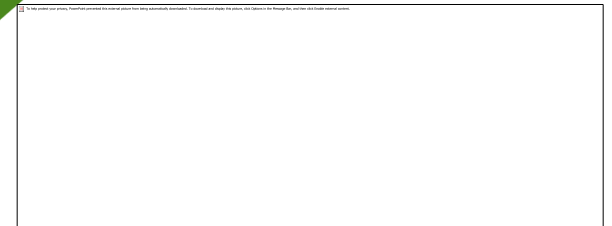


# **NYSEG/RGE**

## **2013 Local Transmission Plan**

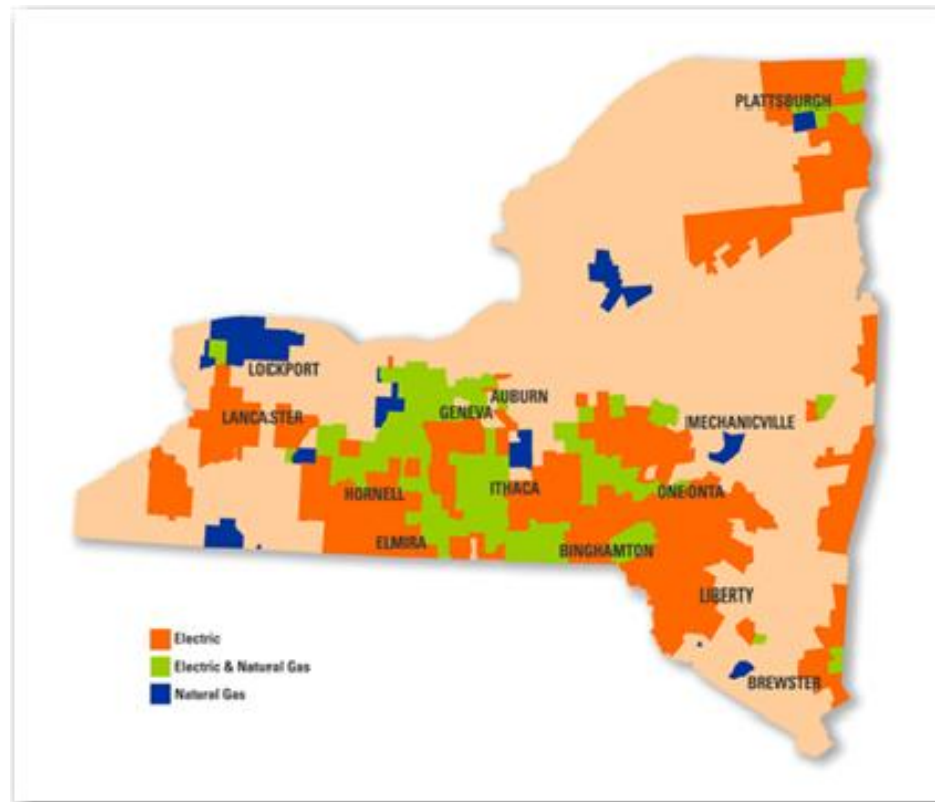
### **System Planning**

Tim Lynch  
October 24, 2013



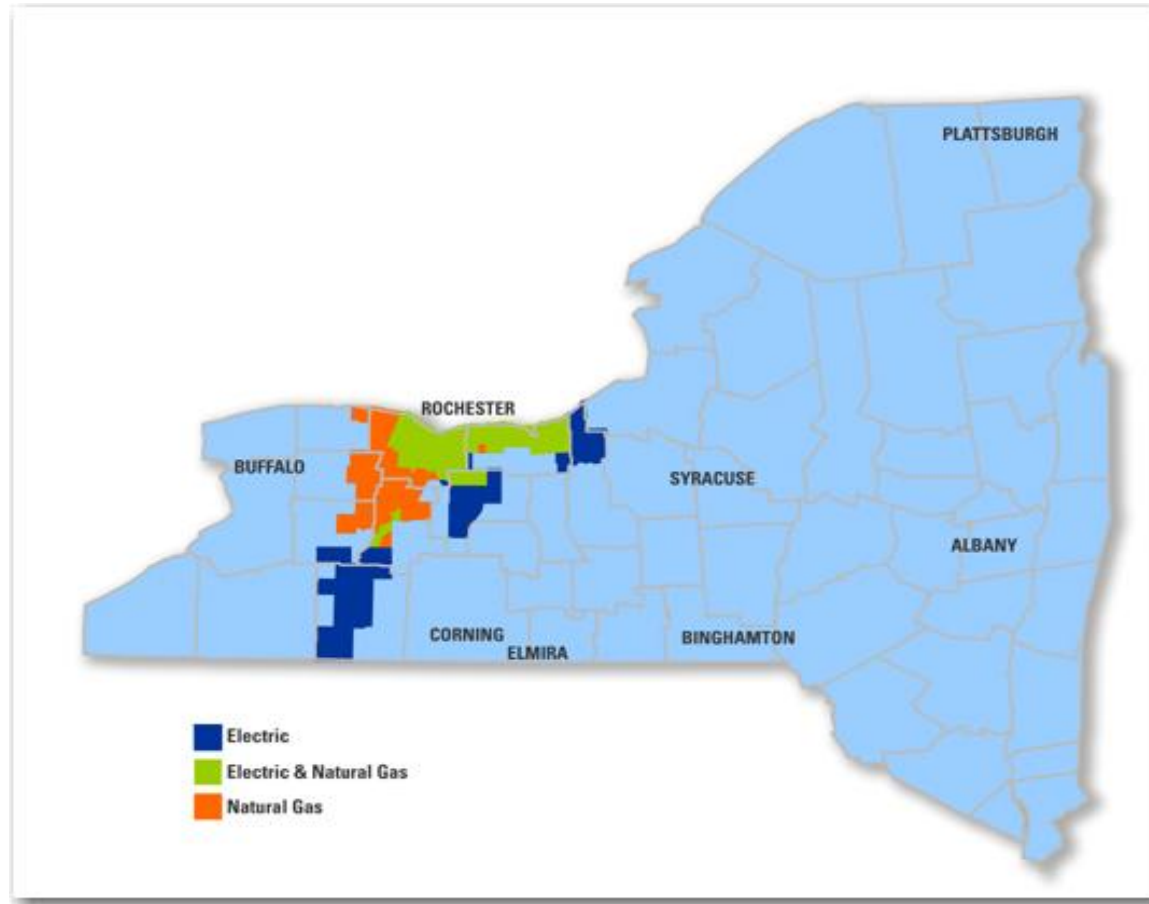
# New York State Electric & Gas (NYSEG)

**NYSEG serves 877,000 electricity customers across 20,000 square miles of upstate New York. It operates and maintains an electricity delivery system that consists of 4,500 miles of transmission lines and 34,000 miles of distribution lines.**



# Rochester Gas & Electric (RGE)

**RGE serves 368,000 electricity customers in the metropolitan Rochester area and surrounding region.**



# Capital Investment in Electric Infrastructure

- In 2012, NYSEG and RGE invested \$343 million in electric capital improvements to provide its customers with safe, reliable service.
- NYSEG and RGE plans to continue to invest at these levels over the next five years.
- Investments are targeted for network reinforcement, modernization & renovation, and automation.

# Local Transmission Plans

- NYSEG – Local transmission facilities include 115kV, 69kV, 46kV, and 34.5kV. Some 34.5kV is dedicated to serving customer load and is considered distribution; some is dual purpose.
- RGE – Local transmission facilities include facilities between 115kV and 34.5kV, as well as 11kV facilities that are operated in parallel with the 115kV and 34.5kV systems and are thus considered an extension of the transmission system.
- Local transmission plans are developed to address reliability issues and accommodate forecasted load growth. Equipment replacements due to asset condition are not included.

# Planning Criteria

- For all voltage levels of the Bulk Power System (BPS) and Local Transmission System, the planning criteria used in this LTP are described in the Iberdrola USA System Planning Manual – Criteria and Processes, dated July 2011.
- For BPS (230kV and higher), the criteria used follow NERC, NPCC, and NYSRC standards, including reliability criteria for normal system conditions, single-element contingency, multiple-element contingency, and extreme contingencies.
- The load flow simulations were monitored for thermal and voltage violations under system normal and applicable contingencies.

# Assumptions and Methodology

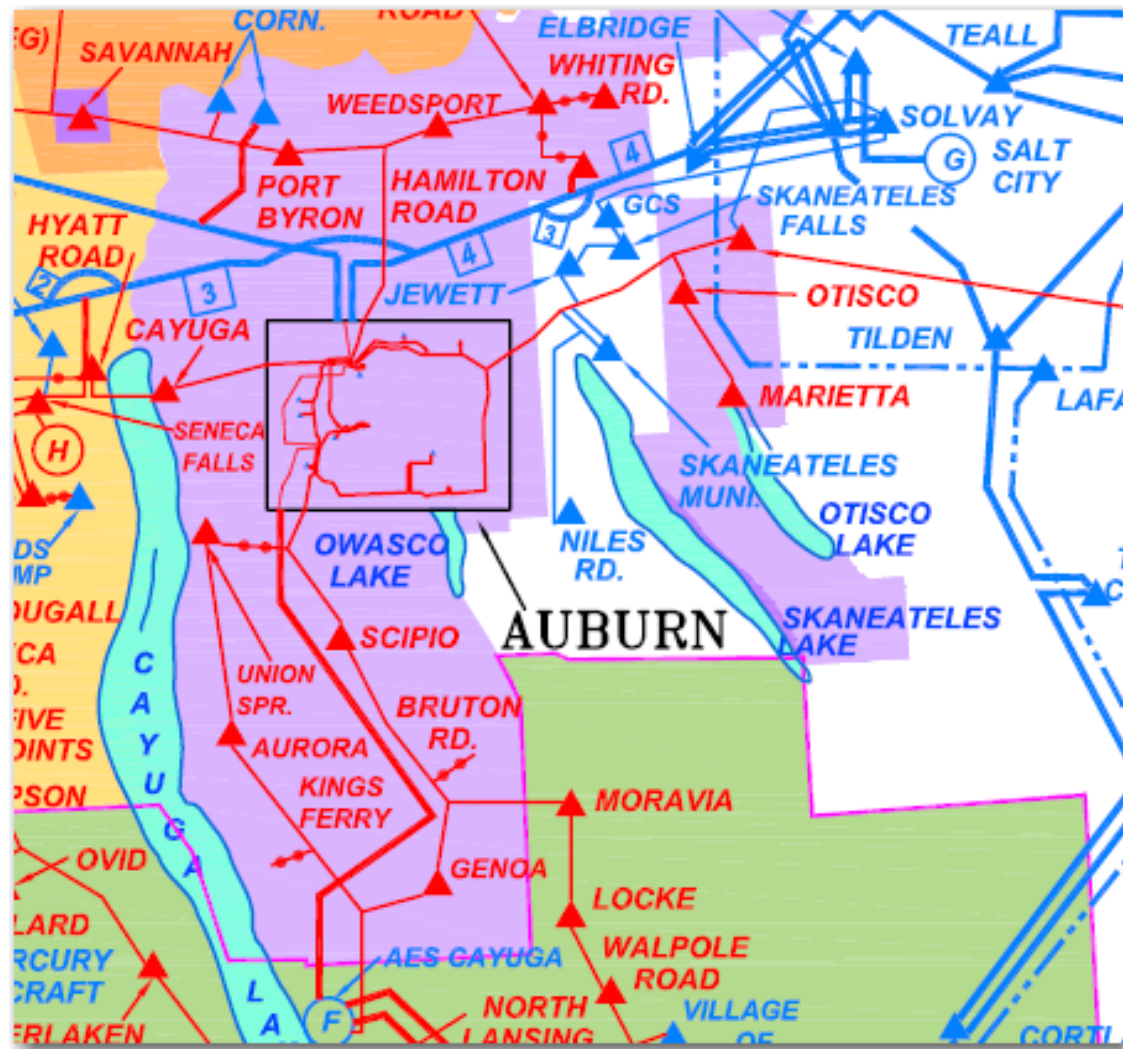
- Starting with FERC 715 summer and winter models available from the NYISO, an LTP is developed for each specific NYSEG and RGE Division using a coincident peak load value and forecast for that Division. This Division peak load value is non-coincident with other Division peak load values.
- The cases include Gold Book projects as well as any NYSEG/RGE planned projects.
- Load growth rates are calculated using a regression analysis on 10 years of actual load data. The load growth rate is then used to calculate the forecasted peak load for the Division in any specific future year.
- PSS/e Power Flow software (Version 33) was used for this LTP.

# Study Results

- Results are presented by Division for 2013, 2018, and 2023 case years.
  - Thermal and voltage violations are noted for each system normal and contingency condition.
  - Projects have been developed to resolve one or more violations.
- NYSEG and RGE have many current projects in process and many projects carried over from the 2011 LTP. New projects identified are marked as conceptual and will be more fully developed and budgeted.



# NYSEG – Auburn Division



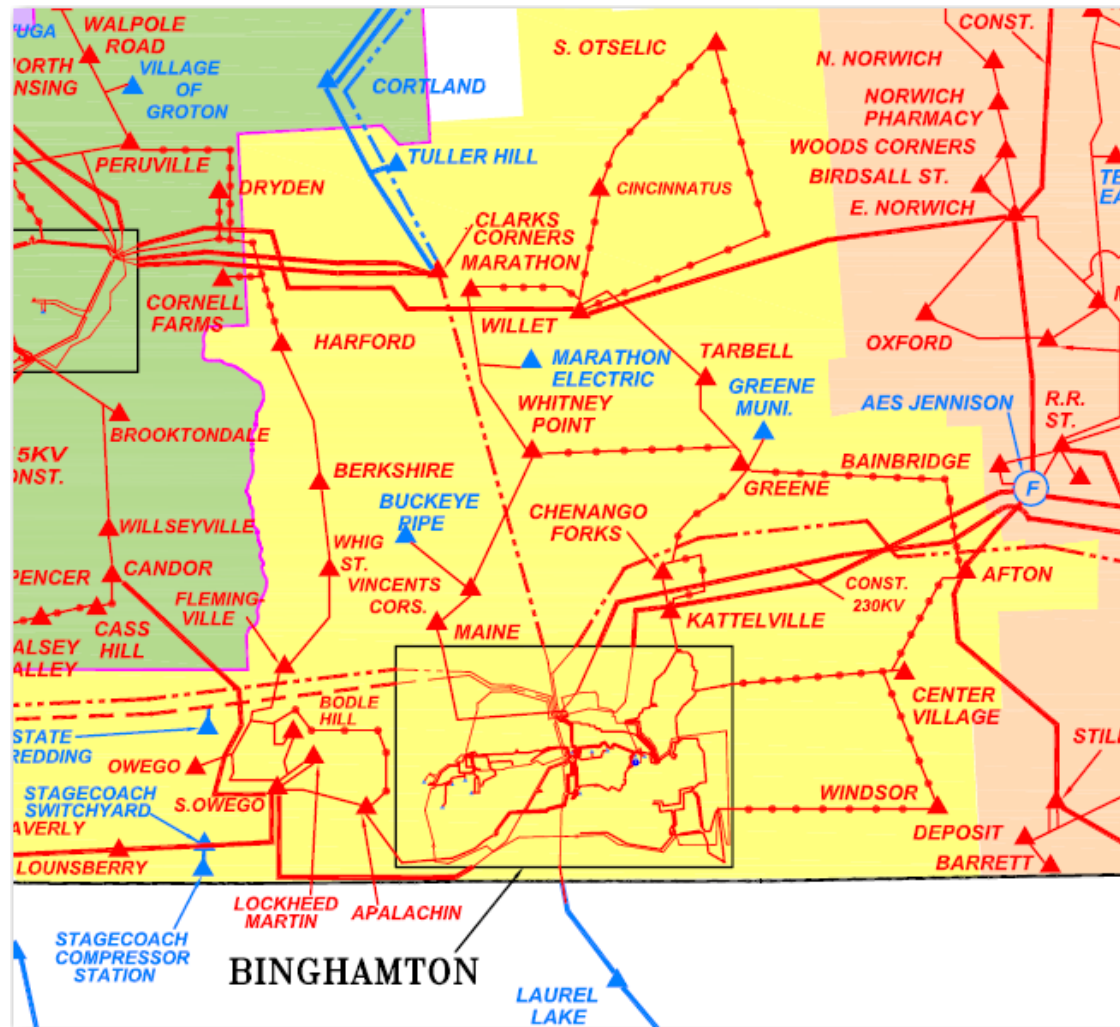
# Auburn – Proposed Projects

Project Name	Issue	Year of Need	Project Status
Reconductor 35kV Line 505 (Green St - Alco)	Post contingency thermal overload	2012	In Progress
Reconductor 35kV Line 525 (Centerport - State St)	Post contingency thermal overload	2012	In Progress
Add 35kV Line Segment (Grant Avenue Tap - State St)	Post contingency thermal overload	2017	In Progress
Add 35kV Line Segment (State St - Miller Tap)	Post contingency thermal overload	2018	In Progress
Auburn Transmission Project	System normal and post contingency thermal overload and submarginal voltages	2011	In Progress
Replace Wright Avenue 115/34.5 kV Transformer #2	Post contingency thermal overload	2017	Conceptual
Replace Wright Avenue 115/34.5 kV Transformer #1	Post contingency thermal overload	2018	Conceptual
Replace State Street 115/34.5 kV Transformer #1	System normal and post contingency thermal overload	2020	Conceptual
Marietta, Otisco, and Marcellus new 1.2, 1.2, and 2.4 MVAR switched capacitor banks	Post contingency submarginal voltages	2018	Conceptual

# Auburn (cont.)

Reconductor 35kV Line Segment (Franklin - NYSEG TA)	Post contingency thermal overload	2023	Conceptual
Reconductor 35kV Line Segment (Willow G - Skan VT)	Post contingency thermal overload	2023	Conceptual
Reconductor 35kV Line Segment (Otisco T - Willow G)	Post contingency thermal overload	2023	Conceptual
Reconductor 35kV Line Segment (Clark Avenue - Green Street)	Post contingency thermal overload	2023	Conceptual
Reconductor 35kV Line Segment (Snyder G - Sewage34)	Post contingency thermal overload	2023	Conceptual
Reconductor 35kV Line Segment (Sewage34 - Wright34)	Post contingency thermal overload	2023	Conceptual
Reconductor 35kV Line Segment (Marcellus - Cam-Sylt)	Post contingency thermal overload	2023	Conceptual
Reconductor 35kV Line Segment (Gouldaub - Swift Street)	Post contingency thermal overload	2023	Conceptual
Reconductor 35kV Line Segment (Gouldaub - Wright34)	Post contingency thermal overload	2023	Conceptual
Reconductor 35kV Line Segment (Grant Tap - State34)	Post contingency thermal overload	2023	Conceptual
Reconductor 35kV Line Segment (Buckeye - Franklin)	Post contingency thermal overload	2023	Conceptual
Reconductor 35kV Line Segment (Buckeye - Grant)	Post contingency thermal overload	2023	Conceptual

# NYSEG - Binghamton Division



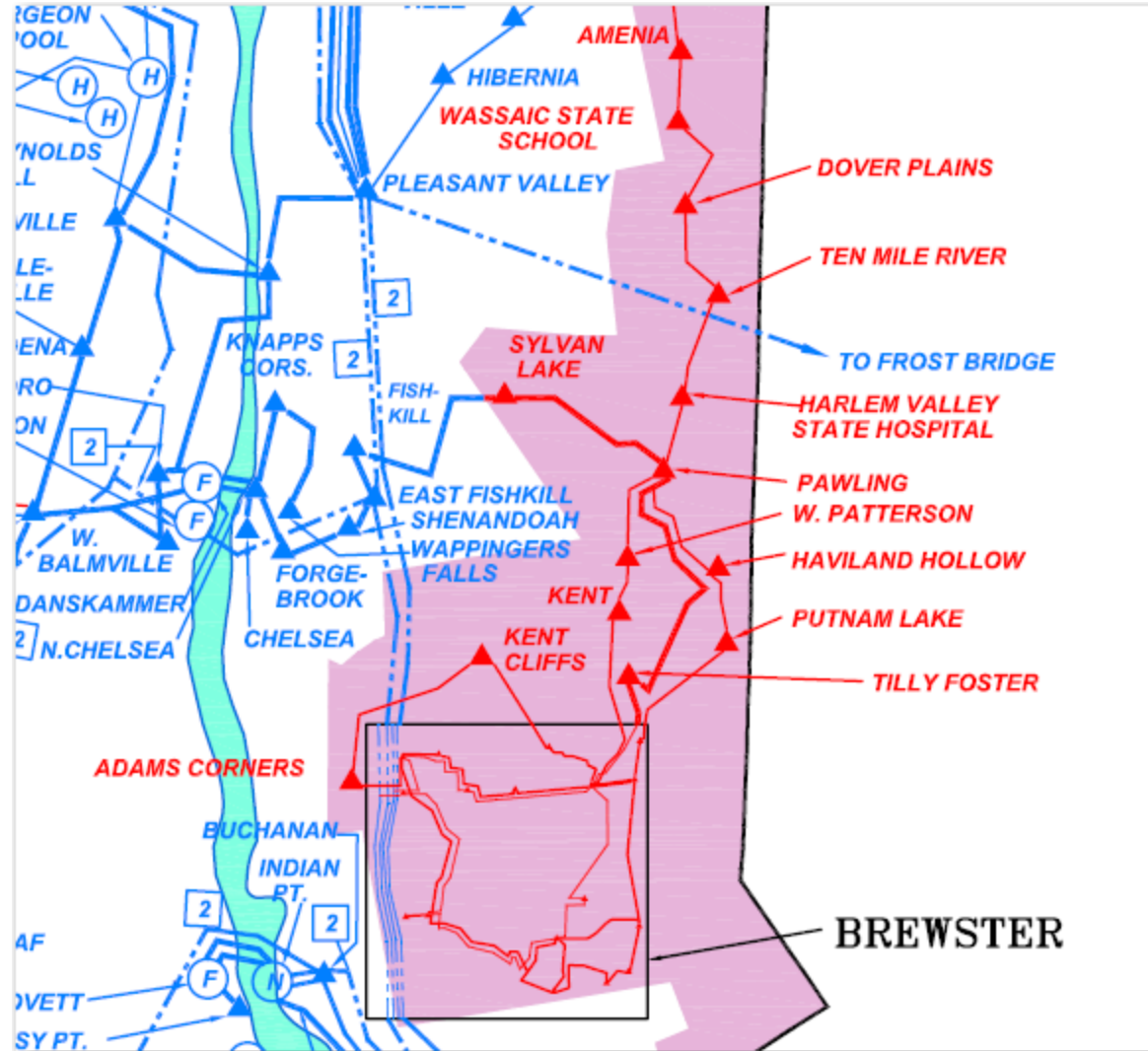
# Binghamton - Proposed Projects

Project Name	Issue	Year of Need	Project Status
Oakdale 3rd 345/115kV transformer	voltage & thermal control for loss of transformer	2013	In Progress
Vestal - Rano 34.5kV 512 reconductor	thermal control during contingency	2013	In Progress
Oakdale Reconfiguration Project	enhanced reliability with breaker-and-a-half	2013	In Planning
Afton New 34.5kV Circuit	load growth	2013	In Progress
Goudey - Oakdale 115kV 939 line reconductor	relieve thermal overloads for normal conditions	2013	Conceptual
Northside 115/34.5kV #2 LTC transformer replacement	relieve thermal overloads for normal conditions	2013	Conceptual
Goudey - SUNY 34.5kV 442 line reconductor	relieve thermal overload for normal conditions	2013	Conceptual
Afton 115kV Capacitor addition	relieve voltage problems for normal conditions	2013	Conceptual
Willet 115kV 30MVAR switched Capacitor addition	relieve thermal overloads for normal conditions	2013	Conceptual

# Binghamton (cont.)

Afton 115/34.5kV transformer and voltage regulator replacement	relieve thermal overloads during contingencies	2013	Conceptual
Goudey - Rano 34.5kV 510 reconductor and Rano 34.5kV 3MVAR switched capacitor addition	thermal & voltage control during contingency	2013	Conceptual
South Owego 115/34.5kV transformer replacement	thermal control for loss of transformer	2013	Conceptual
Oakdale - N. Endicott 115kV 938 reconductor	thermal control for loss of line	2013	Conceptual
Oakdale - GE and Oakdale - Goudey 34.5kV reconductor	thermal control for loss of line	2013	Conceptual
Whig Street 34.5kV 3.6MVAR switched capacitor addition	voltage control for loss of line	2013	Conceptual
Maine 34.5kV 3MVAR capacitor addition	voltage control for loss of line	2022	Conceptual

# NYSEG – Brewster Division



# Brewster – Proposed Projects

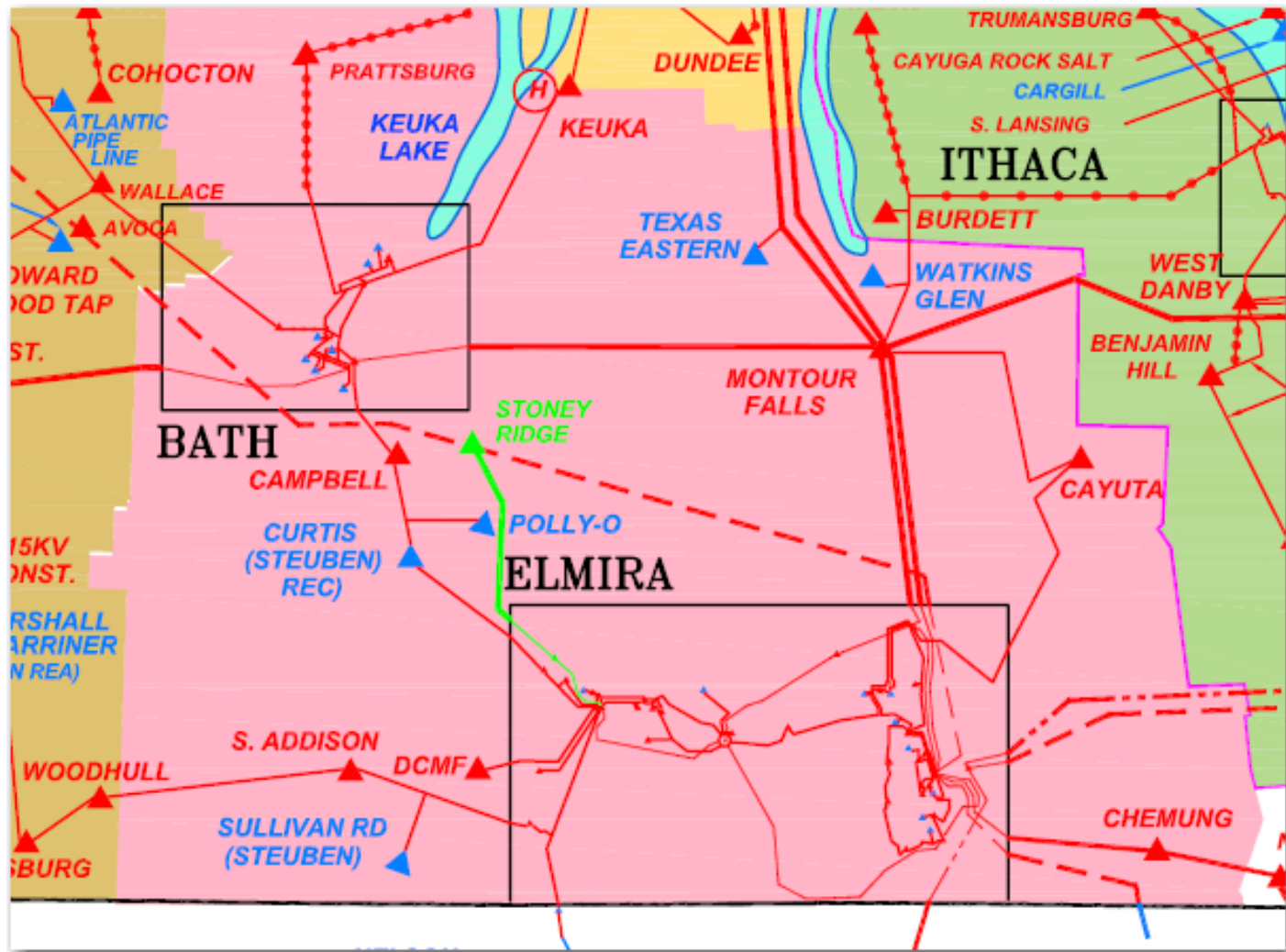
Project Name	Issue	Year of Need	Project Status
Wood Street - Install third 345/115 kV, 150/200/25/280 MVA, LTC transformer	Post contingency thermal overloads & submarginal voltages	2011	In Planning
Carmel-Adams Corners 46 kV Line #810 Rebuild (2.2 miles) with 477 ACSR or equivalent conductor.	Post contingency thermal overloads	2013	In Planning
Katonah - Install a third 115/46 kV, 30/40/50 MVA, LTC transformer	Post contingency thermal overloads	2013	In Planning
Peach Lake -Add 46 kV, 5.4 MVAR Switched Capacitor Bank	Post contingency submarginal voltages	2013	In Planning
Dingle Ridge - Add 46 kV, 5.4 MVAR Switched Capacitor Bank	Post contingency submarginal voltages	2013	In Planning
New 46 kV Line (Pawling – Harlem Valley) (4.2 miles) with 38MVA or more summer LTE rating.	Post contingency thermal overloads & submarginal voltages	2013	Conceptual
Kent Cliffs - Add 46 kV, 19MVAR Switched Capacitor Bank	Post contingency submarginal voltages	2013	Conceptual
Sylvan Lake - Add 115 kV, 95MVAR Switched Capacitor Bank	Post contingency submarginal voltages	2013	Conceptual
Carmel - Install a second 115/46 kV, 30/40/50 MVA, LTC transformer	Post contingency thermal overloads	2014	In Planning



# Brewster (cont.)

Katonah-Bedford 46 kV Line #806 Rebuild 1.7 miles of 336 ACSR conductor with 795 ACSR or equivalent conductor.	Post contingency thermal overloads	2015	In Planning
Line # 803 Kent – Croton Rebuild (2.83 miles) of 2 CU 7 conductor with 29 MVA or more summer LTE rating	Post contingency thermal overloads & submarginal voltages	2015	Conceptual
Croton Falls - Install a third 115/46 kV, 30/40/50 MVA, LTC transformer	Post contingency thermal overloads	2018	In Planning
Cantitoe - Add 46 kV, 12MVAR Switched Capacitor Bank	Post contingency submarginal voltages	2018	Conceptual
Pawling - Install a third 115/46 kV, 30/40/50 MVA, LTC transformer	Post contingency thermal overloads	2020	In Planning
Haviland Hollow - Add 46 kV, 10MVAR Switched Capacitor Bank	Post contingency submarginal voltages	2023	Conceptual

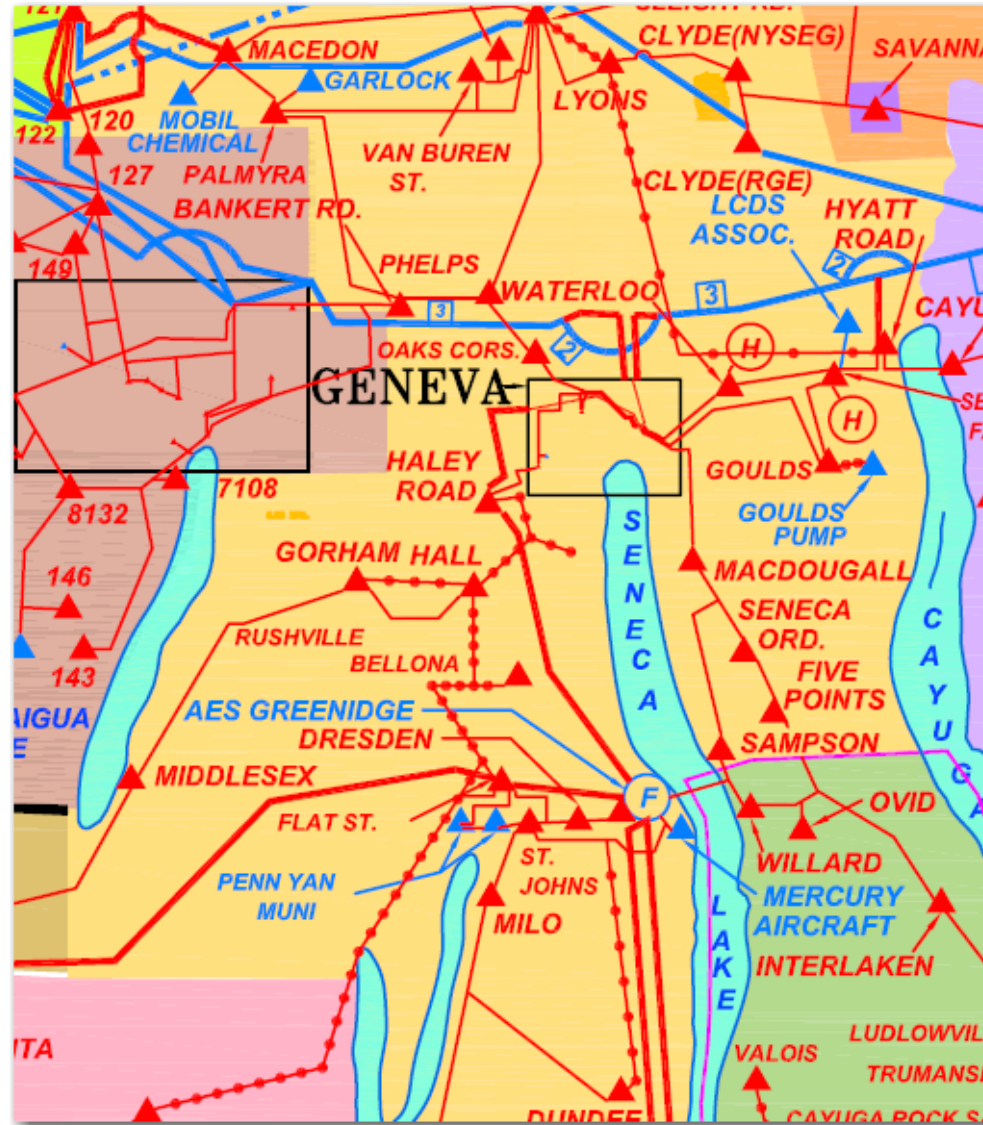
# NYSEG – Elmira Division



# Elmira – Proposed Projects

Project Name	Issue	Year of Need	Project Status
Stoney Ridge - Add 230 kV, 70 MVAR Switched Capacitor Bank	Post contingency submarginal voltages	2013	Conceptual
Line # 574 Pole 37 to Bulkhead 34.5 kV Rebuild ( 1.62 miles) with 40MVA or more summer LTE rating	Post contingency thermal overloads & submarginal voltages	2015	Conceptual
Ridge Road - Install second 115/34.5 kV, 60 MVA LTC Transformer	Post contingency thermal overloads & submarginal voltages	2016	Conceptual
Bulkhead - Add 34.5 kV, 15 MVAR Switched Capacitor Bank	Post contingency thermal overloads & submarginal voltages	2017	Conceptual
Line # 576 W.Elmira to Hillcrest 34.5 kV Rebuild ( 1.62 miles) with 30MVA or more summer LTE rating.	Post contingency thermal overloads & submarginal voltages	2020	Conceptual

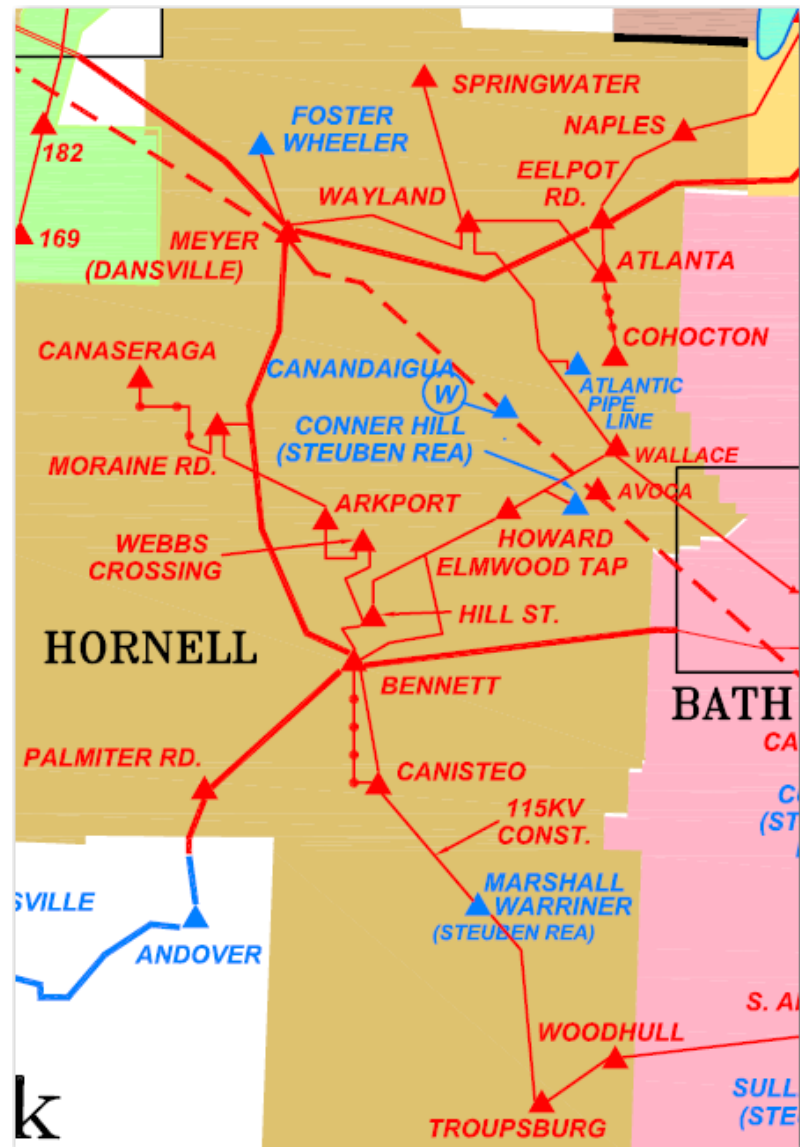
# NYSEG – Geneva Division



# Geneva – Proposed Projects

Project Name	Issue	Year of Need	Project Status
FLAT ST - Install new FLAT ST 115/34.5 KV, 20/26/33(36.7) MVA, LTC transformer.	Post contingency thermal overloads & submarginal voltages	2013	In Progress
Merritt Hill - Ayers Road - Install 1800 kVAR of switched capacitors along distribution circuits served from the 34.5 kV transmission circuit #597	Post contingency submarginal voltages	2013	In Planning
AES Greenidge - Dundee - Install 900 kVAR of switched capacitors along distribution circuits served from the 34.5 kV transmission circuit #596	Post contingency submarginal voltages	2013	In Planning
Uprate Line 542 (Sleight Rd – Van Buren Tap) to at least 50 MVA Summer LTE rating	Post contingency thermal overloads	2016	In Planning
Goulds Pump – Install 34.5 kV, 2.4 MVAR Switched Capacitors	Post contingency submarginal voltages	2018	In Planning
Five Points Prison - Install 34.5 kV, 1.2MVAR switched capacitor banks	Post contingency submarginal voltages	2018	In Planning
(Route 14 – Transalco) Uprate 34.5 kV Line # 596/Voltage Regulator with 23 MVA or more summer LTE rating	Post contingency thermal overloads	2013	Conceptual
Line # 535 Cold Spring Road – West Tap Rebuild with 20 MVA or more summer LTE rating.	Post contingency thermal overloads	2016	Conceptual

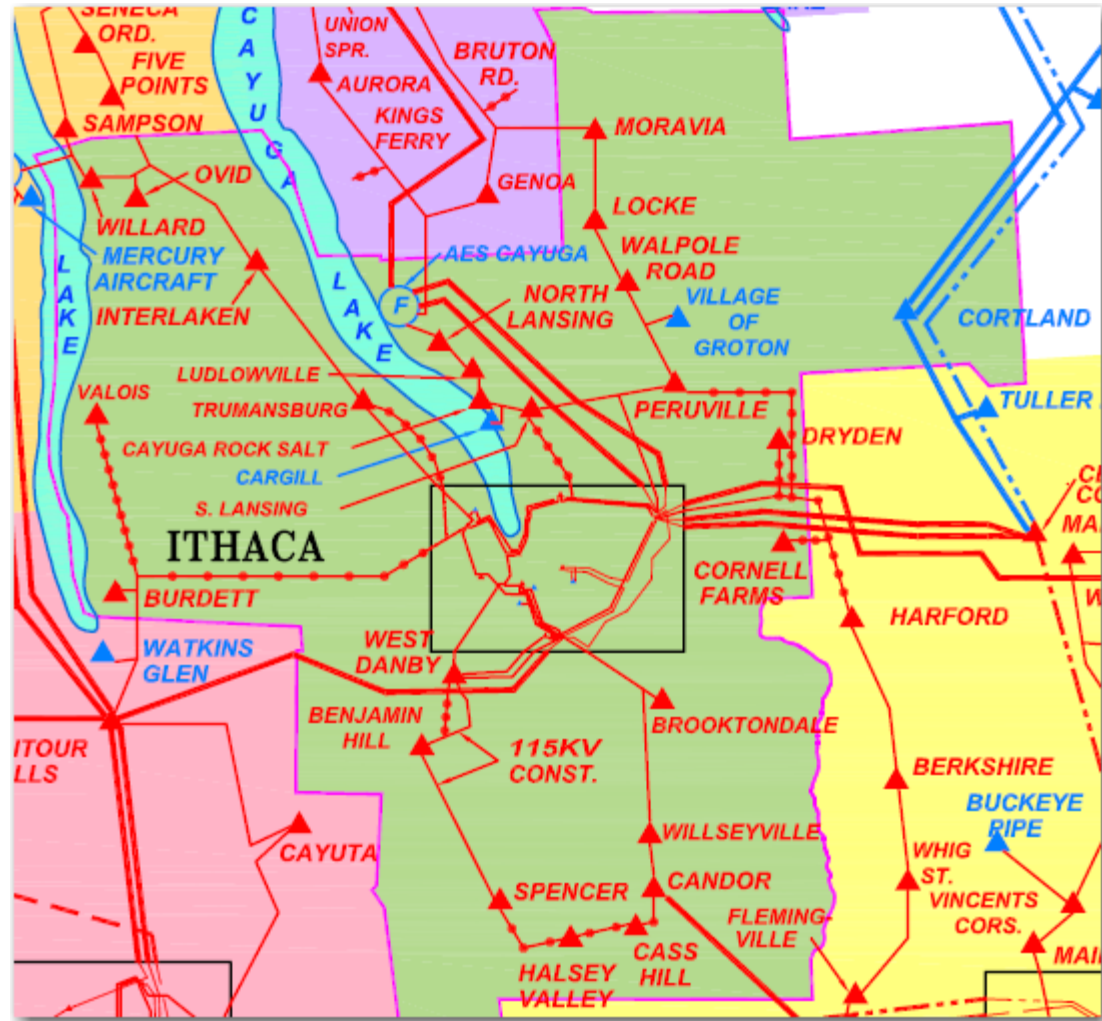
# NYSEG – Hornell Division



# Hornell – Proposed Projects

Project Name	Issue	Year of Need	Project Status
Moraine Road Substation 115 kV Breaker Addition	Post contingency thermal overloads & submarginal voltages	2011	In Planning
South Perry - Add a second 115/34.5kV, 56 MVA, LTC transformer	Post contingency thermal overloads	2013	In Progress
South Perry - Replace the existing 115/34.5kV transformer 33 MVA, NON-LTC at South Perry with a new 56 MVA, LTC transformer	Post contingency thermal overloads	2013	In Progress
South Perry - install a new 230/115kV LTC transformer	Post contingency thermal overloads & submarginal voltages	2013	In Progress
Naples - Add 34.5 kV, 5.4MVAR Switched Capacitor Bank	Post contingency thermal overloads & submarginal voltages	2013	Conceptual
Eelpot Road - Add a second 115/34.5kV, 56MVA LTC transformer	Post contingency submarginal voltages	2014	In Progress
Meyer - Add a second 115/34.5kV, 56MVA LTC transformer	Post contingency thermal overloads & submarginal voltages	2014	In Progress
Meyer/South Perry - Add a 115kV, 15MVAR capacitor bank	Post contingency submarginal voltages	2014	In Progress
Perry Center - Construct a new, 3-breaker, 34.5kV switching station	Post contingency thermal overloads & submarginal voltages	2014	In Progress
Marshall Warriner - Add 34.5 kV Capacitor Bank	Post contingency submarginal voltages	2017	In Planning

# NYSEG – Ithaca Division

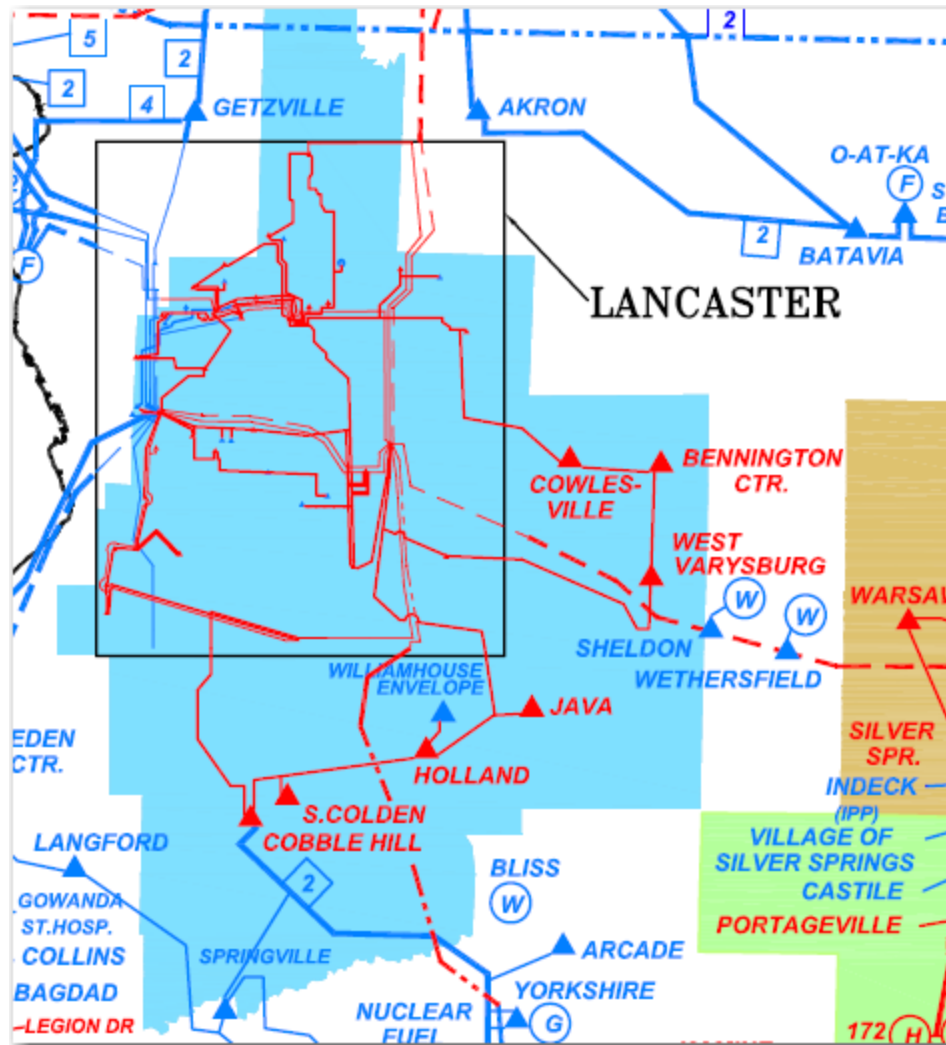




# Ithaca – Proposed Projects

Project Name	Issue	Year of Need	Project Status
Coddington - Install Second 115/34.5 kV, 30/40/50 MVA LTC Transformer	Post contingency submarginal voltages	2017	In Progress

# NYSEG – Lancaster Division



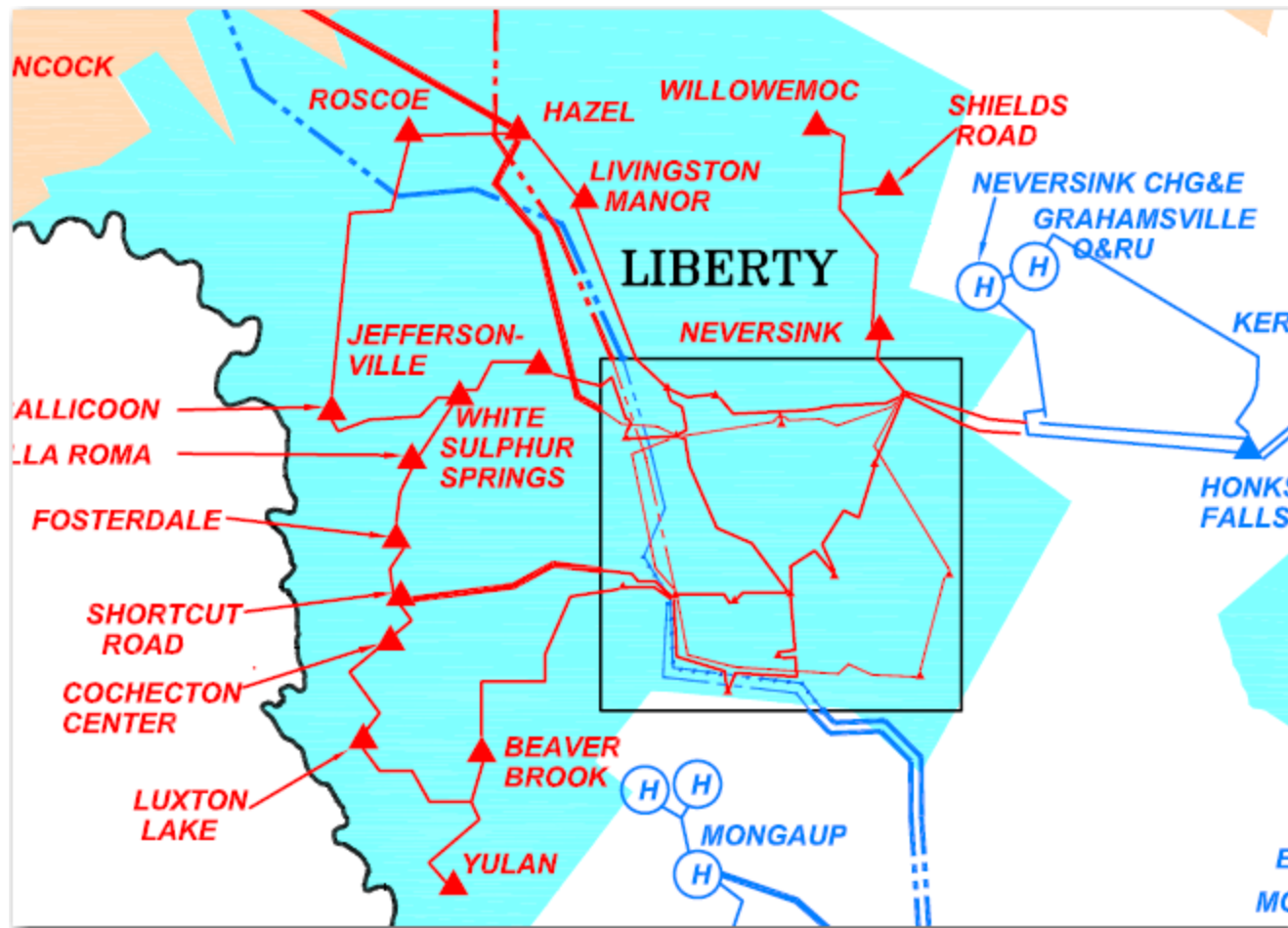
# Lancaster – Proposed Projects

Project Name	Issue	Year of Need	Project Status
Gardenville 3rd 230/115 kV, 250/280 MVA, LTC Transformer	Post contingency thermal overloads and submarginal voltages	2013	In Planning
Big Tree 115 kV, 27 MVAR Switched Capacitor Bank	Post contingency submarginal voltages	2013	In Planning
Davis Road 115/34.5 kV, 15/20/25 MVA Transformers #2 & #3 Replacement	Post contingency submarginal voltages	2013	In Planning
Cobble Hill 2nd 115/34.5 kV, 20/26/33 MVA Transformer	Post contingency submarginal voltages	2013	In Planning
Erie Street 3 <sup>rd</sup> 115/34.5 kV, 30/40/50 MVA NON-LTC Transformer	Post contingency thermal overloads	2013	In Planning
Gardenville-Ebenezer 34.5 kV Line #517 Rebuild	Post contingency thermal overloads and submarginal voltages	2013	Conceptual
Roll Road 2 <sup>nd</sup> 115/34.5 kV, 60 MVA, LTC Transformer	Post contingency thermal overloads and submarginal voltages	2013	Conceptual
Cowlesville 34.5 kV, 1.8 MVAR Switched Capacitor Bank	Post contingency submarginal voltages	2014	In Planning
North Broadway 2nd 115/34.5 kV, 30/40/50 MVA Transformer	Post contingency thermal overloads and submarginal voltages	2015	In Planning

# Lancaster (cont.)

Buffalo Crushed Stone 34.5 kV, 3.6 MVAR Switched Capacitor Bank	Post contingency submarginal voltages	2015	In Planning
Jamison 34.5 kV, 3.6 MVAR Switched Capacitor Bank	Post contingency submarginal voltages	2017	In Planning
Gardenville-Losson Road 34.5 kV Line #542 Rebuild	Post contingency thermal overloads	2017	In Planning
Stolle Road 3 <sup>rd</sup> 115/34.5 kV, 28 MVA, LTC Transformer	Post contingency thermal overloads	2019	Conceptual
Blossom Y-Bullis A 34.5 kV Line #518 Rebuild	Post contingency thermal overloads	2019	Conceptual
Big Tree 3 <sup>rd</sup> 115/34.5 kV, 75 MVA, LTC Transformer	Post contingency thermal overloads	2020	Conceptual
Holland 34.5 kV, 10 MVAR Switched Capacitor Bank	Post contingency submarginal voltages	2021	Conceptual

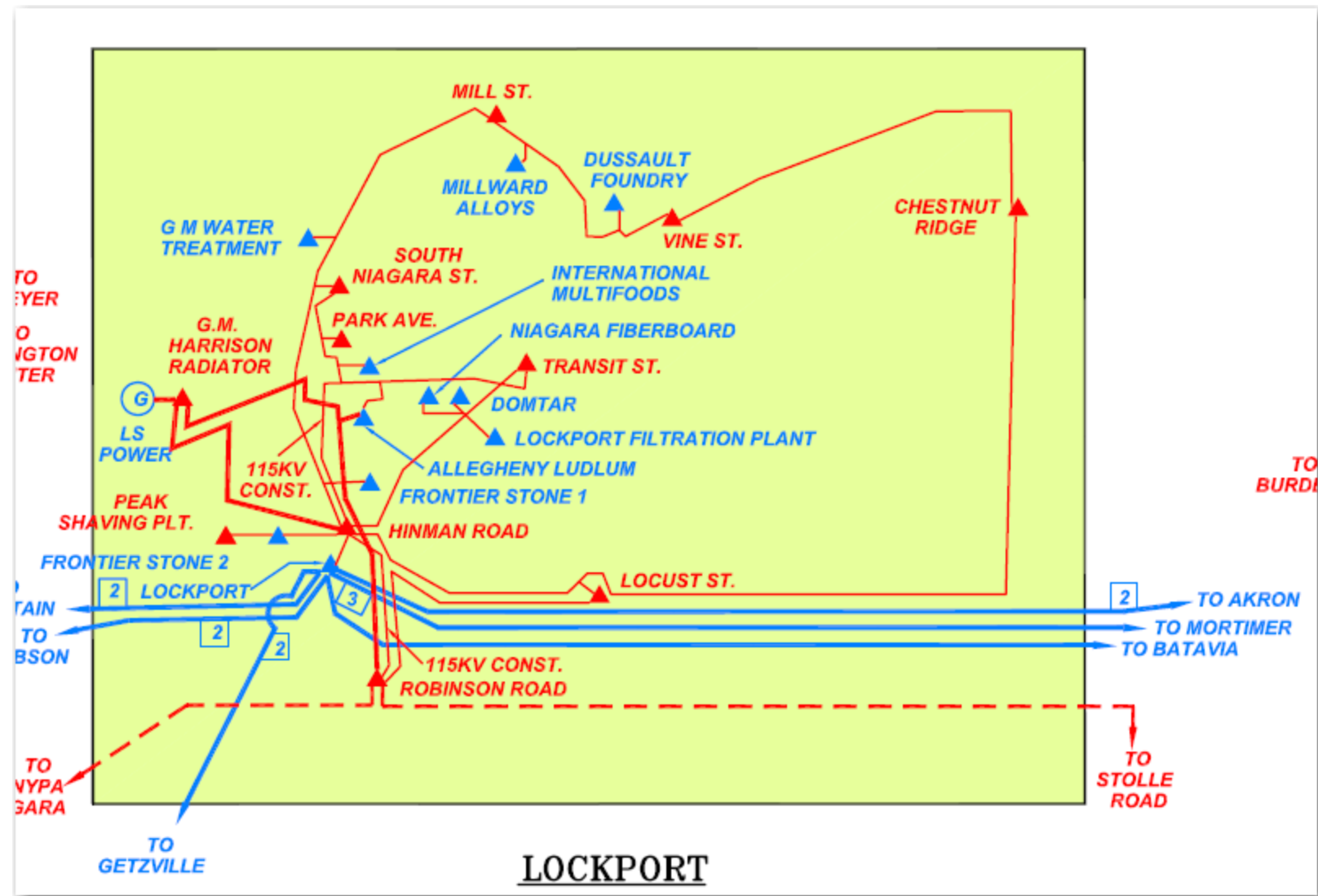
# NYSEG – Liberty Division



# Liberty – Proposed Projects

Project Name	Issue	Year of Need	Project Status
Coopers Corners 3rd 345/115kV transformer	voltage & thermal control for loss of transformer	2013	In Progress
Coopers Corners 2nd 115/34.5kV transformer	voltage control for loss of existing transformer	2013	In Progress
West Woodbourne 5.4MVAR switched 34.5kV cap bank	voltage control for loss of existing transformer	2013	In Progress
Old Falls 34.5kV 3.6MVAR awitched capacitor	voltage & thermal control for loss of 34.5kV line	2017	In Planning
Kiamesha - Maplewood 34.5kV 347 line reconductor	thermal control for loss of line	2019	Conceptual
Hazel 34.5kV 5MVAR switched capacitor addition	voltage control for loss of transformer	2020	Conceptual

# NYSEG – Lockport Division

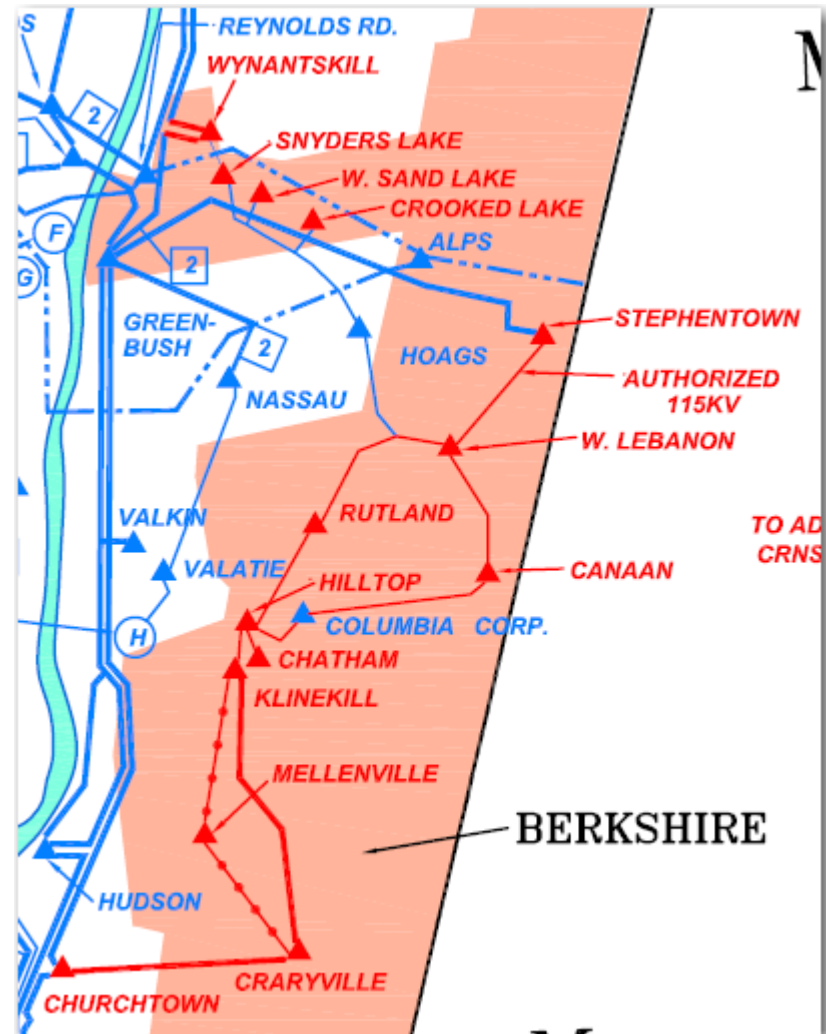
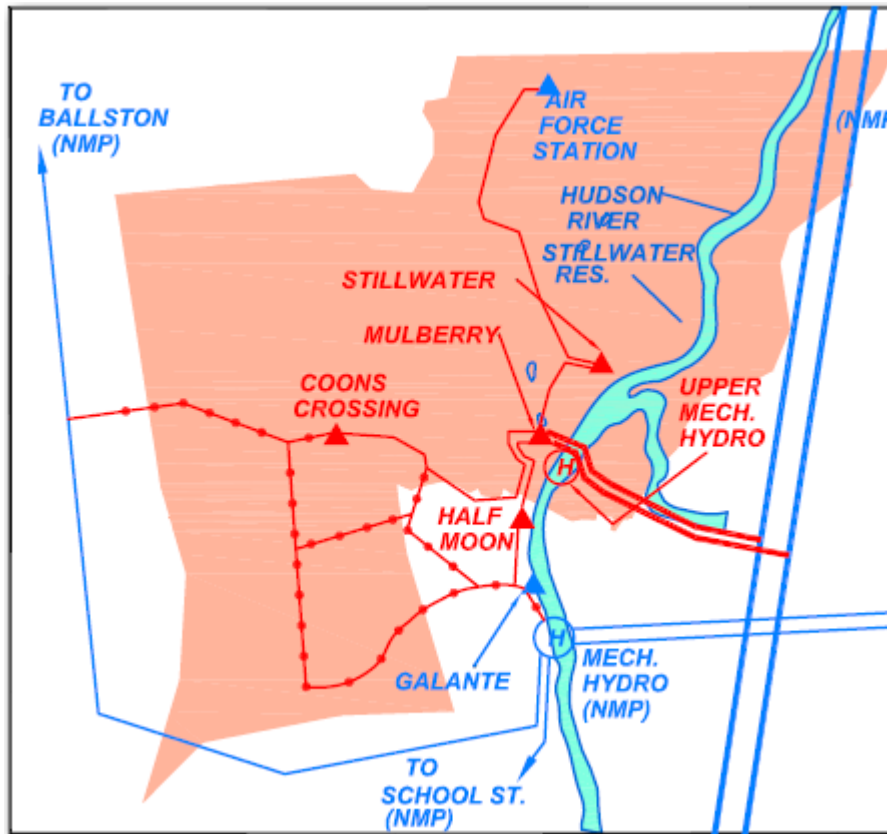


# Lockport – Proposed Projects

Project Name	Issue	Year of Need	Project Status
Locust Street Install 34.5 kV Substation	post contingency thermal overloads & submarginal voltages	2013	Conceptual



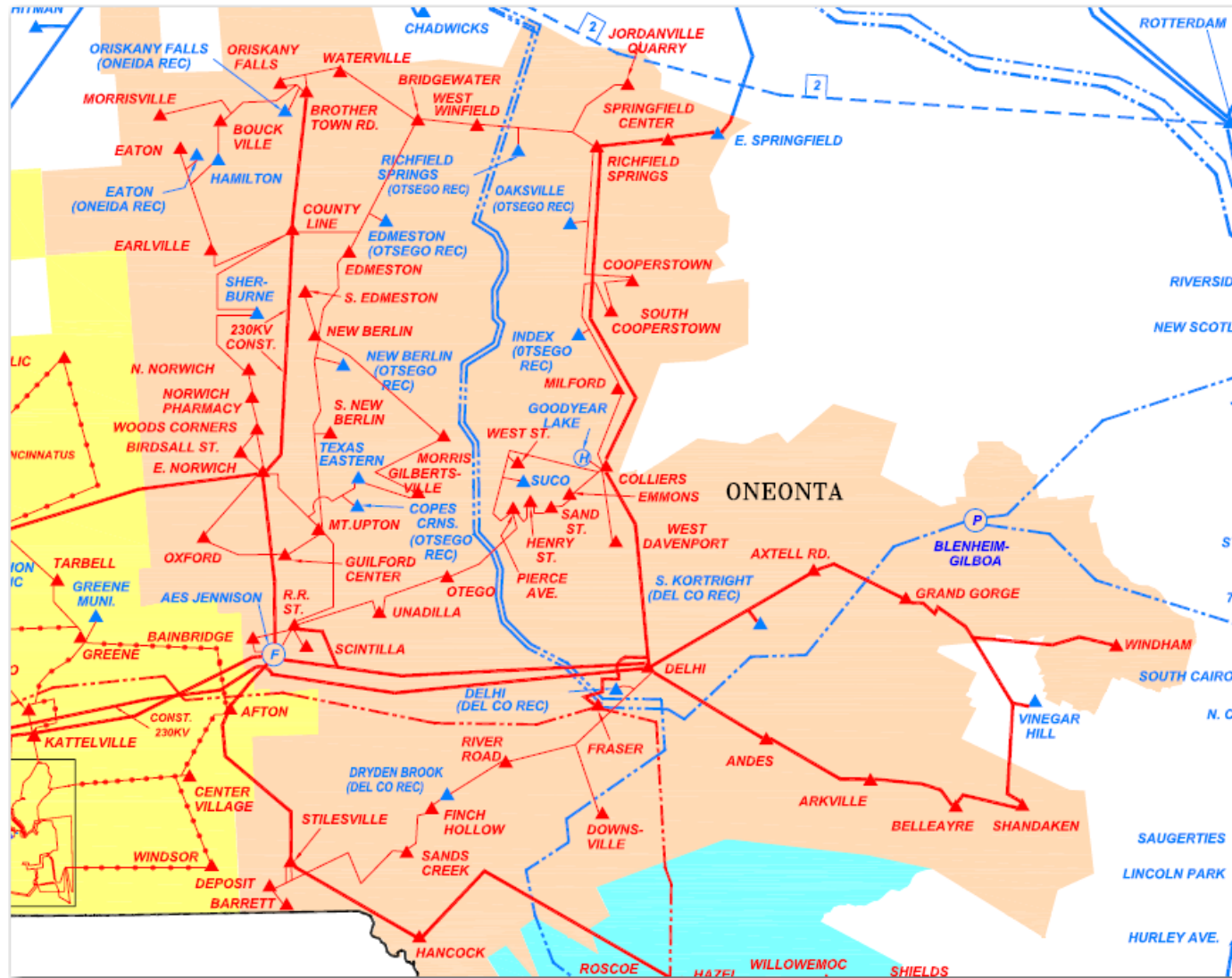
# NYSEG – Mechanicville Division



# Mechanicville – Proposed Projects

Project Name	Issue	Year of Need	Project Status
Circuit 625 & 626 (COMSTOCK - Franchise Line), Upgrade Conductor	System normal and post contingency thermal overload	2011	In Progress
Circuit 620 (BRAINARD TAP - WEST LEBANON Sw. Sta.), Install Static and Ground Wires	Enhance reliability	2011	In Progress
Mechanicville Reinforcement Project, Construct New Luther Forest Substation	System normal and post contingency thermal overload and submarginal voltage	2012	In Progress
Columbia County Transmission Project (Klinekill 115kV)	System normal and post contingency thermal overload and submarginal voltage	2009	In Progress
Stephentown Substation New Transformer	System normal and post contingency thermal overload and submarginal voltage	2019	In Progress

# NYSEG – Oneonta Division



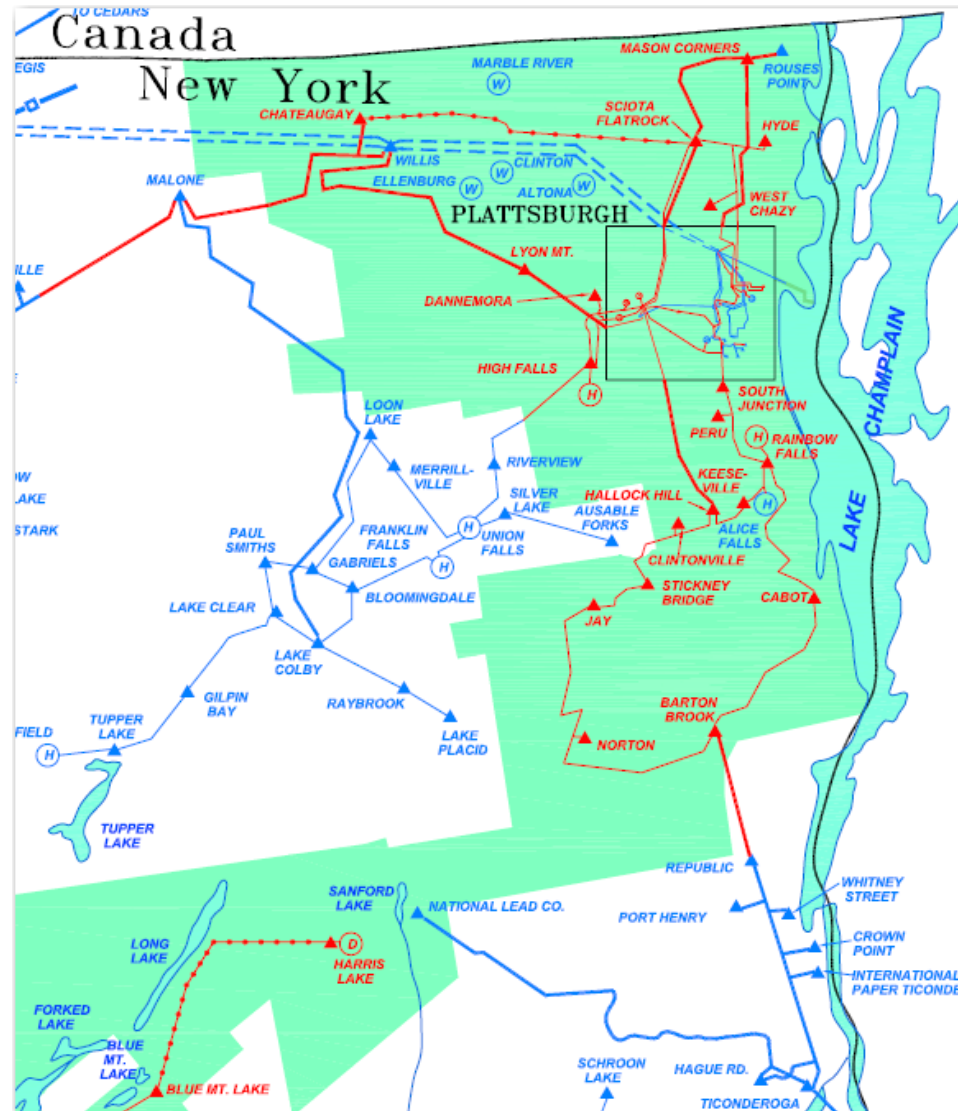
# Oneonta – Proposed Projects

Project Name	Issue	Year of Need	Project Status
Richfield Springs 115/34.5kV LTC transformer	voltage & thermal control for contingencies	2013	In Planning
Fraser 2nd 345/115kV transformer	voltage & thermal control for loss of transformer	2013	In Progress
Windham 115kV 5.4MVAR switched capacitor	voltage & thermal control for transformer outage	2013	In Progress
Morrisville 46kV 3.6MVAR switched capacitor	voltage & thermal control for contingencies	2013	In Progress
Colliers 115/46kV LTC transformers	voltage & thermal control for contingencies	2013	In Progress
Fraser - Delhi Tap 115kV 951 line reconductor	thermal control for normal conditions	2022	Conceptual
Colliers - Sand Street 46kV 811 line reconductor	thermal control for normal conditions	2022	Conceptual
Jennison 115kV 60MVAR, County Line 30MVAR, Pierce Avenue 46kV 15MVAR, Afton 115kV 10MVAR switched capacitor additions	voltage control during normal conditions	2013	Conceptual

# Oneonta (cont.)

Delhi - Delhi Tap 115kV 951 and Delhi - Sidney Tap 115kV 949 line reconductor	thermal control for loss of line	2018	Conceptual
Jennison - Oakdale 115kV 943 line reconductor	thermal control for loss of line	2016	Conceptual
Jennison 115/46kV transformer replacement	thermal control for loss of transformer	2020	Conceptual
New 345kV Source and 115kV line additions	voltage & thermal control for normal conditions	2013	In Planning

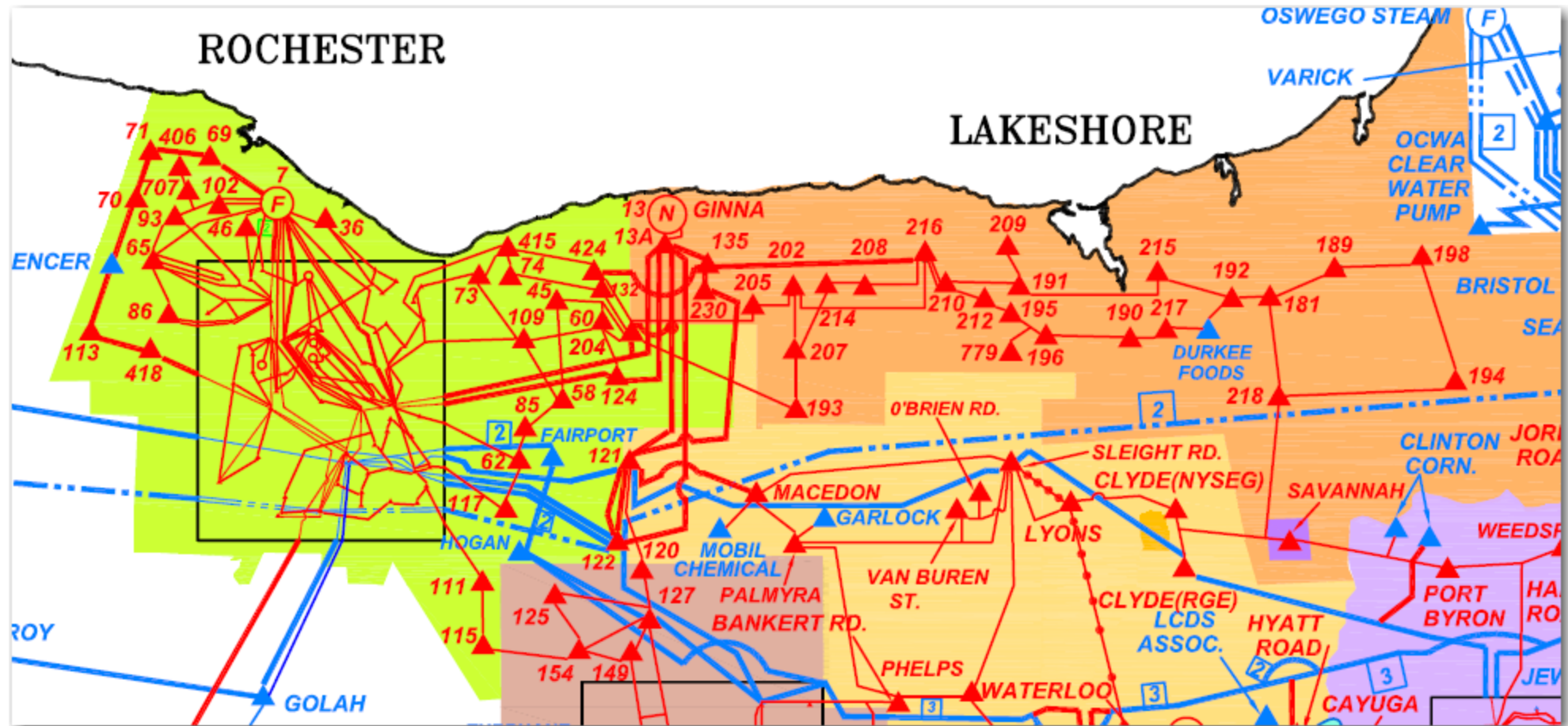
# NYSEG – Plattsburgh Division



# Plattsburgh – Proposed Projects

Project Name	Issue	Year of Need	Project Status
LYON MOUNTAIN Transformer-Regulator Upgrade	Post contingency submarginal voltages	2013	In Planning
CLINTONVILLE, STICKNEY, JAY, and BARTON Substation Switched Capacitors	Post contingency submarginal voltages	2013	In Planning
Ashley Road Substation, Install Three (3) 115 kV 50 MVAR Switched Capacitor Banks	Post contingency submarginal voltages	2013	In Progress

# RGE





# RGE – Proposed Projects

Project Name	Issue	Year of Need	Project Status
U of R New 115-34kV Substation 251-(\$7,638k reimbursable by U of R)	Post contingency thermal overloads, submarginal voltages	2012	In Progress
Station 23 - New Downtown 115kV Source	Post contingency thermal overloads	2013	In Progress
Station 124 New Phase Shifter Transformer	Post contingency thermal overloads	2012	In Progress
Station 124 New SVC	Post contingency voltage stability	2012	In Progress
Rochester Area Reliability Project (New Bulk Power Sta - 345kV Source and 115kV Transmission Lines)	System normal thermal overload; Post contingency thermal overloads, submarginal voltages	2014	In Progress
Stations 67 to 418 New 115kV Transmission Line	System normal thermal overload; Post contingency thermal overloads, submarginal voltages	2012	In Progress
Station 56 Additional 12kV Source	System normal thermal overload; Post contingency thermal overloads, submarginal voltages	2013	In Progress
Station 218 to Clyde New 34.5kV Transmission Line	System normal thermal overload	2011	In Progress
Station 262- New 115kV/34.5kV Substation	Post contingency thermal overloads, submarginal voltages	2012	In Progress

# RGE (cont.)

Station 69 New 115kV Capacitor (formerly Station 71)	Post contingency submarginal voltages	2011	In Planning
Station 80 - Replace 1T and 3T Transformers	System normal thermal overload; Post contingency thermal overloads, submarginal voltages	2013	In Progress
Line 926 - Upgrade 115kV Line	Post contingency thermal overloads	2011	In Progress
Station 49 - Replace 34.5-11.5kV Xfmr	Post contingency thermal overloads	2011	In Progress
Station 56, Add (2) 34.5kV Cap Banks	Post contingency thermal overloads	2012	In Progress
Station 95 - Add 2nd 34.5-11.5kV Transformer	Post contingency thermal overloads	2011	In Planning
Add 35kV Circuit - Offload Circuit 739	Post contingency thermal overloads	2011	In Planning
Add 35kV Circuit - Offload Circuit 783	Post contingency thermal overloads	2011	In Planning
Sectionalize and Reconductor 115kV Circuit 917 (S7 - S418)	Post contingency thermal overloads	2013	In Progress
Station 178 - 34kV Cap banks	System normal and post contingency submarginal voltages	2011	In Progress
Station 168 Service Area Reinforcement	System normal thermal overload; Post contingency thermal overloads, submarginal voltages	2007	In Progress
Station 173 34.5 kV Switched Capacitor Bank Addition	System normal and post contingency submarginal voltages	2011	In Progress

# RGE (cont.)

Sta. 33 Replace 2 T	System normal and post contingency thermal overloads	2012	In Planning
Station 82 - Upgrade 115/12.5kV Transformer	System normal thermal overload	2018	Conceptual
Station 49 - Upgrade 34.5/11.5kV Transformers	Post contingency thermal overloads	2018	Conceptual
Station 48 - Upgrade 115/34.5kV Transformers	Post contingency thermal overloads	2018	Conceptual
Station 33 - Upgrade 34.5/11.5 kV 11T and 115/34.5 kV 8T Transformers	System normal and post contingency thermal overloads	2018	Conceptual
Station 145 - 34kV Cap banks	System normal and post contingency submarginal voltages	2023	Conceptual
Station 149 - 34kV Cap banks	System normal and post contingency submarginal voltages	2023	Conceptual
Station 143 - 34kV Cap banks	System normal and post contingency submarginal voltages	2023	Conceptual
Station 144 - 34kV Cap banks	System normal and post contingency submarginal voltages	2023	Conceptual

# LTP Posted On-line

- NYSEG and RGE Local Transmission Owner Planning Process and Results posted to the NYISO website.
- Also available on the respective websites of NYSEG and RGE at:
  - <http://www.nyseg.com/SuppliersAndPartners/transmissioninfo/localtransmissionplans.html>
  - <http://www.rge.com/SuppliersAndPartners/transmissioninfo/localtransmissionplans.html>

# Q&A

- Questions?