



Orange & Rockland

# 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.)

4

# 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:
  - $0.95 < \text{Bus voltage} < 1.05$
- N-1 Operating Conditions:
  - $0.95 < \text{Bus voltage} < 1.05$

# 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**

# LOCAL PLANS AND ASSESSMENT RESULTS

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

12

# LOCAL PLANS AND ASSESSMENT RESULTS

## EASTERN DIVISION

PROJECT DESCRIPTION	PROPOSED IN-SERVICE	CRITERIA VIOLATION
Capacitor Banks (32 MVars)	Snake Hill (2010) Little Tor (2010) New Hempstead (2012) New Tappan (2013) Montvale (2013) Pomona (2015) West Nyack (2015) Central Rockland (2017)	Voltage

13

# LOCAL PLANS AND ASSESSMENT RESULTS

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

# LOCAL PLANS AND ASSESSMENT RESULTS

## 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

# LOCAL PLANS AND ASSESSMENT RESULTS

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



# LOCAL PLANS AND ASSESSMENT RESULTS

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

# LOCAL PLANS AND ASSESSMENT RESULTS

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

# LOCAL PLANS AND ASSESSMENT RESULTS

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

# LOCAL PLANS AND ASSESSMENT RESULTS

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

# O & R LTP CONTACTS

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