2014 RTEP Assumptions
• **Load Flow Modeling**

  – Power flow models for world load, capacity and topology will be based on the 2019 summer peak case from the 2013 ERAG MMWG series power flow base case

  – Update of adjacent areas with latest topology

  – PJM topology will be based on the 2018 RTEP case that was used in the 2013 RTEP
    • Include all PJM Board approved upgrades through the December 11, 2013 PJM Board of Manager approvals as well as all anticipated February 2014 PJM Board approvals
Locational Deliverability Areas (LDAs)

- Includes the existing 27 LDAs
- Total of 27 LDAs
  - All 27 to be evaluated for 2017/2018 delivery year RPM base residual auction and also for the 2019 Summer RTEP case

<table>
<thead>
<tr>
<th>LDA</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMAAC</td>
<td>Global area - PJM 500, JCPL, PECO, PSEG, AE, DPL, RECO</td>
</tr>
<tr>
<td>SWMAAC</td>
<td>Global area - BGE and PEPCO</td>
</tr>
<tr>
<td>MAAC</td>
<td>Global area - PJM 500, Penelec, Meted, JCPL, PPL, PECO, PSEG, BGE, Pepco, AE, DPL, UGI, RECO</td>
</tr>
<tr>
<td>PPL</td>
<td>PPL &amp; UGI</td>
</tr>
<tr>
<td>PJM WEST</td>
<td>APS, AEP, Dayton, DUQ, Comed, ATSI, DEO&amp;K, EKPC, Cleveland</td>
</tr>
<tr>
<td>WMAAC</td>
<td>PJM 500, Penelec, Meted, PPL, UGI</td>
</tr>
<tr>
<td>PENELEC</td>
<td>Pennsylvania Electric</td>
</tr>
<tr>
<td>METED</td>
<td>Metropolitan Edison</td>
</tr>
<tr>
<td>JCPL</td>
<td>Jersey Central Power and Light</td>
</tr>
<tr>
<td>PECO</td>
<td>PECO</td>
</tr>
<tr>
<td>PSEG</td>
<td>Public Service Electric and Gas</td>
</tr>
<tr>
<td>BGE</td>
<td>Baltimore Gas and Electric</td>
</tr>
<tr>
<td>PEPCO</td>
<td>Potomac Electric Power Company</td>
</tr>
<tr>
<td>AE</td>
<td>Atlantic City Electric</td>
</tr>
<tr>
<td>DPL</td>
<td>Delmarva Power and Light</td>
</tr>
<tr>
<td>DPLSOUTH</td>
<td>Southern Portion of DPL</td>
</tr>
<tr>
<td>PNSOUTH</td>
<td>Northern Portion of PSEG</td>
</tr>
<tr>
<td>VAP</td>
<td>Dominion Virginia Power</td>
</tr>
<tr>
<td>APS</td>
<td>Allegheny Power</td>
</tr>
<tr>
<td>AEP</td>
<td>American Electric Power</td>
</tr>
<tr>
<td>DAYTON</td>
<td>Dayton Power and Light</td>
</tr>
<tr>
<td>DLCO</td>
<td>Duquesne Light Company</td>
</tr>
<tr>
<td>Comed</td>
<td>Commonwealth Edison</td>
</tr>
<tr>
<td>ATSI</td>
<td>American Transmission Systems, Incorporated</td>
</tr>
<tr>
<td>DEO&amp;K</td>
<td>Duke Energy Ohio and Kentucky</td>
</tr>
<tr>
<td>EKPC</td>
<td>Eastern Kentucky Power Cooperative</td>
</tr>
<tr>
<td>Cleveland</td>
<td>Cleveland Area</td>
</tr>
</tbody>
</table>
• Firm Commitments
  – Long term firm transmission service will be consistent with operations

• Outage Rates
  – Generation outage rates will be based on the most recent Reserve Requirement Study (RRS) performed by PJM
  – Generation outage rates for future PJM units will be estimated based on class average rates
2014 RTEP Load Modeling

- **Peak Load**
  - Load will be modeled consistent with the 2014 PJM Load Forecast Report
  - The final load forecast data is expected to be available late December 2013
  - Include Demand Response (DR) and Energy Efficiency (EE) that cleared in the 2016/17 BRA

- **Light Load**
  - Modeled at 50% of the Peak Load forecast per M14B
  - The Light Load Reliability Criteria case will be modeled consistent with the procedure defined in M14B

- **Load Management**, where applicable, will be modeled consistent with the 2014 Load Forecast Report
  - Used in LDA under study in load deliverability analysis
2014 RTEP Generation Assumptions

• All existing generation expected to be in service for the year being studied will be modeled.

• Future generation with a signed Interconnection Service Agreement, or that cleared in the 2016/17 BRA, will be modeled along with any associated upgrades.
  
  – Generation with a signed ISA will contribute to and be allowed to back-off problems.

• Generation with an executed Facility Study Agreement (FSA) will be modeled along with any associated network upgrades.
• Machine list
  – Updated CIR’s for existing units
  – Queues with an executed FSA or higher as of 12/11/2013 will be included in the base model
    • Consult posted machine list for exact modeling assumption
    • FSA will be turned off but allowed to contribute to problems in Generator Deliverability
    • Any identified network upgrades driven by included queue projects will also be modeled
  – Units that cleared in previous RPM auctions that do not yet have an executed FSA or higher will be modeled
  – 2019 RTEP machine list will be presented at February TEAC
2014 RTEP Generation Assumptions

- Generation with an FSA will be modeled consistent with the procedures noted in manual 14B

- Generation with an executed FSA will be modeled off-line but will be allowed to contribute to problems in the generation deliverability testing.
  - Generation with an executed FSA will not be allowed to back-off problems.

- Additional generation information (i.e. machine lists) will be posted to the TEAC page.
• Generation that has officially notified PJM of deactivation will be modeled offline in RTEP base cases for all study years after the intended deactivation date

• RTEP baseline upgrades associated with generation deactivations will be modeled
2014 RTEP Assumptions

- All PJM bulk electric system facilities, all tie lines to neighboring systems and all lower voltage facilities operated by PJM will be monitored.

- Contingency analysis will include all bulk electric system facilities, all tie lines to neighboring systems and all lower voltage facilities operated by PJM.
  - Contingencies in neighboring systems

- Thermal and voltage limits will be consistent with those used in operations.
• As part of the 24-month RTEP cycle, a year 8 (2021) base case will be developed and evaluated as part of the 2014 RTEP

• The year 8 case will be based on the 2020 case that was developed as part of this year’s 2013 RTEP
  – The case will be updated to be consistent with the 2014 RTEP assumptions.

• Purpose: To identify and develop longer lead time transmission upgrades
• Case currently out to TO’s for second review
  – Case distributed for second review has the first round of TO updates and updated queue generation

• In progress
  – Contingency update and check
  – Update interchange
  – Update generation dispatch
    • Machine list will be presented at February TEAC
  – Update load per latest 2014 load forecast
2019 RTEP Timeline

- **End of January 2014**
  - Receive TO feedback and updates, finalize case and associated files

- **February 2014**
  - Exercise the model using analysis, coordinate quality control check and benchmark

- **February 2014 - March 2014**
  - Begin formal RTEP analysis
Model On Demand (MOD) Status

• MOD desk reference completed Q4 2013
• Remote Access Pilot Program (Jan – Feb 2014)
  – Will be underway shortly to ensure TO’s can access MOD and all features work correctly
• All TO’s requested to use MOD Remote Access to manage PJM RTEP Base case modeling data (March 2014)
  – TO reviewed and updated 2014 MMWG case will be loaded as base case
  – PJM and TO’s will work remainder of 2014 to create, upload, and review individual project files
Questions?

Email: RTEP@pjm.com