through various maintenance programs including, but not limited to, ground line inspections, helicopter inspections, and drone inspections.

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Table 4: NYSEG & RG&E Major Asset Class Assessment

NYSEG & RG&E Asset Condition Assessment (Equipment Determined to be at its "End-of-Life")			
OpCo	Asset Class Type		
	Circuit Breakers ⁵	Power Transformers ⁶	Transmission Line Segments ⁷
RG&E	457	27	4
NYSEG	980	38	58
Total	1437	65	62

Table 5: NYSEG & RG&E Line Needs

NYSEG & RG&E Asset Condition Line Needs ⁸		
OpCo	Transmission Line Needs ⁹	Distribution Line Needs
RG&E	1,613	7,037
NYSEG	10,812	34,494
Total	12,425	41,531

⁵ 2021 Asset Health and Risk Assessment Substation Circuit Breakers includes spares.

⁶ 2021 Asset Health and Risk Assessment Substation Power Transformers includes spares.

⁷ 2021 Asset Health and Risk Assessment Transmission Lines.

⁸ Values are based on the Planned Maintenance Report Open Notifications as of December 23, 2021.

⁹ Transmission line needs include needs identified through various transmission line inspection programs such as transmission line inspection, transmission infrared inspection, transmission helicopter inspection, etc.

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Figure 1: NYSEG & RG&E Substation Age Distribution¹⁰

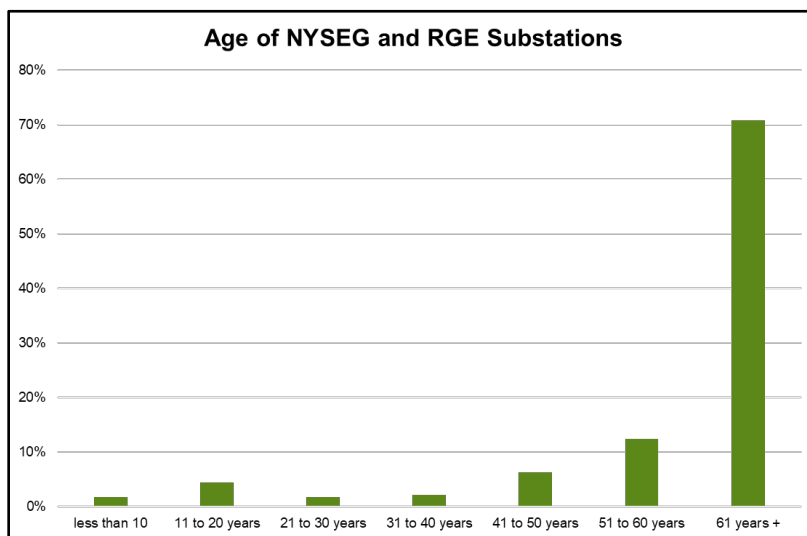
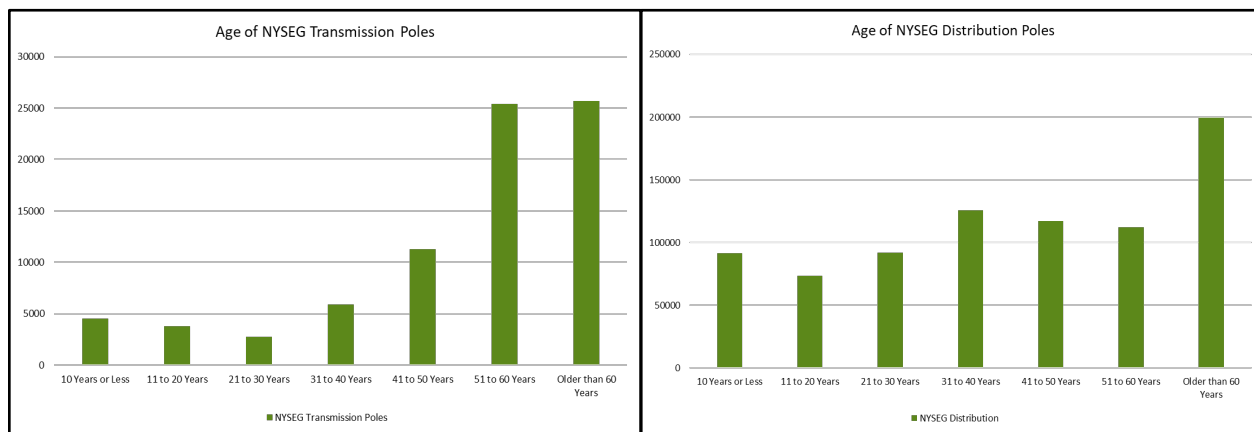


Figure 2: NYSEG T&D Line Age Distribution¹¹

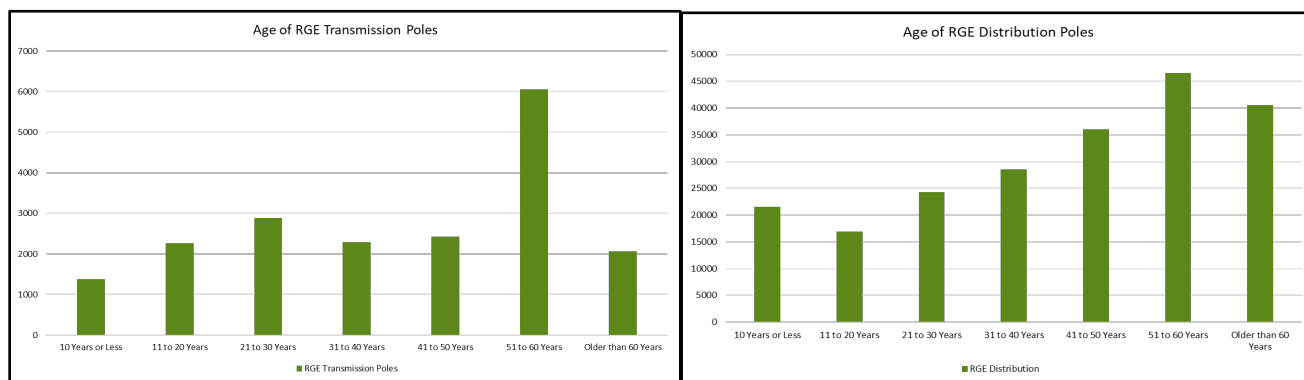


¹⁰ The age provided for substations is based on the oldest asset on record. This date was gathered by reviewing the oldest equipment in SAP, fixed asset information, and some drawing reviews. In most cases, this date is the original construction date.

¹¹ Distribution Pole counts include those classified in SAP as “Pole,” “Push Brace,” “Street Light,” and “structure.” Private poles were excluded from the count.

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Figure 3: RG&E T&D Line Age Distribution



Substation Automation: The information below is intended to provide a high-level summary of the number of substations within the Companies’ territories that have partial or full remote control capabilities. Substations without adequate automation capabilities are harder for Operators to restore following unplanned contingency events, require on-site personnel switching activities, and lead to longer restoration times (Customer Average Interruption Duration Index (“CAIDI”)) for our customers (restoration time is most impactful for customers fed from rural substations that are furthest away from the nearest service center). A major component of the Five Year Plan includes investments associated with substation automation and enhancements to the distribution system to address underlying resiliency concerns. Table 6 below shows the breakdown of substations across our territory with full or partial substation automation capabilities.

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Table 6: NYSEG & RG&E Substation Automation Capabilities

NYSEG & RG&E Automation Capabilities ¹² (Remote SCADA Control)				
OpCo	Substations Assessed	Automation Capability		Percent Fully Automated Substations
		Partial	Fully	
RG&E	163	53	38	23%
NYSEG	437	196	79	18%

Transmission & Distribution Reliability Needs: The information provided below is a high-level summary of the number of known transmission and distribution reliability needs that have been identified through various analytical study assessments and power-flow modeling. Table 7 shows the breakdown of outstanding transmission system violations which is based on a review of our most current reliability studies (e.g., NERC “BES” Assessment). All bulk system violations have corresponding solutions/projects which have already been included in the Five Year Plan. In 2021, a comprehensive New York-wide local reliability study was conducted, and corresponding needs were identified. Over the course of this calendar year, Transmission Planning will develop conceptual solutions to address these needs. The focus will be to prioritize solution development activities on those facilities that have historically affected the Companies’ reliability metrics (System Average Interruption Frequency Index (“SAIFI”) and CAIDI). Table 8 shows the breakdown of outstanding distribution transformer violations under

¹² A substation is considered as fully automated when the Supervisory Control and Data Acquisition (“SCADA”) Center has indication and control of more than 95% of all the substation bays. A substation is considered as a partially automated substation when the SCADA Center has indication and control of between 10 and 95% of the bays of a substation. The level of automation is considered based on the number of automated bays versus the total number of bays in the station. A substation is considered to have no automation capabilities when there is no Remote Terminal Unit at the station or the level of automation is below 10%.

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normal (N-0) and single transformer contingency (N-1) peak-load conditions. Most notable are the distribution transformers that are overloaded (or near overloaded) under all-lines-in (normal) conditions at peak load. This state of operation should not continue and in these cases System Operations must perform activities such as field tie switching (if available) to offload the overloaded transformer or install a mobile transformer with a higher power (MVA) rating. It should be noted that Distribution Planning has been conducting comprehensive area studies which will be used to identify additional reliability needs at the distribution circuit level. These needs may include, but are not limited to, lack of (N-1) circuit redundancy, circuit thermal overloads, and voltage profile violations.

Table 7: NYSEG & RG&E Transmission System (Known) Violations

NYSEG & RG&E Transmission Needs						
OpCo	Bulk (> 69 kV) System Transmission Needs			Local (≤ 69 kV) System Transmission Needs		
	N-0/N-1	N-1-1	Total	Loss of Load	Thermal / Voltage	Total
NYSEG	20	26	46	23	22	45
RG&E	3	7	10	61	67	128
All	23	33	56	84	89	173

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Table 8: NYSEG & RG&E Distribution Transformer (Known) Violations

NYSEG & RG&E Distribution Transformer Needs			
OpCo	Transformer Overloads		
	All-Lines-In ¹³ (N-0)	Contingency (N-1)	Total
RG&E	15	24	39
NYSEG	20	23	43

Q. Would the Panel briefly describe the Companies' electric capital investment requirements for each of the categories shown in Table 2 and Table 3.

A. Yes. In the following subsections, we discuss key projects and programs included in each category we identified previously in Table 2 and Table 3.

A. Asset Condition

Q. What are the projected capital investments in the Electric Asset Condition category for the Companies?

A. The capital forecast for the Electric Asset Condition category from 2022-2026 is shown for NYSEG and RG&E in Table 9 and Table 10, respectively.

¹³ Violations are considered on transformers that are at-or-above 95% of their stated nameplate capability.

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Table 9: NYSEG Electric Asset Condition Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
	2022	2023	2024	2025	2026	Total 2022-2026	
1 Asset Condition	\$ 124,185	\$ 158,569	\$ 239,638	\$ 314,148	\$ 355,180	\$ 1,191,720	
2 TLD Replacements	14,500	27,200	53,600	72,000	91,200	258,500	
3 Pole Replace (WPIT) Program CAP	24,338	33,260	34,000	34,000	34,000	159,598	
4 Distribution Line Deficiencies	28,700	17,228	23,440	29,169	35,581	134,118	
5 Gardenville Substation Rebuild	2,503	13,177	29,429	46,219	40,663	131,991	
6 Meyer New 2nd 115/34.5kV Transformer	-	5,000	24,946	39,892	24,973	94,811	
7 Elec Better	13,297	16,321	16,261	16,228	16,225	78,332	
8 South Perry New Sub & Trans Line Upgrade	599	6,418	26,103	29,158	15,000	77,278	
9 Substation Modernization - Noyes Island T	1,245	-	-	23,152	21,309	45,707	
10 Substation Modernization - Clark Street	-	-	1,992	3,074	34,014	39,080	
11 Line 890 Rebuild	1,709	18,598	10,732	14	-	31,052	
12 Line 880 Rebuild	8,748	13,041	7,550	-	-	29,339	
13 Substation Modernization - South Owego	-	-	1,019	5,838	20,811	27,669	
14 PCB Transformer Replacements	-	3,200	5,300	5,300	5,300	19,100	
15 Substation Minor Capital	6,313	1,698	1,670	2,077	2,197	13,955	
16 T&S Asset Condition Replacement Program	1,200	1,000	1,000	5,000	5,000	13,200	
17 Substation Major Program	5,254	770	593	756	771	8,143	
18 Woodlawn SS Transformer	6,220	143	-	-	-	6,364	
19 Substation Modernization - Wright Avenue	-	-	-	-	5,719	5,719	
20 General Equipment - OPS-T&D	3,565	319	387	472	590	5,333	
21 Bennet Transformer	3,515	-	-	-	-	3,515	
22 URD Replacement Program	-	-	1,000	1,125	1,125	3,250	
23 Battery Program	980	333	350	459	482	2,604	
24 General Equipment - OPS-SO	1,215	165	168	214	219	1,981	
25 ARIES Purchase & program improvements	125	700	100	-	-	925	
26 Checkpoint Firewall Upgrades Subs	156	-	-	-	-	156	
27 Total	\$ 124,185	\$ 158,569	\$ 239,638	\$ 314,148	\$ 355,180	\$ 1,191,720	

Table 10: RG&E Electric Asset Condition Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
	2022	2023	2024	2025	2026	Total 2022-2026	
1 Asset Condition	\$ 50,170	\$ 75,736	\$ 102,384	\$ 137,464	\$ 107,090	\$ 472,844	
2 Station 29 Modernization Project	300	4,864	9,727	29,181	14,591	58,663	
3 Station 37 Modernization Project	300	4,491	8,982	26,947	13,474	54,194	
4 Station 43 Modernization Project	7,771	10,833	10,012	8,411	3,025	40,053	
5 Station 34 Modernization Project	300	4,491	8,982	13,474	8,982	36,230	
6 Station 82 Upgrades	2,007	3,470	4,636	6,752	18,604	35,469	
7 Pole Replace (WPIT) Program CAP	10,472	4,522	4,906	6,332	7,643	33,874	
8 Elec Better	6,069	4,949	5,098	6,563	6,760	29,439	
9 Station 5 Substation Mod D	808	1,068	13,304	6,459	6,236	27,875	
10 Station 192 Trans Facilities Upgrade	2,908	5,549	12,056	7,079	-	27,591	
11 Station 156 Trans./Facilities upgrade	1,027	2,503	6,475	8,155	8,562	26,722	
12 Circuit 794 Rebuild	4,051	11,353	-	-	-	15,404	
13 Station 51	2,192	5,403	5,295	46	-	12,936	
14 T&S Asset Condition Replacement Program	600	1,000	1,000	5,000	5,000	12,600	
15 UG Cable Replacements	3,717	2,741	1,741	2,121	2,121	12,441	
16 Distribution Line Deficiencies	2,006	1,465	2,107	2,781	3,957	12,316	
17 TLD Replacements	586	400	560	408	390	2,344	
18 URD Replacement Program	-	2,000	2,000	2,500	2,500	9,000	
19 PCB Transformer Replacements	-	1,085	1,485	1,857	1,857	6,285	
20 Substation Minor Program	495	610	622	793	809	3,330	
21 Substation Major Program	522	749	552	704	718	3,245	
22 General Equipment - OPS-T&D	586	1,602	2,242	1,223	1,169	6,820	
23 Battery Prog	785	320	327	417	425	2,275	
24 Rochester Circuit 649 Upgrade	1,488	-	-	-	-	1,488	
25 Station 208 - Modernization Project	671	-	-	-	-	671	
26 General Equipment - OPS-SO	350	269	274	262	267	1,422	
27 Checkpoint Firewall Upgrades Subs	159	-	-	-	-	159	
28 Total	\$ 50,170	\$ 75,736	\$ 102,384	\$ 137,464	\$ 107,090	\$ 472,844	

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Q. Please describe the major projects and programs that are attributable to each of the line items shown in Table 9 and Table 10 related to the Asset Condition category.

A. Descriptions of the major projects and programs are below and include an overall description of the project or program, identified needs and project/program justification, and anticipated system benefits from executing on these projects/programs. The focus on specific projects and programs was determined based on their overall contribution to the proposed asset condition capital investment. The projects/programs are described herein as follows:

Transmission Line Deficiency (“TLD”) Replacement Program

Program Description: The TLD Replacement Program focuses on an “in-kind”¹⁴ structure replacement strategy on transmission lines with known structural or 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 an operating company (“OpCo”) prioritization tool/algorithm and individual line intervention scopes are determined following a detailed review of facility need(s).

Needs/Justification: At the end of 2021, there were 3,065 outstanding transmission line needs. To address the consistent presence and growing level of transmission notifications, the Companies have worked to assign additional planning, project management, and engineering resources to develop a plan to address this substantial level

¹⁴ New structures are designed to the most current codes/standards.

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1 of notifications. Line segment execution is prioritized at a Company level, as opposed to
2 a division level, and decision-making includes evaluation of factors, including but not
3 limited to, transmission circuit customer count, SAIFI metrics, outage history, and
4 average age of equipment.

5 **Benefits:** Executing on this program will greatly reduce or eliminate the current backlog
6 of open deficiencies and will reduce the risk of future outages due to asset condition
7 equipment failures. One major benefit of this program is that execution activities can
8 occur more quickly, as opposed to larger capital replacement/rebuild projects, and as a
9 result, will yield in more immediate system reliability (e.g., SAIFI) improvements.

10 **Wood Pole Inspect and Treat (“WPIT”) Program**

11 **Program Description:** The WPIT Program is a program focused on the inspection and
12 refurbishment of wooden poles across the distribution system. The inspection uses
13 specialized contractors to inspect wood poles at ground line for wood decay and insect
14 damage. The inspection also consists of excavation and boring into the pole to identify
15 decay at and below ground line. When a pole is deemed insufficient, it is identified as
16 requiring a pole replacement, generating a notification.

17 **Needs/Justification:** These poles are identified as deficient as part of routine inspections
18 performed on the distribution system. The condition of the poles will only worsen over
19 time. Leaving them unaddressed increases risks to reliability and increases the chance of
20 customer service interruptions. Interruptions due to equipment failure is a large
21 contributor to customer interruptions. Adequate funding, materials, and available field
22 crews are necessary to address the deficiency backlog and keep up with newly identified

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1 needs. Failure of distribution poles due to structural weaknesses will result in customer
2 outages and grid instability should the poles fail. Pole failures occurring during
3 inclement weather also pose a safety risk to crews having to respond for repairs under
4 poorer conditions than planned work.

5 **Benefits:** Replacement of deficient poles will rejuvenate an aging distribution system,
6 thereby increasing reliability and reducing customer outages.

7 **Distribution Line Deficiencies (“DLD”)**

8 **Program Description:** This program involves the grouping of distribution notifications
9 created as part of the Companies’ pole inspection programs. Based on inspection criteria,
10 distribution notifications are created as part of the pole inspection programs, Distribution
11 Infrared Inspections and Distribution Line Inspections. The grouping of these
12 notifications is called DLD.

13 **Needs/Justification:** The DLDs are discovered as part of routine inspections performed
14 on the distribution system. The deficiencies will only worsen over time. Leaving them
15 unaddressed risks reliability and increases the chance of service interruptions. Adequate
16 funding, material, and available field crews are necessary to keep repairs consistently
17 performed.

18 **Benefits:** Replacement of deficient poles and equipment will rejuvenate an aging system,
19 thereby increasing reliability and decreasing customer outages. It will also reduce the
20 need for costly emergency repairs lessening the potential of accidents and injury to
21 customers and employees.

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Electric Betterment Program

Program Description: This program focuses on the replacement of various distribution system elements that contribute to high SAIFI metrics. Electric Betterment projects are aimed at improving the reliability of the 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. The proposed spend is based on historical spend levels and any projects identified and communicated by the divisions in advance.

Needs/Justification: Maintaining a safe and reliable distribution system is paramount to providing safe and reliable service to customers and meeting regulatory targets. This program provides the Companies with the agility required to correct what is negatively impacting reliability in the present and provides a safe and robust system for the future.

Benefits: This project will help avoid customer outages, more efficiently replace aged infrastructure with planned work, and reduce the need for costly emergency repairs reducing the potential of accidents and injury to customers and employees.

T&S Asset Condition Replacement Program¹⁵

Program Description: The objective of the T&S Asset Condition Replacement Program is to conduct system-wide T&S facility surveys, to determine the overall health of the

¹⁵ This program was formerly named the NYSEG “Substation Modernization” Program. The original “Substation Modernization” projects proposed during the 2019 Rate Case continue to advance through various planning and execution phases. Since that time, the Companies have established a comprehensive substation survey program,

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1 NYSEG and RG&E systems and develop a long-term mitigation strategy (projects) to
2 enhance the condition of these assets. These comprehensive T&S surveys will include an
3 assessment of electrical and structural assets which will be scored against individually
4 weighted categories including, but not limited to, the age of equipment,
5 resiliency/flooding impacts, substation P&C assessment, capacity (MVA), and substation
6 reliability performance. The overall T&S health scores will then be used to inform a
7 system-wide prioritization of asset condition replacement/upgrade projects across the
8 NYSEG/RG&E fleet of existing T&S assets.

9 **Needs/Justification: (NYSEG)** There are 478 substations and 4,550 miles of electric
10 transmission (overhead and underground) at NYSEG. Over 59% of substations in
11 NYSEG have assets that are over 60 years old and by 2030 this number could increase to
12 74%. 3% of power transformers and 42% of substation breakers are deemed to be
13 beyond their optimal life expectancy. 42% of power transformers and 17% of substation
14 breakers are over 60 years old. By 2030, this number will increase to 68% and 35%,
15 respectively.¹⁶ **(RG&E)** There are 180 substations and 995 miles of electric transmission
16 (overhead and underground) at RG&E. Over 45% of substations in RG&E have assets
17 that are over 60 years old and by 2030 this number could increase to 73%. 7% of power
18 transformers and 27% of substation breakers are deemed to be beyond their optimal life

which will subsequently be expanded to include a comprehensive survey of Transmission Lines. The results of these surveys will be used to inform a larger asset condition replacement strategy and the development of specific projects to address these survey needs.

¹⁶ Age is one of the many variables that is used in the condition assessment of facilities and may be considered as a strong indicator to determine end-of-life.

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1 expectancy. 26% of power transformers and 15% of substation breakers are over 60
2 years old. By 2030, this number will increase to 47% and 26%, respectively.

3 **Benefits:** Asset condition assessments, maintenance reports, and operational field data
4 suggests that this proposed program is needed to address the aging and obsolete
5 infrastructure on the NYSEG and RG&E system over the next several decades. If the
6 Companies “do nothing” the percentage of assets deemed to be beyond their optimal life
7 expectancy or over the age of 60 increases significantly by 2030.

8 **Substation Minor Program**

9 **Program Description:** The Substation Minor Program covers work at substations under
10 the threshold of \$200,000. This program includes, but is not limited to, the replacement
11 of substation components such as: 1) Capacitor Voltage Transformers (“CCVTs”),
12 Current Transformers (“CTs”), and Potential Transformers (“PTs”); 2) transformer
13 component replacements; 3) substation fences; 4) insulators; 5) relays; and 6) lightning
14 arresters. The scheduled replacement of the above elements contributes to the reduction
15 of outages as a result of substation equipment failures, which has been identified as one
16 of the root causes of substation outages.

17 **Needs/Justification:** Maintain and improve NYSEG and RG&E substation equipment to
18 provide a safe and reliable system. This program provides the Companies with a clear
19 path to correct proactively what is negatively impacting reliability.

20 **Benefits:** This program will help avoid customer outages, more efficiently replace aged
21 infrastructure with planned work, and reduce the need for costly emergency repairs
22 reducing the potential of accidents and injury to customers and employees.

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NYSEG & RG&E PCB Transformer Replacement Program

Program Description: 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 and RG&E 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. There are currently 8,006 remaining transformers at NYSEG – 3,507 are considered high priority and 4,499 are considered mid priority. There are currently 2,249 remaining at RG&E – 268 are considered high priority and 1,981 are considered mid priority.

Needs/Justification: Identifying and replacing probable PCB and PCB-contaminated pole top PCB transformers limits potential environmental risk and the need for costly spill response.

Benefits: Replacing transformers with non-PCB units decreases the average cost of oil-filled electrical equipment spill response over time, prevents pollution, and decreases the probability that NYSEG and RG&E employees will be exposed to possibly dangerous levels of PCBs while on the job. Proactively eliminating a portion of PCBs from the Companies’ distribution systems supports NYSEG and RG&E’s goal of environmental awareness, sustainability risk mitigation, and stewardship. Since all the units recommended for replacement were manufactured before 1970, and are smaller units, replacing them could also help to improve reliability and capacity of the Companies’ electrical systems.

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RG&E Underground Cable Replacement Program

Program Description: The objective of the program is to replace aged or obsolete underground cables proactively and preventatively at RG&E, predominantly in the Rochester Region. 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 main line 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 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 schedules.

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Needs/Justification: Without a dedicated and funded replacement program, the “run to failure” model results in long duration unplanned outages – in many cases, obsolete cable cannot be spliced and/or new cable cannot be pulled in through the old conduit.

Benefits: This program will help avoid customer outages by increasing the rating of RG&E’s underground system, replace aged assets beyond their useful life, and in some cases add redundancy to the underground system.

NYSEG Substation Upgrade Projects

Overview: There are six major NYSEG substation upgrade projects that are predominately driven by underlying asset condition needs. Two of these projects are in the execution phase and four projects are in the planning phase to ensure that the final scope of work addresses the full set of needs identified through each individual study effort. The table below (Table 11) lists the specific substation projects being proposed at NYSEG and the current project phase in which they reside. Individual project descriptions, justification, and benefits can be found in the exhibits listed in the table.

Table 11: NYSEG Substation Projects (Asset Condition)

NYSEG Substation Projects		
Station Name	Project Phase	Exhibit Material Reference
New Gardenville Substation Rebuild	Execution	CCE-4
NYSEG Substation Modernization - Noyes Island		CCE-5
South Perry Substation Upgrades	Planning	CCE-6
NYSEG Substation Modernization - South Owego		CCE-7
Meyer New 2nd 115/34.5 kV Transformer		CCE-8
NYSEG Substation Modernization - Clark Street		CCE-9

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NYSEG Transmission Line Upgrade Projects

Overview: There are two major NYSEG transmission line upgrade projects that are predominately driven by underlying asset condition needs. Both of these projects are in the execution phase. The table below (Table 12) lists the specific transmission line projects being proposed at NYSEG and the current project phase in which they reside. Individual project descriptions, justification, and benefits can be found in the exhibits listed in the table.

Table 12: NYSEG Transmission Line Projects (Asset Condition)

NYSEG Transmission Lines Projects		
Line Name	Project Phase	Source Material Reference
Line 880 (34.5 kV) Rebuild	Execution	CCE-10
Line 890 (34.5 kV) Rebuild		CCE-11

RG&E Substation Upgrade Projects

Overview: There are 10 major RG&E substation upgrade projects that are predominately driven by underlying asset condition needs. Six of these projects are in the execution phase and four projects are in the planning phase to ensure that the final scope of work addresses the full set of needs identified through each individual study effort. The table below (Table 13) lists the specific substation projects being proposed at RG&E and the current project phase in which they reside. Individual project descriptions, justification, and benefits can be found in the exhibits listed in the table.

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Table 13: RG&E Substation Projects (Asset Condition)

RG&E Substation Projects		
Station Name	Project Phase	Source Material Reference
Station 156 Transf./Facilities upgrade	Execution	CCE-12
Station 192 Trans Facilities Upgrade		CCE-13
Station 208 - Modernization Project		CCE-14
Station 43 Modernization Project		CCE-15
Station 5 Substation Modernization Project		CCE-16
Station 51		CCE-17
Station 82 Upgrades	Planning	CCE-18
Station 29 Modernization Project		CCE-19
Station 34 Modernization Project		CCE-20
Station 37 Modernization Project		CCE-21

Q. Are there further detailed descriptions of the projects described above available?

A. Yes. The Five Year Plan included in Exhibit __ (CCE-2), Appendix B provides detailed project information.

B. Electric Reliability

Q. What are the projected capital investments in the Electric Reliability category for the Companies?

A. The capital forecast for the Electric Reliability category from 2022-2026 is shown for NYSEG and RG&E in Table 14 and Table 15, respectively. More information and details about this category, including the projects listed on the tables below, are included in Exhibit __ (CCE-2), Appendix B.

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Table 14: NYSEG Electric Reliability Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>	2022	2023	2024	2025	2026	Total 2022-2026
1	Reliability	\$ 76,364	\$ 53,658	\$ 61,478	\$ 66,477	\$ 37,736	\$ 295,713
2	Breaker Program	18,279	12,048	11,760	14,238	15,738	72,063
3	Distribution Load Relief Program	100	2,000	9,000	9,000	4,000	24,100
4	Milo Substation Rebuild	162	938	17,616	1,007	-	19,724
5	Wood Street New 3rd 345/115kV Trans	15,747	3,011	-	-	-	18,758
6	Craryville New Substation Breaker and Circuit Upgrade	-	4,950	6,560	6,560	-	18,070
7	Animal Guard Program	4,366	3,388	1,516	1,870	1,998	13,138
8	Comprehensive Area Studies	3,000	1,000	3,000	3,000	3,000	13,000
9	Dingle Ridge - 2nd Bank and 13.2kV Conv	5,557	7,179	-	-	-	12,735
10	NeverSink Substation Transformer & Circuit Upgrade	-	500	2,000	8,500	-	11,000
11	Hilldale Substation Transformer Replacment & New Circuit	-	600	1,120	1,000	8,000	10,720
12	Transmission Reinforcement Program	-	-	-	5,000	5,000	10,000
13	Crafts Substation Transformer Upgrade	-	500	1,000	8,500	-	10,000
14	North Brewster Reinforcement	2,218	7,504	30	-	-	9,751
15	Hillcrest Transformer Replacement -Cap	8,299	1,242	-	-	-	9,541
16	Circuit Sensor Implementation Plan	1,000	1,000	5,000	1,680	-	8,680
17	Heritage Hills Upgrade	4,584	2,619	-	-	-	7,203
18	Line 620 Rebuild - 34.5 kV	39	26	1,710	4,086	-	5,861
19	BIM	-	600	615	2,035	-	3,251
20	Sackett Lake Replace Transformer	3,037	-	-	-	-	3,037
21	Substation Modernization - Raquette Lake	2,934	11	-	-	-	2,946
22	Mobile #4 Replacement	1,555	922	-	-	-	2,477
23	Mobile #2 Replacement	1,792	670	-	-	-	2,462
24	Afton 34.5kV Line Addition	1,000	1,000	-	-	-	2,000
25	Sloan Substation Load Relief	-	850	550	-	-	1,400
26	Ithaca - College Ave Underground	1,371	-	-	-	-	1,371
27	NY Spectrum HW Refresh CapEx	1,258	-	-	-	-	1,258
28	Energy Control Center (ECC) Distribution Room Expansion	-	1,100	-	-	-	1,100
29	Willet New 2nd 115-34.5kV Transformer	67	-	-	-	-	67
30	Total	\$ 76,364	\$ 53,658	\$ 61,478	\$ 66,477	\$ 37,736	\$ 295,713

Table 15: RG&E Electric Reliability Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>	2022	2023	2024	2025	2026	Total 2022-2026
1	Reliability	\$ 41,811	\$ 56,100	\$ 66,749	\$ 68,164	\$ 47,236	\$ 280,060
2	Station 46 - Replace #1 #3 Transf. Banks T	6,791	11,698	22,533	16,445	2,344	59,811
3	Sta 210 Modernization Prj - Install WO	1,175	1,594	4,730	16,598	20,784	44,880
4	Webster Area Projects	712	12,470	11,789	16,302	2,774	44,046
5	GMI-Station 168 Svc Area Reinforcements	6,555	7,198	12,512	3	-	26,268
6	Breaker Prog	5,015	2,828	3,195	3,877	4,289	19,204
7	Station 117	3,065	1,000	1,000	5,296	6,356	16,717
8	Sta-127 115kV System Upgrade D	8,597	6,390	-	-	-	14,987
9	Transmission Reinforcement Program	-	2,000	2,000	3,000	5,000	12,000
10	Comprehensive Area Studies	500	2,000	2,000	2,000	2,000	8,500
11	Animal Guards CAP	2,605	1,799	881	1,108	1,190	7,583
12	Circuit Sensor Implementation Plan	1,000	3,000	2,290	-	-	6,290
13	Distribution Load Relief Program	100	500	1,000	2,000	2,000	5,600
14	Replace DC Pilot Wire System	320	2,779	2,000	-	-	5,100
15	Station 38 Total Refurbishment D	3,033	438	-	-	-	3,471
16	RARP Rochester Area Reliability Project	1,731	-	-	-	-	1,731
17	Station 49 4KV to 12KV Upgrade	100	100	500	500	500	1,700
18	BIM	-	305	318	1,036	-	1,660
19	NY Spectrum HW Refresh CapEx	360	-	-	-	-	360
20	Station 49 Transformer Addition	90	-	-	-	-	90
21	UG Cable Injection	61	-	-	-	-	61
22	Total	\$ 41,811	\$ 56,100	\$ 66,749	\$ 68,164	\$ 47,236	\$ 280,060

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Q. Please describe the major projects and programs that are attributable to each of the line items included in Table 14 and Table 15 related to the Reliability category.

A. The following describes the forecasted capital investments for reliability-related projects and programs and includes an overall description of the project or program, identified needs and justification, and anticipated system benefits from executing on these projects and programs. The focus on specific projects and programs was determined based on their overall contribution to the proposed reliability capital investment. The projects/programs are as follows:

Substation Circuit Breaker Replacement Program

Program Description: 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 Asset Management. 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.

Needs/Justification: Circuit breaker replacement needs are identified through health and risk assessments which are conducted by T&S Asset Management. Candidate circuit breakers typically fall in two categories: 1) Obsolete models that are older and are increasingly difficult to maintain due to lack of vendor support and inability to get parts; and 2) Older models that have components that need more frequent maintenance to assure proper operation. Replacement of the breakers are evaluated on a one-for-one replacement basis. Typical needs include evaluation of the existing foundation, upgrade

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1 of obsolete isolation switches with brown glass insulators, and upgrade of the electro-
2 mechanical control relays (if necessary).

3 **Benefits:** This program will improve reliability to customers with improved system
4 control and protection.

5 **Comprehensive Area Studies (“D-Planning”)**

6 **Program Description:** The Distribution Comprehensive Area Improvement Program
7 will consist of several projects that will be identified by the Electric Distribution Planning
8 management team. The team will use a process of identifying reliability needs and
9 performance issues that exist under current and future (10-year) loading/topology
10 projections. Comprehensive area studies are performed on substations and distribution
11 feeders, analyzing present and future conditions related to distribution system capacity
12 loading, common operating voltage conditions, load balancing, reliability and resiliency,
13 loss of load, voltage and power factor quality, distributed generation, hosting capacity
14 and distribution automation, and SCADA needs.

15 **Needs/Justification:** Comprehensive Area studies will be conducted in the NYSEG
16 divisions of Auburn, Binghamton, Elmira, Hornell, Ithaca, Lancaster, Mechanicville, and
17 Oneonta to address reliability and distribution issues. It should be noted that before an
18 individual project is included in the capital plan, it must undergo a comprehensive needs
19 and solutions analysis to ensure all needs are captured (e.g., asset condition) and a cost-
20 effective mitigation plan is developed.

21 **Benefits:** This program will identify projects that are intended to resolve the risk of
22 thermal and loss of load in the study areas.

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Animal Guard Program

Program Description: This program targets 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.

Needs/Justification: These installations have resulted in SAIFI and CAIDI improvements due to decreased animal contact outages. Adequate funding, material, and available field crews are necessary to keep installations moving forward.

Benefits: This project will increase circuit reliability by minimizing the number of animal-caused service interruptions.

Distribution Load Relief Program

Program Description: The objective of this program is to conduct system-wide facility analyses on substations that are overloaded and/or starting to exceed 90% capacity and to develop a mitigation strategy to enhance the condition of these assets so they do not exceed their associated Planned Loading Beyond Nameplate (“PLBN”) thermal rating. These comprehensive analyses will include electrical assessments and asset condition screening assessments which will include an assessment of age of equipment, resiliency/flooding impacts, substation P&C assessment, and substation reliability performance.

Needs/Justification: NYSEG has identified 14 substation banks that have reached or exceeded 90% capacity with half of these banks exceeding 100% of their capacity nameplate rating. This program focuses on conducting system-wide facility analyses to

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1 inform a larger strategy that could involve a number of solutions (projects) involving
2 adding fans, retrofitting upgrades, infield switching to load shed, or retiring smaller
3 substations.

4 **Benefits:** Distribution Load Relief assessments, maintenance reports, and operational
5 field data suggests that a program is needed to address overloaded substation
6 transformers. As the data indicates, if the Companies “do nothing,” the percentage of
7 these overloaded transformers will exceed their PLBN and need immediate replacement
8 and/or create outages.

9 **RG&E Substation Upgrade Projects**

10 **Overview:** There are six major RG&E substation upgrade projects that are predominately
11 driven by underlying reliability needs. Four of these projects are in the execution phase
12 and two of these projects are in the planning phase to ensure that the final scope of work
13 addresses the full set of needs identified through each individual study effort. The table
14 below (Table 16) lists the specific substation projects being proposed at RG&E and the
15 current project phase in which they reside. Individual project descriptions, justification,
16 and benefits can be found in the exhibits listed in the table.

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Table 16: RG&E Substation Projects (Reliability)

RG&E Substation Projects		
Station Name	Project Phase	Source Material Reference
Webster Area Projects ("New Line 812 & St 424 Line Bay" & "New Line 813 - 34.5 kV")	Execution	CCE-22
Station 46 - Replace #1 #3 Transf. Banks		CCE-23
GMI-Station 168 Srvc Area Reinforcements		CCE-24
Station 117		CCE-25
Station 49 4 KV to 12 KV Upgrade	Planning	CCE-26
Sta 210 Modernization Project		CCE-27

Q. Are there further descriptions of the projects described above?

A. Yes. As noted above, the Five Year Plan included in Exhibit __ (CCE-2), Appendix B provides additional project information.

C. Resiliency

Q. What are the projected capital investments in the Electric Resiliency category for the Companies?

A. The capital forecast for the Electric Resiliency category from 2022-2026 is shown for NYSEG and RG&E in Table 17 and Table 18, respectively. Each project listed in the tables below is more fully explained in Exhibit __ (CCE-2), Appendix B.

Table 17: NYSEG Electric Resiliency Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
1	Resiliency	\$ 69,050	\$ 78,485	\$ 68,915	\$ 72,400	\$ 73,262	\$ 362,111
2	DSIP - Grid Automation	28,575	33,782	37,288	37,288	37,288	174,222
3	Resiliency Automation, Hardening and Topology	28,236	41,924	26,167	28,006	28,006	152,339
4	SCADA/Automation	10,503	1,528	4,810	6,356	7,217	30,415
5	Recloser Automation	1,736	1,250	650	750	750	5,136
6	Total	\$ 69,050	\$ 78,485	\$ 68,915	\$ 72,400	\$ 73,262	\$ 362,111

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Table 18: RG&E Electric Resiliency Capital Forecast

	A	B	C	D	E	F	G
		2022	2023	2024	2025	2026	2027
<i>\$ in thousands</i>							
1 Resiliency		\$ 19,073	\$ 17,226	\$ 12,956	\$ 20,304	\$ 22,209	\$ 91,767
2 Resiliency Automation, Hardening and Topology		9,425	13,013	9,037	10,970	12,767	55,212
3 DSIP - Grid Automation		4,652	2,000	2,000	7,000	7,000	22,652
4 SCADA/Automation		4,128	1,393	1,498	1,846	1,955	10,820
5 Recloser Automation		868	820	420	488	488	3,083
6 Total		\$ 19,073	\$ 17,226	\$ 12,956	\$ 20,304	\$ 22,209	\$ 91,767

Q. Please describe the major projects and programs that are attributable to each of the line items that are shown in Table 17 and Table 18 related to the Resiliency category.

A. Descriptions of the forecasted capital investments for resiliency-related projects and programs include an overall description of the project or program, identified needs and project/program justification, and anticipated system benefits from executing on these projects/programs. The focus on specific projects and programs were determined based on their overall contribution to the proposed resiliency capital investment. The projects/programs are described as follows:

Resiliency Program

Program Description: NYSEG/RG&E's 2023-2026 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 the Companies, our customers, and state policymakers and regulators, about the importance of grid resiliency given the number and severity of storms over the past three

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1 years. The Resiliency Plan focuses on three primary program components: 1) Hardening;
2 2) Topology; and 3) Automation. Please reference Exhibit __ (CCE-44) for a more
3 detailed breakdown of the Resiliency Plan.

4 **Needs/Justification:** Significant risk of loss of load during storms has negatively
5 impacted system resilience and affected system reliability and power quality to
6 customers.

7 **Benefits:** This project resolves the risk of loss of load in the study area. Benefits of this
8 program include value for customers from avoided interruptions, and value for the
9 Companies in the form of avoided restoration costs and replacement of damaged
10 distribution infrastructure.

11 **Distribution System Implementation Plan (“DSIP”) Grid Automation Program**

12 **Program Description:** This program provides smart devices on all parts of the electric
13 distribution system. A system fully metered, monitored, and controlled provides
14 integrated system operations, access for competing providers, and enhanced customer
15 services that maximize benefits. This program will include only the purchase and
16 installation of devices that have full communications and control capabilities. All new
17 distribution equipment will be “smart.” The Companies also have a strategic plan to
18 deploy digital Remote Terminal Units (“RTUs”) to provide for status and control of
19 smart devices within substations and on the distribution system. In short, the Companies
20 will continue to automate its entire system, consistent with all applicable standards and
21 requirements.

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1 **Needs/Justification:** In recent years, NYSEG and RG&E have experienced increasing
2 SAIFI metrics that need to be attended and corrected to help reduce interruptions
3 experienced by customers. Without smart devices, the number of outages is higher than
4 it otherwise would be, and the resolution of those outages is more time-consuming.

5 **Benefits:** The proposed solution will reduce the impact, duration, and cost of outage
6 events. This will lead to improved reliability for customers.

7 **SCADA/Automation Program**

8 **Program Description:** The goal of this program is to install an RTU in all substations
9 that do not currently have an RTU, and to integrate all the bays into the SCADA system
10 of those stations where there is an RTU already in service. This program covers the
11 replacement of electromechanical relays with digital relay to get the bays digitalized.
12 The addition of SCADA in the substations in conjunction with the installation of digital
13 relays will allow for improved visibility and remote control, proper system protection
14 coordination, and outage assessment, which in turn will result in quicker response and
15 improved reliability metrics. Remote control capabilities will contribute to an increase in
16 the safety of workers operating the switchgear, preventing them from performing manual
17 commands.

18 **Needs/Justification:** There are 478 substations at NYSEG and 180 substations at RG&E.
19 Substations fall into three categories in terms of Automation based on the remote control
20 and indication capabilities of SCADA over the substation bays: 1) Fully Automated - a
21 substation will be considered fully automated if SCADA has control over more than 95 %
22 of the bays; 2) Partially Automated - a substation will be considered partially automated

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if between 10% and 95 %of the bays are integrated into SCADA; and 3) No Automation - a substation will be considered as having no automation capabilities if SCADA has control of less than 10% of the bays. Substations with no RTU installed will fall under this category. The figures below show the breakdown of current substation automation capabilities at NYSEG and RG&E, respectively.

Figure 4: NYSEG Substation Automation Ratio

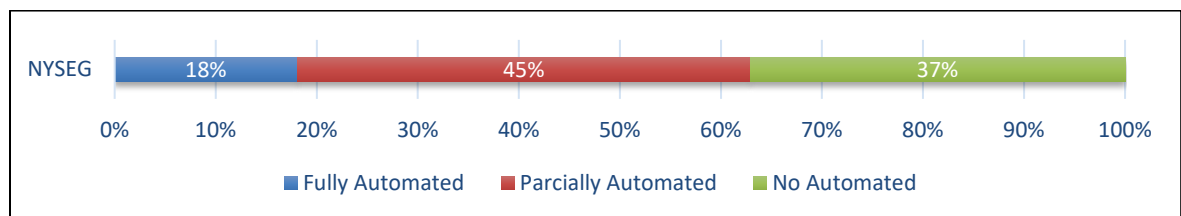
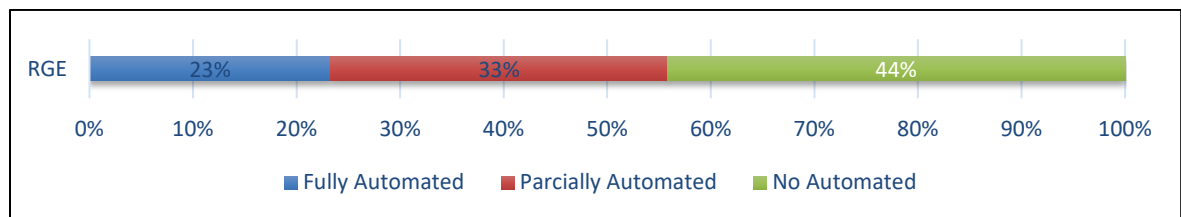


Figure 5: RG&E Substation Automation Ratio



Benefits: This program will help to: 1) reduce CAIDI by allowing remote restoration; 2) digitalize the substation equipment; and 3) increase safety during operation activities.

Q. Are further descriptions of the projects described above available?

A. Yes. The Five Year Plan included in Exhibit __ (CCE-2), Appendix B provides detailed project information.

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D. Compliance

Q. What are the projected capital investments in the Electric Compliance category for the Companies?

A. The capital forecast for the Electric Compliance category from 2022-2026 is shown for NYSEG and RG&E in Table 19 and Table 20, respectively. Each project listed in the tables below is more fully explained in Exhibit __ (CCE-2), Appendix B.

Table 19: NYSEG Electric Compliance Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1	Compliance	\$ 78,463	\$ 117,456	\$ 84,279	\$ 45,508	\$ 14,716	\$ 340,421
2	BES Program - FERC Compliance	76,110	106,617	69,944	34,097	4,249	291,018
3	NERC Alert Priority III	2,353	10,136	9,985	11,411	10,467	44,351
4	FERC Order 2222 DER Aggregations/Billing/Metering	-	667	4,000	-	-	4,667
5	DER- ICCP connection to NYISO	-	35	350	-	-	385
6	Total	\$ 78,463	\$ 117,456	\$ 84,279	\$ 45,508	\$ 14,716	\$ 340,421

Table 20: RG&E Electric Compliance Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1	Compliance	\$ 16,364	\$ 32,338	\$ 47,000	\$ 47,186	\$ 34,571	\$ 177,459
2	BES Program - FERC Compliance	16,364	31,990	44,850	47,186	34,571	174,961
3	FERC Order 2222 DER Aggregations/Billing/Metering	-	333	2,000	-	-	2,333
4	DER- ICCP connection to NYISO	-	15	150	-	-	165
5	Total	\$ 16,364	\$ 32,338	\$ 47,000	\$ 47,186	\$ 34,571	\$ 177,459

Q. Please describe the major projects and programs that are attributable to each of the line items shown in Table 19 and Table 20 related to the Compliance category.

A. Descriptions of the forecasted capital investments for Compliance-related projects and programs include an overall description of the project or program, identified needs and project/program justification, and anticipated system benefits from executing on these projects/programs. The focus on specific projects and programs were determined based on their overall contribution to the proposed Compliance capital investment. The projects/programs are described herein as follows:

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BES Program, NERC Compliance

Program Description: The objective of this program is to identify and address system deficiencies on the portion of the BES owned by 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 showing how these deficiencies will be mitigated must be developed. In order to achieve compliance with NERC TPL requirements, a comprehensive planning assessment was performed, initially in 2014, and again in 2018 to incorporate a number of 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 ensures that a comprehensive and cost-effective solution is developed. It should be noted that 14 previously-identified BES projects have now been included in the CLCPA suite of (Phase 1) projects in support of New York State’s clean energy goals. As a result, the portfolio of BES projects has been adjusted, the remaining projects have been re-prioritized and updated schedules and cost estimate projections have been developed.

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1 **Needs/Justification:** Projects are needed to meet minimum NERC TPL-001-4
2 compliance standards. These corrective action plans (projects) are needed to solve
3 reliability needs (thermal/voltage) and asset condition needs that were identified as a
4 result of the 2018 Transmission Planning Re-Assessment Study.

5 **Benefits:** Execution of this program will result in increased system reliability, enhanced
6 operational flexibility, and the renewal of assets that are beyond their useful life.

7 **NERC Alert Priority III**

8 **Program Description:** NERC Alert Phase III scope is to primarily identify asset(s) that
9 are in critical condition to ensure the safety and reliability of the bulk power system
10 mandated by FERC. The program provides concise actionable information to update the
11 delivery system of our service areas. Those upgrades include structure replacements
12 and/or the amendment of structures that are deemed to be in direct violation with the
13 NESC Code or in very poor condition and ground clearances that affect the safety and
14 reliability to our customers.

15 **Needs/Justification:** Generally, NERC distributes alerts broadly to Transmission Owners
16 (“TOs”) and Operators of the bulk power system. All TOs are required to maintain their
17 assets for reliability and safety purposes. TOs must be in compliance with these
18 requirements, which are mandated by NERC. TOs may be subjected to actionable
19 observations or penalties for non-compliance.

20 **Benefits:** This program will ensure that the Companies comply with mandatory NERC
21 reliability requirements.

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Q. Are further descriptions of the projects discussed above available?

A. Yes. The Five Year Plan included in Exhibit __ (CCE-2), Appendix B provides additional project information.

E. Clean Energy Transformation

Q. What are the projected capital investments in the Electric Clean Energy Transformation category for each company?

A. The capital forecast for the Electric Clean Energy Transformation category from 2022-2026 is shown for NYSEG and RG&E in Table 21 and Table 22, respectively.

Table 21: NYSEG Electric Clean Energy Transformation Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1	Clean Energy Transformation	\$ 152,601	\$ 507,343	\$ 671,433	\$ 747,900	\$ 990,500	\$ 3,069,777
2	CLCPA Transmission Projects - Phase II	24,800	310,200	330,200	417,600	545,400	1,628,200
3	CLCPA Transmission Projects - Phase I	125,700	188,200	305,000	310,300	429,100	1,358,300
4	Ithaca Electrification Projects – Phase 2	-	-	10,000	10,000	10,000	30,000
5	Java SS Microgrid BESS	174	5,943	20,233	-	-	26,351
6	Ithaca Electrification Projects – Phase 1	100	3,000	6,000	10,000	6,000	25,100
7	Stillwater NWA	1,827	-	-	-	-	1,827
8	Total	\$ 152,601	\$ 507,343	\$ 671,433	\$ 747,900	\$ 990,500	\$ 3,069,777

Table 22: RG&E Electric Clean Energy Transformation Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1	Clean Energy Transformation	\$ 600	\$ 7,100	\$ 6,100	\$ 10,000	\$ 25,300	\$ 49,100
2	CLCPA Transmission Projects - Phase II	600	7,100	6,100	10,000	25,300	49,100
3	Total	\$ 600	\$ 7,100	\$ 6,100	\$ 10,000	\$ 25,300	\$ 49,100

Q. Please describe the major projects and programs that are attributable to each of the line items shown in Table 21 and Table 22 related to the Clean Energy Transformation category.

A. Descriptions of the forecasted capital investments for Clean Energy Transformation-related projects and programs include an overall description of the project or program, identified needs and project/program justification, and anticipated system benefits from

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executing on these projects/programs. The focus on specific projects and programs were determined based on their overall contribution to the proposed Clean Energy Transformation capital investment. The projects/programs are described herein as follows:

CLCPA Transmission Projects Phase 1

Project Description: The CLCPA Phase 1 Transmission Projects consist of 23 projects for the purpose of unlocking transmission-connected renewable resources by increasing headroom on the system. The 23 projects are spread throughout the Binghamton, Ithaca, Lancaster, Lockport, and Oneonta areas within NYSEG's service territory. These projects were submitted via petition to the Commission on December 23, 2021 in Case 20-E-0197.

Needs/Justification: The CLCPA Phase 1 Needs and Solutions Assessment Study was performed to provide a comprehensive assessment of the Companies' long-term capital plan projects across its New York service territory that are mature, immediately actionable, and beneficial to the integration of renewable resources in support of CLCPA goals. This study found that by accelerating select NYSEG long-term capital plan projects, a number of reliability and asset condition needs can be mitigated while also providing significant land-based renewable resource deliverability benefits to the BES.

Benefits: This study provides a comprehensive assessment in response to the Commission's Order on Phase 1 Local Transmission and Distribution in Case 20-E-0197 and presents the State with an opportunity to simultaneously solve numerous reliability, resiliency, and asset condition issues, while also unlocking significant headroom for

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renewable energy resources via the Companies' transmission system for delivery around the State.

CLCPA Transmission Projects Phase 2 "Areas of Concern"

Project Description: The CLCPA Phase 2 "Areas of Concern" Transmission Projects consist of 46 projects for the purpose of unlocking an incremental amount of transmission-connected renewable resources and to increase headroom on the system.

The 46 projects are spread throughout the Elmira, Geneva, Hornell, Lancaster, and Rochester areas within the NYSEG and RG&E service territories. These projects were submitted in a petition to the Commission on March 8, 2022 in Case 20-E-0197.

Needs/Justification: The objective of this CLCPA Phase 2 Needs and Solutions Assessment Study, which was performed to determine the system upgrades necessary to satisfy the Near-Term CLCPA Need in the "Z1" Area of Concern (Southern Tier), as defined in the Commission's Order issued on September 9th, 2021 in Case 20-E-0197 (the "Phase 2 Order"). The projects proposed as part of this study are beneficial to the integration of renewable resources in support of CLCPA goals. This study found that by addressing the CLCPA deliverability needs, several asset condition needs can be mitigated while also providing significant land-based renewable resource deliverability benefits to the BES.

Benefits: This study provides a comprehensive assessment in response to the Near-Term CLCPA Need in the "Z1" Area of Concern and presents the State with an opportunity to simultaneously solve numerous reliability, resiliency, and asset condition issues, while

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1 also unlocking significant headroom for renewable energy resources via the Companies'
2 transmission system for delivery around the State.

3 **Ithaca Electrification Projects Phase 1**

4 **Project Description:** These local transmission and distribution projects are needed to
5 address existing reliability needs and will help to support timely execution of the City of
6 Ithaca's electrification initiative. Voltage and thermal violations exist under a range of
7 contingency conditions in the transmission and distribution network between Coddington
8 and Etna Substations in NYSEG's Ithaca Division. To resolve the voltage violations,
9 three shunt capacitors are proposed at: 1) West Hill; 2) Trumansburg; and 3) Cayuga
10 Heights. There is a plan to rebuild Coddington Substation as part of the CLCPA
11 Transmission Projects Phase 1 effort, which will resolve the thermal violations in the
12 long term (2026-2027), but in the short term a mobile 115/34.5 kV transformer will be
13 installed at Coddington. Two transformers at Fourth Street will be replaced with larger
14 units, and the 8.3 kV distribution network (which is islanded from the 12.5 kV
15 surrounding network) will be upgraded to 12.5 kV.

16 **Needs/Justification:** The 34.5 kV transmission network between Coddington and Etna
17 Substations is unable to maintain system voltages above Transmission Planning's
18 minimum criteria of 0.95 per unit under multiple contingency conditions. The long-term
19 plan to rebuild Coddington Substation does not address the immediate system thermal
20 needs, which impact up to 30,000 customers. For a fault on either of the Coddington
21 115/34.5 kV transformers, the remaining transformer may exceed its thermal Long-Term
22 and Short-Term Emergency ratings. Installing a temporary transformer at Coddington

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1 Substation until construction is complete on the rebuild will improve reliability in the
2 short-term. The Fourth Bank Substation Bank #1 transformer is projected to have its
3 capacity exceed by 2026. The distribution circuits out of Fourth Street Substation are 8.3
4 kV, while all other distribution circuits in this region are 12.5 kV. This negatively
5 impacts reliability for Fourth Street Substation customers (~3,300) as well as customers
6 on the nearby circuits (~1,500) since the redundancy that could be provided by having a
7 uniform voltage level is not available. Load growth opportunities are also restricted due
8 to fewer load balancing options resulting from disparate distribution voltages.

9 **Benefits:** These projects will improve existing customer reliability under many
10 contingency conditions and maintain this reliability for projected future load growth.
11 Execution of these projects will serve to increase transmission and distribution system
12 capacity and margin required to support the City of Ithaca's first phase of electrification
13 transformation.

14 **Ithaca Electrification Projects Phase 2**

15 **Project Description:** The load growth projected due to the City of Ithaca's electrification
16 initiative is expected to result in new thermal needs on the transmission and distribution
17 systems, which will require mitigation. As a result, NYSEG expects that five projects
18 would be needed to support the full extent of load growth projected by 2030: 1) the West
19 Hill 34.5/12.5 kV transformer will be replaced with a larger unit; 2) both 34.5/12.5 kV
20 transformers at South Hill will be replaced with larger units; 3) a new 12.5 kV
21 distribution circuit will be routed out of East Ithaca; 4) the 34.5 kV Line 526 between

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Coddington and South Hill Substations will be upgraded; and 5) the 34.5 kV Line 532 between Coddington and West Hill Substations will be upgraded.

Needs/Justification: The projected load growth from the City of Ithaca's electrification initiative is expected to result in up to a 100% increase in winter peak (30% increase in summer peak) loading at Fourth Street, 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.

Benefits: These projects will enable the City of Ithaca to execute on their long-term plans focused on decarbonization and electrification of city buildings and residences. Execution of these projects will serve to increase transmission and distribution system capacity/margin which is required to support the City of Ithaca's second phase of electrification transformation.

Q. Are there further descriptions of the projects discussed above?

A. Yes. The Five Year Plan included in Exhibit ____ (CCE-2), Appendix B provides additional project information.

F. Customer Focus

Q. What are the projected capital investments in the Electric Customer Focus category for the Companies?

A. The capital forecast for the Electric Customer Focus category from 2022-2026 is shown for NYSEG and RG&E Electric in Table 23 and Table 24, respectively.

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Table 23: NYSEG Electric Customer Focus Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1 Customer Focus		\$ 106,968	\$ 129,274	\$ 131,119	\$ 142,595	\$ 146,223	\$ 656,179
2 Dist Line		22,341	36,430	37,702	38,014	39,364	173,851
3 Make Ready		29,467	30,250	30,250	40,750	40,750	171,467
4 Trans line		17,981	16,907	17,594	19,302	20,031	91,815
5 Res Line		10,030	12,774	13,157	13,552	13,958	63,472
6 Serv Conn		7,400	10,228	10,595	11,973	12,362	52,556
7 Ind/Comm		6,987	7,336	7,556	7,783	8,016	37,677
8 Gov't Highway		3,492	3,697	3,808	4,902	5,049	20,948
9 Street Light		3,572	2,500	2,500	2,500	2,500	13,572
10 LED Streetlighting		3,572	4,000	4,000	-	-	11,572
11 DataCapable		100	2,431	2,431	2,431	2,431	9,823
12 Electric Meters		1,605	1,098	1,098	1,098	1,464	6,363
13 LSE Tracker (Life Support Equipment)		-	1,400	200	-	-	1,600
14 Storms Electric		421	225	229	292	298	1,464
15 Total		\$ 106,968	\$ 129,274	\$ 131,119	\$ 142,595	\$ 146,223	\$ 656,179

Table 24: RG&E Electric Customer Focus Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1 Customer Focus		\$ 32,338	\$ 54,169	\$ 63,697	\$ 68,387	\$ 69,599	\$ 288,189
2 Make Ready		1,886	15,200	12,920	19,900	20,900	70,806
3 Dist Line		7,057	10,741	11,184	11,639	12,108	52,730
4 Gov't HW		977	7,998	9,657	9,319	10,183	38,134
5 Res Line		4,725	4,961	5,110	5,264	5,421	25,482
6 Aquaduct Re-Imagined		350	3,000	10,000	7,000	4,000	24,350
7 Serv Conn		2,486	3,200	3,296	3,395	3,497	15,872
8 Ind/Comm		1,857	3,027	3,117	3,211	3,307	14,519
9 Town of Brighton Arc Light Conversion		300	820	3,320	3,320	3,600	11,360
10 Gov't Highway Majors CAP		3,278	1,598	1,646	1,695	2,183	10,400
11 Trans line		1,825	889	1,217	1,547	2,100	7,578
12 DataCapable		100	1,034	1,034	1,034	1,034	4,237
13 Mandated RG&E - East Main St HWY Project		3,255	-	-	-	-	3,255
14 Electric Meters Program		666	322	322	645	752	2,708
15 Street Light		259	303	312	322	414	1,611
16 Mandated - State St		1,426	-	-	-	-	1,426
17 ROC 5 Amazon		1,328	-	-	-	-	1,328
18 LED Streetlighting		380	400	400	-	-	1,180
19 LSE Tracker (Life Support Equipment)		-	600	85	-	-	685
20 STORM ELECTRIC		182	74	76	97	98	527
21 Total		\$ 32,338	\$ 54,169	\$ 63,697	\$ 68,387	\$ 69,599	\$ 288,189

Q. Please describe the major projects and programs that are attributable to each of the line

items you mentioned and that are shown in Table 23 and Table 24 related to the

Customer Focus category.

A. Descriptions of the forecasted capital investments for Customer Focus-related projects

and programs include an overall description of the project or program, identified needs

and project/program justification, and anticipated system benefits from executing on

these projects/programs. The focus on specific projects and programs were determined

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1 based on their overall contribution to the proposed customer capital investment. The
2 projects/programs are described as follows:

3 **Make Ready**

4 **Program Description:** The Make Ready program is in place to make our infrastructure
5 available to meet the broadband communication needs of our customers. As this work
6 has evolved, we have developed, with input from Staff and other stakeholders, guidelines
7 for the cost treatment of the different situations encountered in the field.

8 **Needs/Justification:** This program is needed to process applications providing safe
9 access to distribution pole plant for communications/broadband deployment needs in
10 accordance with Public Service Law § 119-a.

11 **Benefits:** This program provides an avenue for safe and timely access to distribution pole
12 plant for communications and broadband deployment needs.

13 **Distribution Line Program**

14 **Program Description:** The Distribution Line program consists of replacing
15 infrastructure due to emergency situations causing interruptions in service. This program
16 is for unplanned, reactive work on the electric distribution system such as car hit poles,
17 damaged conductors, transformers, and poles. This program's proposed capital spend is
18 based on the costs that have occurred in previous years. It is difficult to predict what may
19 break and or be damaged by others, so a historical-based estimate is used.

20 **Needs/Justification:** Being able to quickly repair damaged assets is paramount in
21 ensuring public safety and maintaining a reliable distribution system. Adequate funding,
22 materials and field crew availability are crucial in expediting our response time.

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1 **Benefits:** The program maintains public safety and helps to ensure our regulatory service
2 targets are met.

3 **Residential Line Program**

4 **Program Description:** This program provides distribution line extensions and necessary
5 facilities (poles, transformers, conductors, conduit, hand holds, manholes, etc.) to provide
6 service to both large-scale residential development projects and individual residential
7 units or meters. The requirement for each project is unique based on the requirements of
8 development projects, the project locations, and the existing electric system
9 infrastructure. This program's proposed capital spend is based on historical spend and
10 any added increase or decrease from various residential customers if communicated in
11 advance. If a project has a cost greater than \$200,000, a separate tracking order is
12 created.

13 **Needs/Justification:** The extensions completed under this program are mandatory to
14 serve NYSEG and RG&E customers. Adequate funding, material, and available field
15 crews are necessary to serve our customers in a timely manner.

16 **Benefits:** This program is required to provide line extensions to residential customers
17 promptly.

18 **Government Highway Program**

19 **Program Description:** This program relocates electric facilities that conflict with
20 highway, road, and street projects being undertaken by municipalities and other
21 government agencies. This program's capital spend is based on historical spend while
22 considering any added increase or decrease from various government agencies if

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1 communicated in advance. Many of these requests are made in-year by the government
2 agencies and are therefore unplanned.

3 **Needs/Justification:** The projects funded under this program are non-discretionary and
4 must be completed under tariff to serve NYSEG and RG&E State and municipal
5 customers.

6 **Benefits:** This program is mandated to provide relocation service requested by State and
7 municipal customers.

8 **Industrial Commercial Program**

9 **Program Description:** This program provides service connections for industrial and
10 commercial customers. Included within the program is anything required for
11 constructing, expanding, replacing, or relocating electric infrastructure assets to connect
12 commercial customers. The cost of the service is comprised of tariff portions as well as
13 customer payments for the amounts above the tariff-required provision. This program's
14 proposed capital spend is based on historical spend and any added increase or decrease
15 from the various commercial customers if communicated in advance.

16 **Needs/Justification:** This program is mandatory to serve NYSEG and RG&E customers.
17 NYSEG & RG&E need to provide reliable and dependable electric service to large
18 commercial and industrial customers. Often, large commercial and industrial customers
19 require an upgrade to the Companies' electric facilities to meet their needs, and the
20 Companies strive to make these upgrades in a timely manner. In certain cases, all, or a
21 portion of the costs of these upgrades may be offset by contributions from the specifically

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1 affected customers. Adequate funding, material, and available field crews are necessary
2 to serve our customers in a timely manner.

3 **Benefits:** This program is required to provide service requested by industrial and
4 commercial customers.

5 **Service Connection Program**

6 **Program Description:** This program installs or upgrades new electric service to
7 individual residential units at the customer's request. Included within the program is
8 anything required for constructing, expanding, replacing, or relocating electric
9 infrastructure assets to connect residential customers. Meters required as part of
10 customer projects are also included on this line item. The cost of the service is comprised
11 of tariff portions as well as customer payments for the amounts above the tariff-required
12 provision.

13 **Needs/Justification:** This program is mandatory to serve NYSEG and RG&E customers.
14 NYSEG and RG&E need to provide reliable and dependable electric service to residential
15 customers. The Companies strive to fulfill these requests in a timely manner. In certain
16 cases, all, or a portion of the costs of these installations and upgrades may be offset by
17 contributions from the specifically affected customers. Adequate funding, material, and
18 available field crews are necessary to keep up with customer demand.

19 **Benefits:** NYSEG and RG&E are required to fulfill our obligation to serve non-
20 industrial/non-commercial customers that request electric service.

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Transmission Line Program

Program Description: 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 CAIDI/SAIFI hot spots in the same calendar year.

Needs/Justification: This program helps to maintain a reliable transmission system and addresses transmission line inspection deficiencies that directly impact CAIDI/SAIFI.

Benefits: Addressing CAIDI/SAIFI hot spots and replacing damaged equipment will positively impact the continuity and quality of service required to maintain the transmission system.

Q. Are there further descriptions of the projects discussed above?

A. Yes. The Five Year Plan included in Exhibit __ (CCE-2), Appendix B provides additional project information.

G. Modernization

Q. What are the projected capital investments in the Electric Modernization category for the Companies?

A. The capital forecast for the Electric Modernization category from 2022-2026 is shown for NYSEG and RG&E in Table 25 and Table 26, respectively.

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Table 25: NYSEG Electric Modernization Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1 Modernization		\$ 62,638	\$ 63,226	\$ 68,115	\$ 44,698	\$ 17,899	\$ 256,576
2 AMI Project E		57,393	57,542	57,542	36,043	5,296	213,816
3 15 Loop Automation Schemes		2,198	1,929	1,929	1,929	1,929	9,914
4 REV - Electric Vehicles		904	1,551	2,132	3,415	-	8,003
5 Siemens Spectrum upgrade to V7		-	-	-	-	6,000	6,000
6 AMI Integration for ISO		-	-	-	739	4,144	4,883
7 IEE Service Mode		-	528	2,112	570	-	3,211
8 DSIP - ADMS		-	375	1,625	1,000	-	3,000
9 Application Interface Upgrades		39	182	1,541	47	-	1,810
10 Distribution Automation		206	209	432	445	458	1,751
11 DSIP - Enterprise Analytics		1,268	-	-	-	-	1,268
12 Transmission GIS and GIS Interface optimization		-	525	225	-	-	750
13 SMSI Field Deployment		-	-	207	414	-	622
14 Automate SAP CCS Dist Gen Billing		599	-	-	-	-	599
15 Spectrum Planned Work Module		-	219	176	72	72	539
16 Electric Reliability Application (ERA) Integration		16	165	60	24	-	265
17 DSIP - Advanced Planning Tools		-	-	132	-	-	132
18 Purchase Plum Devices		15	-	-	-	-	15
19 Total		\$ 62,638	\$ 63,226	\$ 68,115	\$ 44,698	\$ 17,899	\$ 256,576

Table 26: RG&E Electric Modernization Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1 Modernization		\$ 26,247	\$ 25,630	\$ 28,176	\$ 15,699	\$ 5,863	\$ 101,615
2 AMI Project E		24,315	24,144	24,144	12,958	2,209	87,770
3 REV - Electric Vehicles		406	704	972	1,586	-	3,668
4 Siemens Spectrum upgrade to V7		-	-	-	-	2,000	2,000
5 IEE Service Mode		-	284	1,137	307	-	1,729
6 AMI Integration for ISO		-	-	-	246	1,381	1,628
7 DSIP - ADMS		-	125	1,275	100	-	1,500
8 Distribution Automation		44	42	238	245	252	820
9 Automate SAP CCS Dist Gen Billing		649	-	-	-	-	649
10 DSIP - Enterprise Analytics		640	-	-	-	-	640
11 SMSI Field Deployment		-	-	104	207	-	311
12 Transmission GIS and GIS Interface optimization		-	175	75	-	-	250
13 Spectrum Planned Work Module		77	62	54	20	20	233
14 Application Interface Upgrades		56	52	30	20	-	158
15 DSIP - Advanced Planning Tools		-	-	132	-	-	132
16 Electric Reliability Application (ERA) Integration		45	42	15	10	-	112
17 Purchase Plum Devices		15	-	-	-	-	15
18 Total		\$ 26,247	\$ 25,630	\$ 28,176	\$ 15,699	\$ 5,863	\$ 101,615

Q. Please describe the major projects and programs shown in Table 25 and Table 26 related to the Modernization category.

A. Modernization projects are primarily related to automating the electric network. The major project within this category, at NYSEG and RG&E, is the advanced metering infrastructure (“AMI”) project. The AMI project was approved in the 2019 Rate Case and is an ongoing project that will deploy advanced metering technology to gas and

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electric customers. Additional projects within this category update and upgrade various aspects of the automatic and remotely-controlled portions of the electric network.

Q. Are there further descriptions of the projects discussed above?

A. Yes. The Five Year Plan included in Exhibit __ (CCE-2), Appendix B provides additional project information.

H. Innovation

Q. What are the projected capital investments in the Innovation category for the Companies?

A. The capital forecast for the Innovation category from 2022-2026 is shown for NYSEG and RG&E in Table 27 and Table 28, respectively.

Table 27: NYSEG Innovation Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1	Innovation	\$ 10,615	\$ 11,768	\$ 30,786	\$ 62,267	\$ 75	\$ 115,511
2	Low Income Clean Generation	-	-	14,000	21,000	-	35,000
3	EV Charging Hub	-	-	6,006	24,026	-	30,032
4	DSIP - GIS Enhancements GMEP	6,417	6,548	6,679	6,813	-	26,457
5	Medium & Heavy Duty EV Make-Ready Program	-	785	2,355	4,709	-	7,849
6	IEDR	3,898	3,898	-	-	-	7,796
7	Distributed Energy Resource Management System (DERMS)	-	-	-	2,538	-	2,538
8	Stephentown Energy Storage	-	-	666	1,553	-	2,219
9	Wales Center Energy Storage	-	-	666	1,553	-	2,219
10	FICS Scalability Plan	300	300	-	-	-	600
11	Tompkins County Demand Side LMI HVAC Management Pilot	-	-	340	-	-	340
12	Academic Institution Collaboration	-	75	75	75	75	300
13	CYME Server	-	163	-	-	-	163
14	Total	\$ 10,615	\$ 11,768	\$ 30,786	\$ 62,267	\$ 75	\$ 115,511

Table 28: RG&E Innovation Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1	Innovation	\$ 6,289	\$ 6,247	\$ 16,350	\$ 29,462	\$ 75	\$ 58,424
2	Station 125 Energy Storage	-	-	5,824	13,590	-	19,414
3	Low Income Clean Generation	-	-	6,000	9,000	-	15,000
4	DSIP - GIS Enhancements GMEP	3,870	3,374	3,442	3,510	-	14,196
5	IEDR	2,099	2,099	-	-	-	4,198
6	Medium & Heavy Duty EV Make-Ready Program	-	336	1,009	2,018	-	3,364
7	Distributed Energy Resource Management System (DERMS)	-	-	-	1,269	-	1,269
8	FICS Scalability Plan	200	200	-	-	-	400
9	Academic Institution Collaboration	-	75	75	75	75	300
10	CYME Server	-	163	-	-	-	163
11	Integrated EV and ES Controller	121	-	-	-	-	121
12	Total	\$ 6,289	\$ 6,247	\$ 16,350	\$ 29,462	\$ 75	\$ 58,424

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Q. Please describe the major projects and programs shown in Table 27 and Table 28 related to the Innovation category.

A. Descriptions of the forecasted capital investments for Innovation-related projects and programs include an overall description of the project or program, identified needs and project/program justification, and anticipated system benefits from executing on these projects/programs. The focus on specific projects and programs were determined based on their overall contribution to the proposed innovation capital investment. The projects in this category are primarily related to state-of-the-art methods of clean energy generation, energy storage and the expansion of infrastructure for electric vehicles (“EVs”). The projects/programs are described as follows:

Low Income Clean Generation

Program Description: This project will develop one or more solar photovoltaic (“PV”) facilities at both NYSEG and RG&E. NYSEG will install 50 MW of installed capacity while RG&E will install 20 MW of installed capacity. Site acquisition, design, engineering, and construction will be procured through a competitive request for proposals. Revenues generated by these facilities will be allocated to designated low-income customers for the life of the asset. Inclusion of energy storage will be analyzed and considered to the extent that it will result in increased revenue.

Needs/Justification: New York must significantly increase the proportion of renewable generation to meet the requirements of the CLCPA. Today, there are several programs and policies that are meant to support growth of renewable generation including Remote Crediting and Community Distributed Generation. Through Remote Crediting and

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Community Distributed Generation, participating customers receive credits based on revenues generated through those programs and use those credits to offset their electricity cost. Participants benefit by reducing what they would otherwise pay for electricity. Part of this value is shared with the solar PV developer to pay for the facilities.

Benefits: This program will allocate all market based revenue directly to the customers who will benefit the most.

For additional information related to the Low Income Clean Generation program, please refer to the Innovation, Smartgrids and EV Panel testimony.

EV Charging Hub Project

Project Description: This project is a large-scale, purpose-built facility that will serve corridor charging needs for light-duty, medium-duty, and heavy-duty vehicles within the NYSEG service area. The project will include a third-party that will own and operate the chargers and will also be responsible for all driver amenities. Additionally, the third-party partner will be responsible for site acquisition as well as any non-electrical infrastructure related design, engineering, and construction. NYSEG will be responsible for contributing toward site evaluation and for electrical infrastructure related design, engineering, and construction. The project will be located close to a NYSEG substation and will include a dedicated feeder to serve a future expected load of 20 MW. Assuming an average charger power level of 250 kW, the hub will serve up to 80 vehicles. The exact number of vehicles served will depend on charger specification and the mixture of vehicle types served.

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1 **Needs/Justification:** A key premise of the EV charging hub concept is that the current
2 approach of deploying corridor fast chargers, with each site containing roughly four to
3 twelve DC fast chargers works in an environment with only one or two percent EV
4 market penetration, but the current approach will not scale as market adoption scales.
5 Additionally, the current approach will not be able to accommodate medium and heavy-
6 duty EVs as these sites are not designed for those vehicles.

7 **Benefits:** This project will help support growth of the EV market and support New
8 York’s CLCPA goals. The project will showcase a next-generation model that will help
9 the EV market scale.

10 For additional information related to the EV Charging Hub project, please refer to the
11 Innovation, Smartgrids and EV Panel testimony.

12 **Energy Storage Projects**

13 **Project Description:** These projects will install Battery Energy Storage Systems
14 (“BESS”) within both NYSEG and RG&E service territories, specifically at the
15 Stephentown and Wales Center Substations at NYSEG and Stations 89 and 125 at
16 RG&E.

17 **Needs/Justification:** The installations are intended to provide peak shaving during future
18 overload conditions. The NYSEG locations will have a 1 MW/4 MWh BESS installed at
19 each substation. The RG&E locations will have a 2 MW/10 MWh BESS installed at
20 Station 89 and a 7 MW/35 MWh BESS installed at Station 125. Each installation has
21 existing interconnected distributed energy resources (“DER”) on the transformers.

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Benefits: Installing energy storage at these stations will enhance each of the station's ability to host a higher level of DER.

For additional information related to the Energy Storage Projects, please refer to the Innovation, Smartgrids and EV Panel testimony.

Grid Model Enhancement Plan ("GMEP")

Overview: This project is aimed at enabling improved data driven analysis, monitoring, control, planning and forecasting of the electric distribution system. GMEP is foundational to the Companies' DSIP. The project has two primary components: 1) a comprehensive field survey of the distribution network; and 2) the development and implementation of streamlined processes covering the lifecycle of distribution assets by capturing and storing this data in the system of record. By removing inconsistencies and covering existing data gaps, such as conductor phase information, core and advanced functions are enhanced or enabled due to a more accurate system model utilized by Planning and Operations. Among them: processing of DER interconnection applications; quantification of distributed generation hosting capacity; review of non-wire alternative solutions; load and phase balancing; and Volt/Var optimization. In addition, new and streamlined processes will ensure that asset records are managed efficiently and remain consistently reliable in the long term. Finally, the result of the GMEP will be a complete distribution model including network load and DER characteristics. The information in the GMEP will feed the Distribution Planning Tools to support effective planning (including Non-Wires Alternatives ("NWA") analysis), calculate hosting capacity, and analyze interconnection requests. The data will also feed the Advanced Distribution

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1 Management Systems (“ADMS”) as the basis for power flow calculations for
2 optimization and congestion management. For additional information about the GMEP
3 project, please refer to the Innovation, Smartgrids and EV Panel testimony.

4 **Integrated Energy Data Resource (“IEDR”)**

5 **Overview:** This project is in response to the Commission’s February 11, 2021 Order in
6 Case 20-M-0082 ("IEDR Order") directing the implementation of a system that securely
7 collects, integrates and provides useful access to a large and diverse set of energy-related
8 information on one statewide data platform. In response to the two-phased schedule for
9 implementing IEDR included in the IEDR Order, the Companies are working towards the
10 Initial Viable Product and the Minimum Viable Product as part of Phase 1
11 implementation. The project will include the assessment of data in terms of availability
12 and quality and integration of various systems to create a data lake that will then transport
13 various data sets to the statewide IEDR planform. The scope further includes the design,
14 development, testing, integration and maintenance of the systems and process. For
15 additional information about the IEDR project, please refer to the Innovation, Smartgrids
16 and EV Panel testimony.

17 Q. Are there further descriptions of the projects discussed above?

18 A. Yes. The Five Year Plan included in Exhibit __ (CCE-2), Appendix B provides
19 additional project information.

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VII. GENERATION INVESTMENT FORECAST

Q. Please describe the NYSEG and RG&E generating facilities.

A. The NYSEG generating facilities include six active hydroelectric generating facilities and four small fossil-fueled facilities having a total nameplate capacity of approximately 69.5 MW (61.4 MW hydroelectric and 8.1 MW fossil-fueled). The active hydroelectric and fossil-fueled generating facilities are located from Plattsburgh to Rochester. The RG&E facilities include three active hydroelectric facilities having a total nameplate capacity of 57.1 MW; all facilities are located within the City of Rochester. All active hydroelectric facilities are under FERC and New York State Department of Environmental Conservation (“NYSDEC”) 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 are under jurisdiction of NYSDEC. 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 the time in the respective watershed.

Q. Please provide a brief overview of the Companies’ existing fossil-fueled generating facilities.

A. NYSEG has four fossil-fueled standby diesel generators, with a total combined capacity of 8.1 MW. The diesel generators are located at the Harris Lake, 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 46 kV transmission line

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1 from National Grid that feeds NYSEG's service area. RG&E does not have any fossil-
2 fueled generating facilities.

3 Q. Please provide an update on NYSEG's Auburn State Street 7.2 MW natural gas-fired
4 (simple-cycle) generating plant.

5 A. Upon the completion of NYSEG's Auburn Transmission Project, the Auburn State Street
6 generating plant is no longer needed for load support. In 2019, the leased generating unit
7 was retired, sold and removed from the site. The generating unit was deactivated in the
8 New York Independent System Operator system on October 1, 2019.

9 Q. What is the Companies' objective relating to their hydroelectric and diesel generator
10 assets?

11 A. The objective is to maximize production of hydroelectric energy based on available river
12 flows for the benefit of NYSEG and RG&E customers. The Companies will continue to
13 operate and maintain the four standby diesel generators to provide reliable electric service
14 to the customers in the Harris Lake, Blue Mountain and Long Lake areas.

15 Q. What are the capital investment goals for the hydroelectric generating assets that are
16 owned and operated by NYSEG and RG&E?

17 A. The capital investment strategy is to design and execute projects that continue to improve
18 public and personnel safety, protect the environment, address regulatory obligations and
19 requirements, improve hydro-generation availability, reliability, and efficiency, and
20 maintain available generating capacity through upgrade of infrastructure that is nearing or
21 at end-of-life.

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Q. What are the forecasted project expenditures in the Generation capital investment portfolio for the Companies?

A. The forecasted capital investment from 2022-2026 for the hydro-generation portfolio is shown for NYSEG and RG&E in Table 29 and Table 30, respectively.

Table 29: NYSEG Hydro-Generation Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
	2022	2023	2024	2025	2026	Total 2022-2026	
1 Hydro-Generation	\$ 7,525	\$ 7,353	\$ 19,742	\$ 24,905	\$ 57,838	\$ 117,363	
2 Mechanicville Intake Upgrades and Downstream Passage Project	465	919	2,056	6,498	18,919	28,857	
3 Kent Falls - CAPITAL Project	210	212	763	5,039	17,952	24,176	
4 High Falls Intake Upgrades Project	724	550	3,747	4,783	-	9,804	
5 Minor Capital Program	1,389	1,500	1,500	1,500	1,500	7,389	
6 Kents Falls U2 T-G Major Rebuild	4	5	473	883	3,756	5,120	
7 Cadyville U1 T-G Major Rebuild	2	2	478	1,014	2,848	4,345	
8 Mechanicville Upstream Eel Ladder Project	714	628	2,522	278	-	4,141	
9 Cadyville Upgrade U1 & U2 Cooling water systems	-	-	347	406	2,748	3,501	
10 KF Dam Left Abutment & Drainage Improvement	387	2,953	-	-	-	3,340	
11 Saranac Plant Control Systems Upgrade Project	-	-	763	563	1,912	3,238	
12 Keuka/Bradford Concrete Spillway and Toe Resurfacing Repairs/Improvement	-	-	445	360	2,157	2,961	
13 High Falls U2 Generator Rewind	-	-	317	441	1,956	2,714	
14 KF Internal Riser Shaft and Tank	3	3	3	878	1,586	2,473	
15 Keuka/Bradford Dam Automation	-	-	393	323	1,658	2,374	
16 Kents Falls Upstream Training Wall Extension	199	130	1,904	-	-	2,233	
17 Cadyville Right Abutment / Spillway Improvements Project	307	110	1,726	87	-	2,231	
18 Mill C Spillway Concrete Improvements Project	9	70	420	1,450	-	1,949	
19 Rainbow Falls Powerhouse Entrance / Hill Stabilization	115	206	1,622	-	-	1,943	
20 Mechanicville Bay A, Bay B, Bay C Bag Replacement Program & Inclined	1,530	20	-	-	-	1,550	
21 Kents Falls Low Level Floodgate	-	-	263	228	707	1,198	
22 Kents Falls Right Abutment & Toe Scour Upgrades Project	714	44	-	-	-	758	
23 Mill C Intake Trash Rack & Raker Project	340	-	-	-	-	340	
24 Upper Mechanicville Plant Control System Upgrade Project	-	-	-	175	141	316	
25 Rainbow Falls fish bypass study-Env. Compliance	242	-	-	-	-	242	
26 Fossil Hydro Operations	161	-	-	-	-	161	
27 High Falls Draft Tube Stop Logs and Gantry Project	6	-	-	-	-	6	
28 HYDRO Regulatory Mandates	3	-	-	-	-	3	
29 Total	\$ 7,525	\$ 7,353	\$ 19,742	\$ 24,905	\$ 57,838	\$ 117,363	

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Table 30: RG&E Hydro-Generation Capital Forecast

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
	2022	2023	2024	2025	2026	Total 2022-2026	
1 Hydro-Generation	\$ 9,791	\$ 7,253	\$ 24,945	\$ 19,090	\$ 9,278	\$ 70,357	
2 Hydro Generation S2 Modernization	1,406	9,298	20,895	15,158	1,453	48,211	
3 Minor Capital Program	2,137	1,500	1,500	1,500	1,500	8,137	
4 S5 Intake Stop Log Gantry Upgrade Project	356	188	2,289	150	-	2,983	
5 Station #5 surge Tank Rock fall Pro	2,485	-	-	-	-	2,485	
6 S2 Central Ave Dam Superstructure Modernization	-	-	-	569	1,211	1,779	
7 S5 Spillgate #2 Rock Stabilization - 1st priority	-	-	-	619	587	1,206	
8 S5 Gate 2 Hinge Upgrade	-	-	-	467	493	960	
9 S5 Unit 3 Turbine-Generator New Runner	-	-	-	385	443	828	
10 S26 Generator Protection and Controls Upgrade	-	-	130	121	484	735	
11 Station 2 Generator Protection and Controls Upgrade	-	-	130	121	484	735	
12 S5 Gate 5 Rubplate and Bottom Seal Upgrade Project	-	-	-	-	610	610	
13 S5 Surge Tank Expansion (Align with tunnel inspection)	-	-	-	-	575	575	
14 S5 Tunnel System (Construction Joints, Intake Shaft Transition, Surge Tank	-	-	-	-	557	557	
15 Station 5 Gate 3 Rubplate, Rubplate and Breastwall Seal Upgrade Project	-	-	-	-	463	463	
16 S5 Unit 3 Turbine-Generator New Turbine Isolation Valve	-	-	-	-	419	419	
17 S5 Powerhouse T-G Rotating Equipment Guards	283	-	-	-	-	283	
18 Hydro Upgrade	152	-	-	-	-	152	
19 HYDRO Regulatory Mandates	92	-	-	-	-	92	
20 Fossil HYDRO-General Equipment	17	-	-	-	-	17	
21 Station 5 Headgates/Dam	2,864	(3,733)	-	-	-	(869)	
22 Total	\$ 9,791	\$ 7,253	\$ 24,945	\$ 19,090	\$ 9,278	\$ 70,357	

Q. What are the major projects that are being undertaken as part of the Hydro-Generation project portfolio?

A. The major projects at NYSEG include the: 1) Kents Falls Capital Project; 2) Upper Mechanicville Intake Upgrade and Downstream Passage Project; 3) High Falls Intake Upgrades Project; and 4) Hydro Minor Capital Program. Major projects at RG&E include the: 1) Station 2 Modernization Project; 2) Station 5 Headgates/Dam Project; and 3) Hydro Minor Capital Program.

Q. Please explain the NYSEG Kent Falls Capital Project and the reason for the project.

A. The Kent Falls Capital Project involves the installation of new ring girders that will replace 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. The existing penstock saddles, trifurcation and Unit 1 & 2 turbine-generator penstock sections are original to the hydroelectric facility (fabricated and installed circa 1928) and are at end-of-life. The project will restore reliable operation

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1 of the 13.68 MW facility and supports CLCPA goals related to the generation of clean,
2 renewable energy.

3 Q. Please explain the NYSEG Upper Mechanicville Intake Upgrade and Downstream
4 Passage Project and the reason for the project.

5 A. The Upper Mechanicville Intake Upgrade and Downstream Passage Project is required as
6 an outcome of the 50-year operating license issued by FERC, effective April 1, 2021.
7 NYSEG is required to comply with the license settlement agreement that requires
8 modification of the facility's intake to protect aquatic species, specifically American eels,
9 that are upstream of the water intake structure for the hydroelectric facility. Protection
10 will be achieved through the installation of reduced spaced intake trash racks and
11 installation of structure(s) to allow aquatic species to be guided away from the facility
12 intake and safely downstream.

13 Q. Please explain the NYSEG High Falls Intake Upgrades Project and the reason for the
14 project.

15 A. The High Falls Intake Upgrade Project involves an upgrade to the existing intake trash
16 racks from 2-inch clear space opening to 1-inch openings for fish protection per the
17 settlement agreement and NYSDEC Water Quality Certification. Redesign of the intake
18 structure is necessary to reduce intake flow velocities to protect aquatic species. Upon
19 installation of new intake trash racks, river debris accumulating on the intake trash racks
20 will increase. The project also includes installation of a new trash rack raker and
21 associated infrastructure to manage and handle the increased debris removed from the
22 river.

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1 Q. What is the estimated capital investment to upgrade the water intake at Upper
2 Mechanicville and install downstream passage to protect aquatic species?

3 A. The capital investment to comply with the settlement agreement is estimated at \$46.76
4 million, of which \$28.6 million is identified in the Five Year Plan. Due to the magnitude
5 of the additional investment to comply with the settlement agreement, NYSEG has
6 decided to reopen the license settlement agreement with the Parties to eliminate the need
7 for the significant capital investment for passage of aquatic species downstream of the
8 Upper Mechanicville hydroelectric facility water intake structure.

9 Q. Are upgrades to the water intake at NYSEG Upper Mechanicville required independent
10 of the current requirements of the settlement agreement?

11 A. Yes, the existing intake trash racks and associated equipment to remove river debris are
12 41 years old, original to the facility, and nearing end-of-life. Installation of new intake
13 trash racks and equipment to remove river debris is necessary. However, modification of
14 the intake structure is not required. Eliminating this requirement would allow for a
15 substantial reduction in capital investment compared to upgrading the water intake and
16 installation downstream passage for the protection of aquatic species to meet the current
17 requirements of the settlement agreement.

18 Q. Please explain the RG&E Station 2 Modernization Project and the reason for the project.

19 A. The FERC amended RG&E's Station 2 hydroelectric license on March 11, 2009, which
20 allowed RG&E to expand and increase the available capacity of the facility ("FERC
21 License Amendment"). As part of the FERC License Amendment, Unit 1 turbine-
22 generator capacity was increased from 6.5 MW to 8.5 MW, which was completed circa

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2011. Additionally, the FERC License Amendment authorized the installation of a second turbine-generating unit. In-line with the license amendment, the Station 2 Modernization Project involves deepening the area in front of and under the facility's water intake, to allow for the installation of a new and larger penstock that will allow for increased water conveyance, the addition of a second turbine-generating unit, 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 Unit 1 turbine-generator. Sections of the existing penstock are at end-of-life (circa 1900s) and do not allow for future expansion of the hydroelectric facility. The investment will restore reliable operation of the 8.5 MW facility and supports CLCPA goals related to the generation of clean, renewable energy. The second turbine-generating unit will be added at a future date.

Q. Please explain the RG&E Station 5 Headgates/Dam Project and the reason for the project.

A. The Station 5 Headgates/Dam Project involves an upgrade to crest gates 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 gates 4A and 4B failed during operation due to extremely cold temperatures in the region resulting in the need to lower the impoundment and cease generation of electricity at Station 5. Due to the extensive damage, RG&E submitted an insurance claim. Final reimbursement of the insurance claim is to be received in 2023. Upon completion of the project, RG&E will restore the impoundment, which will restore capacity of the dam to pass river flows during high-flow events and return Station 5 to service in generation of clean, renewable energy.

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Q. Please explain the RG&E Hydro Minor Capital Program and the reason for the project.

A. The Hydro Minor Capital Program addresses multiple minor capital expenditures, including but not limited to, equipment upgrades and planned and emergent projects needed to maintain the operating systems and to upgrade safety features at NYSEG and RG&E hydroelectric generating facilities.

Q. Are there further descriptions of the projects discussed above?

A. Yes. The Five Year Plan included in Exhibit __ (CCE-2), Appendix B provides additional project information.

VIII. COMMON INVESTMENTS

Q. What are the areas included in the Five Year Plan that are allocated to both the Gas and Electric lines of business?

A. The areas that are allocated to both the Gas and Electric lines of business (the “Common” areas) are: Building and Facilities (also known as General Services), Customer Service, Fleet, Information Technology, certain portions of Operational Smart Grids, Security and Training.

Q. What are the amounts included in the Five Year Plan for these Common areas?

A. The amounts for each of the areas that are included in the Five Year Plan are shown for NYSEG and RG&E in Table 31 and Table 32, respectively.

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Table 31: NYSEG Common Capital Expenditures (Unallocated Capital Amounts)

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1 Buildings and Facilities		\$ 4,410	\$ 33,475	\$ 59,050	\$ 36,118	\$ 16,087	\$ 149,139
2 Customer Service		2,065	4,038	1,937	1,977	3,114	13,132
3 Fleet		29,420	20,000	20,000	20,000	20,000	109,420
4 Information Technology		12,244	16,822	15,824	14,870	16,244	76,003
5 Operational Smart Grids		41,531	33,245	34,913	24,950	34,071	168,710
6 Physical and Cyber Security		35,538	24,368	22,899	15,195	16,783	114,782
7 Training		2,885	8,038	576	610	780	12,889
8 Total		\$ 128,093	\$ 139,985	\$ 155,198	\$ 113,721	\$ 107,078	\$ 644,076
9							
10 Allocation to Electric Business		\$ 102,808	\$ 112,352	\$ 124,562	\$ 91,272	\$ 85,941	\$ 516,935
11 Allocation to Gas Business		\$ 25,286	\$ 27,633	\$ 30,636	\$ 22,449	\$ 21,137	\$ 127,141

Table 32: RG&E Common Capital Expenditures (Unallocated Capital Amounts)

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1 Buildings and Facilities		\$ 4,823	\$ 8,167	\$ 7,874	\$ 6,453	\$ 5,053	\$ 32,371
2 Customer Service		1,189	3,244	1,951	1,983	2,504	10,872
3 Fleet		6,717	5,689	9,208	6,111	6,214	33,940
4 Information Technology		6,492	10,107	9,778	9,326	9,450	45,152
5 Operational Smart Grids		22,227	15,525	24,728	24,361	31,798	118,639
6 Physical and Cyber Security		23,088	13,269	10,026	8,336	10,531	65,251
7 Training		265	139	63	134	2	603
8 Total		\$ 64,801	\$ 56,141	\$ 63,629	\$ 56,704	\$ 65,553	\$ 306,827
9							
10 Allocation to Electric Business		\$ 46,261	\$ 40,079	\$ 45,425	\$ 40,481	\$ 46,798	\$ 219,044
11 Allocation to Gas Business		\$ 18,540	\$ 16,062	\$ 18,204	\$ 16,223	\$ 18,755	\$ 87,783

Q. How are these costs allocated between the Electric and Gas lines of business?

A. The total amounts for each Common area are allocated based on the ratio of plant assets between the lines of business. For a further discussion of these ratios, please refer to the Revenue Requirements Panel testimony. These ratios are:

	Electric	Gas
NYSEG	80.26%	19.74%
RG&E	71.39%	28.61%

Q. What are the resulting allocated Common Investment amounts for NYSEG and RG&E?

A. The total amount of Common Investment allocated to the Electric line of business by category for NYSEG and RG&E are shown in Table 33 and Table 34, respectively.

Table 33: NYSEG Common Allocation to the Electric Line of Business

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1 Buildings and Facilities		\$ 3,539	\$ 26,867	\$ 47,393	\$ 28,988	\$ 12,911	\$ 119,699
2 Customer Service		1,658	3,241	1,555	1,587	2,499	10,540
3 Fleet		23,612	16,052	16,052	16,052	16,052	87,820
4 Information Technology		9,827	13,501	12,700	11,935	13,038	61,000
5 Operational Smart Grids		33,333	26,682	28,021	20,025	27,345	135,406
6 Physical and Cyber Security		28,523	19,558	18,379	12,196	13,470	92,124
7 Training		2,316	6,451	462	490	626	10,345
8 Total Common Allocation to Electric		\$ 102,808	\$ 112,352	\$ 124,562	\$ 91,272	\$ 85,941	\$ 516,935

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Table 34: RG&E Common Allocation to the Electric Line of Business

	A	B	C	D	E	F	G
		2022	2023	2024	2025	2026	Total 2022-2026
<i>\$ in thousands</i>							
1 Buildings and Facilities		\$ 3,443	\$ 5,831	\$ 5,621	\$ 4,606	\$ 3,608	\$ 23,110
2 Customer Service		849	2,316	1,393	1,416	1,788	7,761
3 Fleet		4,795	4,061	6,574	4,363	4,436	24,229
4 Information Technology		4,635	7,215	6,981	6,657	6,746	32,234
5 Operational Smart Grids		15,868	11,084	17,653	17,391	22,701	84,696
6 Physical and Cyber Security		16,482	9,473	7,158	5,951	7,518	46,582
7 Training		189	99	45	96	2	431
8 Total Common Allocation to Electric		\$ 46,261	\$ 40,079	\$ 45,425	\$ 40,481	\$ 46,798	\$ 219,044

Q. Please describe the projects within the Buildings and Facilities category.

A. The Building and Facilities category maintains and improves the buildings, service centers and other facilities that the Companies own or rent. The projects in this area include upgrading HVAC, lighting, window, and door upgrades to improve energy efficiency, environmental considerations (tanks, spill containment, etc.), back-up systems, building consolidation efforts, video conferencing systems and installation of EV chargers at the Companies' facilities. This area works in collaboration with areas such as Training, the ECC, Electric Operations and other areas when facility improvements or upgrades are needed, or new spaces are required. Other types of projects included within Building and Facilities include replacement due to day-to-day usage, roof replacements and other replacement activities required to keep the buildings and facilities in proper working order. The projects and programs being undertaken by this area are shown below in Table 35 and Table 36.

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Table 35: NYSEG Buildings and Facilities Projects (Unallocated Capital Amounts)

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
	2022	2023	2024	2025	2026	Total 2022-2026	
1 Buildings and Facilities	\$ 4,410	\$ 33,475	\$ 59,050	\$ 36,118	\$ 16,087	\$	149,139
2 Binghamton Service Center	-	1,500	10,000	9,000	-	-	20,500
3 Minor Projects	2,000	3,750	3,750	3,750	3,750	-	17,000
4 Solar Panels	-	2,750	3,000	3,250	3,500	-	12,500
5 EV Chargers	-	2,250	4,250	4,250	1,250	-	12,000
6 Consolidation Ithaca	-	750	4,500	4,500	-	-	9,750
7 Consolidation KGO	-	2,000	6,500	-	-	-	8,500
8 Auburn Service Center Projects	-	750	1,050	-	3,275	-	5,075
9 BMS System	1,000	1,657	750	750	750	-	4,907
10 Liberty Service Center Projects	-	1,400	3,000	-	-	-	4,400
11 Geneva Service Center East Projects	-	150	2,000	2,000	-	-	4,150
12 Brewster Service Center Projects	-	100	2,945	500	530	-	4,075
13 Walton Service Center Projects	-	250	3,800	-	-	-	4,050
14 Oneonta Service Center Projects	-	100	2,170	1,725	-	-	3,995
15 Tablet Project	-	1,704	-	-	1,478	-	3,182
16 Hamburg Operations Center Projects	-	150	2,000	1,000	-	-	3,150
17 ECC Projects	-	2,225	570	325	-	-	3,120
18 Mechanicville Service Center Projects	-	700	1,497	600	300	-	3,097
19 Brewster HVAC	150	1,500	1,000	-	-	-	2,650
20 KGO Projects	-	750	1,610	100	50	-	2,510
21 Lancaster Service Center Projects	-	75	150	2,075	-	-	2,300
22 Progressive Style	120	750	750	530	-	-	2,150
23 Low Risk Buildings Projects	-	500	500	500	500	-	2,000
24 Elmira Service Center Projects	-	1,210	425	250	50	-	1,935
25 Long Lake Building Expansion	-	250	1,500	-	-	-	1,750
26 KGO UPS/Battery Upgrades	500	750	-	-	-	-	1,250
27 Plattsburgh Service Center	-	390	450	-	410	-	1,250
28 Binghamton Service Center Underground Tank Removal	100	900	-	-	-	-	1,000
29 Ithaca Underground Tank Removal/Replacement	100	900	-	-	-	-	1,000
30 Stamford Operations Center Projects	-	230	455	150	-	-	835
31 KGO Cooling Tower Replacement	-	750	-	-	-	-	750
32 KGO House Power/Transformer Upgrade	-	750	-	-	-	-	750
33 Brewster Generator	-	450	150	-	-	-	600
34 Lockport Service Center Projects	100	500	-	-	-	-	600
35 Norwich Operations Center Projects	-	500	-	50	-	-	550
36 Lancaster Service Center Garage Projects	-	-	-	350	75	-	425
37 Video Conferencing	-	90	110	110	110	-	420
38 Hornell Service Center Projects	-	-	-	300	-	-	300
39 Mobile Phones Project	40	44	48	53	59	-	244
40 SPCC West	200	-	-	-	-	-	200
41 Mailroom Digitization	-	-	119	-	-	-	119
42 Plattsburgh Site Upgrades	100	-	-	-	-	-	100
43 Total	\$ 4,410	\$ 33,475	\$ 59,050	\$ 36,118	\$ 16,087	\$	149,139
44							
45 Allocation to Electric Business	\$ 3,539	\$ 26,867	\$ 47,393	\$ 28,988	\$ 12,911	\$	119,699
46 Allocation to Gas Business	\$ 871	\$ 6,608	\$ 11,656	\$ 7,130	\$ 3,176	\$	29,440

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Table 36: RG&E Buildings and Facilities Projects (Unallocated Capital Amounts)

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
	2022	2023	2024	2025	2026	Total 2022-2026	
Buildings and Facilities	\$ 4,823	\$ 8,167	\$ 7,874	\$ 6,453	\$ 5,053	\$ 32,371	
Minor Projects	600	1,500	1,500	1,500	1,500	6,600	
EV Chargers	100	1,500	1,750	1,750	-	5,100	
Solar Panels	-	750	1,500	1,500	500	4,250	
Tablet Project	692	138	996	199	1,435	3,461	
Scottsville Rd Service Center Projects	1,575	535	1,000	200	-	3,310	
Scottsville Road Consolidation Proj.	1,258	1,500	-	-	-	2,758	
BMS System	404	-	300	300	300	1,304	
Scottsville Rd HVAC Phase I	54	1,250	-	-	-	1,304	
Low Risk Building Projects	-	250	250	250	250	1,000	
Progressive Office	-	500	250	250	-	1,000	
Mushroom Blvd Projects	-	-	-	-	750	750	
Video Conferencing	-	75	110	110	110	405	
3 City Center	101	50	50	50	50	301	
Mobile Phones Project	40	44	48	53	59	244	
Canandaigua Truck Garage Projects	-	75	-	-	100	175	
Mailroom Digitization	-	-	119	-	-	119	
Sodus Service Center Projects	-	-	-	110	-	110	
Eastern Monroe Operations Center Projects	-	-	-	105	-	105	
Fillmore Operations Center Projects	-	-	-	75	-	75	
Total	\$ 4,823	\$ 8,167	\$ 7,874	\$ 6,453	\$ 5,053	\$ 32,371	
Allocation to Electric Business	\$ 3,443	\$ 5,831	\$ 5,621	\$ 4,606	\$ 3,608	\$ 23,110	
Allocation to Gas Business	\$ 1,380	\$ 2,337	\$ 2,253	\$ 1,846	\$ 1,446	\$ 9,261	

Q. Please describe the major projects and programs shown in Table 35 and Table 36 related to the Buildings and Facilities category.

A. The major projects and programs for the Building and Facilities category are described herein as follows:

Binghamton Service Center – This project includes the development of a new service center location for Binghamton Service Center, consolidating approximately 205,000 square feet to 165,000 square feet of space in one location. The existing Binghamton Service Center location and Noyes Island Garage and Storage Building are planned to be sold.

Minor Projects – The Minor Projects are small projects that make improvements or upgrade systems in any facility. These projects could be due to end-of-life issues, failures associated with mechanical, electrical or control systems, energy efficiency

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improvements, the reduction of greenhouse gas emissions, or addressing security and safety issues.

Solar Panels – This project will install solar panels at facilities for use at the facilities.

The solar panels will reduce system demand and are in alignment with CLCPA goals.

EV Chargers – This comprehensive program will install approximately 450 EV chargers at NYSEG and 150 EV chargers at RG&E. This program will support electrification of fleet and employee vehicles.

Kirkwood General Office Consolidation – This project will consolidate the existing 215,000 square feet of used space into approximately 110,000 square feet of space to be used by Company personnel. The consolidation of space will include design, construction, moving, information technology and furniture costs to move approximately 160 people.

Ithaca Consolidation – This project will consolidate the existing Ithaca office, Service Center and Trumansburg Service Center into one strategically-located service center. All existing locations would be sold as part of the consolidation.

Q. Please describe the projects within the Customer Service area.

A. The Customer Service area projects focus on direct and indirect interactions with customers. Projects included in this area include: 1) the development of databases for customer service representatives to quickly and accurately answer customer questions that will also connect to the customer-facing website so that customers can get questions answered without calling the call center; and 2) upgrades to enhance the Customer Journey system that will improve the Outage, Energy Usage, High Bill, Service

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Appointments and Collections interfaces and design to improve customer satisfaction.

The projects being undertaken by this area are shown for NYSEG and RG&E in Table 37 and Table 38, respectively.

Table 37: NYSEG Customer Service Projects (Unallocated Capital Amounts)

	A	B	C	D	E	F	G
<i>\$ in thousands</i>		2022	2023	2024	2025	2026	Total 2022-2026
Customer Service		\$ 2,065	\$ 4,038	\$ 1,937	\$ 1,977	\$ 3,114	\$ 13,132
Regulatory Driven Efforts		425	1,379	886	912	764	4,366
Customer Journey Redesign		688	688	701	715	730	3,522
Energy Manager Enhancements		501	552	100	100	1,370	2,623
Lab Equipment		150	150	250	250	250	1,050
Contact Center Knowledge Database		-	769	-	-	-	769
Orchestration Platform - Customer Journey		-	500	-	-	-	500
Kiosk Upgrade		302	-	-	-	-	302
Total		\$ 2,065	\$ 4,038	\$ 1,937	\$ 1,977	\$ 3,114	\$ 13,132
Allocation to Electric Business		\$ 1,658	\$ 3,241	\$ 1,555	\$ 1,587	\$ 2,499	\$ 10,540
Allocation to Gas Business		\$ 408	\$ 797	\$ 382	\$ 390	\$ 615	\$ 2,592

Table 38: RG&E Customer Service Projects (Unallocated Capital Amounts)

	A	B	C	D	E	F	G
<i>\$ in thousands</i>		2022	2023	2024	2025	2026	Total 2022-2026
Customer Service		\$ 1,189	\$ 3,244	\$ 1,951	\$ 1,983	\$ 2,504	\$ 10,872
Regulatory Driven Efforts		425	1,379	886	912	764	4,366
Energy Manager Enhancements		105	707	500	500	1,162	2,974
Customer Journey Redesign		308	308	315	321	328	1,580
Lab Equipment		150	336	250	250	250	1,236
Contact Center Knowledge Database		-	384	-	-	-	384
Kiosk Upgrade		201	-	-	-	-	201
Orchestration Platform - Customer Journey		-	130	-	-	-	130
Total		\$ 1,189	\$ 3,244	\$ 1,951	\$ 1,983	\$ 2,504	\$ 10,872
Allocation to Electric Business		\$ 849	\$ 2,316	\$ 1,393	\$ 1,416	\$ 1,788	\$ 7,761
Allocation to Gas Business		\$ 340	\$ 928	\$ 558	\$ 567	\$ 716	\$ 3,110

Q. Please describe the major projects and programs shown in Table 37 and Table 38 related to the Customer Service category.

A. The major projects and programs for the Customer Service category are described herein as follows:

Regulatory Driven Efforts - 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.

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1 **Customer Journey Redesign Project** – This project will reimagine how customers
2 interact with NYSEG across the Company’s most critical touchpoints. Key journeys for
3 redesign have been identified and prioritized based on the following criteria: customer
4 satisfaction; cost reduction; strategic value; and complexity.

5 **Energy Manager Enhancements** – This project will take the AMI metering data from
6 customers and digest it into the Energy Manager platform so that the Companies can send
7 mid-bill cycle alerts to customers who are forecasted to be experiencing a higher-than-
8 expected bill period. This alert will empower the customer with insights specifically
9 designed to help them reduce their energy usage and will indicate the tools/services the
10 Companies can offer to help the customer stay on track and not overspend on energy.
11 These tools/services will be a mixture of home energy efficiency recommendations along
12 with Conservation Load Management programs or rebates that may be available to the
13 customer. The scope will be for the build, setup and configuration of this system and
14 alerts. Mobile capability and widgets will allow our customers in our mobile app to have
15 the same full rich Energy Manager and usage experience that they would experience on
16 the website. These widget and integrations will include usage and comparison graphs,
17 home surveys, energy efficiency advice, usage alerts, bill comparisons, near real-time
18 interval data, and rates comparisons. The scope will be for the integration
19 implementation and configuration.

20 Q. Please describe the projects within the Fleet Services category.

21 A. The projects within the Fleet Services category are related to fleet replacements and are
22 shown below for NYSEG and RG&E in Table 39 and Table 40.

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Table 39: NYSEG Fleet Projects (Unallocated Capital Amounts)

	A	B	C	D	E	F	G
		2022	2023	2024	2025	2026	Total 2022-2026
<i>\$ in thousands</i>							
Fleet		\$ 29,420	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 109,420
Fleet Replacement Program		29,000	20,000	20,000	20,000	20,000	109,000
Global Telematics Solution		420	-	-	-	-	420
Total		\$ 29,420	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 109,420
Allocation to Electric Business		\$ 23,612	\$ 16,052	\$ 16,052	\$ 16,052	\$ 16,052	\$ 87,820
Allocation to Gas Business		\$ 5,808	\$ 3,948	\$ 3,948	\$ 3,948	\$ 3,948	\$ 21,600

Table 40: RG&E Fleet Projects (Unallocated Capital Amounts)

	A	B	C	D	E	F	G
		2022	2023	2024	2025	2026	Total 2022-2026
<i>\$ in thousands</i>							
Fleet		\$ 6,717	\$ 5,689	\$ 9,208	\$ 6,111	\$ 6,214	\$ 33,940
Fleet Replacement Program		6,700	5,689	9,208	6,111	6,214	33,923
Global Telematics Solution		17	-	-	-	-	17
Total		\$ 6,717	\$ 5,689	\$ 9,208	\$ 6,111	\$ 6,214	\$ 33,940
Allocation to Electric Business		\$ 4,795	\$ 4,061	\$ 6,574	\$ 4,363	\$ 4,436	\$ 24,229
Allocation to Gas Business		\$ 1,922	\$ 1,628	\$ 2,635	\$ 1,748	\$ 1,778	\$ 9,710

Q. Please describe the capital expenditures shown in Table 39 and Table 40 related to the Fleet Services category.

A. The capital expenditures for Fleet Services are for the replacement of vehicles and equipment and are based on established lifecycle criteria. Fleet Services objectives are to provide a safe, reliable, regulatory compliant and cost-effective fleet of vehicles and equipment for the Companies 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

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included. Changes in operational requirements are also considered, based on feedback from the end-users of the fleet.

4. Supports sustainability efforts through the purchase of alternatively fueled vehicles.

Q. Please describe the projects in the Information Technology ("IT") category.

A. The projects and programs being undertaken in this category are shown for NYSEG and RG&E in Table 41 and Table 42, respectively.

Table 41: NYSEG IT Projects (Unallocated Capital Amounts)

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1 Information Technology		\$ 12,244	\$ 16,822	\$ 15,824	\$ 14,870	\$ 16,244	\$ 76,003
2 Client Project Requests and Integration Projects		-	7,677	9,267	8,784	8,812	34,540
3 END USER Life Cycle		1,927	1,070	1,095	1,100	1,116	6,308
4 Microsoft Deployment Life Cycle		-	2,645	-	-	2,700	5,345
5 WINTEL Life Cycle		1,396	806	835	839	853	4,729
6 UNIX Life Cycle		327	386	916	925	1,140	3,694
7 STORAGE Life Cycle		341	695	709	724	739	3,208
8 SAP Enhancements		-	828	1,332	828	-	2,988
9 NETENG Life Cycle		469	565	591	588	600	2,813
10 GIS Utility Network Model Implementation		-	801	801	801	-	2,404
11 Digital Journey EDB Transformation		901	819	-	-	-	1,720
12 NETSEC Life Cycle		345	236	278	280	283	1,422
13 Click Upgrade & Long Cycle Work		1,366	-	-	-	-	1,366
14 ESRI UN Deployment		955	-	-	-	-	955
15 Liferay WCM Implementation		875	-	-	-	-	875
16 PureEngage to PureConnect Migration		841	-	-	-	-	841
17 RPA Electric & Gas Operation		460	294	-	-	-	754
18 Contractor Portal		664	-	-	-	-	664
19 Customer Insights		636	-	-	-	-	636
20 Damage Assessment		600	-	-	-	-	600
21 Regulatory Driven Efforts		140	-	-	-	-	140
22 Total		\$ 12,244	\$ 16,822	\$ 15,824	\$ 14,870	\$ 16,244	\$ 76,003
23							
24 Allocation to Electric Business		\$ 9,827	\$ 13,501	\$ 12,700	\$ 11,935	\$ 13,038	\$ 61,000
25 Allocation to Gas Business		\$ 2,417	\$ 3,321	\$ 3,124	\$ 2,935	\$ 3,207	\$ 15,003

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Table 42: RG&E IT Projects (Unallocated Capital Amounts)

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
	2022	2023	2024	2025	2026	Total 2022-2026	
Information Technology	\$ 6,492	\$ 10,107	\$ 9,778	\$ 9,326	\$ 9,450	\$ 45,152	
Client Project Requests and Integration Projects	-	3,999	4,874	4,638	5,509	19,020	
GIS Utility Network Model Implementation	-	1,822	1,822	1,822	-	5,465	
END USER Life Cycle	830	545	613	561	569	3,119	
WINTTEL Life Cycle	897	438	459	456	464	2,715	
Microsoft Deployment Life Cycle	-	1,322	-	-	1,350	2,672	
STORAGE Life Cycle	392	376	383	392	400	1,943	
UNIX Life Cycle	167	196	466	471	569	1,869	
NETSEC Life Cycle	176	299	344	347	363	1,528	
SAP Enhancements	-	419	671	419	-	1,509	
Digital Journey EDB Transformation	458	417	-	-	-	875	
Click Upgrade & Long Cycle Work	837	-	-	-	-	837	
NETENG Life Cycle	63	125	146	220	225	778	
ESRI UN Deployment	485	-	-	-	-	485	
Liferay WCM Implementation	444	-	-	-	-	444	
PureEngage to PureConnect Migration	420	-	-	-	-	420	
RPA Electric & Gas Operation	234	149	-	-	-	384	
Contractor Portal	331	-	-	-	-	331	
Customer Insights	323	-	-	-	-	323	
Damage Assessment	300	-	-	-	-	300	
Regulatory Driven Efforts	71	-	-	-	-	71	
Primavera PPM Cloud	61	-	-	-	-	61	
Total	\$ 6,492	\$ 10,107	\$ 9,778	\$ 9,326	\$ 9,450	\$ 45,152	
Allocation to Electric Business	\$ 4,635	\$ 7,215	\$ 6,981	\$ 6,657	\$ 6,746	\$ 32,234	
Allocation to Gas Business	\$ 1,857	\$ 2,891	\$ 2,798	\$ 2,668	\$ 2,704	\$ 12,918	

Q. Please describe the major projects and programs shown in Table 41 and Table 42 related to the Information Technology category.

A. The Information Technology category includes projects that allow the computing and technology backbone of the Companies to operate efficiently, utilizing supported hardware and software securely. The projects and programs in this area include updating laptops, servers, databases, operating systems, productivity software (Microsoft suite of applications) and supporting individual business area efforts to automate and leverage technology. The projects are described herein as follows:

Client Project Requests and Integration Projects – This program is for business initiatives identified by the Networks business areas for future efficiency projects. The Companies have 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

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1 involves collating the requirements across all business areas for projects requiring IT
2 expenditure. Projects are prioritized by the leaders of each business area before
3 completing the estimation and capacity planning process. This process runs from the
4 beginning of May through the end of August each year. The final portfolio is then
5 presented back to senior management at the end of August for acceptance. Given the
6 above timetable the final project list for 2023 and beyond does not exist at the time of this
7 filing.

8 **IOC-NET-End USER** – The overall goal of this project is to refresh the Companies’
9 computing devices following the refresh lifecycle defined for the Companies for users in
10 scope. This project also provides personal computers in support of new hires and
11 refreshes demand requirements enterprise-wide.

12 **Microsoft Deployment** – This project captures the work associated with Microsoft
13 Enterprise Agreements and all the services provided to the Companies as end user. These
14 services include business collaboration (email, messaging, and virtual meetings),
15 operating system, applications, and security protection.

16 Q. Please describe the projects in the Operational Smart Grids category.

17 A. The Operational Smart Grids category has projects that are related to both the Electric
18 and Gas lines of business as well as projects that are focused only on the Electric line of
19 business. The projects and programs included in this section are limited to those that
20 benefit both the Electric and Gas lines of the business. These projects and programs
21 include innovation projects such as development and execution of Advanced Planning
22 Tools that will utilize data collected via the AMI system, and the management of the vast

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1 amount of data that will be collected and then leveraged to gain insights and operational
2 efficiency. With this data, the Companies will be able to remotely and efficiently address
3 network issues and updates. Having this ability requires that we have a robust
4 communication system that is secure from cyberattacks. Projects within the Operational
5 Smart Grids category address both of the issues. Other innovation projects include the
6 Hydrogen Blending Pilot project, which will introduce hydrogen into a specific
7 customer's fuel line with the objective of reducing the customer's greenhouse gas
8 emissions and evaluating the ability of the existing technology to blend and combust
9 hydrogen in a safe and efficient manner. These innovation projects are more fully
10 described in the Innovation, Smartgrids and EV Panel testimony. Projects such as the
11 Global Cybersecurity, IT-OT DR/DMZ, Cybersecurity Innovation Lab and Tripwire
12 projects all ensure that the devices on the network as well as the communication network
13 is secure. In order to have a robust communication system, the infrastructure must be in
14 place to support the demands placed upon it, and it needs to have the ability to
15 communicate large amounts of data at a high rate. Projects such as the Telecom Fiber,
16 Telecom Infrastructure, Telecom Vertical Builds, WAN Expansion, and the
17 Communication Tower, Shelter and Facility Improvement Projects are all needed to meet
18 the communication and automation demands of the networks. Technology improvements
19 move a fast pace. To ensure that the Companies are utilizing hardware and software that
20 is supported by vendors and secure from cyber threats it is necessary to upgrade systems,
21 hardware and/or software. As a result, projects such as ECC Lifecycle (LC), AMI
22 Lifecycle, Itron Software Replacement, OMS Enhancements and the Microsoft Licensing

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project are needed. The projects and programs being undertaken in this area are shown for NYSEG and RG&E in Table 43 and Table 44, respectively.

Table 43: NYSEG Operational Smart Grids Projects (Unallocated Capital Amounts)

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1 Operational Smart Grids		\$ 41,531	\$ 33,245	\$ 34,913	\$ 24,950	\$ 34,071	\$ 168,710
2 Telecomm Infrastructure		11,347	6,956	6,539	6,081	6,156	37,078
3 NY WAN Expansion		7,331	5,993	5,650	5,248	4,912	29,133
4 Telecomm Fiber		7,728	3,987	3,639	2,825	2,542	20,721
5 Energy Control Systems Infrastructure		415	2,725	4,971	2,061	2,016	12,188
6 Telecomm Vertical Builds		2,360	2,459	2,459	1,459	1,459	10,196
7 FCC License Radio Spectrum purchase		4,000	2,200	1,000	500	500	8,200
8 OSG Communications Tower, shelter Facility Improvements (Com)		1,000	1,500	1,500	2,000	2,000	8,000
9 NY AMI Lifecycle		-	-	-	-	6,928	6,928
10 FAN + mobile technology refresh and expansion		400	300	1,200	2,100	2,100	6,100
11 ECC Life cycle		768	956	1,100	1,250	1,320	5,394
12 Virtualization Expansion		-	1,645	1,541	-	1,600	4,786
13 Data Center Consolidation		575	1,519	1,500	-	-	3,594
14 Rochester Consolidation		2,028	882	-	-	-	2,910
15 Historian and Analytic Upgrades Program		-	134	2,480	142	146	2,902
16 NMC Solar Winds		494	379	379	379	379	2,011
17 OMS Enhancements		375	375	375	375	375	1,875
18 Solar Battery Backup Integration		500	500	250	200	200	1,650
19 Veritas Growth		44	484	81	81	601	1,290
20 Microsoft Licensing		898	-	-	-	-	898
21 Oracle Exadata		12	-	-	-	836	848
22 Networks ECTRM		769	-	-	-	-	769
23 Full OMS Functional alignment ABB-Spectrum		-	250	250	250	-	750
24 Itron Mobile hardware replacement		488	-	-	-	-	488
25 Total		\$ 41,531	\$ 33,245	\$ 34,913	\$ 24,950	\$ 34,071	\$ 168,710
26							
27 Allocation to Electric Business		\$ 33,333	\$ 26,682	\$ 28,021	\$ 20,025	\$ 27,345	\$ 135,406
28 Allocation to Gas Business		\$ 8,198	\$ 6,563	\$ 6,892	\$ 4,925	\$ 6,726	\$ 33,303

Table 44: RG&E Operational Smart Grids Projects (Unallocated Capital Amounts)

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1 Operational Smart Grids		\$ 22,227	\$ 15,525	\$ 24,728	\$ 24,361	\$ 31,798	\$ 118,639
2 ROC Hydrogen Pilot		-	-	2,000	6,000	12,000	20,000
3 Data Center Consolidation		345	1,342	6,965	6,335	3,883	18,871
4 Telecomm Infrastructure		5,007	2,417	2,272	2,113	2,142	13,951
5 Telecomm NY WAN Buildout		3,107	3,057	2,874	2,673	1,980	13,691
6 Telecomm Fiber		3,243	2,092	1,276	1,148	1,034	8,793
7 Telecomm Vertical Builds		3,442	959	959	959	959	7,278
8 Energy Control Systems Infrastructure		827	970	2,579	1,203	872	6,451
9 FAN + mobile technology refresh and expansion		400	800	1,500	1,500	1,500	5,700
10 FCC License Radio Spectrum purchase		2,000	700	700	350	350	4,100
11 NY AMI Lifecycle		-	-	-	-	4,059	4,059
12 OSG Communications Tower, shelter Facility Improvements (Com)		500	500	750	1,250	750	3,750
13 Virtualization Expansion		-	1,003	946	-	890	2,839
14 Rochester Consolidation		1,268	535	-	-	-	1,803
15 Historian and Analytic Upgrades Program		-	158	1,209	79	82	1,528
16 NMC Solar Winds		313	229	229	229	229	1,229
17 ECC Life cycle		160	160	162	164	166	812
18 Veritas Growth		26	294	49	49	371	789
19 OMS Enhancements		125	125	125	125	125	625
20 Solar Battery Backup Integration		250	100	50	100	50	550
21 Microsoft Licensing		536	-	-	-	-	536
22 Networks ECTRM		408	-	-	-	-	408
23 Oracle Exadata		10	-	-	-	356	366
24 Itron Mobile hardware replacement		260	-	-	-	-	260
25 Full OMS Functional alignment ABB-Spectrum		-	83	83	83	-	250
26 Total		\$ 22,227	\$ 15,525	\$ 24,728	\$ 24,361	\$ 31,798	\$ 118,639
27							
28 Allocation to Electric Business		\$ 15,868	\$ 11,084	\$ 17,653	\$ 17,391	\$ 22,701	\$ 84,696
29 Allocation to Gas Business		\$ 6,359	\$ 4,442	\$ 7,075	\$ 6,970	\$ 9,097	\$ 33,943

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Q. Please describe the projects and programs shown in Table 43 and Table 44 related to the Operational Smart Grids category.

A. The projects are described herein as follows:

Data Center Consolidation – This project will standardize 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. Resources can be shared across NYSEG and RG&E to provide additional support capabilities when needed. The consolidation will lead to fewer facilities that need to be supported and a reduction in costs.

Telecom Infrastructure – This project will continue to deploy and expand telecom infrastructure in order to enhance communications capabilities and connectivity throughout the Companies’ territories for distribution automation and monitoring activity for improved capacity, reliability, and functionality for operation of gas/electric networks.

Telecom 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. This project will minimize the number of microwave hops and repeaters in the field as well as help manage the size and capability of the Worldwide Interoperability of Microwave Access (“WiMAX”) network architecture.

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New York Wide Area Network Expansion – This project involves WiMAX

Deployments to support automation activities at NYSEG.

OSG Communications Tower, Shelter Facilities Improvements – This project will

repair existing telecommunications towers and shelters and will build new towers and

shelters where needed. The Companies will build communication facilities (towers and

shelters) for OSG communications equipment. The new facilities will be security-

enhanced communication huts, indoor racks and cabinets and outdoor enclosures.

FCC License Radio Spectrum Purchase – This project will provide OSG long-term

capabilities for enhancing wireless systems supporting SCADA control, monitoring, open

and close functions, and station to station tele-protection application needs. The project

will also enable expandability for field area network ("FAN") expansions and 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 field teams.

Energy Control Systems Infrastructure – This project encompasses incremental

hardware refresh activities and technology upgrades as well as improvements to Electric,

Gas and Business Area systems.

FAN + Mobile Technology Refresh and Expansion – This project will enhance,

explore, and refresh wireless broadband systems to allow for technology diversity,

provide high-speed, reliable, and cost-effective communication alternatives to public

carriers and Public Telephone Switched Network Services, and provide diversity and

redundancy to public carrier circuits for critical applications that require it.

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Telecomm Vertical Builds – The building of vertical infrastructure is necessary to support our deployment of wireless and cellular technology.

Q. Please describe the projects in the Physical and Cyber Security category.

A. The Physical and Cyber Security category focuses on the safety and physical security of buildings, substations, regulator and gate stations and other facilities owned or leased by the Companies, as well as the cybersecurity of the Companies' communication systems, automation systems, information, and computing systems. The physical security of our facilities is addressed by the Avangrid Security Domain ("ASD") program. This project deploys security sensors, devices, communication channels and communication infrastructure across the Companies' service territories. Fire Protection at facilities is addressed by the Fire Protection Program and ensures that facilities meet the National Fire Protection Association ("NFPA") code requirements. This program installs or replaces smoke detectors, fire alarm systems, mass notification systems, automated extinguisher and fire suppression systems at the Companies' facilities. The programs being undertaken in this category are shown for NYSEG and RG&E in Table 45 and Table 46, respectively.

Table 45: NYSEG Physical and Cyber Security Projects (Unallocated Capital Amounts)

	A	B	C	D	E	F	G
<i>\$ in thousands</i>							
	2022	2023	2024	2025	2026	Total 2022-2026	
Physical and Cyber Security	\$ 35,538	\$ 24,368	\$ 22,899	\$ 15,195	\$ 16,783	\$ 114,782	
ASD Security System Installation	10,867	5,343	7,293	8,456	5,637	37,597	
Avangrid Security Domain (ASD) OSG Telecommunications	7,209	7,297	3,562	3,062	3,062	24,193	
Global Cybersecurity Directors Plan	10,574	4,975	6,468	727	727	23,471	
Avangrid Security Domain (ASD) OSG Infrastructure	3,867	3,504	2,488	(0)	3,107	12,966	
FIRE PROTECTION	2,000	2,500	2,500	2,500	2,500	12,000	
QSR - Security Plan	173	373	390	388	396	1,721	
Tripwire Implementation	-	-	-	-	1,318	1,318	
IT-OT DR/DMZ	848	-	-	-	-	848	
Cybersecurity Innovation Lab	-	377	196	23	35	631	
DRAGOS	-	-	-	38	-	38	
Total	\$ 35,538	\$ 24,368	\$ 22,899	\$ 15,195	\$ 16,783	\$ 114,782	
Allocation to Electric Business	\$ 28,523	\$ 19,558	\$ 18,379	\$ 12,196	\$ 13,470	\$ 92,124	
Allocation to Gas Business	\$ 7,015	\$ 4,810	\$ 4,520	\$ 2,999	\$ 3,313	\$ 22,658	

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Table 46: RG&E Physical and Cyber Security Projects (Unallocated Capital Amounts)

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
		2022	2023	2024	2025	2026	Total 2022-2026
1 Physical and Cyber Security		\$ 23,088	\$ 13,269	\$ 10,026	\$ 8,336	\$ 10,531	\$ 65,251
2 ASD Security System Installation		6,402	2,890	275	4,750	2,965	17,282
3 Global Cybersecurity Directors Plan		6,480	3,050	3,959	437	437	14,362
4 Avangrid Security Domain (ASD) OSG Infrastructure		3,595	3,704	2,688	124	3,307	13,417
5 Avangrid Security Domain (ASD) OSG Telecommunications		4,916	2,092	1,677	1,677	1,677	12,038
6 FIRE PROTECTION		1,090	1,090	1,090	1,090	1,090	5,450
7 QSR - Security Plan		88	213	217	222	227	967
8 Tripwire Implementation		-	-	-	-	808	808
9 IT-OT DR/DMZ		517	-	-	-	-	517
10 Cybersecurity Innovation Lab		-	231	120	14	21	387
11 DRAGOS		-	-	-	23	-	23
12 Total		\$ 23,088	\$ 13,269	\$ 10,026	\$ 8,336	\$ 10,531	\$ 65,251
13							
14 Allocation to Electric Business		\$ 16,482	\$ 9,473	\$ 7,158	\$ 5,951	\$ 7,518	\$ 46,582
15 Allocation to Gas Business		\$ 6,605	\$ 3,796	\$ 2,869	\$ 2,385	\$ 3,013	\$ 18,668

Q. Please describe the projects and programs shown in Table 45 and Table 46 related to the Physical and Cyber Security Projects category.

A. The projects are described herein as follows:

ASD OSG Telecommunications – This project includes the installation of telecommunications infrastructure including fiber, WiMAX, network architecture design telecommunications infrastructure, and the implementation of switching and routing within transport backbone for DWDM IP/MPLS.

ASD Security System Installation – This project, formerly known as System Cutover, 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

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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 and to allow for the transport of video back to the SOC for remote monitoring of security network, access control and video monitoring systems.

Global Cybersecurity Directors Plan – This program will improve all aspects of cybersecurity on all OSG assets and systems related to both the electric and gas systems.

ASD OSG Infrastructure – This project will continue the development of tools and capabilities with cybersecurity for the Companies.

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 NFPA standards.

Q. Please describe the projects in the Training category.

A. The projects being undertaken in this category are shown for NYSEG and RG&E in Table 47 and Table 48.

Table 47: NYSEG Training Projects (Unallocated Capital Amounts)

	A	B	C	D	E	F	G
		2022	2023	2024	2025	2026	Total 2022-2026
<i>\$ in thousands</i>							
Training		\$ 2,885	\$ 8,038	\$ 576	\$ 610	\$ 780	\$ 12,889
Training Facility		2,000	6,200	350	350	500	9,400
Training – Fleet		325	1,560	-	-	-	1,885
Training Equipment and Tools		500	250	200	250	250	1,450
Training Technology Projects		60	28	26	10	30	154
Total		\$ 2,885	\$ 8,038	\$ 576	\$ 610	\$ 780	\$ 12,889
Allocation to Electric Business		\$ 2,316	\$ 6,451	\$ 462	\$ 490	\$ 626	\$ 10,345
Allocation to Gas Business		\$ 569	\$ 1,587	\$ 114	\$ 120	\$ 154	\$ 2,544

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Table 48: RG&E Training Projects (Unallocated Capital Amounts)

	A	B	C	D	E	F	G
	<i>\$ in thousands</i>						
	2022	2023	2024	2025	2026	Total 2022-2026	
1 Training	\$ 265	\$ 139	\$ 63	\$ 134	\$ 2	\$ 603	
2 Training Equipment and Tools	250	125	50	125	-	550	
3 Training Technology Projects	15	14	13	9	2	53	
4 Total	\$ 265	\$ 139	\$ 63	\$ 134	\$ 2	\$ 603	
5							
6 Allocation to Electric Business	\$ 189	\$ 99	\$ 45	\$ 96	\$ 2	\$ 431	
7 Allocation to Gas Business	\$ 76	\$ 40	\$ 18	\$ 38	\$ 1	\$ 173	

Q. Please describe the projects and programs shown in Table 47 and Table 48 related to the Training category.

A. The Training category includes improvement of the Companies' current training facilities. The existing facilities are outdated, not technologically current and do not have enough room to provide the needed training. The HR Training is constructing a new, state-of-the-art training facility that will include innovative training methods such as Augmented Reality and Virtual Reality that will focus on developing, building and maintaining a qualified Electric and Gas workforce. Along with the facility improvements, equipment, technology, and training development projects are planned to take place. Projects such as Fleet Training, Equipment and Tools, Technology and Immersive Learning Technology Development projects will be required to fully develop the planned training advances.

Q. Are there further descriptions of the projects discussed above?

A. Yes. The Five Year Plan included in Exhibit __ (CCE-2), Appendix B provides additional project information.

IX. CAPITAL INVESTMENT PLANNING PROCESS

Q. Please describe the Companies' capital planning and governance process.

A. The capital planning and governance process underwent a complete revamping beginning in 2019. A platform called PPM was installed to collect data on each project, including

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1 scope, justification, prioritization, company, forecasts, budgets, actual spend, closes to
2 plant forecast, closes to plant actuals and other data that is pertinent to each project. This
3 platform also serves as the record for project approval and project status.

4 Q. Please describe the capital planning process utilized by the Companies.

5 A. On an annual basis, the Companies collect data regarding capital projects that are
6 identified as necessary to deliver safe and reliable service to customers. Each individual
7 company and line of business is developed individually, with each Company and line of
8 business having capital spending limits consistent with the levels included in the most
9 recently approved rate plans, plus any adjustments needed based on new regulatory
10 orders, opportunities for efficiency improvements, or other adjustments as deemed
11 necessary. The proposed projects are forecasted over a 10-year window. These projects
12 are then prioritized utilizing the prioritization methodology described in Exhibit ____
13 (CCE-2). Upon completion of the initial prioritization, a review with senior management
14 is held and further adjustments are suggested. Working with the project sponsors and
15 project managers, adjustments are made to the timing or duration of projects. Upon the
16 completion of adjustments, additional reviews with senior management are performed
17 until agreement is reached with both the portfolio of projects and capital spending limits.
18 Once the agreement is reached, the budget is complete.

19 Q. Is the budget reviewed at any time during the year?

20 A. Yes, the actual capital expenditure on each project is updated in PPM (through data
21 collected in the Companies' SAP system) and project managers provide updated forecasts
22 in PPM monthly. If changes are needed on project budgets, project schedule or project

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1 scope, project managers submit change requests in PPM. These change requests are
2 reviewed with the Governance Committees. Please see Section 4 of Exhibit __ (CCE-2)
3 for additional information on these groups. These committees also provide approval for
4 projects that were included in the annual budget, but have not received authorization to
5 begin execution, as further explained in Section 4 of Exhibit __ (CCE-2).

X. CONCLUSION

7 Q. Does the Panel have any final statements regarding the Companies' proposed Five Year
8 Plan with the modifications proposed by this Panel?

9 A. Yes. The proposed electric, generation, and common capital spend will allow the
10 Companies to continue to provide customers with safe, reliable service while meeting
11 future transmission and distribution system needs. Meeting customer needs will continue
12 to be a focus of the Companies' objectives, whether related to new connections,
13 obligatory state and municipal relocations, or localized or regional growth. Ensuring the
14 aging system infrastructure is replaced in a timely fashion is one critical component to
15 meeting customers' service and reliability needs. The asset condition replacement
16 programs and projects are aimed at mitigating the safety, environmental, and reliability
17 risks associated with aging infrastructure. The Companies are proposing a continuation of
18 the resiliency program which will further improve the resiliency and reliability of the
19 distribution system and allow system operators to act more quickly during and after
20 adverse weather conditions, such as those experienced in recent years. Executing on the
21 proposed Five Year Plan will result in overall system reliability improvements which will
22 have direct benefits for our customers. These programs, along with compliance projects

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1 necessary to address federal, state, and local mandates, are critical for the continued safe
2 and reliable operation of the electric system. The Companies also recognize the evolving
3 dynamic of the transmission and distribution grid to accommodate existing and future
4 anticipated renewable resource interconnections and local electrification initiatives. Those
5 projects and programs, which are proposed as part of the Clean Energy Transformation
6 category, will be critical in the Companies' ability to support the aggressive CLCPA
7 targets, mitigate system bottlenecks, increase headroom capabilities, and set the system up
8 for anticipated renewable resource penetration and load increases due to electrification. In
9 addition, many NYSEG and RG&E projects and programs have been identified within
10 disadvantaged communities. Specific details around which projects and programs are
11 located within disadvantaged communities are included in Exhibit __ (CCE-2), Appendix
12 C.

13 Q. Does this conclude your testimony at this time?

14 A. Yes, it does.