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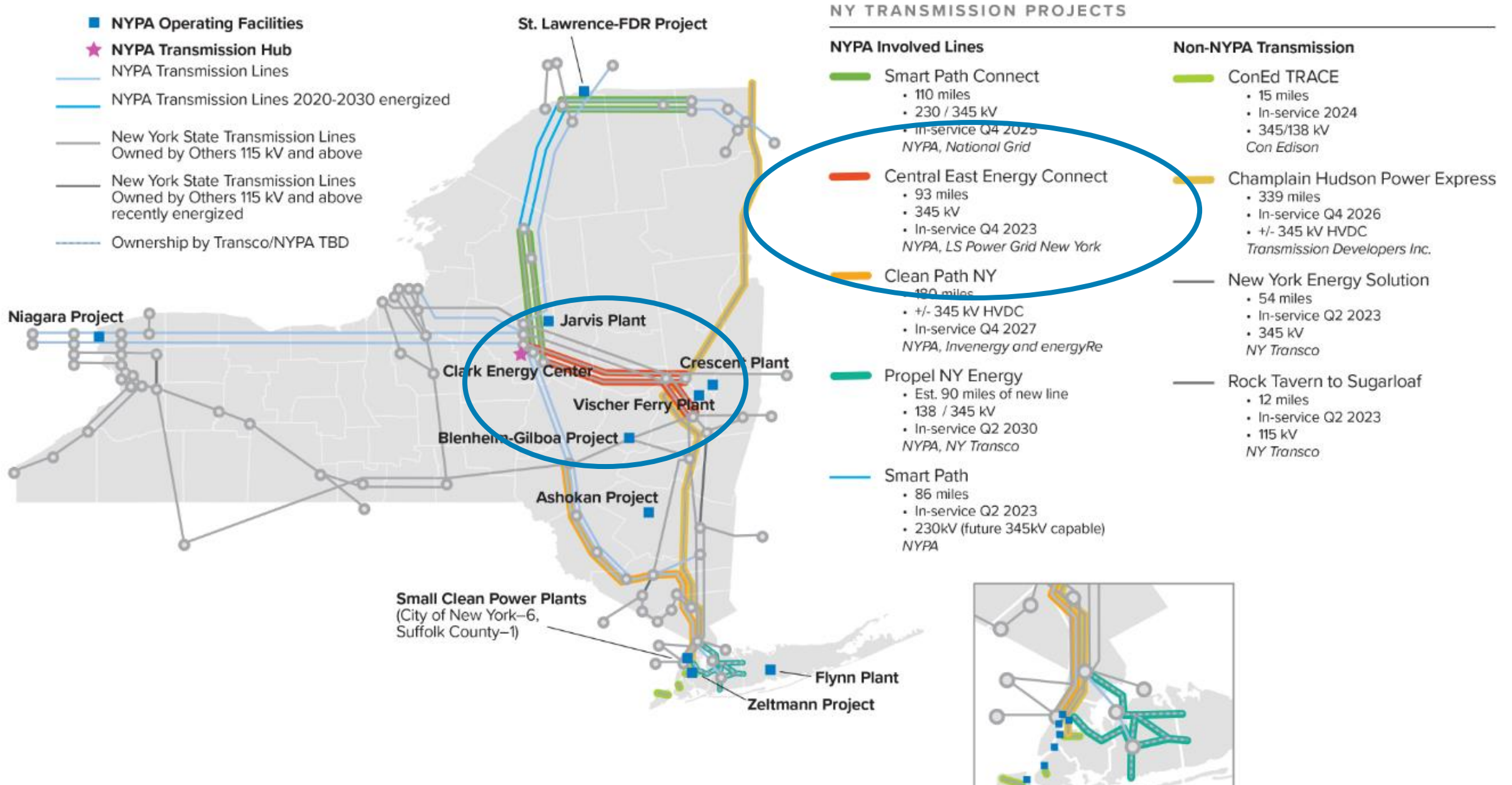
# Proposed Modification to Exception #1 to ARR



Application of Reliability Rules (ARR)

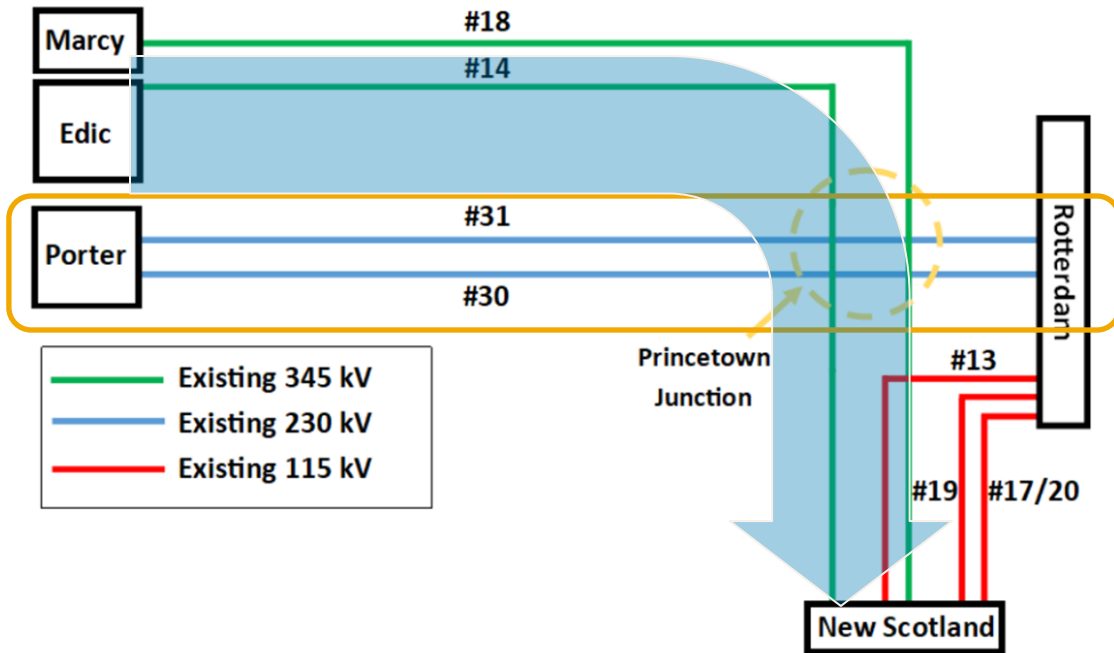
September 30, 2024

# Growing Transmission Capacity in New York State

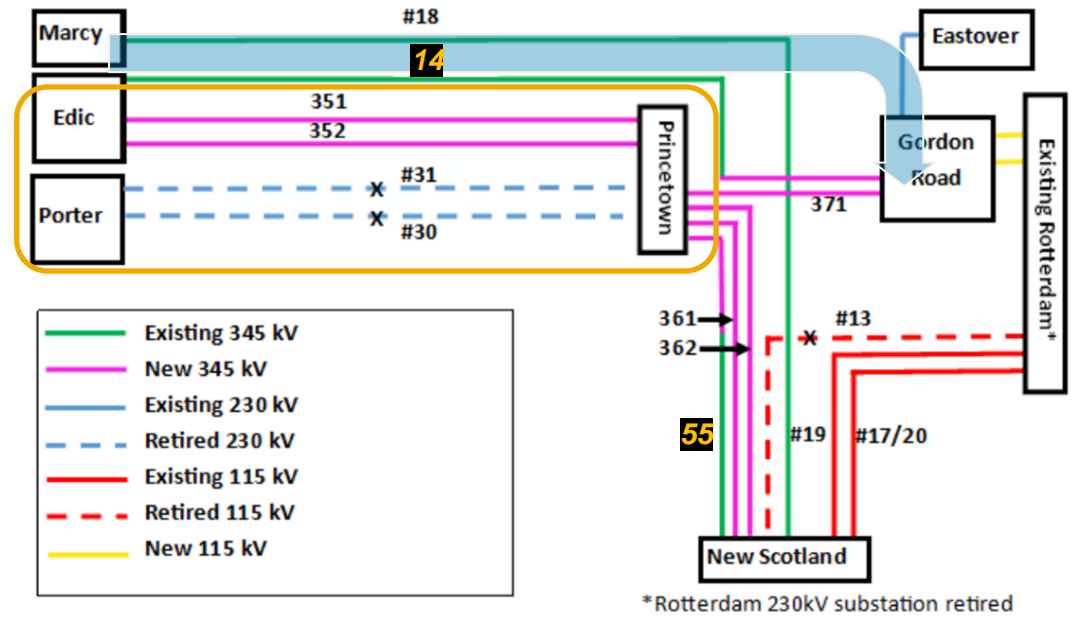


# With Central East Connect Project in-service

**Before**



**Current**



# 345 kV Edic to New Scotland 14 line was modified into Edic to Gordon Road 14 and Princetown to New Scotland 55 lines

ENS-14 line segmented into 14 and 55 lines.



# 230 kV Porter to New Scotland 31 and 32 lines into 345 kV 351 and 352 lines

The 230 kV 31 and 32 lines upgraded into the 345 kV 351 and 352 lines.

# Exception #1 To Reliability Rules: Post Contingency Flow on Marcy-New Scotland



The post-contingency flow on the *Marcy-New Scotland 18* line is allowed to exceed its LTE rating

- for the loss of the *Edic-New Scotland 14* line
  - by the amount of relief that can be obtained by tripping the Gilboa pumping load as a single corrective action.

Also, the post-contingency flow on the *Edic-New Scotland 14* line is allowed to exceed its LTE rating for either the

- loss of the *Marcy-New Scotland 18* line alone or the
- double-circuit loss of the *Marcy-New Scotland 18* and *Adirondack-Porter 12* lines,
- by the amount of relief that can be obtained by tripping the Gilboa pumping load as a single corrective action.

Approved NYPP Operating Committee  
January 27, 1988.

NYSRC Reliability Rule C.1

# NYPA's Request

- **Modify the existing Exception #1 to ARR by modifying circuit names to the new line and,**
- **Incorporate the worst thermal contingency, the new 345 kV double circuit tower contingency.**

# Exceptions to Exceed LTE Allowed For The Following Scenarios

## Existing Exception

### 345 kV UNS-18

- Allowed to exceed LTE for the Loss of **ENS-14**

### 345 kV ENS-14

- Allowed to exceed LTE for the Loss of **UNS-18**.
- Or for the loss double-circuit loss of **UNS-18** and **Porter-12** lines

## Proposed Exception

### 345 kV UNS-18

- Allowed to exceed LTE for the Loss of **14**,
- Or for the loss double-circuit loss of **351** and **352** lines.

### 345 kV **14**

- Allowed to exceed LTE for the Loss of **UNS-18**.
- Or for the loss double-circuit loss of **UNS-18** and **Porter-12** lines,
- Or for the loss double-circuit loss of **351** and **352** lines,

# Is Exception #1 still effective with the new system topology?

NYPA analysis demonstrates dropping BG pumps is still effective at reducing post-contingency overloads on the modified **14**, and UNS-18 lines



# All Line In-Service Contingency Screening Results With BG Offline

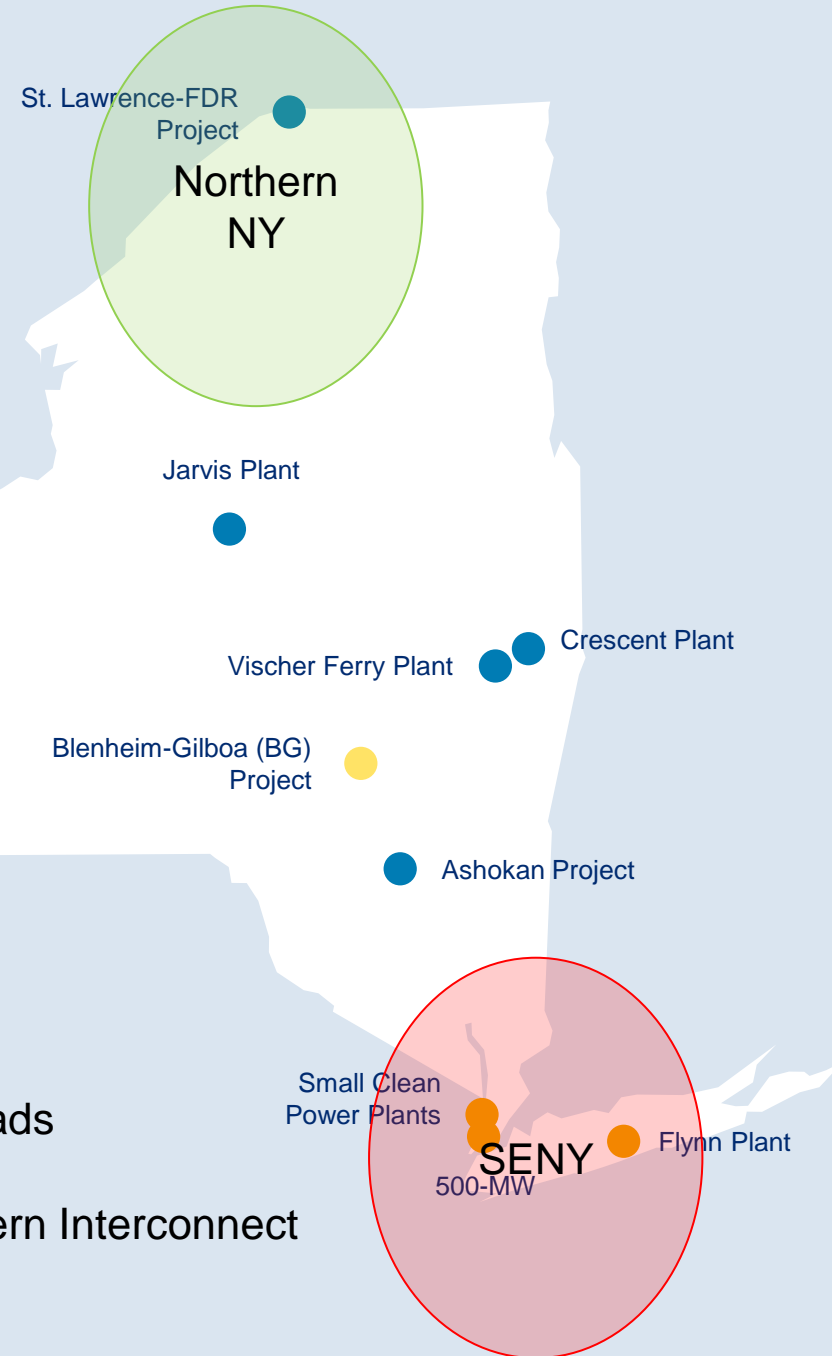
Table 1: All In-Service Screening

Monitored Ckt Name	Monitored Facility	Contingency Name	Base Flow (MVA)	Cont Flow (MVA)	LTE %Loading	STE % Loading
<b>14</b>	137200 EDIC 345 148964 GORDON ROAD 345 1	DCT:EDIC-PRINCETOWN <b>351 / 352</b>	904	1563	<b>102</b>	<b>91</b>
UNS-18	137453 N.SCOT99 345 147833 MARCY T1 345 1	DCT:EDIC-PRINCETOWN <b>351 / 352</b>	1031	1552	94	79
<b>55</b>	137452 N.SCOT77 345 148965 PRNCTWN 345 1	DCT:PRINCETOWN-NSCOT <b>361 / 362</b>	749	1679	94	87
EF24-40	135205 FRAEDCSC 345 137200 EDIC 345 1	T:EDIC-PRINECTOWN <b>352 &amp; UCC2-41</b>	947	1430	80	80
UCC2-41	147833 MARCY T1 345 148059 MARCCSC1 345 1	T:EDIC-PRINCETOWN <b>351 &amp; EF24-40</b>	1093	1427	80	80
UCC2-41	147833 MARCY T1 345 148059 MARCCSC1 345 1	EDIC-FRASER <b>EF2-40</b>	1093	1393	78	78
<b>352</b>	137200 EDIC 345 148965 PRNCTWN 345 2	T:EDIC-PRINCETOWN <b>352 &amp; UCC2-41</b>	999	1487	74	74
<b>351</b>	137200 EDIC 345 148965 PRNCTWN 345 1	T:EDIC-PRINCETOWN <b>351 &amp; EF24-40</b>	997	1460	72	72

# Three Different Generation Reduction Scenarios Used to Partially Correct ACE at 50% and 80%


## NYPA Operating Facilities by Fuel Type

- Hydro
- Pumped Storage
- Gas



## Study Assumptions:

- All Line In-Service
- Central-East stressed to ~ 3850 MW
- Sensitivity analysis with 50% and 80% of the BP pump loads compensated by reductions in Niagara generation
- Remainder of load/gen imbalance dispatched to the Eastern Interconnect



# UNS-18 Post-Contingency Loading And Relief

September 30, 2024

# UNS-18: Different Dispatch Scenarios For Post-Contingency Loading For The Loss Of 14

**Table 2: Loading Of UNS-18 For The Loss Of 14**

Mitigation Action	Base Flow (MVA)	Initial Contingency Flow (MVA)	5 Min Contingency Flow After BG Pump Drop and ACE correction (MVA)		
			SENY	West NY	North NY
None	861	1497	1497		
Trip 1 BG Pump			1483	1455	1449
Trip 2 BG Pumps			1471	1416	1404
Trip 3 BG Pumps			1461	1379	1364
Trip 4 BG Pumps			1451	1343	1324

\* Post-contingency MVA relief when 50% of the pump load lost is offset by decreases in Different Areas

# UNS-18: Different Dispatch Scenarios For Post-Contingency Relief For The Loss Of 14

**Table 3: Load Relief Of UNS-18 For The Loss Of 14**

Mitigation Action	Total Relief Per Dispatch: (MVA)		
	SENY	West NY	North NY
None	-	-	-
Trip 1 BG Pump	14	42	48
Trip 2 BG Pumps	26	81	93
Trip 3 BG Pumps	36	118	133
Trip 4 BG Pumps	46	154	173

\* Post-contingency MVA relief when 50% of the pump load lost is offset by decreases in Different Areas

# UNS-18: Different Dispatch Scenarios For Post-Contingency Loading For The Loss Of 14

**Table 4: Loading Of UNS-18 For The Loss Of 14**

Mitigation Action	Base Flow (MVA)	Initial Contingency Flow (MVA)	5 Min Contingency Flow After BG Pump Drop and ACE correction (MVA)		
			SENY	West NY	North NY
None	861	1497	1497		
Trip 1 BG Pump			1483	1448	1438
Trip 2 BG Pumps			1471	1402	1385
Trip 3 BG Pumps			1461	1359	1336
Trip 4 BG Pumps			1451	1318	1288

\* Post-contingency MVA relief when 80% of the pump load lost is offset by decreases in Different Areas

# UNS-18: Different Dispatch Scenarios For Post-Contingency Relief For The Loss Of 14

**Table 5: Load Relief Of UNS-18 For The Loss Of 14**

Mitigation Action	Total Relief Per Dispatch: (MVA)		
	SENY	West NY	North NY
None	-	-	-
Trip 1 BG Pump	14	49	59
Trip 2 BG Pumps	26	95	112
Trip 3 BG Pumps	36	138	161
Trip 4 BG Pumps	46	179	209

\* Post-contingency MVA relief when 80% of the pump load lost is offset by decreases in Different Areas

# UNS-18: Different Dispatch Scenarios For Post-Contingency Loading For **The Proposed Additional Tower Contingency Loss Of 351 & 352**

**Table 6: Loading Of UNS-18 For Tower Contingency Loss Of **351 & 352****

Mitigation Action	Base Flow (MVA)	Initial Contingency Flow (MVA)	5 Min Contingency Flow After BG Pump Drop and ACE correction (MVA)		
			SENY	West NY	North NY
None	1005	1510	1510		
Trip 1 BG Pump			1510	1466	1458
Trip 2 BG Pumps			1510	1424	1410
Trip 3 BG Pumps			1494	1384	1454
Trip 4 BG Pumps			1480	1346	1494

\* Post-contingency MVA relief when 50% of the pump load lost is offset by decreases in Different Areas



# UNS-18: Different Dispatch Scenarios For Post-Contingency Relief For **The Proposed Additional Tower Contingency Loss Of 351 & 352**

**Table 7: Load Relief Of UNS-18 For The Tower Contingency Loss Of **351 & 352****

Mitigation Action	Total Relief Per Dispatch: (MVA)		
	SENY	West NY	North NY
None	-	-	-
Trip 1 BG Pump	16	45	52
Trip 2 BG Pumps	30	86	100
Trip 3 BG Pumps	43	126	144
Trip 4 BG Pumps	56	164	184

\* Post-contingency MVA relief when 80% of the pump load lost is offset by decreases in Different Areas

# UNS-18: Different Dispatch Scenarios For Post-Contingency Loading For **The Proposed Additional Tower Contingency Loss Of 351 & 352**

**Table 8: Loading Of UNS-18 For Tower Contingency Loss Of **351 & 352****

Mitigation Action	Base Flow (MVA)	Initial Contingency Flow (MVA)	5 Min Contingency Flow After BG Pump Drop and ACE correction (MVA)		
			SENY	West NY	North NY
None	1005	1510	1510		
Trip 1 BG Pump			1494	1458	1446
Trip 2 BG Pumps			1480	1410	1390
Trip 3 BG Pumps			1467	1364	1339
Trip 4 BG Pumps			1455	1320	1295

\* Post-contingency MVA relief when 80% of the pump load lost is offset by decreases in Different Areas

# UNS-18: Different Dispatch Scenarios For Post-Contingency Relief For **The Proposed Additional Tower Contingency Loss Of 351 & 352**

**Table 9: Load Relief Of UNS-18 For The Tower Contingency Loss Of **351 & 352****

Mitigation Action	Total Relief Per Dispatch: (MVA)		
	SENY	West NY	North NY
None	-	-	-
Trip 1 BG Pump	16	52	64
Trip 2 BG Pumps	30	100	121
Trip 3 BG Pumps	43	146	172
Trip 4 BG Pumps	56	190	216

\* Post-contingency MVA relief when 80% of the pump load lost is offset by decreases in Different Areas



**14**

# Post-Contingency Loading And Relief

**September 30, 2024**

# 14: Post-Contingency Loading For The Loss Of UNS-18

**Table 10: Loading Of 14 For Tower Contingency Loss Of UNS-18**

Mitigation Action	Base Flow (MVA)	Initial Contingency Flow (MVA)	5 Min Contingency Flow After BG Pump Drop and ACE correction (MVA)		
			SENY	West NY	North NY
None	861	1050	1050		
Trip 1 BG Pump			1041	1023	1019
Trip 2 BG Pumps			1032	998	991
Trip 3 BG Pumps			1023	976	959
Trip 4 BG Pumps			1014	956	899

- Post-contingency MVA relief when 50% of the pump load lost is offset by decreases in Different Areas
- \* Tower Loss of the UNS-18 & Porter-12 lines has the same loading the loss UNS-18 alone

# 14: Post-Contingency Relief For The Loss Of UNS-18

**Table 11: Load Relief Of 14 For The Tower Contingency Loss Of UNS-18**

Mitigation Action	Total Relief Per Dispatch: (MVA)		
	SENY	West NY	North NY
None	-	-	-
Trip 1 BG Pump	9	27	30
Trip 2 BG Pumps	18	51	58
Trip 3 BG Pumps	27	73	90
Trip 4 BG Pumps	36	93	120

- Post-contingency MVA relief when 50% of the pump load lost is offset by decreases in Different Areas
- \* Tower Loss of the UNS-18 & Porter-12 lines has the same loading the loss UNS-18 alone

# 14: Post-Contingency Loading For The Loss Of UNS-18

**Table 12: Loading Of 14 For Tower Contingency Loss Of UNS-18**

Mitigation Action	Base Flow (MVA)	Initial Contingency Flow (MVA)	5 Min Contingency Flow After BG Pump Drop and ACE correction (MVA)		
			SENY	West NY	North NY
None	861	1050	1050		
Trip 1 BG Pump			1046	1019	1012
Trip 2 BG Pumps			1044	989	979
Trip 3 BG Pumps			1041	961	984
Trip 4 BG Pumps			1038	934	917

- Post-contingency MVA relief when 80% of the pump load lost is offset by decreases in Different Areas
- \* Tower Loss of the UNS-18 Porter-12 lines has the same loading the loss UNS-18 alone

# 14: Post-Contingency Relief For The Loss Of UNS-18

**Table 13: Load Relief Of 14 For The Tower Contingency Loss Of UNS-18**

Mitigation Action	Total Relief Per Dispatch: (MVA)		
	SENY	West NY	North NY
None	-	-	-
Trip 1 BG Pump	3	31	37
Trip 2 BG Pumps	6	60	71
Trip 3 BG Pumps	9	88	103
Trip 4 BG Pumps	12	115	133

- Post-contingency MVA relief when 80% of the pump load lost is offset by decreases in Different Areas
- \* Tower Loss of the UNS-18 Porter-12 lines has the same loading the loss UNS-18 alone



# 14: Different Dispatch Scenarios For Post-Contingency Loading For The Proposed Additional Tower Contingency Loss Of 351 & 352

**Table 14: Loading Of 14 For Tower Contingency Loss Of 351 & 352**

Mitigation Action	Base Flow (MVA)	Initial Contingency Flow (MVA)	5 Min Contingency Flow After BG Pump Drop and ACE correction (MVA)		
			SENY	West NY	North NY
None	861	1497	1497		
Trip 1 BG Pump			1483	1455	1449
Trip 2 BG Pumps			1471	1416	1404
Trip 3 BG Pumps			1461	1379	1364
Trip 4 BG Pumps			1451	1343	1324

\* Post-contingency MVA relief when 50% of the pump load lost is offset by decreases in Different Areas

# 14: Different Dispatch Scenarios For Post-Contingency Relief For The Proposed Additional Tower Contingency Loss Of 351 & 352

**Table 15: Load Relief Of 14 For The Tower Contingency Loss Of 351 & 352**

Mitigation Action	Total Relief Per Dispatch: (MVA)		
	SENY	West NY	North NY
None	-	-	-
Trip 1 BG Pump	14	42	48
Trip 2 BG Pumps	26	81	93
Trip 3 BG Pumps	36	118	133
Trip 4 BG Pumps	46	154	173

- Post-contingency MVA relief when 50% of the pump load lost is offset by decreases in Different Areas

# 14: Different Dispatch Scenarios For Post-Contingency Loading For The Proposed Additional Tower Contingency Loss Of 351 & 352

**Table 16: Loading Of 14 For Tower Contingency Loss Of 351 & 352**

Mitigation Action	Base Flow (MVA)	Initial Contingency Flow (MVA)	5 Min Contingency Flow After BG Pump Drop and ACE correction (MVA)		
			SENY	West NY	North NY
None	861	1497	1497		
Trip 1 BG Pump			1483	1448	1438
Trip 2 BG Pumps			1471	1402	1385
Trip 3 BG Pumps			1461	1359	1336
Trip 4 BG Pumps			1451	1318	1288

\* Post-contingency MVA relief when 80% of the pump load lost is offset by decreases in Different Areas

# 14: Different Dispatch Scenarios For Post-Contingency Relief For **The Proposed Additional Tower Contingency Loss Of 351 & 352**

**Table 17: Load Relief Of 14 For The Tower Contingency Loss Of 351 & 352**

Mitigation Action	Total Relief Per Dispatch: (MVA)		
	SENY	West NY	North NY
None	-	-	-
Trip 1 BG Pump	14	49	59
Trip 2 BG Pumps	26	95	112
Trip 3 BG Pumps	36	138	161
Trip 4 BG Pumps	46	179	209

- Post-contingency MVA relief when 80% of the pump load lost is offset by decreases in Different Areas

# Post-Contingency MVA Relief Expected From Tripping BG Pumps

This table shows a reasonable range of relief when 50% to 80% of the +ACE due to tripped pumps is corrected within Western NY State, with the Eastern Interconnect picking up the Remaining Discrepancy.

**Table 26: Range Of Relief Per Number Of BG Pumps Dropped (MVA)**

Relief On	<u>UNS-18</u>		<u>14</u>	
BG Pumps Tripped	Loss of <u>14</u>	Tower <u>351 &amp; 352</u>	Loss of <u>UNS-18</u> or Tower <u>UNS-18 &amp; P12</u>	Tower <u>351 &amp; 352</u>
1	32 – 38	16 – 64	3 – 37	14 – 59
2	64 – 74	30 – 112	6 – 71	26 – 112
3	93 – 109	43 – 172	9 – 103	36 – 161
4	122 – 143	56 – 216	12 – 133	46 – 209

# Maintenance Outage Screening Results (N-1-1 Analysis) Show the Value in Integrating Additional Contingencies

September 30, 2024

# N-1-1 Results

**Table 27: Maintenance Screening**

Maintenance Outage Scenario	Monitored Circuit	Contingency Name	Base Flow (MVA)	Cont Flow (MVA)	% LTE	% STE
NSCOT345BS77	UNS-18	T: Edic - Princetown <b>352</b> & 41	1239	1635	99.1	83.0
NSCOT345BS77	UNS-18	T: Edic - Princetown <b>351</b> & 40	1239	1617	98.0	82.0
NSCOT345BS77	EF24-40	T: Edic - Princetown <b>352</b> & 41	1205	1734	96.7	96.7
DCT:PRINCNTWN-NSCOT <b>361/362</b>	UNS-18	<b>T: Edic - Princetown 351 &amp; 352</b>	1160	1573	95.4	79.8
NSCOT345BS66K	UNS-18	<b>T: Edic - Princetown 351 &amp; 352</b>	1142	1563	94.7	79.3
DCT:PRINCNTWN-NSCOT <b>361/362</b>	UNS-18	T: Edic - Princetown <b>352</b> & 41	1160	1557	94.4	79.0
NSCOT345BS66K	UNS-18	T: Edic - Princetown <b>352</b> & 41	1142	1551	94.0	78.7
NSCOT345BS66K	UNS-18	New Scot 345 Bus 77	1142	1550	93.9	78.6
NSCOT345BS77	UNS-18	<b>T: Edic - Princetown 351 &amp; 352</b>	1239	1543	93.5	78.3
NSCOT345BS66K	<b>14</b>	<b>T: Edic - Princetown 351 &amp; 352</b>	778	1432	93.1	83.1
DCT:PRINCNTWN-NSCOT <b>361/362</b>	<b>14</b>	<b>T: Edic - Princetown 351 &amp; 352</b>	781	1431	93.1	83.0
NSCOT345BS77	UNS-18	New Scot 345 Bus 66K	1239	1535	93.1	77.9
NSCOT345BS66K	EF24-40	T: Edic - Princetown <b>352</b> & 41	1153	1665	92.9	92.9
DCT:PRINCNTWN-NSCOT <b>361/362</b>	UNS-18	New Scot 345 Bus 77	1160	1532	92.9	77.7
DCT:PRINCNTWN-NSCOT <b>361/362</b>	UNS-18	T: Edic - Princetown <b>351</b> & 40	1160	1526	92.5	77.4
NSCOT345BS66K	UNS-18	T: Edic - Princetown <b>352</b> & 41	1142	1518	92.0	77.0

Blenheim-Gilboa

# The Transmission System is Changing; This Exception Provides Operational Flexibility Under Challenging Conditions

September 30, 2024



# Tripping B-G Pumping Loads Remains Effective in Reducing Overloads

The steady-state analysis shows removing B-G pumping load remains an effective method for decreasing west-to-east flows from Central New York to the Capital District.



# Proposed Exception #1 To Reliability RULES: Post Contingency Flow on Marcy-New Scotland



- The post-contingency flow on the *Marcy-New Scotland 18* line is allowed to exceed its LTE rating for the loss of the *Edic-Gordon Road 14* line or the double-circuit loss of the *Edic-Princetown 351 and 352*, by the amount of relief that can be obtained by tripping the Gilboa pumping load as a single corrective action.
- Also, the post-contingency flow on the *Edic-Gordon Road 14* line is allowed to exceed its LTE rating for either the loss of the *Marcy-New Scotland 18* line alone, or the double-circuit loss of the *Marcy-New Scotland 18* and *Adirondack-Porter 12* lines, or the double-circuit loss of the *Edic-Princetown 351 and 352* by the amount of relief that can be obtained by tripping the Gilboa pumping load as a single corrective action.

NYSRC Reliability Rule C.1

# Contact Info

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NYPA Operations Planning

## Brent A. Blanchard

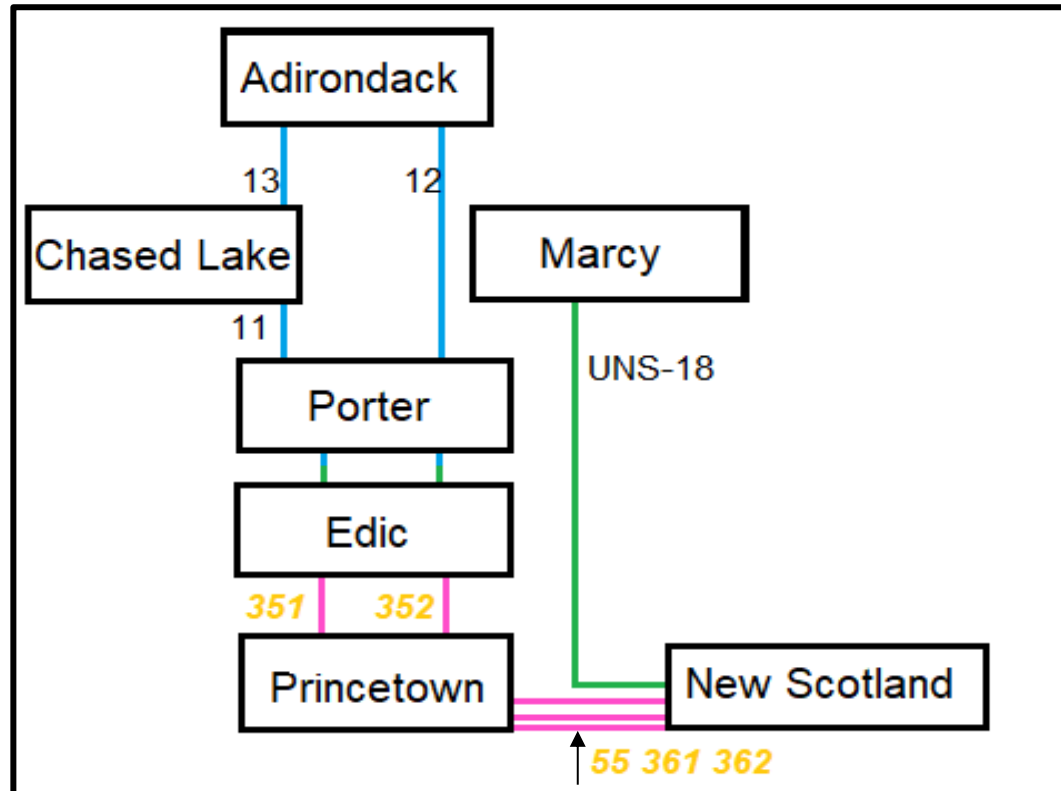
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# Northern New York to Central East Topology





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**Thank  
You**