

2018 Intermediate Area Transmission Review (ATR)

Overview

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2018 Intermediate ATR

- **Purpose of the assessment is to demonstrate New York Bulk Power Transmission Facilities (BPTF) conformance with:**
 - NPCC Design Criteria
 - NYSRC Reliability Rules
- **Facilities**
 - BPTF defined by NYISO Open Access Transmission Tariff
 - BPTF includes all Bulk Power System (BPS) facilities plus certain non-BPS facilities
 - The study year for this assessment is Year 2023

Facilities Included in this Review

- **The New York Control Area (NYCA) representation is from the 2018 FERC 715 filing with updates according to the NYISO 2018 Gold Book (GB). Significant changes to transmission and generation compared to the 2015 ATR include:**
 - **Transmission**
 - 2018 GB Section VII Transmission Owner ‘firm’ projects are included
 - Firm projects are those which have been reported by TOs as being sufficiently firm, and either (i) have an Operating Committee approved System Impact Study (if applicable) and, for projects subject to Article VII, have a determination from New York Public Service Commission that the Article VII application is in compliance with Public Service Law § 122, or (ii) is under construction and is scheduled to be in-service prior to June 1 of the current year.
 - NextEra Energy Transmission NY Western NY – Empire State Line Project
 - **Generation**
 - Additions: CPV Valley, Cricket Valley
 - Deactivations: Indian Point 2 and 3, Selkirk 1 and 2
- **External NYCA representation is from the 2017 ERAG Multi-regional Modeling Working Group (MMWG) series library cases**

Load and Capacity

Description	Comprehensive Review:	Intermediate Review:	Change From Previous CATR
	2015 Forecast for Summer 2020	2018 Forecast for Summer 2023	
Peak Load (MW)	34,309	32,284	-2,025
Total Capacity (MW)	43,779	40,198	-3,581
Reserve Margin	27%	24%	-3%

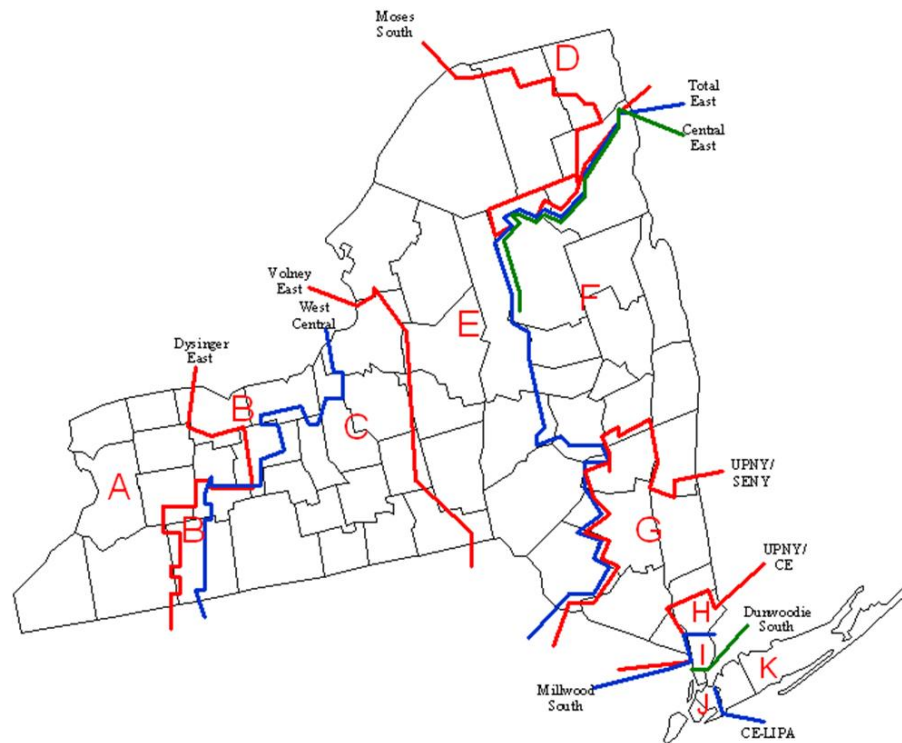
2018 ATR Assessments & Evaluations

- **Steady-State and Stability Assessment**
 - 2023 summer peak load base case
 - N-1
 - N-1-1
- **Short Circuit Assessment**
 - 2023 summer peak load base case
- **Extreme Contingency Assessment**
 - 2023 summer peak load base case
 - Performed at transfer levels expected to occur 75% of the time on a load flow duration basis
- **Extreme System Condition Assessment**
 - Extreme Weather (2023 90/10 load)
 - Fuel Shortage (2023/24 winter peak load)
- **Assessment of planned system expansion or reconfiguration plans on the NYCA system restoration plan**
- **The following assessments/evaluations relied on the conclusions from the 2015 Comprehensive ATR**
 - Review of Special Protection Systems
 - Review of Dynamic Control Systems
 - Review of Exclusions to Directory #1 Criteria

Transfer Analysis

- Thermal, voltage, and stability analysis is performed in accordance with the NYISO Methodology for Assessment of Transfer Capability in the Near-Term Transmission Planning Horizon
- Transfer levels are created by proportionally shifting generation across the interface under evaluation
 - Generation resources in source and sink areas are adjusted uniformly to allow for equal participation of generators based on their reserve power ratio
- Stability margin transfer cases are built at interface transfer levels 10% higher than the more limiting of the emergency thermal or voltage limits (NYISO Transmission Planning Guideline #3-1)

NY Internal Interfaces



Thermal Transfer Analysis – Intra Area (Normal)

Interface	2015 Comprehensive Review	2018 Intermediate Review
	Study Year 2020	Study Year 2023
Dysinger East	1,750	1,725
West Central	400	500
Volney East	4,125	4,225
Moses South	2,350	2,300
Central East	2,350	2,725
Total East	4,850	4,850
UPNY-SENY	5,075	4,975
UPNY-ConEd	4,950	6,875
Sprain Brook-Dunwoodie South	5,625	5,700
Long Island Import	1,700	1,675

Thermal Transfer Analysis – Inter Area (Normal)

Interface	2015 Comprehensive Review	2018 Intermediate Review
	(Study Year 2020)	(Study Year 2023)
New York – New England	1,125	1,725
New England – New York	1,500	1,000
New York – Ontario	1,600	1,650
Ontario – New York	1,850	2,025
New York – PJM	2,475	2,675
PJM – New York	3,100	3,225

Assessment of Planning Transfer Capability

Interface	2015 Comprehensive Review (Study Year 2020)				2018 Intermediate Review (Study Year 2023)			
	Normal (MW)		Emergency (MW)		Normal (MW)		Emergency (MW)	
Dysinger East	1,750	T	2,325	T	1,725	T	2,600	T
West Central	400	T	975	T	500	T	1,375	T
Volney East	4,125	T	4,300	V	4,225	T	4,400	V
Moses South	2,350	T	2,350	T	2,300	T	2,300	T
Central East	2,350	T	2,650	T/V	2,700	V	2,700	V
Total East	4,850	T	5,100	T	4,850	T	5,225	T
UPNY-SENY	5,075	T	5,300	T	4,975	T	5,475	T
UPNY-ConEd	4,950	T	5,550	V	6,875	T	7,375	V
Sprain Brook-Dunwoodie South	5,257	V	5,275	V	5,125	V	5,125	V
Long Island Import	1,700	T	2,250	T	1,675	T	2,200	T

Steady State Transmission Security Analysis

- Under N-0, N-1, N-1-0 and N-1-1 conditions, the steady state analysis showed no observed thermal or voltage violations on the BPTF

Stability Transmission Security Analysis

- The stability analysis results show that the system response to N-1 and N-1-1 events is stable and damped.

Fault Current Assessment

- The study performed in the ATR evaluates the fault duty at BPTF and other critical buses
- For this assessment
 - Transmission lines and transformers are modeled in their normal operating condition
 - All generating units are modeled in-service
 - Current limiting series reactor protocols are respected

Fault Current Assessment Results

- No overdutied breakers are observed in this assessment

Extreme Contingency Assessment

- **Steady state and stability extreme contingencies are considered very low probability events**
- **For the Extreme Contingencies as defined by NPCC and NYSRC, power flow and stability analyses indicate the system would be stable and would not cause significant thermal or voltage problems over a widespread area. In a few cases, loss of local load within an area due to low-voltage or first-swing instability of isolated generators would be confined to the NYCA.**

Extreme System Condition – Extreme Weather

- Extreme weather analysis uses the same assumptions for the 2023 baseline case with load scaled to the 90th percentile forecast
- Evaluations include steady state and stability N-1 analysis

Zone	A	B	C	D	E	F	G	H	I	J	K	NYCA
Baseline	2,742	1,971	2,747	713	1,253	2,258	2,129	666	1,435	11,194	5,176	32,284
90th Percentile	2,916	2,096	2,921	758	1,333	2,417	2,279	693	1,493	11,549	5,634	34,089
Delta	174	125	174	45	80	159	150	27	58	355	458	1,805

Extreme System Condition – Extreme Weather

- **The steady state analysis showed no thermal or voltage violations on the BPTF**
- **For dynamic analysis, all contingencies evaluated are stable, damped, and no generating unit lost synchronism other than by fault clearing action or special protection system response**

Extreme System Condition – Fuel Shortage

- Fuel shortage assessment assumes the condition of a natural gas fuel shortage using winter peak load conditions
- NYCA generators that are assumed as unavailable include:
 - Gas-only units, and
 - Consideration of dual-fuel units that contain limitations on the amount of oil they can burn
- The total reduction in generating capability is approximately 7,500 MW

Extreme System Condition – Fuel Shortage

- The steady state analysis showed no thermal or voltage violations on the BPTF
- For dynamic analysis, all contingencies evaluated are stable, damped, and no generating unit lost synchronism other than by fault clearing action or special protection system response
 - An instance of a single line to ground fault near Marcy which is positively damped but has large oscillations was observed
 - The analysis showed that additional power system stabilizers in units in the Oswego complex would greatly improve the observed damping concerns for this event

Review of Special Protection Systems and Dynamic Control systems

- The 2018 ATR relied on the Special Protection System and Dynamic Control System evaluations performed in the 2015 Comprehensive ATR

Review of Exclusions from NPCC Basic Criteria

- NYISO has no existing exclusions to NPCC Design Criteria and makes no requests for new exclusions

Conclusion

- The New York State BPTF as planned through 2023, conforms to planning reliability criteria described in NPCC Directory #1 and NYSRC Reliability Rules

2019 Area Transmission Review

- The NYISO proposes to perform an Interim Level review in 2019 with a tentative planned completion date by December 2019

The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policy makers, stakeholders and investors in the power system



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