NYSEG

Brewster Division – Project and Company Initiatives Update

June 27, 2019

Municipal Officials' Meeting

Agenda

- Introductions
- Safety Moment
- System Overview
- Vegetation Management & 5-Year Trim Cycle
- Routine Maintenance Programs
- Update on 2018 Automation Planned Work
- Capital Improvements & Capital Plan
- Trip Saver Pilot Program
- Reliability Projects
- Future Initiatives
- New York Rate Case Highlights
- Storm Recommendations and Emergency Response Plan

Motor Vehicle Accidents on the Rise

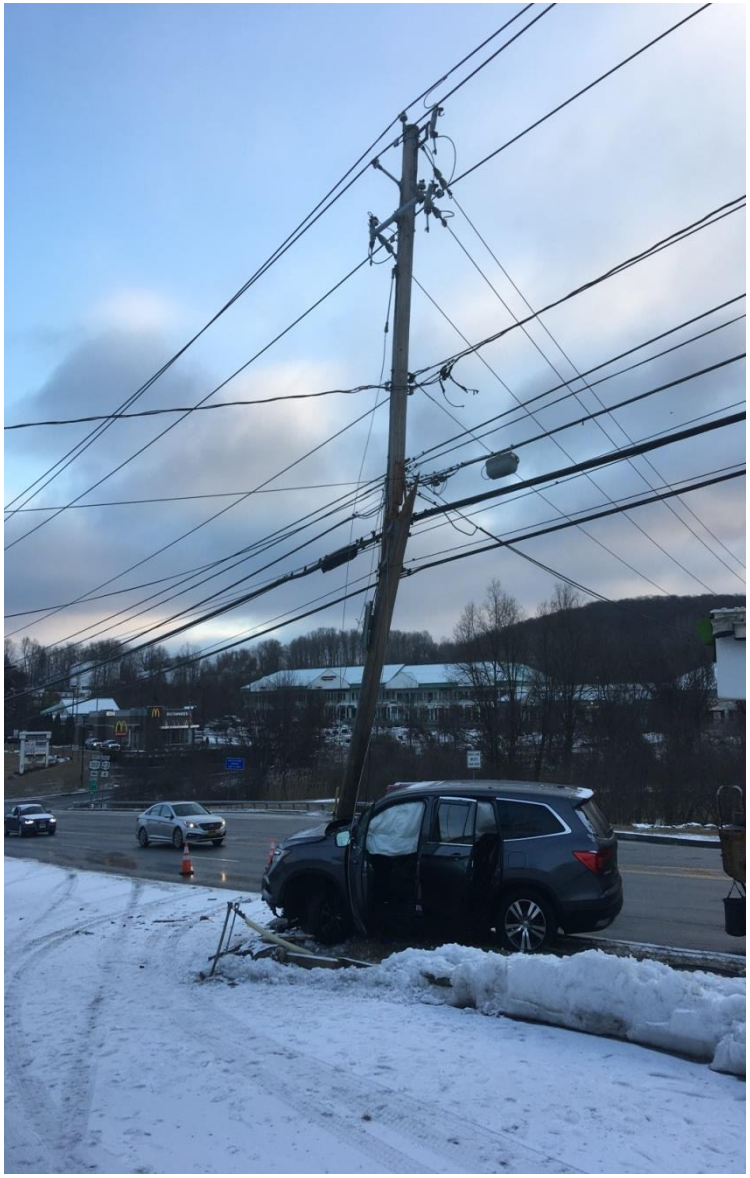
Motor Vehicle Accident Statistics

2017: 76 broken poles
58 outages
10,435 customers affected

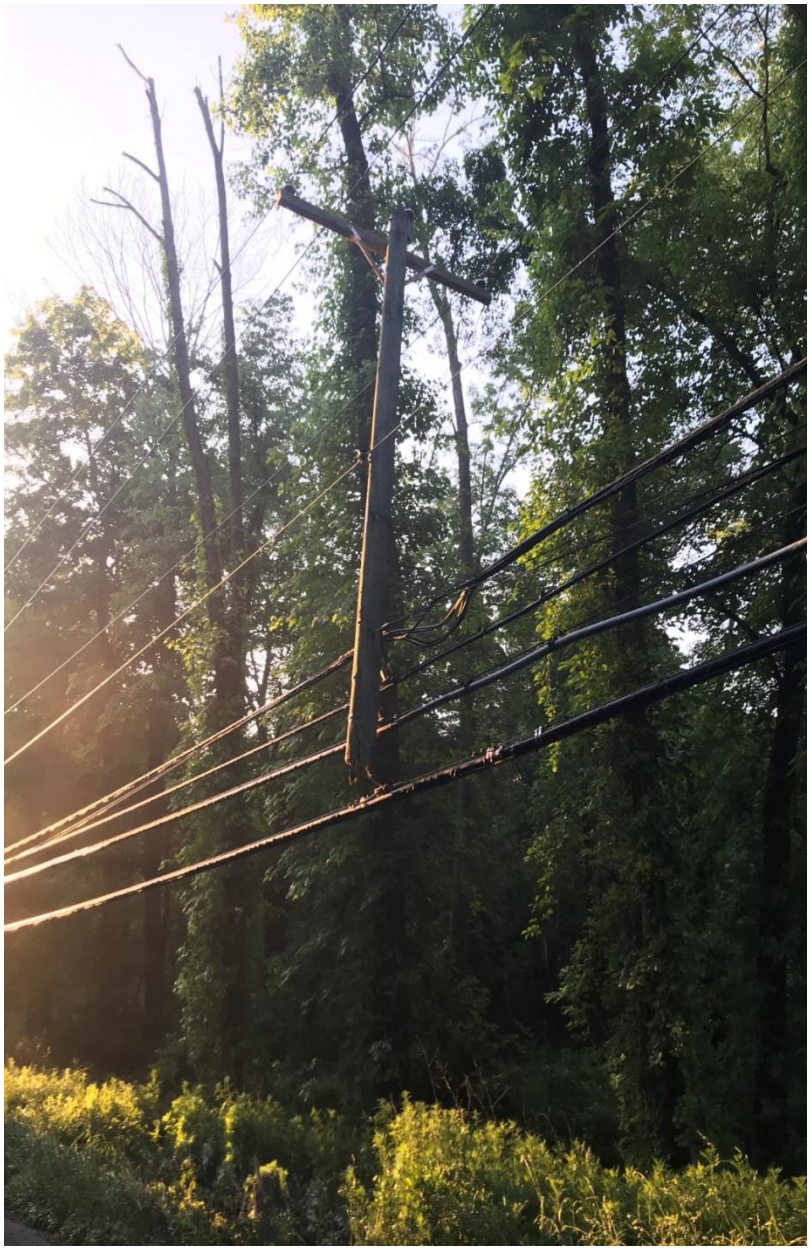
2018: 97 broken poles
79 outages
15,387 customers affected

2019 YTD:
67 broken poles
40 outages
8,480 customers affected

- January 2019: 30 MVAs with broken poles
- Week of 6/16/19: 8 MVAs with broken poles and one pad mount transformer




SHERIFF
PUTNAM COUNTY

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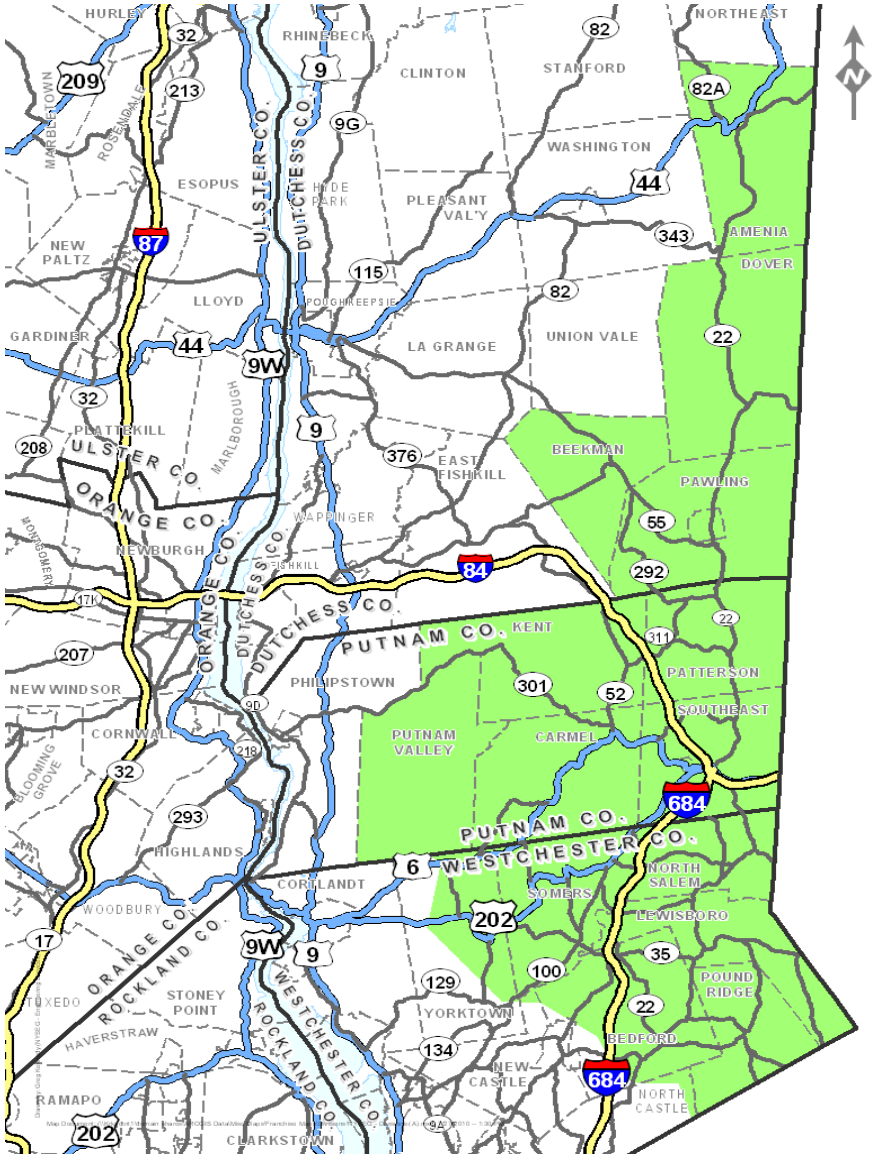
System Overview



New York State Electric & Gas serves 890,000 electric and 264,000 natural gas customers across New York

The Brewster Division is 531 square miles and serves approximately 86,400 electric customers

The electrical system is comprised of:

- **32 substations; 15 transmission lines**
- **95 distribution circuits; 2,399 circuit miles**
- **1,630 overhead miles; 769 underground miles**

5 Year Trim Cycle – Substation, Circuits

Year	2016	2017	2018	2019	2020
Miles	271.02	277.7	364.5	369.5	347.54
Circuit	Adams Corners 411	Cantitoe 282	Amenia 153	Adams Corner 412	Amawalk 449/451/454
	Adams Corners 413	CHU-Long MT Rd	Bedford Hills 462	Amenia 154	Bedford Hills 227
	Amawalk 453	CHU-Pleasant Ridge Rd	Crafts 424	Bedford Hills 225	Cantitoe 283
	Cantitoe 497	CHU-Separate Rd	Cross River 469	Bedford Hills 463	Cantitoe 498
	Carmel 501	CHU-White Pond Rd	Cross River 470	Dingle Ridge 277	CHU-Chapman Rd
	Carmel 502	Crafts 422	Goldens Bridge 417	Goldens Bridge 418	CHU-Long Hill Rd
	Carmel 503	Crafts 423	Goldens Bridge 420	Haviland Hollow 426	CHU-Sylvan Beach Rd
	CHU-RT 301	Croton Falls 446	Goldens Bridge 421	Mohansic 404	CHU-Tower Hill Rd
	Croton Falls 514	Dover Plains 494	Kent 176	Mohansic 405	Cross River 468
	Pawling 166	Pawling 509	Kent 526	Mohansic 406	Croton Falls 515/516
	Pawling 508	Pound Ridge 456	Peach Lake 249	Peach Lake 250	Dingle Ridge 278
	Pound Ridge 457	Putnam Lake 485	Putnam Lake 486	Sylvan Lake 478	Golden Bridge 414
	Tilly Foster 439	Tilly Foster 437	Sylvan Lake 481	Sylvan Lake 480	Harlem Valley 105
		Tilly Foster 438	Teakettle Spout 489	Ten Mile River 443	Haviland Hollow 427
		Tilly Foster 441	Union Valley 431	Ten Mile River 444	Katonah 448/450/452
		Tilly Foster 442	Union Valley 432	West Patterson 474	Kent 175
			Union Valley 433		Kent Cliffs 291/292
			West Patterson 475		Monhansic 403
					Pawling 165
					Pound Ridge 455/458
					Putnam Lake 484
					Streetlight_11 STI
					Teakettle Spout 490/491

Total Trim Mileage - 1,630

5 Year Trim Cycle – County, Town

Dutchess County				
2016	**2017**	**2018**	**2019**	**2020**
Dover	Dover	Amenia	Amenia	Beekman
Pawling	Pawling	Beekman	Beekman	Dover
		Dover	Dover	Pawling

Putnam County				
2016	**2017**	**2018**	**2019**	**2020**
Brewster	Brewster	Carmel	Brewster	Kent
Carmel	Carmel	Kent	Patterson	Mahopac
Mahopac	Mahopac	Mahopac	Putnam Valley	Patterson
Putnam Valley	Putnam Valley	Patterson	Southeast	Putnam Valley
	Southeast			

Westchester County				
2016	**2017**	**2018**	**2019**	**2020**
Bedford	Bedford	Bedford	Bedford	Bedford
North Salem	Somers	Lewisboro	North Salem	Lewisboro
Pound Ridge		North Salem	Somers	North Salem
Somers		Pound Ridge	Yorktown	Pound Ridge
		Somers		Somers
				Yorktown

2018 Vegetation Management

Item – Circuit	County	Miles to Manage	Miles Complete	% Complete	Expected Completion Date
Amenia 153	Dutchess County	24 mi.	24	100%	complete
Bedford Hills 462	Westchester County	14 mi.	14	100%	complete
Crafts 424	Putnam County	33 mi	33	100%	complete
Cross River 469	Westchester County	19 mi	19	100%	complete
Cross River 470	Westchester County	28 mi	28	100%	complete
Goldens Bridge 417	Westchester County	14 mi.	14	100%	complete
Goldens Bridge 420	Westchester County	7 mi	7	100%	complete
Goldens Bridge 421	Westchester County	22 mi	22	100%	complete
Kent 176	Dutchess County	10 mi	10	100%	complete
Kent 526	Dutchess County	8 mi	8	100%	complete
Peach Lake 249	Westchester County	18 mi	18	100%	complete
Putnam Lake 486	Putnam County	26 mi	26	100%	complete
Sylvan Lake 481	Dutchess County	20 mi	20	100%	complete
Teakettle Spout 489	Westchester County	14.5	14.5	100%	complete
Union Valley 431	Westchester County	14 mi.	14	100%	complete
Union Valley 432	Westchester County	23 mi	23	100%	complete
Union Valley 433	Putnam County	30 mi	30	100%	complete
West Patterson 475	Putnam County	39 mi	39	100%	complete
803 Transmission Line	Putnam County	4.9 mi	4.9	100%	complete
813 Transmission Line	Putnam/Dutchess County	7.8 mi	7.8	100%	complete
994 Transmission Line	Putnam/Dutchess County	19 mi	19	100%	complete
June 2018 Transmission Patrol follow up (115 Kv)	Putnam/Dutchess/Westchester	24 locations	24	100%	complete
June 2018 Transmission Patrol follow up (46 Kv)	Putnam/Dutchess/Westchester	65 locations	65	100%	complete
Wood Street 345/115 substation (outside perimeter fence and ROW clearing)	Putnam County	1	1	100%	complete

Routine Maintenance Programs

Distribution and Transmission Inspection Programs:

- **Transmission Wood Pole and Above Ground Inspections** *on a 10 yr cycle based on industry best practice for this type of wood pole maintenance.*
- **Distribution and Transmission Line Inspections** *on equipment are on a 5 yr cycle based on industry best practice*

	Distribution Infrared Program	Stray Voltage	Transmission Infrared Inspection via Helicopter – Complete
Year/Units	# Circuits (% of Total Circuits)	Units	# Circuits (% of Total Lines)
2018	60 (100%)	19,523 (100%)	15 (100%)

Distribution and Transmission Substation Programs (Annually):

- **Substation Battery Maintenance – 100%**
- **Transformer Oil Analysis – 100%**
- **Infrared Substation Equipment Testing – 100%**
- **Comprehensive Substation Inspection (bi-monthly) – 100%**
- **Vegetation Abatement – 100%**

Additional Substation Programs (Doble Testing)

- **Distribution Type Transformers** on a 12 year cycle based on industry best practice- 4 this year – **100%**
- **Substation Circuit Breakers** on a 6 year cycle based on industry best practice - 21 this year – **100%**
- **Transmission Type Transformers** on a 6 year cycle based on industry best practice – 4 this year **100%**

2018 Transmission/Distribution Maintenance Work – Repair/Replace
Repairs/Replacements Completed as of June 19, 2019

Item	Details	Quantity	Number Complete	Percent Complete
Transmission Maintenance	Crossarms	232	199	85.8%
Transmission Maintenance	Insulators	46	42	91.3%
Transmission Maintenance	Poles	78	39	52.7%
Distribution Maintenance	Conductors	22	22	100%
Distribution Maintenance	Lightning Arrestors	117	117	100%
Distribution Maintenance	PRI Risers	7	7	100%
Distribution Maintenance	Guy Wires	99	99	100%
Distribution Maintenance	Cut Outs	9	9	100%
Distribution Maintenance	Poles	198	197	99.5%
Distribution Maintenance	Secondary/Service	13	13	100%
Distribution Maintenance	Hand Holes	6	6	100%
Distribution Maintenance	Grounds	142	142	100%
Distribution Maintenance	Insulators	13	13	100%
Distribution Maintenance	Transformers	24	24	100%
Distribution Maintenance	Crossarms	46	46	100%

2018 Substation Distribution Maintenance Work

Substation Automation

We are performing upgrades in the automation system of the following substations. These upgrades will provide more visibility of the stations to the SCADA system. The following substation upgrades will be completed in 2019.

a. Kent Cliffs
b. Putnam Lake
c. Cantitoe
d. Amawalk

Breaker Replacement

The followings breakers in the table to the right are scheduled to be replaced in the Brewster division.

Amenia Substation Rebuild

1. Install a new substation transformer
2. Low-side medium voltage GIS
3. Low-side capacitor bank and accompanying equipment
4. Convert 10 miles of 4.8kV circuits 153 & 154 to 13.2kV

- **NOTE: All Substation Distribution Work on-track to be completed in 2018 or 2019.**

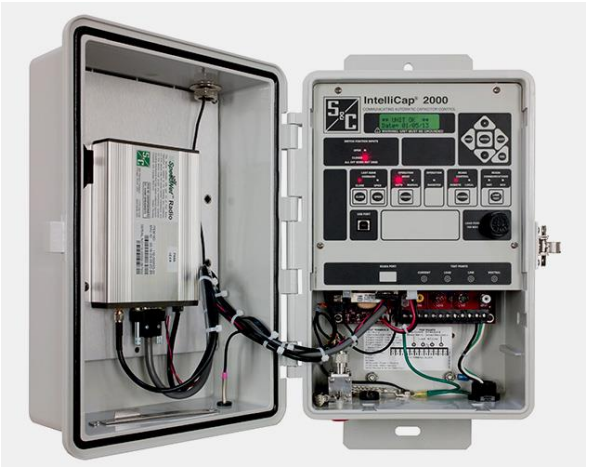
Substation Name	Circuit Breaker
Carmel	CARMEL-99202 – **Complete**
Croton Falls	CROTON FALLS-2B-52 – **Complete**
Croton Falls	CROTON FALLS-44652
Croton Falls	CROTON FALLS-51452 – **Complete**
Croton Falls	CROTON FALLS-51552 – **Complete**
Croton Falls	CROTON FALLS-51652 – **Complete**
Croton Falls	CROTON FALLS-80252 – **Complete**
Croton Falls	CROTON FALLS-80352 – **Complete**
Croton Falls	CROTON FALLS-81052 – **Complete**
Croton Falls	CROTON FALLS-81252 – **Complete**
Croton Falls	CROTON FALLS-81352 – **Complete**
Croton Falls	CROTON FALLS-T5-52 – **Complete**
Croton Falls	CROTON FALLS-T6-52
Golden Bridge	GOLDEN BRIDGE-1B-42
Golden Bridge	GOLDEN BRIDGE-2B-42
Golden Bridge	GOLDEN BRIDGE-41642
Golden Bridge	GOLDEN BRIDGE-41742
Golden Bridge	GOLDEN BRIDGE-41842
Golden Bridge	GOLDEN BRIDGE-41942
Golden Bridge	GOLDEN BRIDGE-42042
Golden Bridge	GOLDEN BRIDGE-42142
Golden Bridge	GOLDEN BRIDGE-T2-42
Kent Cliffs	KENT CLIFFS-29182– **Complete**
Kent Cliffs	KENT CLIFFS-29282– **Complete**
Sylvan Lake	SYLVAN LAKE-47812 – **Complete**
Sylvan Lake	SYLVAN LAKE-48012 – **Complete**
Sylvan Lake	SYLVAN LAKE-48112 – **Complete**
Bedford Hills	BEDFORD HILLS-22532
Bedford Hills	BEDFORD HILLS-22732
Bedford Hills	BEDFORD HILLS-46232
Bedford Hills	BEDFORD HILLS-46332

2018 Transmission Substation Maintenance Work

- **Pawling** – 115 kV Capacitor Bank Installation – **Complete**
- **Dover** – 46 kV Capacitor Bank Installation – **Complete**
- **Croton Falls** – Oil Breaker Replacement of all 46 kV and one 115 kV - **7 of 8 Completed**
- **Kent Cliffs** – Two switches replaced with new 46 kV breakers – **Complete**
- **Carmel** – 115 kV Oil Breaker Replacement - **Complete**
- **Carmel** – Finish the Transmission Line 807 Project – Upgrade from 46 kV to 115 kV – **Complete**
- **Tilly Foster** – New Breakers Installation for MTA - **Ongoing**

2018/2019(Q1) Automation Planned Work

Towns	Reclosers
Bedford	5
Beekman	11
Carmel	15
Dover	2
Kent	3
Lewisboro	8
North Salem	14
Patterson	11
Pawling (Town)	3
Pawling (Village)	3
Poundridge	4
Putnam Valley	14
Somers	20
Southeast	4
Yorktown	1
TOTAL	118



- Automation of capacitors and regulators provide better voltage regulation.
- Automation of reclosers provide reduced outage durations, through remote switching capabilities.

Note: We have added some additional reclosers and are finishing the installation and testing of the devices in 2019.

2018/19 Distribution Automation Work
Tasks Completed as of June 20, 2019

		Engineering			Installation			Commissioned		
Item	**Details**	**Qty**	**Number Complete**	**Percent Complete**	**Qty**	**Number Complete**	**Percent Complete**	**Qty**	**Number Complete**	**Percent Complete**
Automation Planned Work - Reclosers	**TOTAL: 118 Reclosers**	**118**	**116**	**98.0%**	**118**	**109**	**92.0%**	**118**	**105**	**89.0%**
Bedford	5 Reclosers	5	5	100.0%	5	5	100.0%	5	5	100.0%
Beekman	11 Reclosers	11	11	100.0%	11	11	100.0%	11	11	100.0%
Carmel	15 Reclosers	15	14	93.0%	15	13	87.0%	15	13	100.0%
Dover	2 Reclosers	2	2	100.0%	2	2	100.0%	2	2	100.0%
Kent	3 Reclosers	3	3	100.0%	3	3	100.0%	3	3	100.0%
Lewisboro	8 Reclosers	8	8	100.0%	8	8	100.0%	8	8	100.0%
North Salem	14 Reclosers	14	12	86.0%	14	10	71.0%	14	10	71.0%
Patterson	11 Reclosers	11	11	100.0%	11	11	100.0%	11	11	100.0%
Pawling (Town)	3 Reclosers	3	3	100.0%	3	3	100.0%	3	3	100.0%
Pawling (Village)	3 Reclosers	3	3	100.0%	3	3	100%	3	3	100.0%
Pound Ridge	4 Reclosers	4	4	100.0%	4	2	50.0%	4	2	50.0%
Putnam Valley	14 Reclosers	14	14	100.0%	14	14	100.0%	14	13	93.4%
Somers	20 Reclosers	20	20	100.0%	20	20	100.0%	20	20	100.0%
Southeast	4 Reclosers	4	4	100.0%	4	4	100.0%	4	3	75.0%
Yorktown	1 Reclosers	1	1	100.0%	1	1	100.0%	1	1	100.0%

Underground Capital Improvements

2018	2019	2020	2021	2022
Replace 30 Junction cabinets – **Complete**	Replace 2 Junction cabinets	Replace 8 Single Phase Transformers	Replace .5 Miles of primary underground on Golden Bridge 420	Replace 1.7 Miles of primary underground on Croton Falls 516
Replace 20 Single Phase Transformers – **Complete**	Replace 20 Single Phase Transformers	Inject .75 Miles of 3 Phase Primary on the Teakettle 490	Replace .6 Miles of primary underground on Croton Falls 514	
Replaced 3 Switch Gear	Replace 2 Switch Gears	Replace 1 Mile of primary underground on Croton Falls 514		
	Replace 1 Mile of primary underground on Golden Bridge 420			

Subdivisions with Underground Improvement Plan

- Heritage Hills
- Wild Oaks
- Dalton Farms
- Oakridge
- The Willows
- Chelsea Cove
- Greenbriar
- Primrose Farms
- Fox Run
- Indian Hill

Capital 5 Year Plan

NYSEG

Project Title: Dingle Ridge – 2nd Bank and 13.2kV Conversion (60% Complete)

Line of Business: Electric

Responsible Group: Projects

Investment Classification: System Capacity

Project Sponsor: Distribution Planning

Total Project Cost: $15,870,804

2013	2014	2015	2016	2017
$0	$37,710	$157,876	$273,408	$569,812
2018	2019	2020	2021	2022
$1,260,882	**$4,970,857**	**$8,600,260**	$0	$0

Project Description:

Dingle Ridge – Upgrade the current 5MVA bank substation to a new Greenfield substation with 2 – transformer banks. Convert 9.6 miles of 4.8KV circuits 277 and 278 to 13.2kV.

Capital 5 Year Plan

NYSEG

Project Title: Line 807 115kV Conversion Project (80% complete)

Line of Business: Electric

Responsible Group: Projects

Investment Classification: Reliability Risk

Project Sponsor: System Planning

Total Project Cost: $26,075,471

2013	2014	2015	2016	2017
$6,760,174	$2,646,423	$4,413,869	$1,845,198	$2,903,847
2018	2019	2020	2021	2022
$2,373,641	**$ 5,132,320**	$0	$0	$0

Project Description:
Convert the existing Carmel to Wood Street to Katonah Line #807 from 46kV to 115kV operation. This line is already constructed to 115kV standards; therefore, the project is primarily substation modifications. A new 115kV line terminal and two new 115kV breakers will be added at Carmel Substation, two new 115kV line terminals will be added at Wood Street Substation, and a new 115kV line terminal and three new 115kV breakers will be added at Katonah Substation.

Capital 5 Year Plan

NYSEG

Project Title: North Brewster Reinforcement (75% complete and is a multi-year project)

Line of Business: Electric

Responsible Group: Projects

Investment Classification: Mandatory

Project Sponsor: Business Development

Total Project Cost: $23,603,908

2013	2014	2015	2016	2017
$0	$0	$0	$44,107	$2,505,050
2018	2019	2020	2021	2022
$8,267,318	**$4,522,366**	**$8,265,067**	$0	$0

Project Description:

At Amenia Substation, the project will install 1 – 46/13.2kV, transformer & accompanying equipment and convert 10 miles of the existing 4.8 kV circuits 153 and 154 to 13.2 kV. At Dover Plains Substation, the project installed 1 – 46kV capacitor banks and accompanying equipment. At Pawling Substation, the project installed 2 – 115kV capacitor banks and accompanying equipment.

Capital 5 Year Plan

NYSEG

Project Title: Pawling-Ten Mile River New 115kV Line (Line 825 Rebuild) (planned for the future)

Line of Business: Electric

Responsible Group: Projects

Investment Classification: Reliability Risk

Project Sponsor: System Planning

Total Project Cost: $31,605,000

2013	2014	2015	2016	2017	
$0	$0	$0	$0	$0	
2018	2019	2020	2021	2022	Beyond 2022
$0	$0	$3,160,500	$3,160,500	$6,321,000	$18,963,000

Project Description:

Build a 115kV line from Pawling to the vicinity of Ten Mile River Sub.

Trip Saver Pilot Program - COMPLETE

- New pilot program for Brewster
- Installing 75+ devices across the Brewster system
- Installs on spur lines
- Replaces a standard fuse with advanced technology
- Minimizes sustained outages due to temporary faults

Reliability Projects

Project	Where	What	Details	Status
1	Town of Amenia, Dutchess County	Amenia Interconnect with Central Hudson Gas & Electric	• This interconnect gives NYSEG the necessary load availability to properly serve the Silo Ridge Development • Provides an alternate feed for Amenia substation in case of Transmission or Substation Failure	NYSEG Construction Complete Next Step to work with CHGE Engineering.
2	Towns of Amenia and Dover, Dutchess County	3 Phase extension and conversion of Dover Plains 494 to Amenia (Amenia Distillery)	• Extending the Main line will provide the necessary 3 Phase Service for the Amenia Distillery • Will eventually provide a circuit tie between Amenia and Dover for increased reliability	Construction has started
3	Town of Carmel, Putnam County	Alternate Feed for Putnam County Hospital (auto flop over scheme)	• Provide an additional distribution feed for the hospital from a different substation • This will limit the duration and frequency of any outage the hospital will incur	Awaiting feedback from Hospital for next steps

Reliability Projects Continued

Project	Where	What	Details	Status
4	Towns of Carmel (Mahopac) and Kent, Putnam County	Relocation of Crafts 424 substation exit along route 6	• Relocate the section of poles along route 6 that are currently off road • Relocating these poles closer to the road will limit tree exposure and gain accessibility to work on these line	Phase 1 engineering is complete Filing for DEP, DOT and NYC easements and permits
5	Town of Somers, Westchester County	2019 Underground Replacement Plan Heritage Hills	• Replace Single Phase aging infrastructure, wire and equipment • Current facilities are at end of life span and are in need of update to limit outages	Phase 2 is in construction Phase 3 is in engineering
6	Towns of North Salem and Lewisboro, Westchester County	North Salem Line Extensions and Circuit Ties	• Build 3 Line extensions on various locations in North Salem to create circuit ties to assist in limiting duration of outages • One line extension will create an alternate feed to 2 nursing home facilities located on Route 22 on North Salem	One in construction One waiting on easements One in final engineering approval

New York Rate Cases

- Filed New York rate cases on May 20, 2019 for NYSEG electric and NYSEG natural gas, and RG&E electric and RG&E natural gas

- Comprehensive rate filings: 27 pieces of testimony, 9 special studies, and more than 8,000 pages of testimony and exhibits

- Rate Year is April 1, 2020 through March 31, 2021 (rates effective April 20, 2020)

- Filed a one-year case; we plan to file multi-year financial schedules this month

New York Rate Cases

1. Rate increases will allow for:
   - Continuation of safe and reliable electric and gas service
   - Transition to a clean energy future

2. Customers
   - Lowest average residential electric bills and among the lowest average residential gas bills
   - Continue high quality customer service – provide more information to customers for informed energy choices – Advanced Metering Infrastructure (AMI)

3. Important initiatives and investments
   - Vegetation management
   - Resiliency Plan: system hardening, automation and topology
   - Gas Safety: enhanced leak prone main replacement program

4. Promote clean energy technologies
   - Enable distributed generation
   - Electric vehicle projects – DC fast charging, battery storage and energy efficiency goals

New York Rate Cases

- NYSEG Electric:
  - One-third of increase is for vegetation management
  - Monthly average bill increase is $10.20 (13.5% of the total bill) for a residential customer using 600 kilowatt-hours per month

- NYSEG Gas:
  - Increase is for investments, operations and maintenance and depreciation
  - Monthly average bill increase is $1.03 (.9% of the total bill) for a residential customer using 80 therms per month

- NYSEG has the lowest average residential electric bills of the major New York utilities, and among the lowest average residential gas bills
  - This would remain the same with the rate case as proposed

New York Rate Cases – Schedule

- Eleven month statutory process
- July to September: Public hearings (to be scheduled)
- Opportunities for comments include becoming a party to the case, letters to the PSC, statements at public hearings, comments on the Department of Service website

New York Rate Cases – Key Elements: Vegetation Management

- NYSEG is the only electric utility in New York not on a cycle trimming program for distribution

- Ground-to-sky and hazard tree removal proposal on both single and 3-phase lines will enhance existing Brewster five-year cycle trim

New York Rate Cases – Key Elements: Vegetation Management

- NYSEG and RG&E have approximately 300,000 ash trees along its distribution and transmission rights-of-way. A 10-year ash tree removal program proposed
- Rate plan includes wood removal and a vine program for Brewster Division
- Proposals in the filing are consistent with previous management audits and the April 18, 2019 Storm Report

New York Rate Cases – Key Elements: AMI

- AMI is comprised of smart meters, communications network and data management systems providing two-way communications, enhancing the customer experience
- The rate case includes the replacement of 1.3 million electric meters and the retrofitting/replacement of 600,000 natural gas meters installation
- Meter deployment is planned April 2021 through March 2024
- Approximately a $500M investment

New York Rate Cases – Key Elements: Resiliency

Program goals:
Enhance the resiliency of Company infrastructure to better withstand the impact of severe weather and allow for quicker customer recovery when impacts occur.

Incremental investment over the next 7-10 years

- **Pole Replacement**
- **Re-conductor**
- **Infrastructure Hardening**
- **Voltage and Topology Upgrades**
- **Network Automation**
- **Automated Meter Reading**
- **Vegetation Management**

** $2.0 B includes ~$500M for NY AMI program*

New York Rate Cases – Key Elements: Resiliency

1) **What is "Resiliency"?**
   "Resiliency" focuses on (1) preventing and limiting the scope and impact of outages when they occur, and (2) the ability to expediently restore power after a significant outage.

2) **Why is it important to distinguish "resiliency" from "reliability"?**
   Reliability relates to performance under "blue-sky" conditions. In contrast, our plan is designed to reduce the number of customers that experience outages during low-probability, high impact storms.

3) **What are factors requiring a focused resiliency approach?**
   Weather (wind), "hazard" trees located outside of our right-of-way, and circuit designs that result in multiple outages from a single event.

4) **What actions address resiliency most directly?**
   Enhanced vegetation management (more aggressive ground-to-sky tree trimming and hazard tree removal), system hardening, and changes to circuit topology, with automation.

5) **Why act now?**
   There is an emerging consensus among customers and community representatives that it is time to address resiliency. By starting now we will gather data to help design solutions that address unique circuit characteristics and changing weather patterns.

6) **How did NYSEG and RG&E determine the circuits to be targeted in this first plan?**
   1) identified and ranked the worst performing circuits from among NYSEG's 1,200 and RG&E's 885 circuits; 2) defined a cost-effective plan for each distribution circuit; and 3) identified the circuits to be addressed in each year, based on rankings and other relevant criteria.

New York Rate Cases – Key Elements: Resiliency

Storms:

- NYSEG has experienced 123 “major storms” (123 for NYSEG and 42 for RG&E) between 2012-2018. These include ice storms, blizzards, hurricanes, wind storms, tornados, and lightning combined with wind and rain.
- 48 of these major storms experienced restoration periods that lasted at least 4 days (including 12 in 2018). An average of more than 50,000 customers lost power during each of these 48 major storms.

Trees:

- About 57% of NYSEG and RG&E’s combined outages during the 2015-2018 period were caused by trees or branches contacting wires and other electric equipment.
- The portion of these tree-related outages caused by out of the ROW trees is approximately 64% for NYSEG and 41% for RG&E.

The 2019-2020 Resiliency Plan:

- Forty (40) NYSEG distribution circuits, 14 RG&E distribution circuits, and 4 RG&E transmission line upgrades were selected to be included in the Resiliency Plan.
- NYSEG and RG&E are proposing $35.5 million and $2.9 million respectively, to fund Enhanced Vegetation Management on distribution circuits included in the Resiliency Plan.
- NYSEG plans to invest $56.5 million ($16.8 million in 2019 and $39.7 million in 2020) in hardening, automation, and topology for the initial 40 circuits. RG&E plans to invest $25.5 million ($5.6 million in 2019 and $19.9 million in 2020).

Resiliency Circuits

Division	Circuit Name	Circuit	Rank	Cust	3-Phase	Total OH Miles	SAIFI	SAIDI	CapEx ($M)
Binghamton	Vestal 623	8101401	66	1,709	6.59	41.54	2.4	6.74	$3.21
Brewster[22]	Croton Falls 514	1105002	64	847	3.28	7.86	.86	8.73	$1.01
Brewster[23]	Croton Falls 515	1105004	23	1,467	14.69	23.50	4.27	13.06	$1.23
Brewster	Croton Falls 516	1105095	31[24]	1,311	4.28	12.51	4.39	15.41	$3.11
Brewster	Golden Bridge 420	1106120		1,116	5.28	7.03	2.94	9.78	$1.07
Brewster	Teakettle Spout 490	1107190		850	0.84	0.84	1.58	2.79	$1.00
Brewster	Adams Corner 411	1105111	6	1,958	10.13	28.43	4.59	12.31	$2.48
Brewster	Crafts 422	1105722	14	1,485	7.99	20.18	4.82	15.36	$0.30
Brewster	Crafts 423	1105723	3	2,534	11.32	31.24	4.05	12.59	$0.52
Brewster	Crafts 424	1105724	7	1,257	16.11	33.47	6.44	28.89	$2.01
Brewster	Cross River 470	1105870	54	1,009	9.52	28.20	4.51	30.15	$0.36
Brewster	Golden Bridge 414	1106104	29	1,196	7.03	27.30	3.15	11.44	$0.38
Brewster	W. Patterson	1106574	75	944	7.15	31.00	4.07	8.83	$0.26
Brewster	Pawling 509	1106667	61	1,795	21.23	59.30	2.4	6.28	$0.88
Brewster	Pound Ridge 455	1106855	25	1,603	8.23	34.88	3.86	20.47	$1.63
Brewster	Putnam Lake 486	1106986	42	1,624	5.23	26.22	3.07	9.65	$0.66
Brewster	Sylvan Lake 478	1107078	39	2,425	12.15	38.08	2.17	6.89	$0.60
Brewster	Sylvan Lake 481	1107081	65	1,594	9.20	20.48	2.58	12.52	$0.25
Brewster	Teakettle Spout 489	1107189	70	1,094	5.75	14.47	3.71	17.77	$0.84
Brewster	Tilly Foster 441	1107241	37	1,428	11.70	23.57	3.65	10.69	$0.95
Brewster	Tilly Foster 442	1107242	48	1,196	6.42	14.12	4.14	6.27	$0.40
Brewster	Union Valley 432	1107732	51	2,218	11.39	23.11	2.19	6.47	$1.14
Brewster	Union Valley 433	1107733	73	2,325	13.72	30.07	2.19	6.47	$1.49
Elmira	South Addison 346	5204446	60	1,321	27.32	53.68	3.33	13.68	$1.09
Elmira	N Urbana 535	5206335	88	1,465	17.98	105.79	2.44	7.92	$3.32
Geneva	Milo 201	4202901	218	736	10.26	39.12	2.82	5.25	$0.90
Ithaca	Peruville Tap 522	4303701	50	1,383	16.57	86.55	3.38	4.76	$1.64
Lancaster	Langer RD. 433	3103204	41	2,041	7.44	15.23	2.46	4.3	$0.51
Liberty	Maplewood 229	2402229	40	2,015	13.74	26.04	2.51	6.54	$3.97
Liberty	Old Falls 283	2402583	67	1,512	16.52	59.92	2.75	6.66	$0.41
Liberty	Yulan 204	2403404	17	1,898	27.96	105.40	3.58	12.91	$2.27
Liberty	Walden 705	2403605	36	2,280	9.93	18.63	2.29	2.16	$0.32
Mechanicville	Kline Kill 631	1205403	43	1,841	18.80	126.59	2.66	14.75	$4.79
Mechanicville	Raylinksi Tap 606	1205901	8	4,564	20.35	26.67	1.75	2.48	$1.36

Enhanced Vegetation Management

As shown in Table 7, the Companies propose to perform ground-to-sky clearing on all 3-phase circuit miles in NYSEG and RG&E, and to apply ground-to-sky clearing on single phase circuits in in NYSEG's Brewster division.

Table 7. Ground-to-Sky Clearing of Distribution Circuits in 2019-2020 Resiliency Plan[26]

	Trim Miles		Proposal
	3-Phase	Total	
NYSEG – Brewster Division	202.6	535.9	Ground-to-sky clearing on all overhead lines (Phase-1, 2, and 3)
Other NYSEG Circuits	328.2	328.2	Ground-to-sky clearing on Phase 3 overhead lines
RG&E Circuits	127.3	127.3	

The estimated enhanced vegetation management costs are $30.9 million for the Brewster division (22 circuits in total) for ground-to-sky clearing on all circuit miles. The cost of performing enhanced vegetation management in NYSEG's other 18 circuits is $12.7 million with ground-to-sky clearing is performed on the 3-phase overhead system. RG&E enhanced vegetation management costs $3.5 million for ground-to-sky clearing on 3-phase circuit miles.

Storm Report Recommendations

System Improvement Opportunities:

1. System Maintenance and Hardening
2. Resiliency Plan: Transforming Energy

Emergency Response Improvement Projects:

Based on event after-action findings, Scorecard and Part 105 report results, feedback from officials and customers, six project areas with 65 sub-projects were established.

Resources	Logistics	Policy
Crew Management	Communications	Work Planning

Storm Report Implementation Plans:

Company personnel are working on 77 projects based on the PSC Storm Report issued on April 18, 2019

- 15 Projects are complete
- 62 Projects are in progress

Emergency Preparedness/Response – Blue Sky Activities

Municipal Coordination

- Dry ice and bottled water locations
- Staging sites

Critical Facilities

- Review list
- Identify larger elderly population areas

Contact information

- Updating municipal officials contact information
- Life support customer outreach

Resources

- Damage assessors, wire guards
- Line crew resource hiring
- Mutual assistance
- Enhanced weather services

Emergency Preparedness/Response – Event Activities

Municipal Liaisons
- EOC and incident command staffing
- Liaison tools and resources (paper, electronic and human)

Municipal Officials' Communications:
- Municipal calls – operator-assisted, agenda and invitation modifications
- Critical Facility communications – update twice daily with 1800 hrs deadline

Work Planning:
- Road Clearing
- Inclusion of critical infrastructure

Communications:
- ETRs – Global, Regional, Local, Specific
- News release cycle and website timestamps

Resources:
- Damage assessor, wire guard matrices
- Line crew resource hiring, mutual assistance

Questions?