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National Grid's 2017 Local Transmission Plan

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Planning Horizon, Data, Assumptions, Tools

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- Planning horizon required 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, 2017-2027.
- 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

LTP Information Available on Line

- The NYISO website provides a link to the National Grid project list:
 - Choose **Market Participants**
 - Then **NYISO Planning**
 - Select **Documents & Resources** in menu at left
 - Select **Local Transmission Plans** & filter to get the current plan
- National Grid's Project List can also be accessed directly at:
www.nationalgridus.com/oasis/filings_studies.asp
- The National Grid Transmission Planning Guide is posted on our website under:
 - *www.nationalgridus.com/transmission/c3-8_standocs.asp*
 - Then Click the link for Operations Documentation and then the link for:
Transmission Planning Guide

Project Status Description

Project Status Description	
Concept	Project is identified as solution to a need and it still requires internal and external approvals.
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 (Firm)	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.

Transmission Facilities Studied

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National Grid organizes its study reports by Transmission Planning Study Areas

Transmission Planning Study Areas

West

F – Frontier

G – Genesee

SW – Southwest

Central

SOC – Syracuse Oswego Cortland

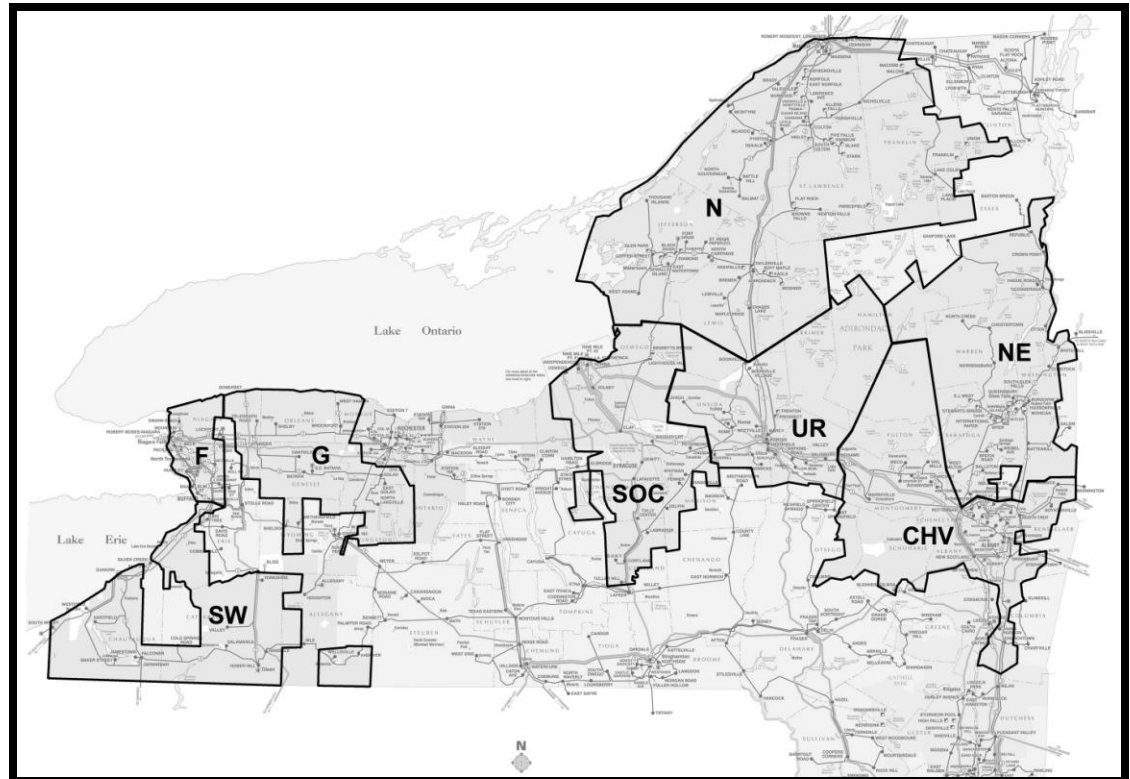
N – Northern

UR – Utica/Rome

East

CHV – Capital Hudson Valley

NE - Northeast



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.

2017 LTP – Western NY (Frontier 1 of 2)



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Primary Driver	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Updated Status	NYISO System Impact Study Status	Comments
Western New York - Frontier								
Reliability	National Grid, USA		03/2016		Add overcurrent protection to 230/23 kV transformers TR1, TR2 & TR3 at Sawyer Ave. Over current settings will trip a bank if load exceeds STE ratings	In Service	N/R	
Reliability	National Grid, USA		06/2016	Packard 77/78 Series Reactors	Install 230 kV series reactors on #77 & #78 Lines at Packard	In Service	Approved	
Reliability	National Grid, USA		06/2016	Huntley 230 kV Cap banks	Install two 230 kV Capacitor Banks at Huntley	In Service	Approved	
Reliability	National Grid, USA		03/2017		Replace TR1 at Elm Street	In Service	N/R	
Reliability	National Grid, USA		12/2017	Western NY Reinforcement Project	Reconductor part of Gardenville - Erie 115 kV circuit #54	Under Construction	Approved	
Reliability	National Grid, USA		06/2018	Gardenville Substation	Replace Gardenville 230:115 kV transformers TR#3 and TR#4	Planned	Approved	
Reliability	National Grid, USA		12/2018		Addition of 4th Elm Street 240-24 kV transformer at substation (TR3)	Under Construction	N/R	
Load Growth	National Grid, USA		06/2019	New Subtransmission Supply Stations	Install 115-34.5kV substation at Ohio Street	Planned	N/R	
Load Growth	National Grid, USA		09/2019	New Distribution Stations	Addition of new New Two Mile Creek Rd 115-13.2 kV substation	Under Construction	N/R	formerly known as Tonawanda 115-13.2kV
Reliability	National Grid, USA		12/2019		Huntley-Lockport 36/37 Asset Condition Refurbishment	Planned	Proposed	
Reliability	National Grid, USA		12/2020	Gardenville Substation	Complete rebuild of Gardenville 115 kV station	Under Construction	Approved	

2017 LTP – Western NY (Frontier 2 of 2)

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Primary Driver	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Updated Status	NYISO System Impact Study Status	Comments
Western New York - Frontier								
Reliability	National Grid, USA		12/2020	Huntley Substation Rebuild	Rebuild of Huntley Substation	Under Construction	N/R	
Public Policy	National Grid, USA		03/2021	Western NY Reinforcement Project	Niagara-Packard #193&194 Reconductor	Concept	N/R	
Reliability	National Grid, USA		03/2022	Western NY Reinforcement Project	Niagara-Packard #191 & 192 Reconductor	Concept	Uncertain	
Reliability	National Grid, USA		06/2022	Western NY Reinforcement Project	Packard-Gardenville 115kV Line 182 Reactor	Concept	Uncertain	
Reliability	National Grid, USA		06/2022	Transformer Replacements	Replace TR2 at Elm Street	Proposed	N/R	
Reliability	National Grid, USA		06/2022	Transformer Replacements	Seneca Terminal Station - Replace TR2 & TR5	Concept	N/R	
Reliability	National Grid, USA		01/2023	Western NY Reinforcement Project	Packard-Erie #181-922 Reconductor 28.4 miles	Concept	Uncertain	Article VII required
Reliability	National Grid, USA		06/2023	Transformer Replacements	Kensington Terminal Station - Replace TR4 & TR5	Concept	N/R	
Reliability	National Grid, USA		06/2023	New Distribution Stations	Install new 115-13.2kV substation in Niagara Falls	Concept	N/R	
Reliability	National Grid, USA		03/2023	Western NY Reinforcement Project	Walck-Huntley #133, Packard-Huntley #130 Reconductor	Concept	Uncertain	

2017 LTP – Western NY (Genesee)



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Primary Driver	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Updated Status	NYISO System Impact Study Status	Comments
Western New York - Genesee								
Load Growth	National Grid, USA		12/2015	New Distribution Stations	Addition of new North Lakeville (Sonora Way) 115/13.2 kV station	In Service	N/R	
Reliability	National Grid, USA		10/2018	Genesee 115kV Capacitor Banks	Install 115kV 20 MVAR cap bank at Golah substation	Planned	N/R	
Reliability	National Grid, USA		03/2019	Genesee 115kV Capacitor Banks	Install 30 MVAR 115 kV Capacitor Bank at Batavia	Planned	N/R	Second
Reliability	National Grid, USA		05/2019	Mortimer	Add second 115 kV breaker in series with the existing bus tie breaker at Mortimer	Planned	N/R	
Reliability	National Grid, USA		12/2019	Mortimer	Swap 115 kV lines #113 and #114 at Mortimer Station	Planned	N/R	Corrected Line Numbers
Reliability	National Grid, USA		03/2020	Mortimer	Replace 115-66kV TR3	Concept	N/R	
Reliability	National Grid, USA		03/2021		Rebuild 115kV portion of Golah Substation	Concept	N/R	

2017 LTP – Western NY (Southwest)

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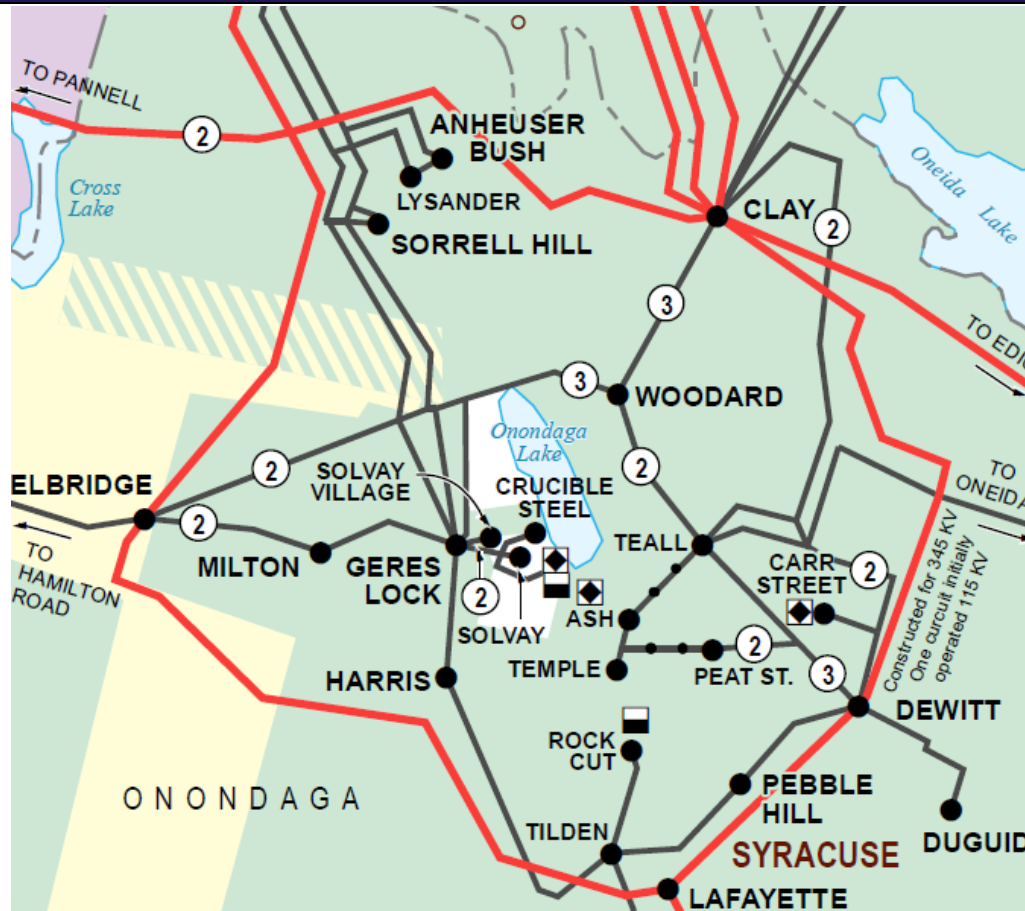
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Primary Driver	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Updated Status	NYISO System Impact Study Status	Comments
Western New York - Southwest								
Reliability	National Grid, USA		12/2015	Western NY Reinforcement Project	Reconductoring of two 115 kV lines between Five Mile Rd and Homer Hill, each approx. 7.4 miles long	In Service	Approved	
Reliability	National Grid, USA		12/2015	Western NY Reinforcement Project	Construct Five Mile Rd 345/115 kV station connecting 345 kV Homer City-Stolle #37 circuit and 115 kV Gardenville-Homer Hill #151/152 circuits with single 345/115 kV 448 MVA transformer and single 25 MVA capacitor bank	In Service	Approved	
Reliability	National Grid, USA		09/2019	New Subtransmission Supply Stations	Install new 115-34.5kV substation at West Ashville	Planned	N/R	Article VII Filed
Reliability	National Grid, USA		03/2020	Western NY Reinforcement Project	Add a second 115 kV bus tie in series with existing Dunkirk 115 kV bus tie breaker	Planned	Approved	Delayed from 6/2018
Reliability	National Grid, USA		06/2020		Dunkirk 115 kV Rebuild	Planned	N/R	
Reliability	National Grid, USA		06/2021	Western NY Reinforcement Project	Install Reactors on Falconer - Warren 115 kV circuit #171 (795 ACSR)	Concept	Approved	Cancelled
Reliability	National Grid, USA		06/2023	Gardenville-Dunkirk	Reconductor 20.5 Miles of the 115 kV #141 & # 142 circuits between Gardenville and North Angloa	Concept	N/R	

Central NY – Syracuse area

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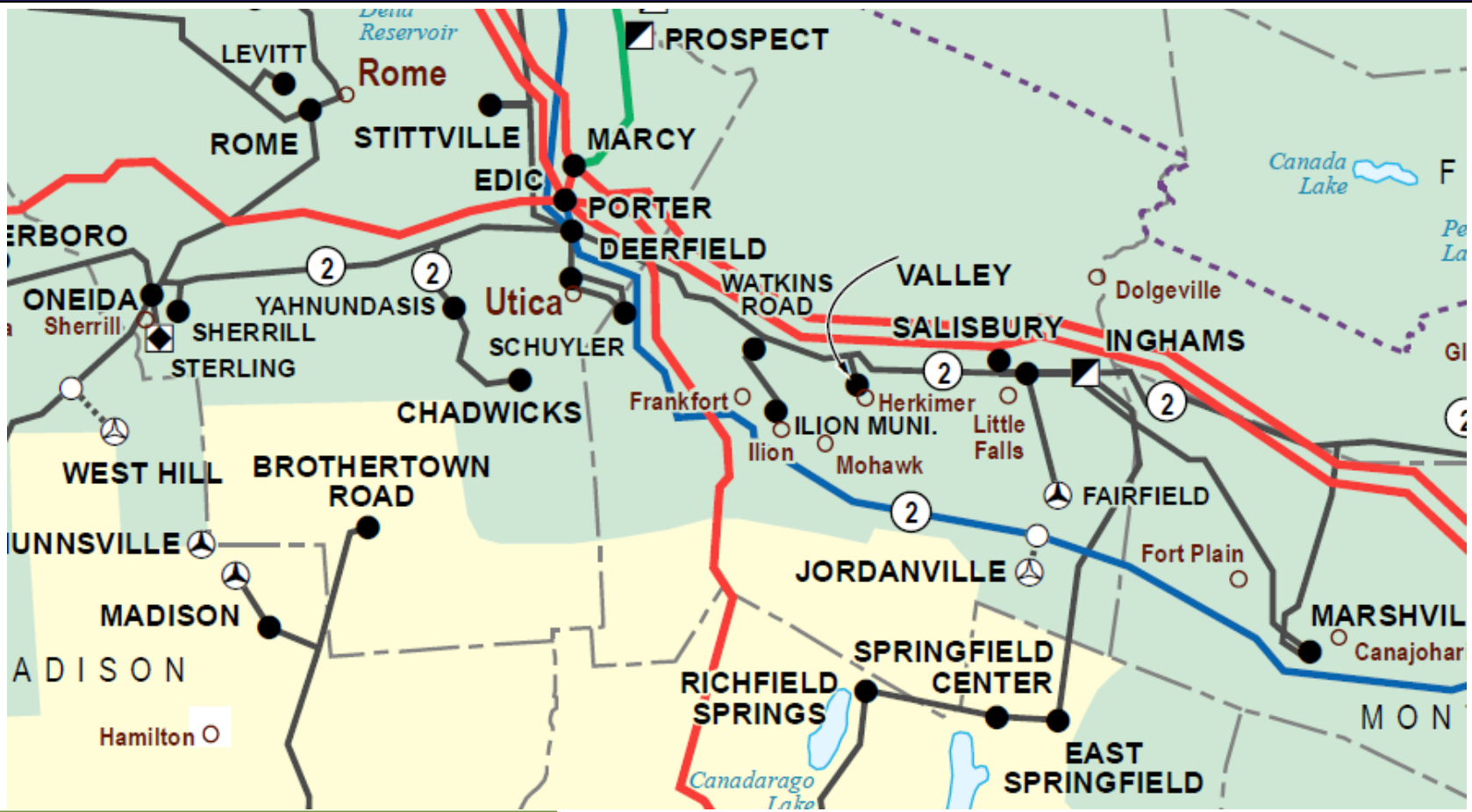
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Central NY – Utica/Rome area

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2017 LTP – Central NY (Northern & Utica/Rome)



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Primary Driver	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Updated Status	NYISO System Impact Study Status	Comments
Central New York - Northern								
Load Growth	National Grid, USA		12/2022	Watertown Substation	Install new distribution substation in Watertown area	Planned	N/R	
Reliability	National Grid, USA		12/2022		Malone Distribution Substation Expansion	Concept	N/R	
Central New York - Utica / Rome								
Reliability	National Grid, USA		10/2016	Edic 345-230kV TB2 Reconnect	Create a new bay by adding two new 345 kV breakers, then reconnect the TB2 to the newly created position.	Completed	Approved	
Reliability	National Grid, USA		12/2018		Install Reactors on Yahnundasis-Porter #3	Planned	N/R	
Reliability	National Grid, USA		12/2018		Install Reactors on Onedia -Porter #7	Planned	N/R	
Reliability	National Grid, USA		06/2022	Porter Station Bulk Power Upgrades	Porter 230 kV substation bulk power upgrades	Planned	N/R	
Reliability	National Grid, USA		12/2022		Terminal Substation (Utica) Relocation	Concept	N/R	
Reliability	National Grid, USA		12/2023		Onieda Station Rebuild	Concept	N/R	
Reliability	National Grid, USA		12/2023		Booneville Station Rebuild	Concept	N/R	

2017 LTP – Central NY (Syracuse/Cortland/Oswego)

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Primary Driver	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Updated Status	NYISO System Impact Study Status	Comments
Central New York - Syracuse/Cortland/Oswego								
Reliability	National Grid, USA		12/2015		Reconnect 345-115 kV bank TB2 at Claysubstation	Under Construction	Approved	Interim Operating Procedure in place to prevent the SB scenario at Clay
Reliability	National Grid, USA		06/2017		Add line position at Elbridge. NYSEG to construct new 115kV line. Bus together existing Line5/15 to create new 5 line.	In Service	Approved	Article VII proceedings
Load Growth	National Grid, USA		01/2018		Edic Add 345/115kV Transformers and 115kV Circuits to MV Edge	Under Construction	N/R	
Reliability	National Grid, USA		03/2019		Oswego 115kV Station Rebuild	Planned	N/R	
Load Growth	National Grid, USA		04/2019		Install new Distribution substation in De Witt area	Planned	N/R	
Reliability	National Grid, USA		06/2019		Dewitt-Pebble Hill #19 Re-conductor 1/2 mile line	Cancelled	N/R	
Reliability	National Grid, USA		12/2020	Central Division Reconductoring	Reconductor 115 kV Clay - Dewitt #3	Planned	N/R	Article VII Proceedings
Reliability	National Grid, USA		12/2020	Central Division Reconductoring	Reconductor 115 kV Clay - Teall #10	Planned	N/R	Article VII Proceedings
Reliability	National Grid, USA		06/2021	Central Division Reconductoring	GE - Geres Lock #8 115 kV Reconductor	Planned	N/R	
Reliability	National Grid, USA		12/2021		Elbridge -Woodard #4 Line Install Reactors	Concept	Uncertain	
Reliability	National Grid, USA		12/2021		Elbridge 115kV Reactors	Concept	Uncertain	
Reliability	National Grid, USA		06/2022		Cortland - Clarks Corners #1-716 Reconductor 0.3 miles of 115 kV	Concept	N/R	
Reliability	National Grid, USA		12/2022		Lighthouse Hill Station Relocation	Concept	N/R	

Eastern NY – Northeast area

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Primary Driver	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Updated Status	NYISO System Impact Study Status	Comments
Eastern New York - Capital & Hudson Valley								
Reliability	National Grid, USA		03/2016		Thermal Upgrades on the Greenbush-Schodack/Hudson #13 & #15 115 kV Lines	In Service	N/R	
Reliability	National Grid, USA		10/2016		Upgrade station equipment/terminations for Menands-Riverside #3 115kV	In Service	N/R	
Load Growth	National Grid, USA		06/2017	New Distribution substations	Addition of two new 115/13.2 kV banks at Riverside station	Cancelled	N/R	
Reliability	National Grid, USA		04/2018		Reconfigure Rotterdam Station as part of planned Rebuild to eliminate R1 and R82 breaker-failure contingencies	Planned	N/R	
Reliability	National Grid, USA		06/2018		Reconductor/rebuild 3.2 miles of the Wolf Rd-Menands #10 115kV	Planned	N/R	
Reliability	National Grid, USA		06/2018		Reconductor/rebuild 3.2 miles of the State Campus-Patruon-Menands #15 115kV	Planned	N/R	
Reliability	National Grid, USA		03/2019		Install Series Reactors at Rotterdam station on the #19 and #17 115 kV lines	Planned	N/R	
Reliability	National Grid, USA		03/2019		Reconductor 115kV Albany-Greenbush 1&2	Planned	N/R	
Reliability	National Grid, USA		03/2019	Shunt Capacitor Bank	Install one 35 MVAR 115 kV capacitor bank at Rosa Road	Planned	N/R	
Reliability	National Grid, USA		06/2019		Reconductor/rebuild 7.1 miles of the Rotterdam-Curry Rd #11 115kV	Planned	N/R	
Load Growth	National Grid, USA		06/2020	New Distribution substations	New Maple Ave 115-13.2kV Substation outside Amsterdam NY	Planned	N/R	Corrected location (Was Central NY last LTP)
Reliability	National Grid, USA		03/2021		Reconductor 115 kV Maplewood-Menands #19 & Maplewood-Reynolds #31 Lines	Concept	N/R	
Load Growth	National Grid, USA		06/2021	New Distribution substations	New 115-13.2kV substation Bethlehem, NY	Planned	N/R	
Reliability	National Grid, USA		12/2023	Inghams Substation Rebuild	Replace 115 kV breakers; adding a new phase shifter	Concept	Uncertain	Corrected location (Was Central NY last LTP)
Reliability	National Grid, USA		05/2024		Rotterdam 115kV Rebuild	Concept	N/R	

2017 LTP List – Eastern NY (Northeast)

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Primary Driver	Primary Equipment Owner	Other Equipment Owner(s)	Projected In-Service Month/Year	Major Project	Project	Updated Status	NYISO System Impact Study Status	Comments
Eastern New York - Northeast								
Reliability	National Grid, USA		06/2017		Reconductor Mohican-Battenkill #15 115 kV (14.2 miles)	In Service	Approved	
Reliability	National Grid, USA		01/2018		Add second 230-115kV transformer at Eastover Road	Under Construction	Approved	
Reliability	National Grid, USA		03/2018		Add a two-stage 115 kV 20MVAR Capacitor at Ticonderoga	Planned	N/R	
Reliability	National Grid, USA		11/2019		New 115 kV switching Station - Schaghticoke	Planned	N/R	
Reliability	National Grid, USA		12/2019		New 115 kV switching Station - Lasher Rd	Under Construction	N/R	Article VII Approved
Load Growth	National Grid, USA		03/2020	New Distribution substations	New Lasher (Randall) Rd 115-13.2kV substation outside Ballston, NY	Under Construction	N/R	Article VII Approved
Reliability	National Grid, USA		03/2021	New Distribution substations	Build a 115-13.2 kV substation @ Sodeman Road	Under Construction	N/R	

LTP Communication

- Interested parties may submit written comments on National Grid's LTP within 30 days (December 3, 2017) to:

Mark Domino, Engineering Manager

Transmission Planning - NY

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.

Questions?

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