National Grid's Local Transmission Plan (LTP) for New York

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Local Transmission Planning Process

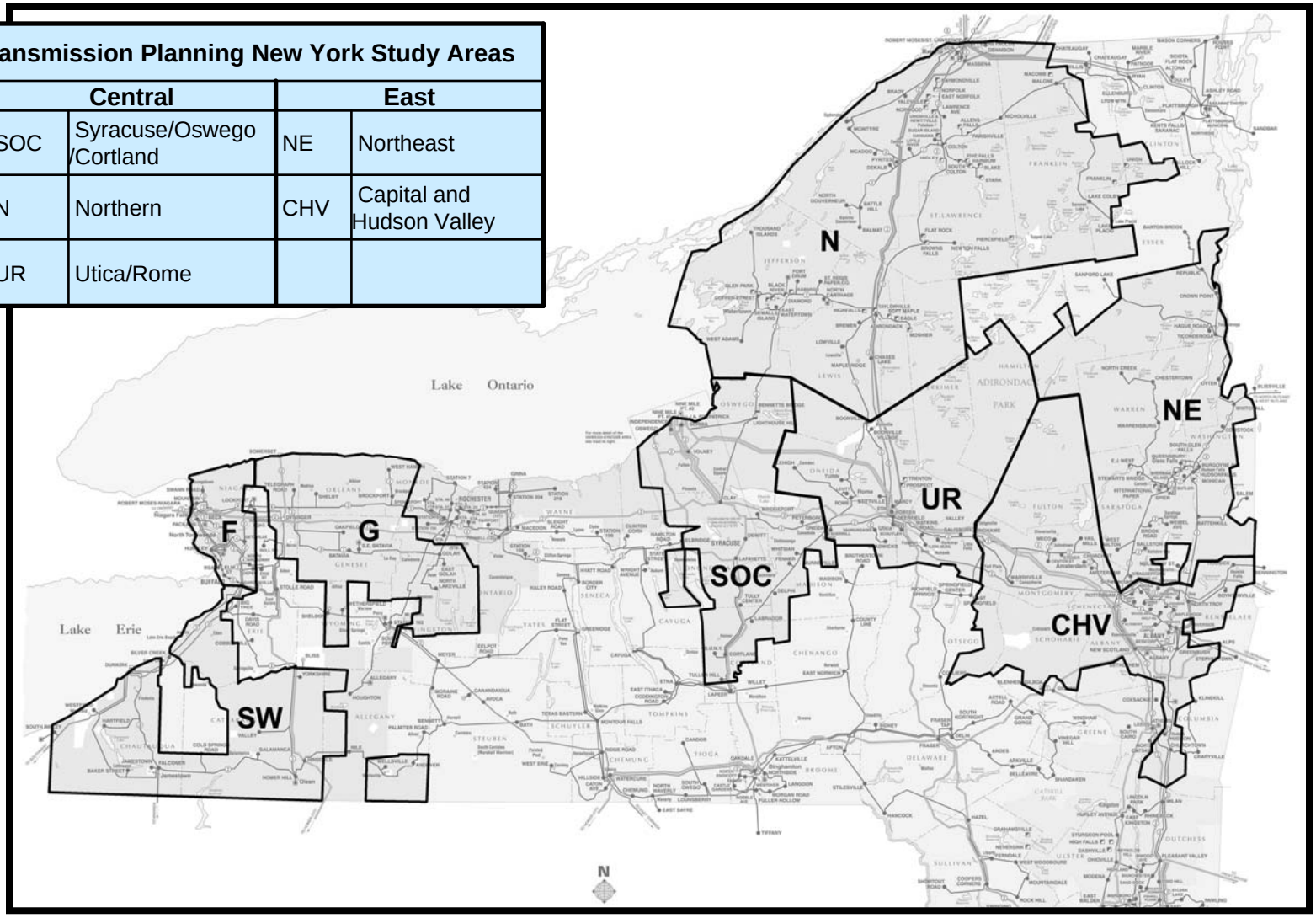
- **LTP is developed to supplement other planning processes, such as:**
  - NYISO's CSPP, including RNA and CARIS
  - STARS, joint long-term study with other NY transmission owners
- **LTP identifies local system needs that may not be addressed by other NYISO planning processes, and identifies solutions**
  - Local transmission planning is done as concurrent area transmission studies, with care to identify inter-area effects.
  - High level NYISO base cases are refined to reflect localized adjustments.
  - Depending on area, peak and light load models are used.
  - Sensitivities are examined to generation dispatch, bulk power transfer levels, and other factors of importance to the area under study.
  - Potential non-compliances with planning standards and criteria are identified.
  - Full range of possible solutions are considered.

Transmission Facilities Studied

- Models used in National Grid's studies include all transmission facilities in NY State plus major transmission in neighboring systems in Ontario, Quebec, New England, and PJM.
- National Grid studies all contingencies required by the standards, criteria and its Transmission Planning Guide and monitors impacts on all systems.
- Problems identified within National Grid's 345 kV, 230 kV, and 115 kV systems are addressed and are discussed with the NYISO; problems found on neighboring systems are discussed with the applicable transmission owner.

Transmission Facilities Studied

National Grid Transmission Planning New York Study Areas					
West		**Central**		**East**	
F	Frontier	SOC	Syracuse/Oswego /Cortland	NE	Northeast
G	Genesee	N	Northern	CHV	Capital and Hudson Valley
SW	Southwest	UR	Utica/Rome		



Note: Some National Grid transmission lines extend outside its retail service areas.
Some lines within National Grid's retail service areas are not owned by National Grid.

LTP Information Available On Line

- The NYISO website provides a link to the National Grid project list:
  - Choose **Planning For The Future**
  - Then **NYISO Planning**
  - Select **Documents & Resources** in menu at left
  - Click link to **Local TO Planning Process**
- National Grid's project list can also be accessed directly at:
  - www.nationalgridus.com/oasis/filings_studies.asp

Planning Criteria

- National Grid Transmission Planning Guide provides direction for design of all National Grid facilities that are part of the interconnected system.
- The National Grid Transmission Planning Guide is posted on our website under:
  - www.nationalgridus.com/transmission/c3-8_standocs.asp
  - Click the link to: Transmission Planning Guide
- The National Grid Transmission Planning Guide references, and requires adherence to, applicable NERC, NPCC and NYSRC standards and criteria.

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Planning Horizon, Data, Assumptions, Tools

- Planning horizon required for the Bulk Electric System by NERC standards is 10 years; National Grid extends some studies to a 15 year horizon.
- LTP list contains projects for the 10 year horizon, 2012-2021.
- NYISO base cases for load flow and transient stability (FERC 715); PSS/E used for analysis
- NYISO data for short circuit studies; Aspen OneLiner used for analysis
- NYISO “gold book” forecasts for NY wide loads
- Adjustments to load in local areas where necessary to reflect non-coincident peaks (90/10), localized load growth

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LTP Project List

- The LTP Project List is a cumulative listing of proposed regulated transmission solutions that may meet LTP needs.
- The LTP Project List contains the status of each project:
  - *Concept*
  - *Proposed*
  - *Planned*
  - *Under Construction*
  - *In Service*
  - *Cancelled*

LTP Project List

Project Status Descriptions	
Concept	Project is under consideration as possible solution to a need, but little or no analysis is available.
Proposed	National Grid has internally determined that the project is an appropriate solution to a need, but has not yet obtained System Impact Study (SIS) approval through the NYISO (if required).
Planned	SIS has been approved (if required) and National Grid has management commitment to proceed with the project.
Under Construction	Project has siting approval, as required, and is under construction.
In Service	Project is complete and in commercial operation.
Cancelled	Project has been removed from the National Grid business plan and is no longer being considered as a viable option.

LTP List – Western NY (1 of 2)

Primary Driver	Projected In-Service Month/Year	Major Project	Project	Current Status	Needs
Reliability	05/18	Southwest Station	Construct a new 345:115 kV station in the southwest region with cap bank	Proposed	SW low voltage
Reliability	05/16	Reconductoring #171	Reconductor Falconer - Warren 115 kV circuit #171	Proposed	SW low voltage
Reliability	05/17	Mortimer-Golah area 115 kV reinforcements	Conversion of line #109 from 69 kV to 115 kV	Proposed	Golah low votlage
Reliability	05/17		Split the Mortimer bus into three sections, rearrange line terminals	Proposed	Golah low votlage
Reliability	05/17		Split the Golah bus into two sections	Proposed	Golah low votlage
Reliability	05/17	Second Lockport Bus Tie Breaker	Add a second 115 kV bus tie in series with existing bus tie breaker	Proposed	Batavia Area low voltage
Reliability	05/14	Lockport - Mortimer #111 rebuild	Rebuild Lockport - Mortimer 115 kV circuit #111	Proposed	Asset condition
Reliability	05/17	Second Dunkirk Bus Tie Breaker	Add a second 115 kV bus tie in series with existing bus tie breaker	Proposed	SW low voltage
Reliability	05/16	Gardenville - Dunkirk 141/142 rebuild	Rebuild Gardenville - Dunkirk 141/142	Proposed	Asset condition
Reliability	05/17	Gardenville Cap Banks	Install 2-120 MVAR capacitor banks at Gardenville (115 kV)	Proposed	Gardenville low 230 kV voltage
Reliability	05/17	Replacement of Gardenville Transformers	Replace Gardenville 230:115 kV transformers TB#3 and TB#4	Proposed	Asset condition

LTP List – Western NY (2 of 2)

Primary Driver	Projected In-Service Month/Year	Major Project	Project	Current Status	Needs
Reliability	12/12	Swann Rd Transformer	Replace 115-13.2 kV transformer	Proposed	Address distribution loading concerns
Load Growth	05/13	Addition of new Frankhauser 115:13.2 kV station	Addition of new Frankhauser 115:13.2 kV station	Proposed	N-1 and N-1-1 transformer overloads
Reliability	05/13	Huntley Permanent Cap Banks	Place 1-75 MVAR permanent cap bank to replace existing 2-52.5 MVAR banks at Huntley (115 kV)	Proposed	Frontier region low voltage
Reliability	10/12	Addition of breakers to #2 and #4 circuits	Loop Mortimer - Elbridge #2 and Pannell - Geneva #4 into Farmington	Proposed	NYSEG Request
Reliability	05/12	Upgrade of #107	Replace limiting terminal equipment on Lockport - Batavia 115 kV circuit #107	Proposed	Batavia Area thermal overload
Reliability	05/13	Homer Hill Cap Banks	Install 1-25 MVAR capacitor bank at Homer Hill (115 kV)	Proposed	SW low voltage
Reliability	05/19	Reconductoring #54	Reconductor part of Gardenville - Erie 115 kV circuit #54	Proposed	Thermal overloads
Reliability	05/13	Batavia Cap Bank and Bus upgrade	Install 1-27 MVAR capacitor bank at Batavia and increase size of bus conductor (115 kV)	Proposed	Batavia Area low voltage
Reliability	10/13	Niagara-Packard #195 rebuild	Niagara-Packard #195 115 kV line rebuild	Proposed	Thermal Overload

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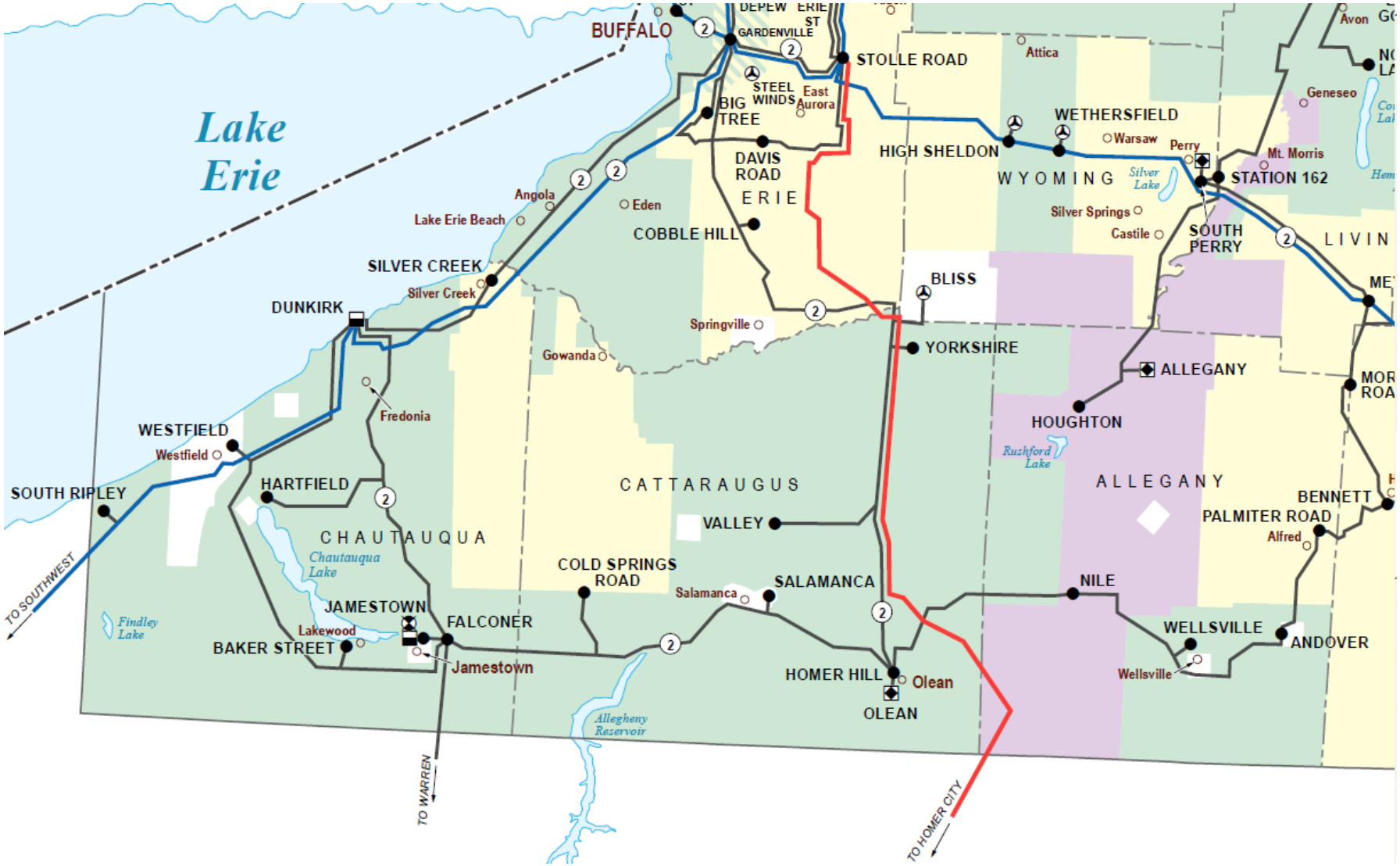
Western NY – Southwest area



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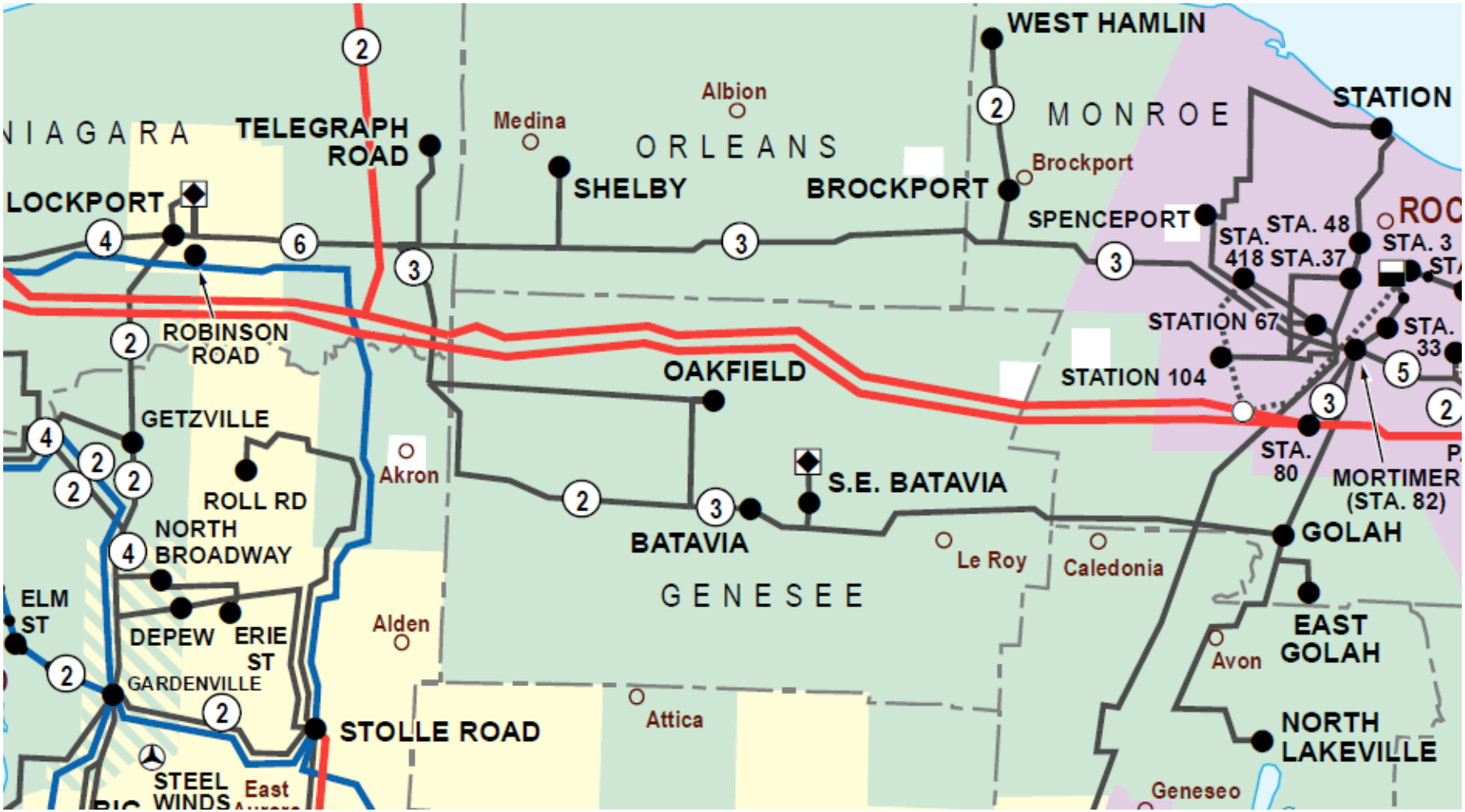
Western NY – Genesee area



LTP List – Central NY

Primary Driver	Projected In-Service Month/Year	Major Project	Project	Current Status	Needs
Reliability	12/14	Central Division Reconductoring	Reconductor Clay - Dewitt #3	Concept	Potential overload under contingency conditions
			Reconductor Clay - Teall #10		Potential overload under contingency conditions
			Reconductor Oneida - Yahnundasis #3		Potential overload under contingency conditions
Reliability	12/12	Wetzel Road Substation	Install new Distribution Substation in North Syracuse area	Concept	Distribution system requirements
Reliability	12/12	McBride Substation	Connect Distribution Substation in Syracuse area	Concept	Distribution system requirements
Reliability	12/17	Inghams Substation Rebuild	Replace 115kV breakers; possibly adding a new phase shifter	Concept	Asset condition driven; Phase shifter adjusting capability out of range under certain operating conditions;
Reliability	4/14	[redacted]	[redacted]	Planned	Required by NPCC A-10 criteria
Reliability	11/12	Northern Area Projects	Replace three 115 kV circuit breakers at ALCOA substation	Planned	Addresses breakers that are over their current interrupting capabilities
Reliability	09/12	Automate 115 kV Switches at Lowville	Installing two new 115 kV motor operated disconnect switches and two (2) Cuts to implement the automatic control scheme at Lowville.	Planned	Reduce outages at Lowville substation because of a Boonville-Taylorville #5 line outage
Reliability	06/12	Replace 345 kV Breakers at Scriba and Volney Substations	Replace two 345 kV breakers at Volney and replace eight breakers at Scr ba	Planned	Addresses breakers that are over their current interrupting capabilities
Reliability	3/15	[redacted]	[redacted]	Planned	Required by NPCC A-10 criteria
Reliability	9/12	Colton-Brownsfalls 1 Load Break Attachment	Colton-Brownsfalls 1 Load Break Attachment	Planned	Improved switching flexibility for operations
Reliability	3/15	115kV Breaker Addition	Dewitt 345kV Breaker addition	Planned	Improved operating flex bility

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Central NY – Utica/Rome area

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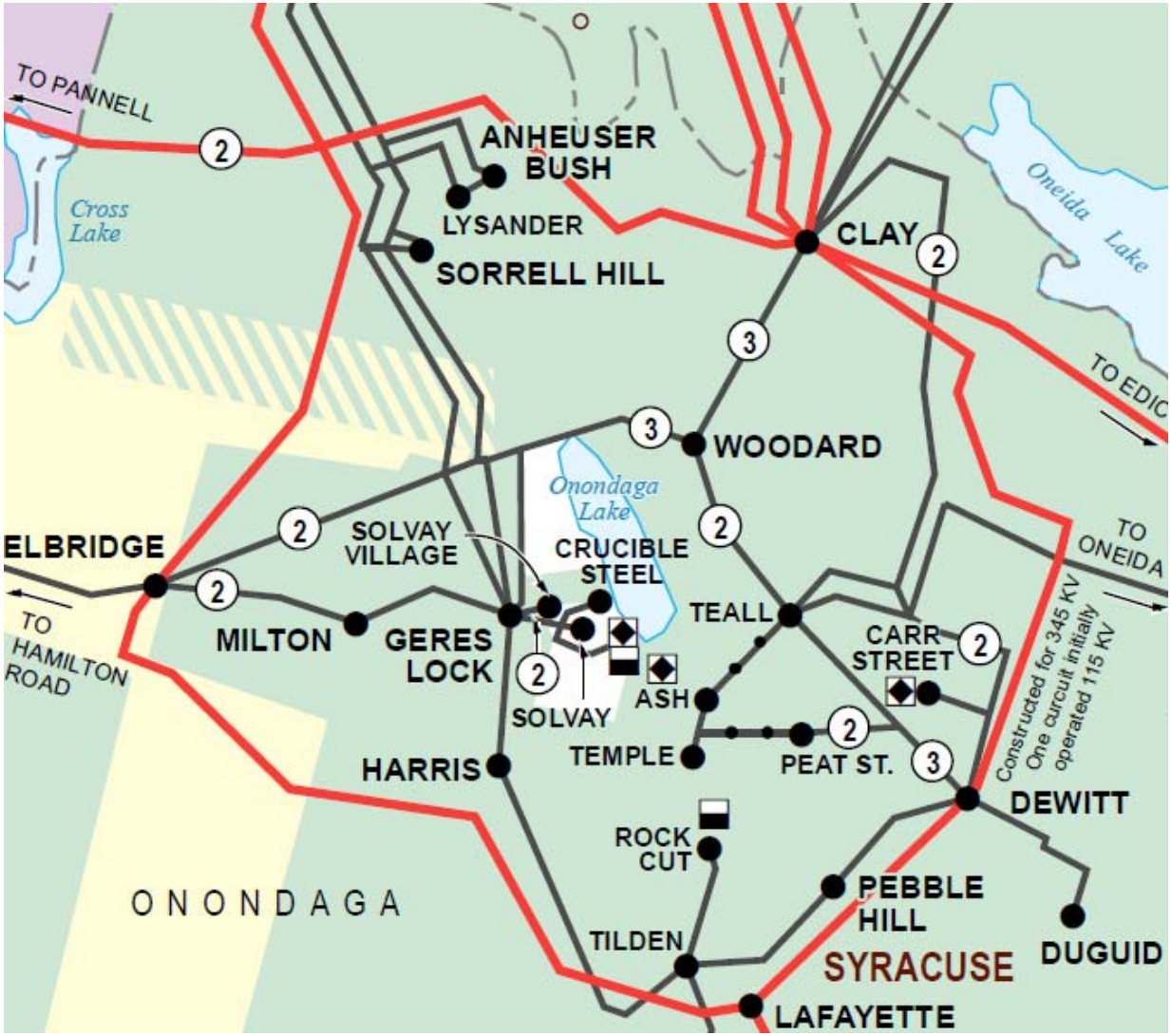
Central NY – Syracuse area



Eastern NY – Northeast area

LTP List – Eastern NY

Primary Driver	Projected In-Service Month/Year	Major Project	Project	Current Status	Needs
Reliability	06/14	Northeast Region Reinforcement Project	230-115kV station at Eastover Road in Schaghticoke, supplied by the Rotterdam-Bear Swamp #E205 230kV.	Proposed	Thermally-limited Spier-Rotterdam #1/#2 115kV and Rotterdam 230-115kV Transformers for contingencies affecting the local 115kV system and 345/230-115kV supply transformers.
Reliability	06/14		Add fourth Rotterdam 230-115kV Transformer.	Proposed	Autotransformer loadings in the Capital Region will exceed ratings under certain contingencies
Reliability	06/14		Spier-Rotterdam #1/#2 115kV Reconductoring, reconfiguration, and addition of new Spier-Rotterdam #3 115kV.	Proposed	Existing Spier-Rotterdam circuits will exceed ratings under contingency conditions
Reliability	06/14		Replace five 115kV Circuit Breakers at North Troy.	Proposed	Increased short-circuit capability necessary with Eastover 230-115kV addition.
Reliability	2012-2014		Reconductor Ballston #2 115kV tap (Tap-Ballston; 3.9 miles) and Mohican-Battenkill #15 115kV (14.2 miles).	Proposed	Existing lines will exceed ratings under contingency conditions
Reliability	2017-2019		Reconductor Eastover Rd-Luther Forest #3 115kV (10.4 miles), Ballston #2 115kV Tap (Ballston-Malta; 5.1 miles), and Mohican-Butler # 18 (3.5 miles).	Proposed	Load growth will cause circuits to reach their ratings
Reliability	2015-2019		Addition of 250MVAR of reactive compensation (capacitors) to Northeast Region T/D System.	Proposed	Ensure satisfactory voltage in the Northeast Region
Reliability	11/12	Replace Maplewood R15 Circuit Breaker	Replace one 115kV Circuit Breaker at Maplewood.	Planned	Addresses breaker that is over its current interrupting capabilities
Load growth	7/12	Inman Rd Substation load relief	Install second transformer bank and two new feeders.	Planned	Address distribution loading concerns
Reliability	12/12	Sycaway transformer	Add new 115-13.2 kV transformer	Under Construction	Address distribution loading concerns

LTP Communication

- Interested parties may submit written comments on National Grid's LTP within 30 days (by November 3, 2011) to:

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  National Grid

  300 Erie Blvd. West

  Syracuse, NY 13202

- Comments will be posted on the NYISO website.
- Modifications to the LTP discussed at the next LTP meeting.

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Questions?