PJM Interconnection
Resource Adequacy Analysis Subcommittee
Meeting Notes
Teleconference / Web Conference
August 29, 2014
9:00 AM

Participants:

Bloom, David  Baltimore Gas and Electric Company
Campbell, Bruce  EnergyConnect, Inc.
Dugan, Bill  Customized Energy Solutions, Ltd.
Filomena, Guy  Customized Energy Solutions, Ltd.
Fryfogle, Tim  ReliabilityFirst
Heizer, Fred  Ohio PUC
Kure, Paul  ReliabilityFirst
Mabry, David  McNees Wallace & Nurick LLC
Marton, David  FirstEnergy Solutions Corporation
Norton, Chris  American Municipal Power, Inc.
Reif, Kenneth  PPL Electric Utilities Corp.
Stadelmeyer, Rebecca  Exelon Business Services Company, LLC
Wilson, James  Wilson Economics

Falin, Tom, Chair  PJM
Bhavaraju, Murty  PJM
Gledhill, Andrew  PJM
Rocha Garrido, Patricio  PJM
Reynolds, John  PJM
Quevada, Jason, Secretary  PJM
1. **ADMINISTRATIVE ITEMS**

   The meeting started at 9:00 am and ended at 10:00 am. The Chair welcomed the group and solicited additional agenda items for the meeting. There were no additional agenda items suggested.

2. **APPROVAL OF MEETING NOTES**

   The Secretary reviewed the meeting notes for the June 19, 2014 meeting and solicited comments from the Subcommittee. The Subcommittee unanimously approved the amended meeting notes.

3. **2014 RRS PRELIMINARY RESULTS AND DISCUSSION**

   Mr. Gledhill led a discussion of the draft results of the 2014 Reserve Requirement Study (RRS) analysis. Mr. Gledhill noted that in general the Study is very similar in scope, base assumptions and model characteristics as the previous 2013 RRS report. Several slides were shown that detailed consistency of the 2013 and 2014 Study. The 15.7% IRM for 2018/2019 calculated in this year's study is identical to the 15.7% IRM calculated for 2017/2018 in last year's study. This is the result of offsetting factors - slight increase from the PJM load shape and PJM capacity model changes as well as a decrease from the Capacity Benefit of Ties. The target date to review the draft 2014 Study report was the next RAAS meeting on October 3th, 2014.
Results of 2014 and 2013 RRS are summarized below:

<table>
<thead>
<tr>
<th>RRS Year</th>
<th>Delivery Year Period</th>
<th>Calculated IRM</th>
<th>Recommended IRM</th>
<th>Average EFORd</th>
<th>Average XEFORd</th>
<th>World Reserve Margin</th>
<th>Recommended FPR</th>
<th>Recommended DR Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>2015 / 2016</td>
<td>15.58%</td>
<td>15.6%</td>
<td>6.86%</td>
<td>5.60%</td>
<td>14.2%</td>
<td>1.0911</td>
<td>0.951</td>
</tr>
<tr>
<td>2014</td>
<td>2016 / 2017</td>
<td>15.51%</td>
<td>15.5%</td>
<td>6.97%</td>
<td>5.66%</td>
<td>14.3%</td>
<td>1.0897</td>
<td>0.952</td>
</tr>
<tr>
<td>2014</td>
<td>2017 / 2018</td>
<td>15.66%</td>
<td>15.7%</td>
<td>7.01%</td>
<td>5.70%</td>
<td>14.4%</td>
<td>1.0907</td>
<td>0.951</td>
</tr>
<tr>
<td>2014</td>
<td>2018 / 2019</td>
<td>15.67%</td>
<td>15.7%</td>
<td>7.02%</td>
<td>5.71%</td>
<td>14.4%</td>
<td>1.0907</td>
<td>0.951</td>
</tr>
</tbody>
</table>

The results from the 2013 RRS Study are below:

<table>
<thead>
<tr>
<th>RRS Year</th>
<th>Delivery Year Period</th>
<th>Calculated IRM</th>
<th>Recommended IRM</th>
<th>Average EFORd</th>
<th>Average XEFORd</th>
<th>World Reserve Margin</th>
<th>Recommended FPR</th>
<th>Recommended DR Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>2014 / 2015</td>
<td>16.23%</td>
<td>16.2%</td>
<td>7.35%</td>
<td>5.97%</td>
<td>14.1%</td>
<td>1.0926</td>
<td>0.954</td>
</tr>
<tr>
<td>2013</td>
<td>2015 / 2016</td>
<td>15.68%</td>
<td>15.7%</td>
<td>6.91%</td>
<td>5.62%</td>
<td>14.2%</td>
<td>1.0920</td>
<td>0.954</td>
</tr>
<tr>
<td>2013</td>
<td>2016 / 2017</td>
<td>15.68%</td>
<td>15.7%</td>
<td>6.94%</td>
<td>5.64%</td>
<td>14.2%</td>
<td>1.0917</td>
<td>0.953</td>
</tr>
<tr>
<td>2013</td>
<td>2017 / 2018</td>
<td>15.69%</td>
<td>15.7%</td>
<td>6.95%</td>
<td>5.65%</td>
<td>14.2%</td>
<td>1.0916</td>
<td>0.953</td>
</tr>
</tbody>
</table>

4. **FUTURE MEETINGS**

The Subcommittee agreed to meet on October 3, 2014 from 1:30 pm – 3:30 pm EPT via web-ex/tele-conference.
2014 ACTION ITEMS

1. Evaluation of the PRISM load model (Comparison to historical peak load variability, Use of Non-normal distributions, Linkage to forecast etc.)
2. Evaluate the modeling and analysis techniques used in CETO studies.
3. Developing a MARS model to determine impacts of modeling the World as a single entity vs. individual regions
4. Perform peak period generation performance analytical assessments for RTO and LDAs.

COMPLETED ACTION ITEMS

1. Identify scope and analysis efforts needed to determine generator performance at peak demand periods
2. Evaluation of current treatment of Demand Resources (DR)
3. Comparison of Modeling Parameters used for MARS and PRISM.

PARKING LOT- OPEN ITEMS

1. MARS assessments to use transition state matrix to replace two-state statistics used to represent generation performance
2. Examination of World reserve levels and deliverability of those reserves to PJM
3. Investigate the Total Transfer Capability (TTC) for the PJMRTO
4. Investigate the effects of common mode outages on generator forced outage rates and its effects on the IRM.
5. Output of 21 points in the load distribution and verify the impacts of greater granularity
Anti-trust:
You may not discuss any topics that violate, or that might appear to violate, the antitrust laws including but not limited to agreements between or among competitors regarding prices, bid and offer practices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that might unreasonably restrain competition. If any of these items are discussed the chair will redirect the conversation. If the conversation still persists, parties will be asked to leave the meeting or the meeting will be adjourned.

Code of Conduct:
As a mandatory condition of attendance at today's meeting, attendees agree to adhere to the PJM Code of Conduct as detailed in PJM Manual M-34 section 4.5, including, but not limited to, participants' responsibilities and rules regarding the dissemination of meeting discussion and materials.

Public Meetings/Media Participation:
Unless otherwise noted, PJM stakeholder meetings are open to the public and to members of the media. Members of the media are asked to announce their attendance at all PJM stakeholder meetings at the beginning of the meeting or at the point they join a meeting already in progress. Members of the Media are reminded that speakers at PJM meetings cannot be quoted without explicit permission from the speaker. PJM Members are reminded that "detailed transcriptional meeting notes" and white board notes from "brainstorming sessions" shall not be disseminated. PJM Members are also not allowed to create audio, video or online recordings of PJM meetings.