

2019 National Grid NY Local Transmission Plan

NYISO ESPWG

November 18, 2019

nationalgrid



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01

Introduction

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Planning Horizon, Data, Assumptions, Tools

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, 2019-2028.

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

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

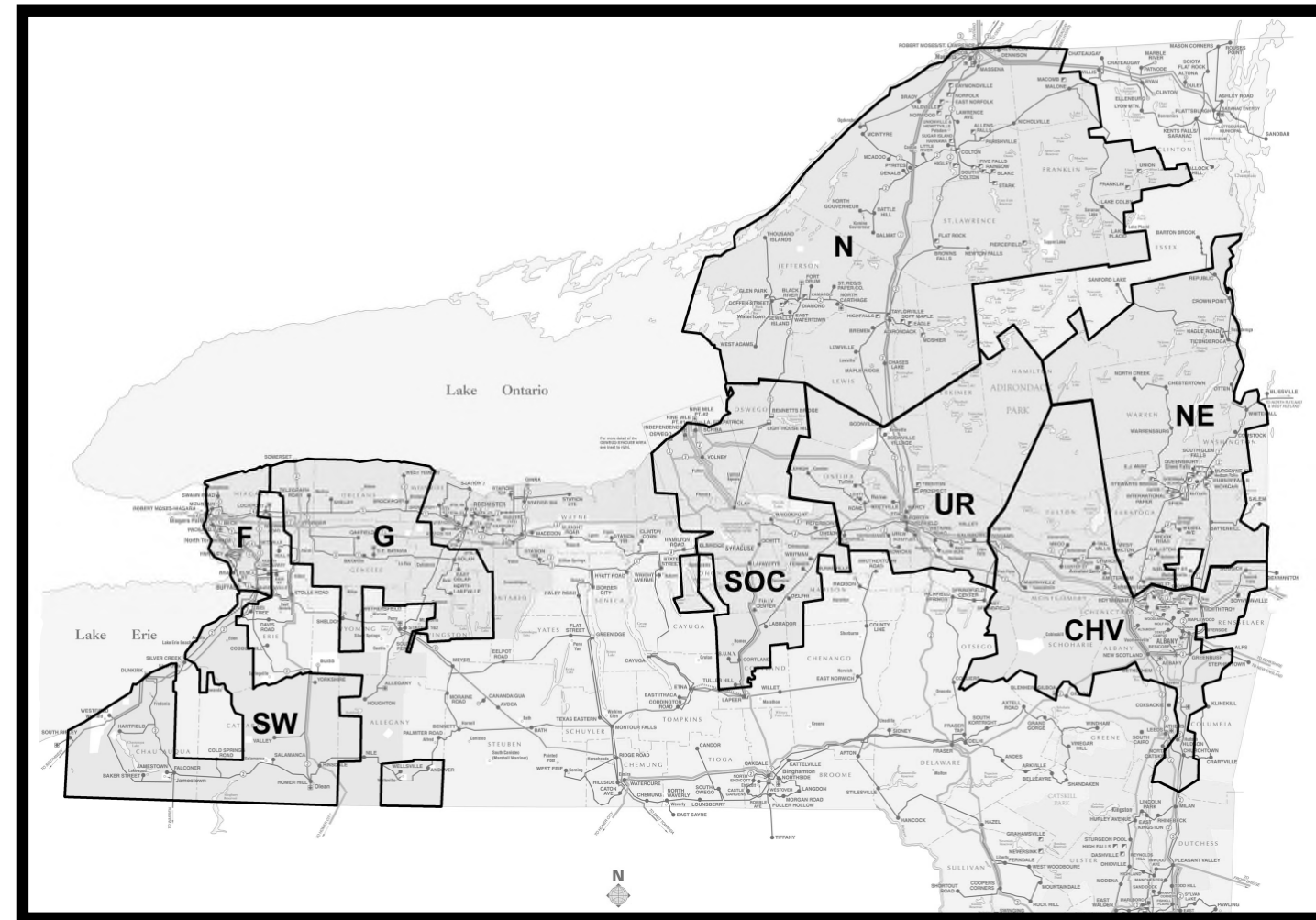
N – Northern

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.

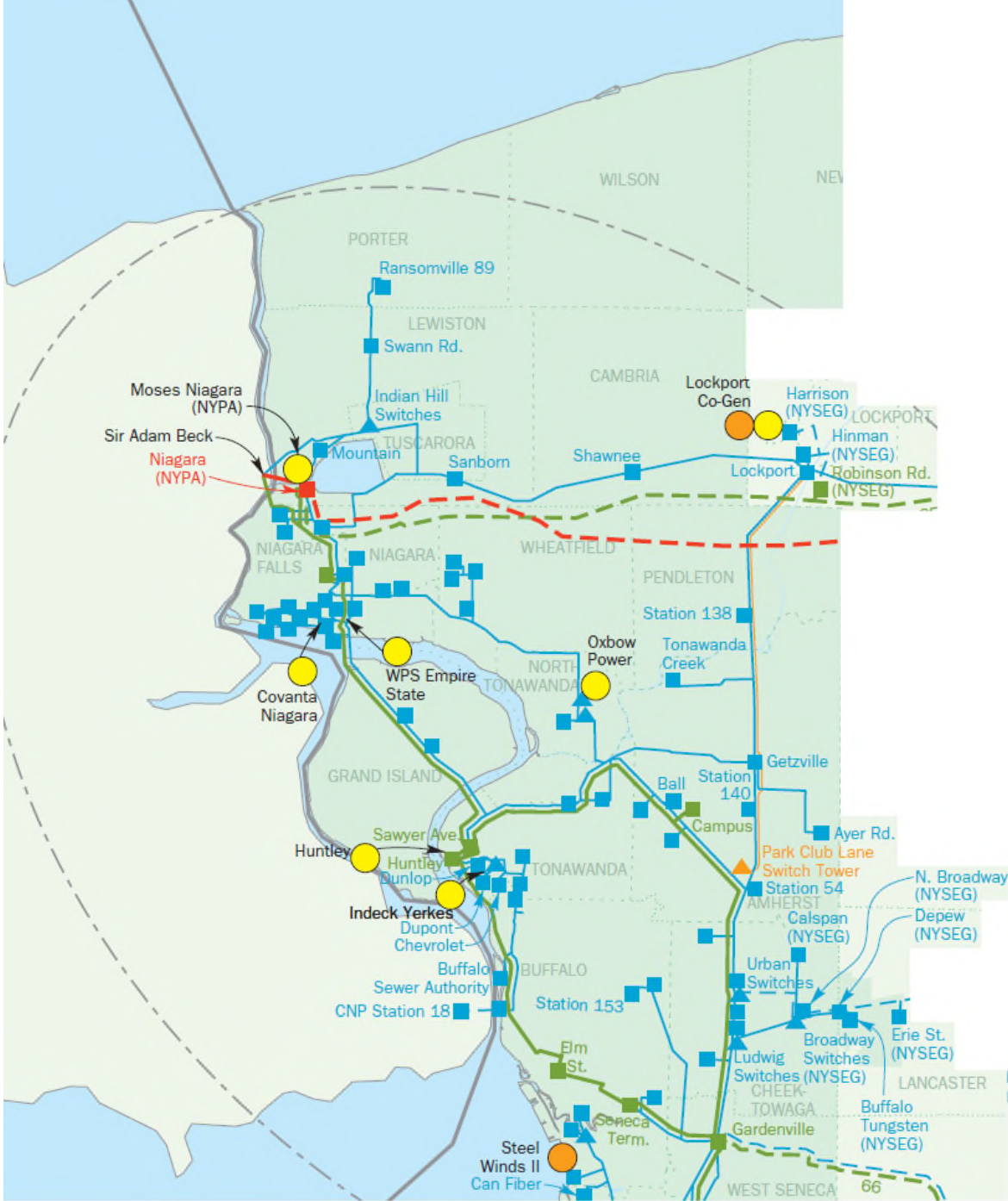
02

Areas

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Western NY - Frontier



2019 LTP – Western NY (Frontier 1 of 2)

| Primary Driver | Primary Equipment Owner | Other Equipment Owners (s) | Proposed In-Service date Month/Year | Major Project | Project Name | Updated Status | NYISO System Impact Study Status | Comments |
|-----------------------------|-------------------------|----------------------------|-------------------------------------|--------------------------------------|----------------------------------------------------------------------|--------------------|----------------------------------|----------------------------------------|
| Western New York - Frontier | | | | | | | | |
| Load Growth | National Grid, USA | | 10/2019 | New Sub Transmission Supply Stations | Install 115-34.5kV substation at Ohio Street | In-Service | N/R | |
| Reliability | National Grid, USA | | 10/2019 | Transformer Replacements | Seneca Terminal Station - Replace TR2 | In-Service | N/R | Damage/failure |
| Reliability | National Grid, USA | | 12/2019 | Gardenville Substation | Complete rebuild of Gardenville 115 kV station | Under Construction | Approved | In service with Phased Cut-overs |
| Load Growth | National Grid, USA | | 3/2020 | New Distribution Stations | Addition of 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 | | 3/2020 | | Huntley-Lockport 36/37 Asset Condition Refurbishment | Under Construction | N/R | |
| Reliability | National Grid, USA | | 11/2020 | Gardenville Substation | Replace Gardenville 230:115 kV transformer TR#4 | Planned | Approved | |
| Reliability | National Grid, USA | | 12/2020 | | Addition of 4th Elm Street 240-24 kV transformer at substation (TR3) | Under Construction | N/R | |
| Reliability | National Grid, USA | | 1/2021 | Huntley Substation Rebuild | Rebuild of Huntley Substation | Under Construction | N/R | |
| Reliability | National Grid, USA | | 5/2021 | | Mountain-Lockport 103/104 Bypass | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2021 | New Distribution Stations | Install new 115-13.2kV substation in Niagara Falls (Royal Ave) | Planned | N/R | |
| Reliability | National Grid, USA | NYPA | 11/2021 | Western NY Reinforcement Project | Niagara-Packard #192 Reconductor 3.7 miles | Planned | N/R | Separated 191 &192 |

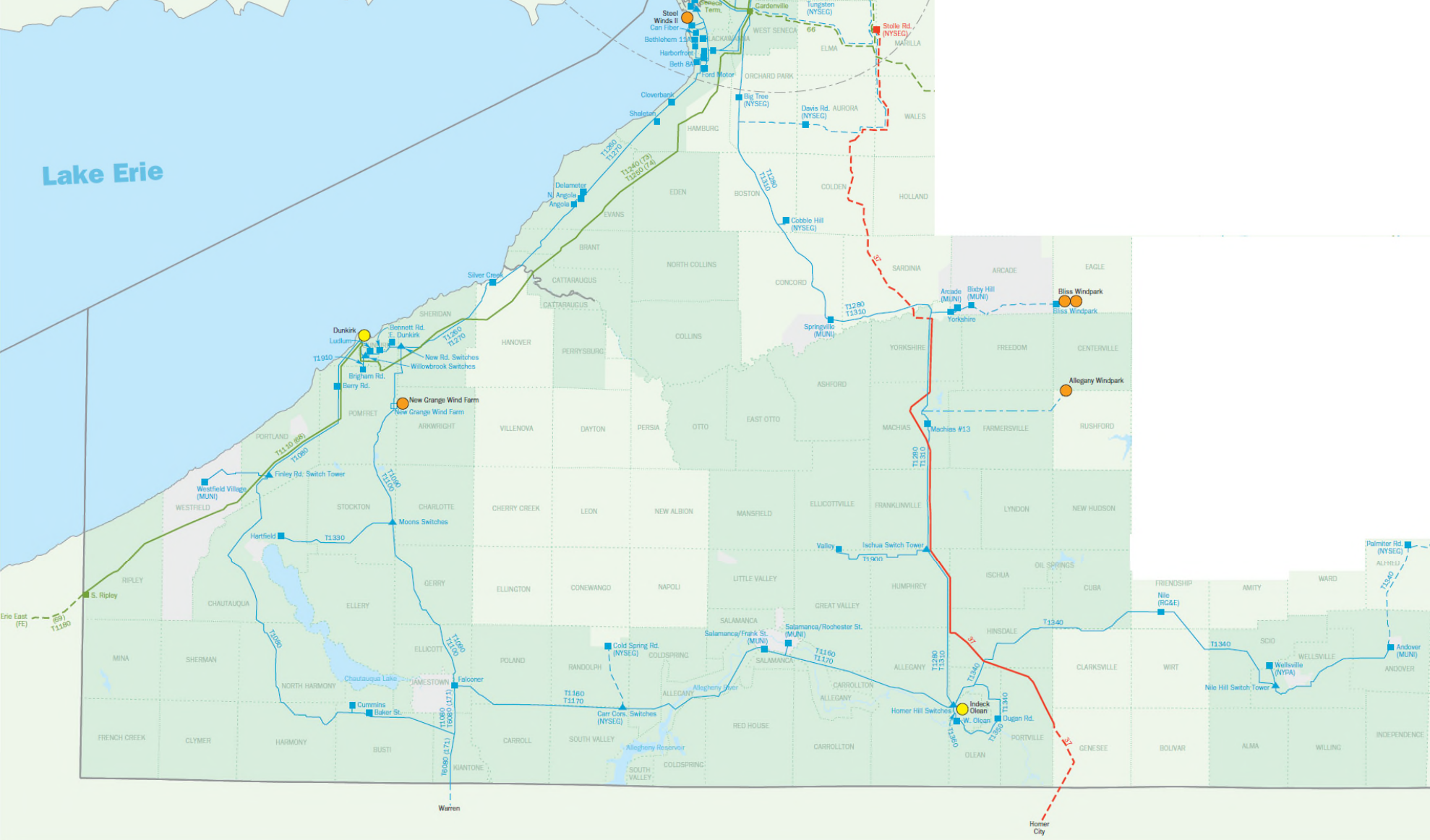
2019 LTP – Western NY (Frontier 2 of 2)

| Primary Driver | Primary Equipment Owner | Other Equipment Owners (s) | Proposed In-Service date Month/Year | Major Project | Project Name | Updated Status | NYISO System Impact Study Status | Comments |
|-----------------------------|-------------------------|----------------------------|-------------------------------------|----------------------------------|------------------------------------------------------------|----------------|----------------------------------|------------------------------|
| Western New York - Frontier | | | | | | | | |
| Reliability | National Grid, USA | NYPA | 2/2022 | Western NY Reinforcement Project | Niagara-Packard #191 Reconductor 3.7 miles | Planned | N/R | Separated 191 &192 |
| Interconnection | National Grid, USA | NYSEG | 3/2022 | | Gardenville-Arcade 151 - Loop-in-and-out of NYSEG Big Tree | Planned | Approved | |
| Reliability | National Grid, USA | | 6/2022 | Transformer Replacements | Seneca Terminal Station - Replace TR5 | Planned | N/R | TR2 replaced as Failure |
| Reliability | National Grid, USA | | 6/2022 | Transformer Replacements | Gardenville TR3 Replacement | Concept | Uncertain | |
| Reliability | National Grid, USA | | 6/2022 | | Lockport - Second Differential Relay Scheme | Concept | N/R | |
| Public Policy | National Grid, USA | NYPA | 7/2022 | Western NY Reinforcement Project | Niagara-Packard #193 & 194 Reconductor | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2023 | Transformer Replacements | Replace TR2 at Elm Street | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2023 | Western NY Reinforcement Project | Walck-Huntley #133, Packard-Huntley #130 Reconductor | Planned | N/R | Packard-Huntley in Gold Book |
| Reliability | National Grid, USA | | 12/2023 | Transformer Replacements | Kensington Terminal Station - Replace TR4 & TR5 | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2024 | | Lockport Station Rebuild | Planned | N/R | |
| Reliability | National Grid, USA | | 3/2025 | Western NY Reinforcement Project | Niagara-Gardenville #180 - Reconfiguration & Reactor | Concept | N/R | |
| Reliability | National Grid, USA | | 3/2025 | Western NY Reinforcement Project | Packard-Gardenville 182/181 Reactor | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2026 | Western NY Reinforcement Project | Packard-Erie #181-922 Reconfiguration | Planned | Uncertain | |
| Reliability | National Grid, USA | | 6/2026 | | Packard 115kV & 230kV Refurbishment | Concept | N/R | |
| Reliability | National Grid, USA | | 6/2026 | | Gardenville - Add Two 115kV breakers | Planned | N/R | |

2019 LTP – Western NY (Genesee)

| Primary Driver | Primary Equipment Owner | Other Equipment Owners (s) | Proposed In-Service date Month/Year | Major Project | Project Name | Updated Status | NYISO System Impact Study Status | Comments |
|----------------------------|-------------------------|----------------------------|-------------------------------------|-------------------------------|-----------------------------------------------------------------------------------|----------------|----------------------------------|------------------------|
| Western New York - Genesee | | | | | | | | |
| Reliability | National Grid, USA | | 1/2019 | Genesee 115kV Capacitor Banks | Install 115kV 20 MVAR cap bank at Golah substation | In Service | N/R | |
| Reliability | National Grid, USA | | 8/2019 | Genesee 115kV Capacitor Banks | Install 30 MVAR 115 kV Capacitor Bank at Batavia | In Service | N/R | Second |
| Reliability | National Grid, USA | | 6/2020 | Mortimer | Swap 115 kV lines #113 and #114 at Mortimer Station | Planned | N/R | Corrected Line Numbers |
| Reliability | National Grid, USA | | 1/2021 | Mortimer | Replace 115-66kV TR3 At Mortimer | Planned | N/R | |
| Reliability | National Grid, USA | | 8/2021 | Mortimer | Add second 115 kV breaker in series with the existing bus tie breaker at Mortimer | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2022 | | Batavia - Replace Five 115kV Breakers | Concept | NR | |
| Reliability | National Grid, USA | | 6/2022 | | Replace Cables Lockport-Mortimer #111,#113, #114 | Planned | NR | |
| Reliability | National Grid, USA | | 12/2022 | Golah | Replace 69-34.5kV TR at Golah | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2024 | | Reconfiguration of 115kV portion of Golah Substation | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2026 | | Mortimer-Pannell 24 & 25 Rebuild | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2026 | | Mortimer-Golah 110 Refurbishment | Concept | N/R | |
| Reliability | National Grid, USA | | 6/2026 | | Mortimer-Golah 109 Refurbishment | Concept | N/R | |

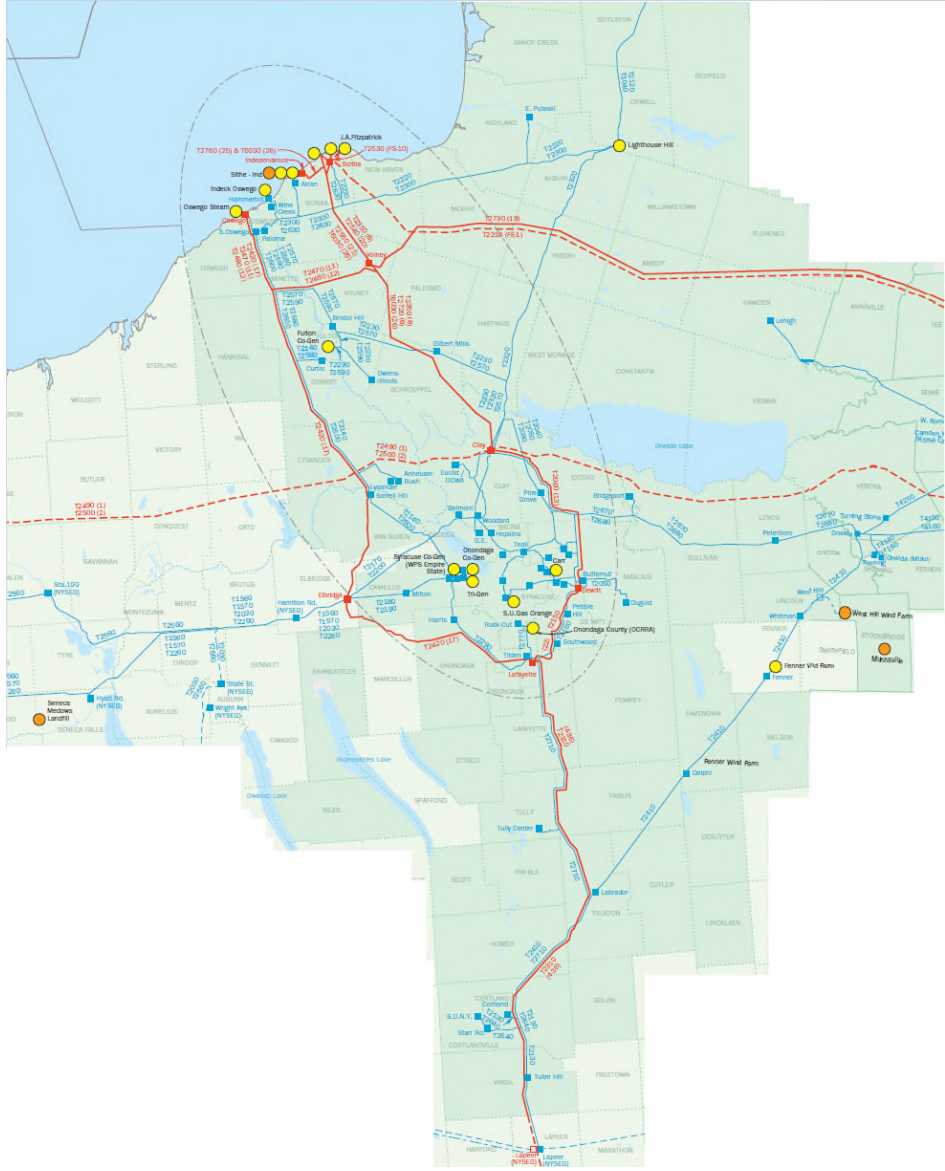
Western NY - Southwest



2019 LTP – Western NY (Southwest)

| Primary Driver | Primary Equipment Owner | Other Equipment Owners (s) | Proposed In-Service date Month/Year | Major Project | Project Name | Updated Status | NYISO System Impact Study Status | Comments |
|------------------------------|-------------------------|----------------------------|-------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------|--------------------|----------------------------------|-------------------------|
| Western New York - Southwest | | | | | | | | |
| Reliability | National Grid, USA | | 2/2020 | New Sub Transmission Supply Stations | Install new 115-34.5kV substation at West Ashville | Under Construction | N/R | Article VII Approved |
| Reliability | National Grid, USA | | 6/2022 | | Dunkirk-Laona 161/162 Reactor Removal | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2022 | | MoonRd-Falconer 175/176 Reactor Installation | Planned | N/R | |
| Reliability | National Grid, USA | | 3/2024 | 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 | | 3/2024 | | Dunkirk 115 kV Rebuild | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2024 | Gardenville-Dunkirk | Reconductor 20.5 Miles of the 115 kV #141 & #142 circuits between Gardenville and North Angola | Planned | N/R | Article VII Proceedings |
| Reliability | National Grid, USA | | 6/2024 | | Homer Hill - Replace Five OCB | Planned | N/R | |

Central NY – SOC (Syracuse/Oswego/Cortland)



2019 LTP – Central NY (Syracuse/Oswego/Cortland)

| Primary Driver | Primary Equipment Owner | Other Equipment Owners (s) | Proposed In-Service date Month/Year | Major Project | Project Name | Updated Status | NYISO System Impact Study Status | Comments |
|---------------------------------------------|-------------------------|----------------------------|-------------------------------------|---------------------------------|------------------------------------------------------------------|--------------------|----------------------------------|-------------|
| Central New York - Syracuse/Oswego/Cortland | | | | | | | | |
| Load Growth | National Grid, USA | | 3/2019 | | Install new distribution substation - Collamer | In Service | N/R | DeWitt Area |
| Reliability | National Grid, USA | | 5/2020 | Central Division Reconductoring | GE - Geres Lock #8 115 kV Reconductor | Under Construction | N/R | |
| Reliability | National Grid, USA | | 3/2021 | | Oswego 115kV Station Rebuild | Under Construction | N/R | |
| Reliability | National Grid, USA | | 10/2021 | Central Division Reconductoring | Reconductor 115 kV Clay - Dewitt #3 | Under Construction | N/R | |
| Reliability | National Grid, USA | | 10/2021 | Central Division Reconductoring | Reconductor 115 kV Clay - Teall #10 | Under Construction | N/R | |
| Reliability | National Grid, USA | | 3/2022 | | South Oswego-Indeck #6 - High Speed Protection | Concept | Uncertain | |
| Reliability | National Grid, USA | | 8/2022 | | Cortland - Clarks Corners #1-716 Reconductor 0.3 miles of 115 kV | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2023 | | Cortland 115kV Capacitor Bank | Concept | N/R | |
| Reliability | National Grid, USA | | 3/2025 | | Oswego 345kV Rebuild | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2025 | | Lighthouse Hill Station Relocation | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2026 | | South Oswego 115kV Rebuild | Concept | N/R | |
| Reliability | National Grid, USA | | 3/2028 | | DeWitt Station Rebuild | Concept | N/R | |

Central NY – Utica/Rome



2019 LTP – Central NY (Utica/Rome)

| Primary Driver | Primary Equipment Owner | Other Equipment Owners (s) | Proposed In-Service date Month/Year | Major Project | Project Name | Updated Status | NYISO System Impact Study Status | Comments |
|-------------------------------|-------------------------|----------------------------|-------------------------------------|---------------|-------------------------------------------|----------------|----------------------------------|----------|
| Central New York - Utica/Rome | | | | | | | | |
| Reliability | National Grid, USA | | 7/2018 | | Install Reactors on Yahnundasis-Porter #3 | In-Service | N/R | |
| Reliability | National Grid, USA | | 7/2018 | | Install Reactors on Oneida -Porter #7 | In-Service | N/R | |
| Reliability | National Grid, USA | | 12/2023 | | Oneida Station Rebuild | Planned | N/R | |
| Reliability | National Grid, USA | | 12/2023 | | Oneida Cap Bank Installation | Concept | N/R | |
| Reliability | National Grid, USA | | 6/2024 | | Terminal Substation (Utica) Relocation | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2024 | | Boonville Station Rebuild | Planned | N/R | |

Central NY – Northern



2019 LTP – Central NY (Northern)

| Primary Driver | Primary Equipment Owner | Other Equipment Owners (s) | Proposed In-Service date Month/Year | Major Project | Project Name | Updated Status | NYISO System Impact Study Status | Comments |
|-----------------------------|-------------------------|----------------------------|-------------------------------------|---------------|------------------------------------------------|----------------|----------------------------------|-----------------|
| Central New York - Northern | | | | | | | | |
| Reliability | National Grid, USA | | 11/2019 | | Browns Falls Terminal Equipment Upgrades | In-Service | N/R | Gold Book S2022 |
| Reliability | National Grid, USA | | 6/2020 | | Taylorville Terminal Equipment Upgrades | Planned | N/R | Gold Book S2022 |
| Reliability | National Grid, USA | | 6/2020 | | Taylorville - Boonville Clearance Upgrades | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2020 | | Browns Falls Taylorville Clearnace | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2020 | | Colton - Browns Falls Clearance | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2020 | | Lowville STA CONN Replacement | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2021 | | Flat Rock Terminal Equipment Upgrades | Proposed | N/R | |
| Reliability | National Grid, USA | | 6/2021 | | Colton Terminal Equipment | Proposed | N/R | |
| Reliability | National Grid, USA | | 6/2022 | | Black River Terminal Equipment | Proposed | N/R | |
| Reliability | National Grid, USA | | 6/2023 | | Install Reactors Taylorville-Boonville | Concept | Uncertain | |
| Reliability | National Grid, USA | | 12/2024 | | Coffeen Terminal Equipment Upgrades | Proposed | N/R | Gold Book S2022 |
| Reliability | National Grid, USA | | 6/2025 | | Malone Distribution Substation Expansion | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2025 | | Malone PAR | Concept | N/R | |
| Reliability | National Grid, USA | | 12/2025 | | New 115kV Line - Lyme Junction to Indian River | Planned | Uncertain | |

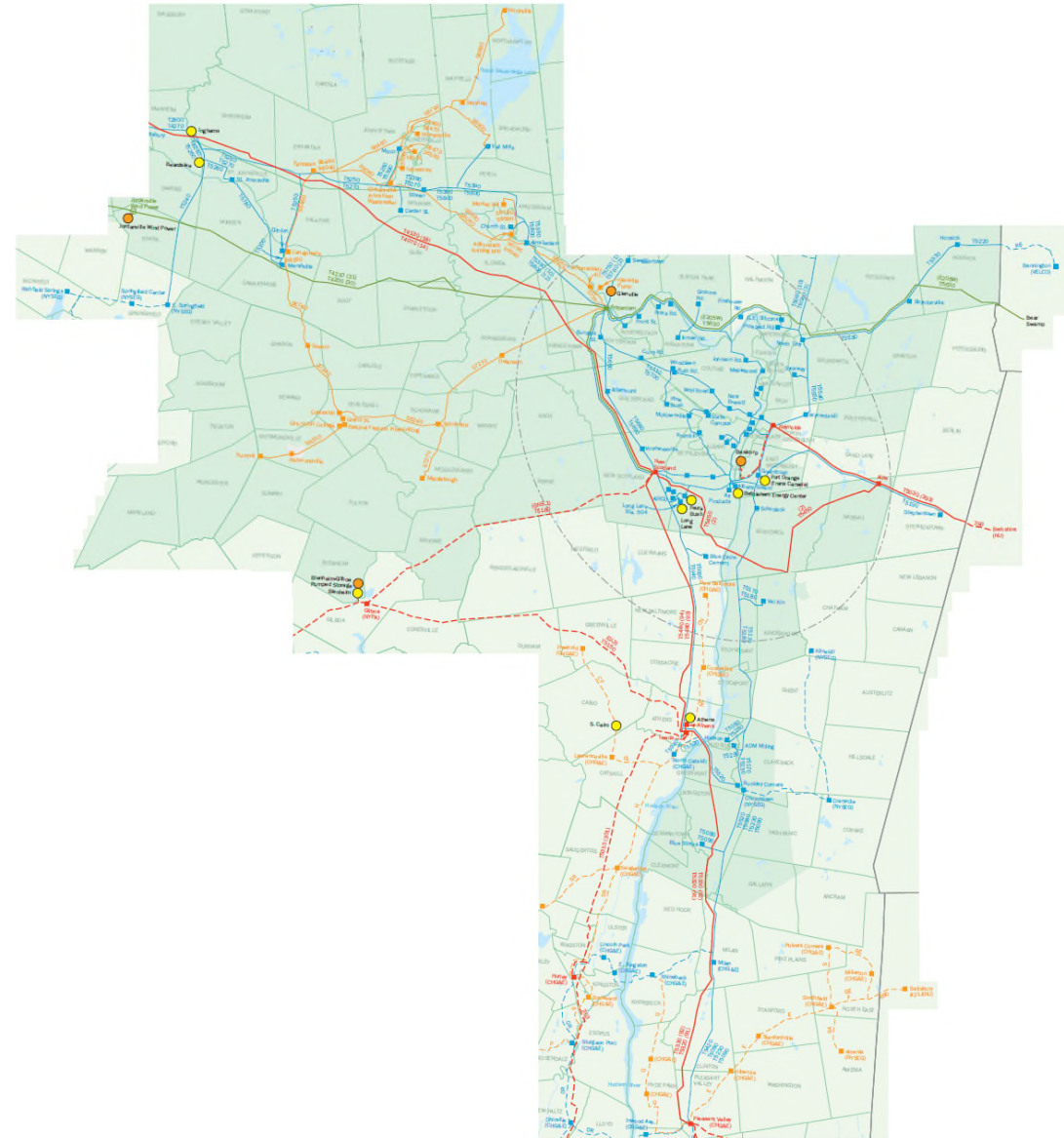
Eastern NY – Northeast area



2019 LTP List – Eastern NY (Northeast)

| Primary Driver | Primary Equipment Owner | Other Equipment Owners (s) | Proposed In-Service date Month/Year | Major Project | Project Name | Updated Status | NYISO System Impact Study Status | Comments |
|------------------------------|-------------------------|----------------------------|-------------------------------------|------------------------------|--------------------------------------------------------------------|--------------------|----------------------------------|----------------------|
| Eastern New York - Northeast | | | | | | | | |
| Reliability | National Grid, USA | | 5/2018 | | Add second 230-115kV transformer at Eastover Road | In Service | Approved | |
| Reliability | National Grid, USA | | 12/2018 | | Add a two-stage 115 kV 21.6VAR Capacitor at Ticonderoga | In Service | N/R | |
| Reliability | National Grid, USA | | 1/2019 | | Replace 115kV Breakers at North Troy | In Service | N/R | |
| Reliability | National Grid, USA | | 7/2019 | New Distribution substations | Build a 115-13.2 kV substation @ Sodeman Road | In Service | N/R | |
| Reliability | National Grid, USA | | 10/2019 | | New 115 kV Switching Station - Schaghticoke | In Service | N/R | |
| Reliability | National Grid, USA | | 3/2020 | | New 115 kV switching Station - Lasher Rd | Under Construction | N/R | Article VII Approved |
| Load Growth | National Grid, USA | | 3/2020 | 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 | | 3/2022 | | Queensbury - Capacitor Replacement | Planned | N/R | |

Eastern NY - Capital & Hudson Valley



2019 LTP – Eastern NY (Capital & Hudson Valley 1 of 2)

| Primary Driver | Primary Equipment Owner | Other Equipment Owners (s) | Proposed In-Service date Month/Year | Major Project | Project Name | Updated Status | NYISO System Impact Study Status | Comments |
|--------------------------------------------|-------------------------|----------------------------|-------------------------------------|------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------|----------|
| Eastern New York - Capital & Hudson Valley | | | | | | | | |
| Reliability | National Grid, USA | | 12/2018 | | Reconfigure Rotterdam Station as part of planned Rebuild to eliminate R1 and R82 breaker-failure contingencies | In-Service | N/R | |
| Reliability | National Grid, USA | | 4/2019 | | Maplewood - Replace one OCB | In Service | N/R | |
| Reliability | National Grid, USA | | 6/2019 | | Reconductor 115kV Albany-Greenbush 1&2 | In Service | N/R | |
| Reliability | National Grid, USA | | 8/2019 | | Rotterdam Replace R13 & R14 115kV breakers | In Service | N/R | |
| Reliability | National Grid, USA | | 8/2019 | Shunt Capacitor Bank | Install one 39.6 MVAR 115 kV capacitor bank at Rosa Road | In-Service | N/R | |
| Interconnection | National Grid, USA | NYSEG | 10/2019 | | Accommodate NYSEG Falls Park Station on Schodack-Churchtown | In Service | N/R | |
| Reliability | National Grid, USA | | 3/2020 | | Install Series Reactors at Rotterdam station on the #19 and #17 115 kV lines | Under Construction | N/R | |
| Reliability | National Grid, USA | | 3/2020 | | Reconductor/rebuild 7.1 miles of the Rotterdam-Curry Rd #11 115kV | Under Construction | N/R | |
| Load Growth | National Grid, USA | | 12/2020 | New Distribution substations | New Maple Ave 115-13.2kV Substation outside Amsterdam NY | Under Construction | N/R | |
| Reliability | National Grid, USA | | 6/2021 | | Stoner-Rotterdam #12 - Correct Clearance Limit | Concept | N/R | |

2019 LTP – Eastern NY (Capital & Hudson Valley 2 of 2)

| Primary Driver | Primary Equipment Owner | Other Equipment Owners (s) | Proposed In-Service date Month/Year | Major Project | Project Name | Updated Status | NYISO System Impact Study Status | Comments |
|--------------------------------------------|-------------------------|----------------------------|-------------------------------------|----------------------------|----------------------------------------------------------------------------------|----------------|----------------------------------|----------|
| Eastern New York - Capital & Hudson Valley | | | | | | | | |
| Reliability | National Grid, USA | | 6/2023 | | Reconductor 115 kV Maplewood-Menands #19 & Maplewood-Reynolds #31 Lines | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2023 | | Cobleskill Station Take-Off Reconductor | Proposed | N/R | |
| Reliability | National Grid, USA | | 3/2024 | | Rotterdam TR3 & Relay upgrade | Concept | Uncertain | |
| Reliability | National Grid, USA | | 6/2024 | | Reconductor 115kV Meco-Rotterdam & Stoner-Rotterdam | Concept | Uncertain | |
| Reliability | National Grid, USA | | 6/2024 | | Reynolds Road Station Rebuild | Planned | N/R | |
| Reliability | National Grid, USA | | 6/2025 | | Greenbush - 115kV & 34.5kV refurb | Proposed | N/R | |
| Reliability | National Grid, USA | | 12/2025 | Inghams Substation Rebuild | Rebuild stations; replace new phase angle regulator | Planned | Uncertain | |
| Reliability | National Grid, USA | | 3/2026 | | Cobleskill Take-Off Reconductor | Concept | N/R | |
| Reliability | National Grid, USA | | 3/2026 | | Rotterdam Schoharre #18/Schenectady International - Rotterdam #4 Rebuild 0.93 mi | Concept | N/R | |
| Reliability | National Grid, USA | | 6/2028 | | Reconductor 0.3mi 115kV St Johnsville - Marshville | Concept | Uncertain | |
| Reliability | National Grid, USA | | 3/2030 | | Rotterdam 115kV Rebuild | Concept | N/R | |

03

Conclusion

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LTP Communication

Interested parties may submit written comments on National Grid's LTP within 30 days (Dec 18, 2019) to:

Mark Domino, Engineering Manager

Transmission Planning - NY

National Grid

300 Erie Blvd, West

Syracuse, NY 13202

- TransmissionPlanning@nationalgrid.com

Comments will be posted on the NYISO website.

Modifications to the LTP discussed at the next LTP meeting.

Questions?



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