

Section 6: 2012 Retool Study



6.0: Overview

6.0.1 – Summary of Key Modeling Assumptions

In recognition of the dynamic nature of study assumptions, PJM's 2009 RTEP analysis included a retool assessment of the 2012 system, originally conducted as part of the 2007 RTEP process and reanalyzed in PJM's 2008 RTEP analysis.

Retool analysis provides PJM with the opportunity to address uncertainties associated with prior upgrade decisions and identify whether they are still required when originally identified. PJM incorporated a number of changes into the 2009 RTEP retool analysis to reflect changes which have occurred since 2007. Results of the 2007 RTEP analysis are available in the 2007 RTEP Report which is available at: <http://www.pjm.com/documents/reports/rtep-report/2007-rtep.aspx>.

Generation

With respect to the 2009 RTEP Retool of the 2012 system, all generation expected to be in service by June 1, 2012 was modeled, based on the criteria for inclusion in the RTEP analysis as described in **Section 2.3**.

2009 Load Forecast vs 2007 Forecast, for 2012

Load forecasting is a fundamental driver of resource adequacy requirements and transmission expansion plans. PJM issued a new load forecast report in January 2009 for 2009 through 2024. PJM RTO load for 2012 was forecasted to be 144,613 MW, a reduction of 4,074 MW (2.7 percent) from the 2007 PJM Load Forecast for 2012. The 2009 PJM Load Forecast for the Mid-Atlantic region for 2012 was 63,556 MW, a reduction of 1,083 MW (1.7 percent) from the 2007 PJM Load Forecast for 2012.

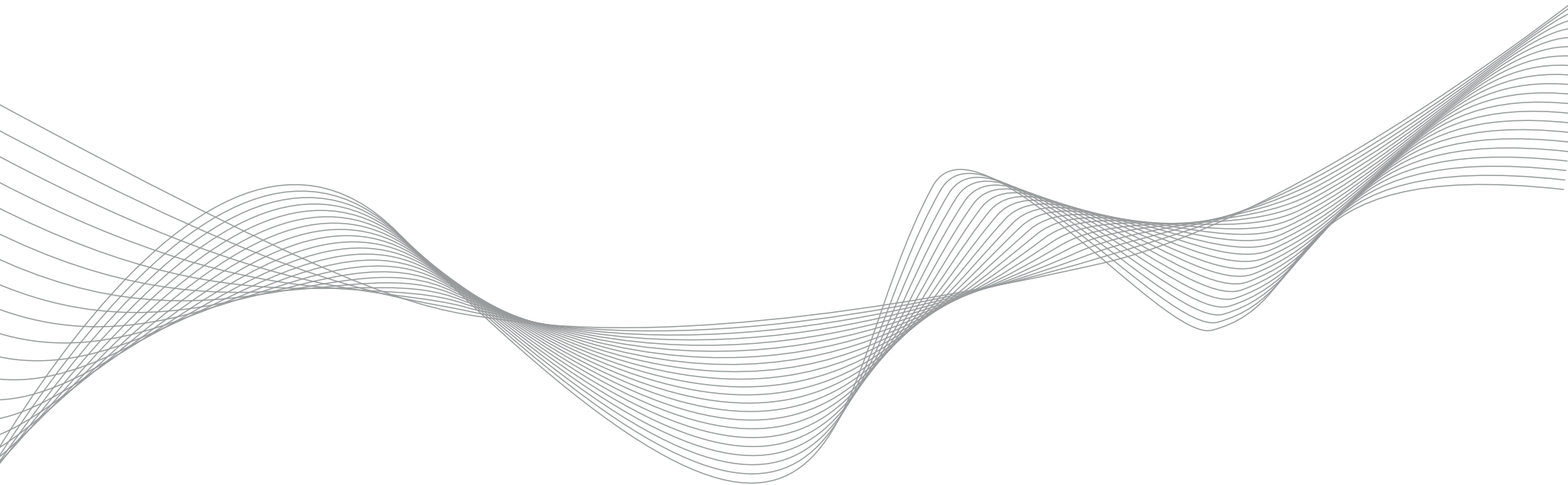
Please refer to **Section 2.1.3** for detailed forecast comparisons and load growth projections including RTO and Mid-Atlantic load forecast trends, respectively.

Load Management

In more recent RTEPs, significant attention has been paid to facilities proposed to export capacity and energy from PJM to New York

Network Topology

Upgrades approved by the PJM Board since the 2007 RTEP as well as merchant transmission projects which expected to be in service by June 1, 2012, were incorporated into the 2009 retool analysis for the 2010 system. Interchange values used in the 2009 retool analysis of the 2012 system were consistent with approved long-term firm transmission service requests in PJM's OASIS system.



PJM

DE

DC

IL

IN

KY

MD

MI

NJ

NC

OH

PA

TN

VA

WV

6.1: Susquehanna - Lackawanna - Jefferson - Roseland (SR)

6.1.1 – Background

The PJM Board of Managers approved the Susquehanna - Roseland 500 kV line in 2007 to resolve numerous overloads on critical 230 kV circuits across Eastern Pennsylvania and Northern New Jersey beginning in 2012.

In the 2008 RTEP Retool, PJM validated the required June 1, 2012 in-service date for this project. Twenty reliability criteria violations were identified in Eastern Pennsylvania and New Jersey beginning in 2012. Results of these RTEP analyses can be reviewed in the 2007 and 2008 RTEP Reports which are available at: <http://www.pjm.com/documents/reports/rtep-report/2007-rtep.aspx>.

6.1.2 – Confirming 2012 In-Service Date

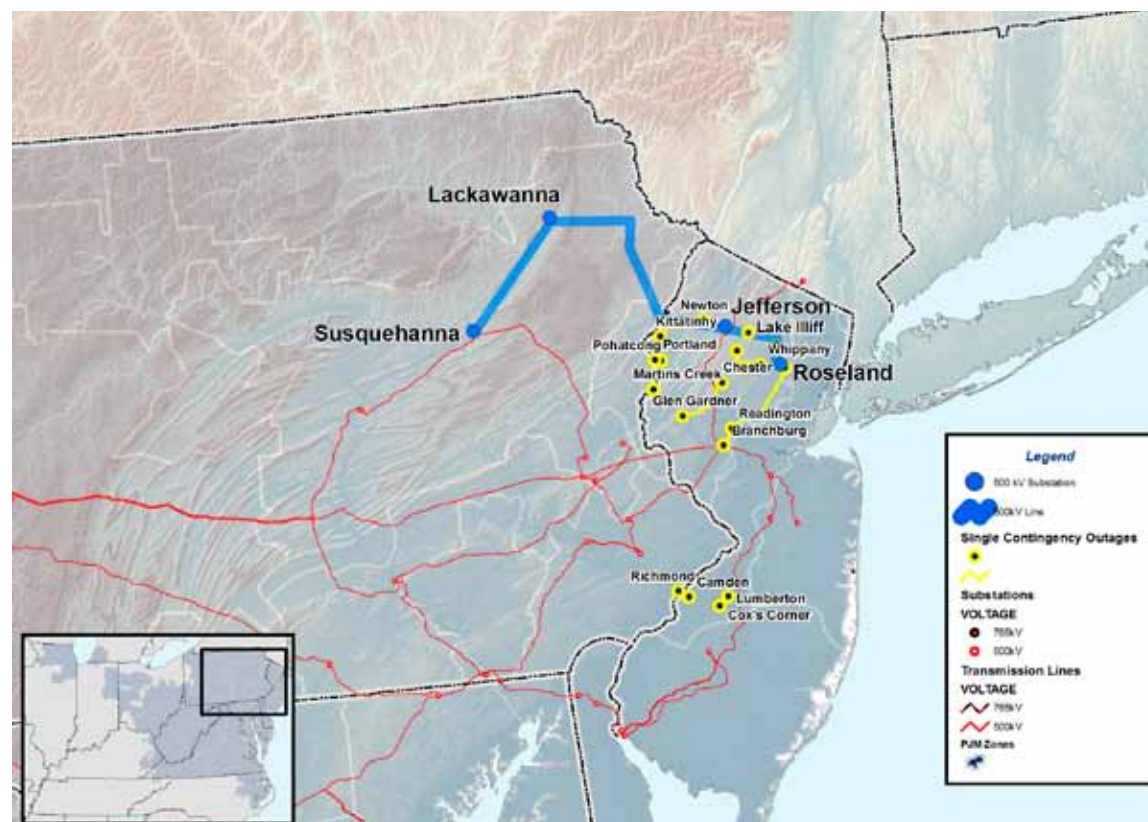
PJM's 2009 RTEP retool analysis for 2012 included an assessment of the continued need for the Susquehanna - Roseland 500 kV line, shown on Map 6.1. Based on the identification of 13 thermal overloads and 10 double circuit tower line outage overloads, PJM re-validated the required June 1, 2012 in-service date for the line.

PJM's 2009 retool EMAAC deliverability analysis identified 13 NERC Category B reliability criteria violations and 10 NERC Category C Double Circuit Tower Line contingency (DCTL) violations.

Category B Contingencies

Table 6.1 lists the 13 lines expected to be overloaded due to NERC Category B single

Map 6.1: Susquehanna - Roseland 500 kV Transmission Line



The right-of-way route shown on this map is for illustrative purposes only and may not depict the actual route that may eventually be chosen. Substation locations may also be modified if more beneficial connections are determined by PJM.

contingency events throughout the fifteen year planning horizon. EMAAC deliverability analysis identified these violations as part of test conducted for compliance with NERC Reliability Standard TPL-002. These overloads are shown on Map 6.1.

NERC Category C / DCTL Contingencies

Table 6.2 depicts ten transmission lines that are expected to be overloaded throughout PJM’s 15-year planning horizon due to the outage of two lines that are located on a common structure. These lines are expected to be overloaded based on common mode contingency tests, described in Section 3.2 and 3.3, These violations are also reflected on Map 6.1.

Table 6.1: 2012 Retool: Category B Violations Driving SR Need

Overloaded Facilities: Category B Contingencies			
Fr Name	To Name	kV	Year Overloaded
Readington	Roseland	230	2012
Branchburg	Readington	230	2012
Greystone	Whippany	230	2013
Whippany	Roseland	230	2013
Montville	Roseland	230	2016
Martins Creek	Portland	230	2016
Richmond	Camden	230	2017
Kittatinny	Pohatcong	230	2018
West Wharton	Greystone	230	2018
Glenn Gardner	Chester	230	2019
Kittatinny	Newton	230	2021
Newton	Lake Iliff	230	2022
Coxs Corner	Lumberton	230	2022

Table 6.2: 2012 Retool: Category C Violations Driving SR Need

Overloaded Facilities: Category C / DCTL Coningencies			
Fr Name	To Name	kV	Year Overloaded
Newton	Lake Iliff	230	2012
Kittatinny	Newton	230	2012
Lake Iliff	Montville	230	2012
Greystone	Whippany	230	2012
West Wharton	Greystone	230	2012
Martins Creek	Portland	230	2013
Kittatinny	Pohatcong	230	2014
Portland	Kittatinny	230	2015
Glenn Gardner	Chester	230	2015
Martins Creek	Morris Park	230	2021

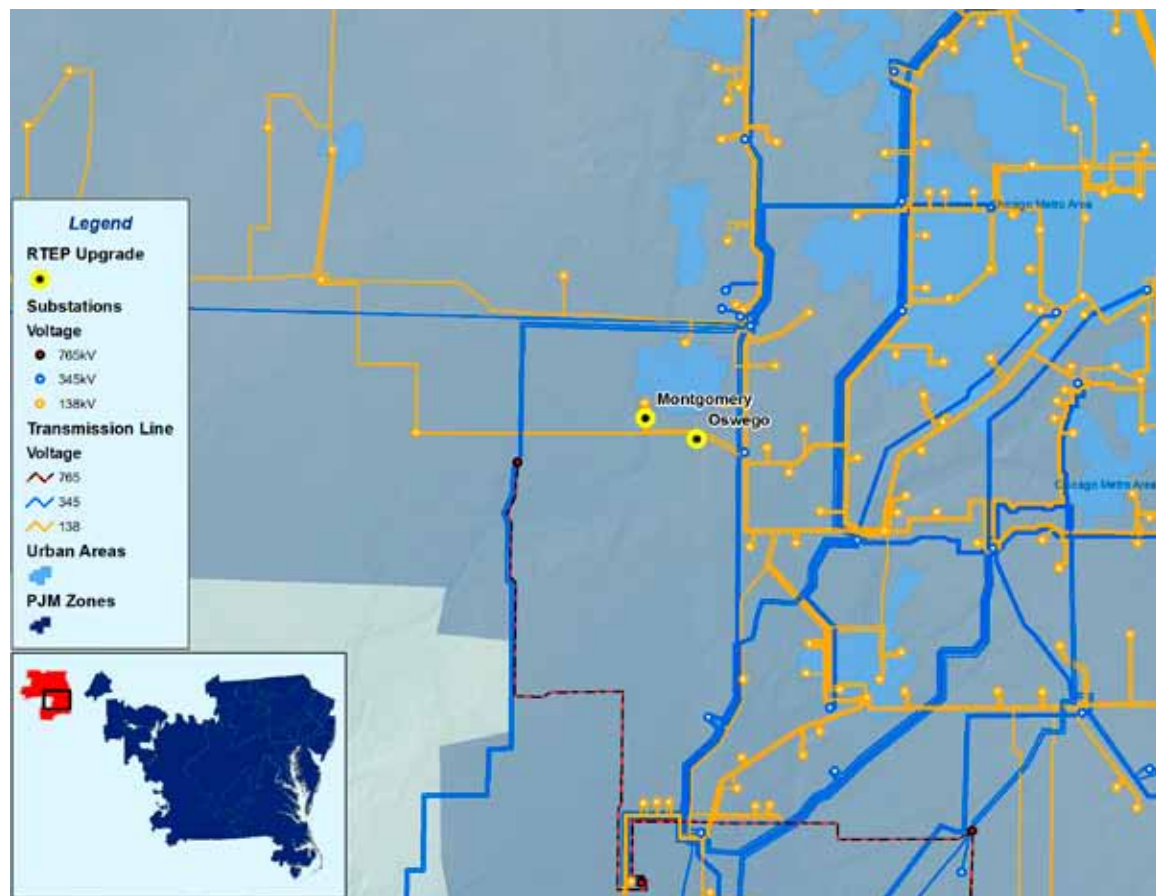


6.2: Additional Baseline Retool Results

Western PJM / ComEd

The 2007 RTEP identified a thermal overload of 138 kV line 14304 between Oswego TDC 592 to Montgomery TSS 106, as identified in PJM's generator deliverability test. The approved solution was to increase the capacity of 138 kV line 14304 between Oswego TDC 592 to Montgomery TSS 106, shown on Map 6.2a. A 2012 retool analysis as part of PJM's 2009 RTEP cycle indicated that upgrade can be deferred beyond 2012. In 2013, the planned addition of the Plano 345/138 kV transformer eliminates the need for this upgrade. This upgrade has been cancelled and formally removed from PJM's RTEP.

Map 6.2a: Western PJM / ComEd



Western PJM / Duquesne

PJM's 2007 RTEP identified a thermal overload of Carson – Oakland 138 kV and Arsenal – Brunot Island 138 kV for Category C-3 type contingencies in 2012. The approved RTEP solution is to build a new 345/138 kV substation at Brady and construct a new Carson - Brady - Brunot Island 345 kV line, shown on Map 6.2b. PJM's 2009 retool using 2012 RTEP assumptions indicated that these upgrades can be deferred to 2013.

Map 6.2b: Western PJM / Duquesne

