Long Term Reactive Plan
In 2006 the Planning Committee approved including reactive planning for a 10 year RTEP model.

Analysis focuses on 345 kV, 500 kV and 765 kV to determine the more global reactive needs in year 10 – 2018.

Analysis is limited to areas of the system where thermal problems were identified in the 6-15 year analysis.

For the 2008 RTEP thermal problems were identified in the Eastern Mid-Atlantic, Southwest Mid-Atlantic and Mid-Atlantic regions of PJM.
• PJM completed load deliverability voltage analysis for 2018 of the Mid-Atlantic, Southwest Mid-Atlantic and Eastern Mid-Atlantic
• Load deliverability was the main driver for the majority of the overloads identified in years 6 through 15
• High load conditions modeled in the load deliverability analysis are when PJM typically sees voltage issues on the system
PJM identified the need for approximately 3,000 MVAR of reactive devices by 2018 in order to provide for an adequate voltage profile for N-0 and N-1 conditions

- If the entire 3,000 MVAR were static switched capacitors the cost would be estimated at $60 M
- If 20% of the 3,000 MVAR were required to be dynamic with the remaining switched capacitors the estimated cost would be $108 M
- PJM used $20K per MVAR for static reactive and $100 K per MVAR for dynamic reactive
• Last year’s long term reactive analysis identified the need for approximately 3,000 MVAR of reactive reinforcements by 2017.

• The reduced load forecast appears to be the primary driver responsible for the lack of increase in the reactive needs from last year’s study.
2009 RTEP Assumptions
Generic assumptions consistent with those discussed at the January TEAC

Loads – Based on the 2009 Load Report
- RTO Peak: 153,377 MW
  - PJM South: 21,140 MW
  - PJM West: 67,099 MW
  - PJM Mid-Atlantic: 65,138 MW
    - * All Loads are Non-Coincidental Peaks

Generation
- Machine lists posted to TEAC page
- Previously discussed units
  - Potomac River - in
  - Bergen - in
  - Indian River 3 & 4 – in
  - Sewaren - in
  - Catoctin – out
### 2013 Retool CET0

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2009 Interregional Planning Activities
2009 Interregional Planning Activities

- PJM / NYISO focused study
- PJM/MISO/SPP/TVA Interregional Planning Initiatives…wind…DOE
- Southwest Indian Study
• Reliability Analysis
  – N-1-1 analysis for all 230 kV and above facilities
  – Generator deliverability testing of PJM generation to PJM load and NYISO generation to NYISO load, while monitoring adjacent area facilities
  – Analyze peak (90/10) summer conditions while simulating a capacity deficiency in the combined PS-North / ConEd system.
  – Perform sensitivity analysis on credible retirement scenarios for critical transmission contingencies identified above.
  – Develop potential transmission overlay options to resolve the issues identified in the reliability analysis.

• Market Efficiency Analysis
  – Complete a market simulation of the combined NYISO/PJM system
  – Identify areas with the highest LMP spreads
  – Identify facilities producing the highest projected congestion
  – Test the market efficiency impact of the potential solutions identified in the reliability analysis.
• Joint Coordinated System Plan Study (JCSP)
  – Market Efficiency and Wind Integration focus - 2024
    • $80+ billion to integrate 20% wind and limiting congestion
  – Included reliability screen of combined 2018 regional plans
    • Plans integrate well. No major issues surfaced.
  – Reports to be posted soon on www.jcspstudy.org

• Eastern Wind Integration Transmission Study
  – Follows the JCSP siting and transmission methods
  – Updated DOE wind data for siting
  – New work on operational impacts and reliability analysis
    • First impressions of regulation estimates and LOLP impacts
• Reliability Analysis
  – Develop a combined PJM / MISO 2014 model.
  – Simulate N-1, N-2 and N-1-1 contingencies.
    ➢ N-1-1 contingencies will include combinations of PJM and MISO facilities
  – Develop solutions to potential reliability issues identified above.
    ➢ Sensitivity analysis on potential solutions
• Economic Study – evaluate market efficiency of potential project alternatives
• Subregional RTEP Committee meetings
  – Review 2009 RTEP assumptions
• 2013 Retool analysis is underway
• 2014 Case complete
• Retool of other years will follow once case creation is complete
  – 2010 case nearing completion