PJM Interconnection
Resource Adequacy Analysis Subcommittee
Meeting Notes
Teleconference / Web Conference
September 5, 2013
9:30 AM

Participants:
Brandolisio, Frank PECO Energy Company
Campbell, Bruce EnergyConnect, Inc.
Carmean, Greg OPSI, Inc.
Fernandes, John RES Americas
Filomena, Guy Customized Energy Solutions, Ltd.
Hoatson, Tom Riverside Generating, LLC
Huntoon, Stephen NextEra Energy Power Marketing, LLC
McDonald, Steve Customized Energy Solutions, Ltd.
Norton, Chris American Municipal Power, Inc.
Pakela, Greg DTE Energy Trading, Inc.
Reif, Kenneth PPL Electric Utilities Corp.
Snow, Robert Federal Energy Regulatory Commission
Watson, Mark Duquesne Light Company

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

The meeting started at 9:30 am and ended at 11:30 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 July 3, 2013 meeting and solicited comments from the Subcommittee. The Subcommittee unanimously approved the amended meeting notes.

3. **2013 RRS PRELIMINARY RESULTS AND DISCUSSION**

Messrs. Gledhill and Rocha led a discussion of the draft results of the 2013 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 2012 RRS report. Mr. Rocha showed several slides that detailed consistency of the 2012 and 2013 Study. The 15.7% IRM for 2017/2018 calculated in this year's study is slightly higher than the 15.6% IRM calculated for 2016/2017 in last year's study. This is the result of lower load diversity between PJM and the World that reduces PJM's Capacity Benefit of Ties, especially at the time of PJM's peak (see World Peak columns in the two tables below as requested by the subcommittee. In this year's study, at the time of PJM's peak, the World is at 96.4% of its peak compared to 95.4% in last year's study). The target date to review the draft 2013 Study report was the next RAAS meeting on October 3th, 2013.
Results of 2013 and 2012 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 XEFFORd</th>
<th>Average XEFORd</th>
<th>World Peak*</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>96.4%</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>96.4%</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>96.4%</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>96.4%</td>
<td>1.0916</td>
<td>0.953</td>
</tr>
</tbody>
</table>

The results from the 2012 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 XEFFORd</th>
<th>Average XEFORd</th>
<th>World Peak*</th>
<th>Recommended FPR</th>
<th>Recommended DR Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>2013 / 2014</td>
<td>15.92%</td>
<td>15.9%</td>
<td>7.36%</td>
<td>6.05%</td>
<td>95.4%</td>
<td>1.0889</td>
<td>0.957</td>
</tr>
<tr>
<td>2012</td>
<td>2014 / 2015</td>
<td>15.88%</td>
<td>15.9%</td>
<td>7.36%</td>
<td>6.05%</td>
<td>95.4%</td>
<td>1.0889</td>
<td>0.956</td>
</tr>
<tr>
<td>2012</td>
<td>2015 / 2016</td>
<td>15.31%</td>
<td>15.3%</td>
<td>7.21%</td>
<td>5.91%</td>
<td>95.4%</td>
<td>1.0849</td>
<td>0.958</td>
</tr>
<tr>
<td>2012</td>
<td>2016 / 2017</td>
<td>15.56%</td>
<td>15.6%</td>
<td>6.97%</td>
<td>5.69%</td>
<td>95.4%</td>
<td>1.0902</td>
<td>0.955</td>
</tr>
</tbody>
</table>

4. FUTURE MEETINGS

The Subcommittee agreed to meet on October 3, 2013 from 9:30 pm – 11:30 am EPT via web-ex/tele-conference.
2013 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 PJM RTO
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 re-direct 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.