

LONG RANGE TRANSMISSION PLAN (2009-2018)

ESPWG/TPAS Meeting
October 16, 2009
NYISO

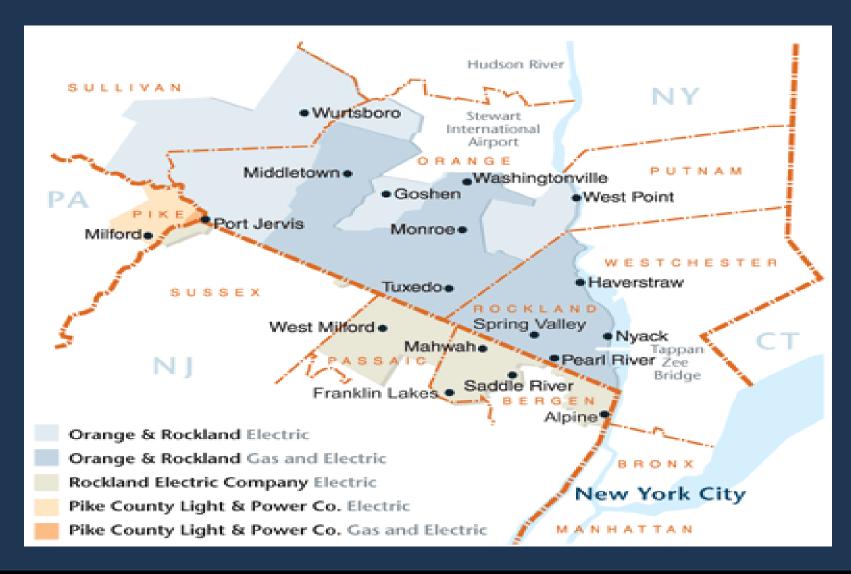


PRESENTATION OUTLINE

- O & R SYSTEM
- LONG TERM TRANSMISSION PLAN
- BASE CASE MAJOR ASSUMPTIONS
- SYSTEM ASSESSMENTS
 - ASSESSMENT CRITERIA
- LOCAL PLANS AND ASSESSMENT RESULTS
- O & R LTP CONTACTS



O & R SERVICE TERRITORY





O & R TRANSMISSION SYSTEM

RTO	ZONE	COUNTIES
NYISO	G	Rockland, Orange, Sullivan
PJM	East MAAC	Bergen, Passaic, Pike (PA)

- BPS interfaces with Consolidated Edison, Central Hudson, NYPA and PSEG (RECO).
- Six (6) 345 kV stations (includes South Mahwah-RECO) and one (1) 115/69 kV station.
- 513 miles of electric transmission lines (69 kV, 138 kV and 345 kV).
- All time system peak: 1617 MW (8/2/06) includes RECO.
- Total Electric Customers: 300,000 (approx.)

LONG RANGE TRANSMISSION PLAN

- Objective of plan: reliably serve forecasted loads.
- 10-year planning horizon (2009-2018).
- Modeled system conditions of O & R's three divisions:
 - Eastern Division (Rockland County and Bergen County, NJ -RECO)
 - Central Division (Orange County and portions of Passaic County, NJ - RECO).
 - Western Division (Orange County, Sullivan County and Pike County, PA - PIKE).
- Based on the approved 2009-2013 O & R budget.
 - Plan may change due to changing future conditions.

LONG RANGE TRANSMISSION PLAN

- Facilities Covered by Plan:
 - Transmission Lines
 - 69 kV, 138 kV and 345 kV
 - Transmission Substations
 - 345/138 kV banks
 - 138/69 kV banks
 - High Voltage System (Distribution Substations)
 - Capacitor bank installations
 - Breaker replacements

BASE CASE MAJOR ASSUMPTIONS

SUMMER YEAR	PEAK LOAD (MW)	NEW GEN. PLANTS	DSM (MW)	CAPITAL PROJECTS
2009	1660	NONE	4.8	In-service prior to Sum2009
2013	1795	NONE	40.6	In-service prior to Sum2013
2018	2005	NONE	57.0	In-service prior to Sum2018

SYSTEM ASSESSMENTS

- Thermal
- Voltage
- Short Circuit
- Under-Frequency Load Shedding
- Extreme Contingencies
- Breaker Replacements Due to Age

ASSESSMENT CRITERIA

THERMAL

- Normal Operating Conditions:
 - Below Normal Rating of Equipment
- N-1 Operating Conditions:
 - Below Long-Term Emergency Ratings of Equipment.

VOLTAGE

- Normal Operating Conditions:
 - 0.95 < Bus voltage < 1.05
- N-1 Operating Conditions:
 - 0.95 < Bus voltage < 1.05

ASSESSMENT CRITERIA

SHORT CIRCUIT

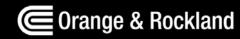
 Short circuit flow during 3-phase, 2-phase or single phase to ground faults not to exceed short-circuit rating of equipment.

UNDER-FREQUENCY RELAYS

- NPCC
 - First Setting(59.3 Hz): 10% of previous year's peak
 - Plus 25% of curtailables and co-generation
 - Second Setting (58.8): 15% of previous year's peak.

– RFC

- First Setting: 10% of the year's forecasted peak (59.3 Hz)
- Second Setting: 10% of the year's forecasted peak (58.9 Hz)
- Third Setting: 10% of the year's forecasted peak (58.5)



ASSESSMENT CRITERIA

- EXTREME CONTINGENCIES
 - Gauge the overall impact involving multiple contingencies and identify mitigating actions to minimize the impact.
- BREAKER REPLACEMENTS DUE TO AGE

EASTERN DIVISION			
PROJECT DESCRIPTION	PROPOSED IN- SERVICE	CRITERIA VIOLATIONS	
345 kV Line North Rockland Station	December 2013	Thermal, Voltage	
69kV Line 55 Upgrade to 138kV	December 2015	Thermal, Voltage	

EASTERN DIVISION		
PROPOSED IN- SERVICE	CRITERIA VIOLATION	
Snake Hill (2010) Little Tor (2010) New Hempstead (2012) New Tappan (2013) Montvale (2013) Pomona (2015) West Nyack (2015)	Voltage	
	PROPOSED IN- SERVICE Snake Hill (2010) Little Tor (2010) New Hempstead (2012) New Tappan (2013) Montvale (2013) Pomona (2015)	

EASTERN DIVISION			
PROJECT DESCRIPTION	PROPOSED IN- SERVICE	CRITERIA VIOLATION	
Short Circuit Affected Breakers	NONE	-	
Breaker Replacements	2011 (West Haverstraw, Burns, Ramapo)	Equipment Age	

CENTRAL DIVISION			
PROJECT DESCRIPTION	PROPOSED IN- SERVICE	CRITERIA VIOLATION	
Line 28 Ramapo To Sugarloaf	June 2010	Thermal	
Sterling Forest 138/69 kV Transformer Installation	May 2015	Voltage	

CENTRAL DIVISION		
PROJECT DESCRIPTION	PROPOSED IN- SERVICE	CRITERIA VIOLATIONS
Capacitor Banks (32 MVars)	Hartley (2011) West Warwick (2012) Woodbury (2016)	Voltage

CENTRAL DIVISION			
PROJECT DESCRIPTION	PROPOSED IN- SERVICE	CRITERIA VIOLATION	
Short Circuit Affected Breakers	NONE	-	
Breaker Replacements	2011 (Sugarloaf)	Equipment Age	

WESTERN DIVISION			
PROJECT DESCRIPTION	PROPOSED IN- SERVICE	CRITERIA VIOLATIONS	
Cuddebackville 345 KV Station	December 2016	Thermal, Voltage	

WESTERN DIVISION			
PROJECT DESCRITION	PROPOSED IN- SERVICE	CRITERIA VIOLATION	
Capacitor Banks (16 MVars)	Pocatello (2014) Fair Oaks (2015) Milford (2016)	Voltage	

WESTERN DIVISION			
PROJECT DESCRIPTION	PROPOSED IN- SERVICE	CRITERIA VIOLATION	
Short Circuit Affected Breakers	NONE	<u>-</u>	
Breaker Replacements	NONE	NONE	

O & R LTP CONTACTS

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