System Operations Report

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MC Webinar
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Average Load Forecast Error

May 2021
Hourly Error: 1.20%  Peak Error: 1.37%

April 2021
Hourly Error: 1.58%  Peak Error: 1.47%
Daily Peak Forecast Error (April)

- Error at Peak Hour
- Weekend / Holiday

Over-forecasting
Under-forecasting
Daily Peak Forecast Error (May)

- Error at Peak Hour
- Weekend / Holiday

Over-forecasting
Under-forecasting
PJM’s BAAL performance has exceeded the goal of 99% for each month in 2021.
Two spinning events in the month of April
Two reserve sharing events with the Northeast Power Coordinating Council (NPCC)
The following Emergency Procedures occurred in April:
  – 22 Post-Contingency Local Load Relief Warnings (PCLLRW)
  – 6 High System Voltages
• One spinning event in the month of May
• Four reserve sharing events with the Northeast Power Coordinating Council (NPCC)
• The following Emergency Procedures occurred in May:
  – 14 Post-Contingency Local Load Relief Warnings (PCLLRW)
  – 1 Hot Weather Alert
  – 1 Geomagnetic Disturbance Warning
  – 6 High System Voltages
  – 4 Shortage Cases Approved
The 13-month average forced outage rate is 3.93% or 7,785 MW. The 13-month average total outage rate is 15.46% or 30,620 MW.
Note: “Unplanned Outages" include tripped facilities. One tripping event may involve multiple facilities.
PCLLRW Count Vs. Peak Load – Daily Values For 3 Months

RTO Peak Load
PCLLRW Count

MW (Thousands)
PCLLRW Count

03/01/21 04/01/21 05/01/21
## Spin Response: April

### Tier 1 Response

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Start Time</th>
<th>End Time</th>
<th>Duration</th>
<th>Region</th>
<th>Tier 1 Estimate (MW)</th>
<th>Tier 1 Response (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>04/13/21</td>
<td>16:05:53</td>
<td>16:14:44</td>
<td>00:08:51</td>
<td>RTO</td>
<td>2093.4</td>
<td>975.6</td>
</tr>
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<td>2</td>
<td>04/30/21</td>
<td>16:30:27</td>
<td>16:42:04</td>
<td>00:11:37</td>
<td>RTO</td>
<td>1487.6</td>
<td>610.2</td>
</tr>
</tbody>
</table>

*Tier 2 Response is equal to Tier 2 Assigned for events with duration less than ten minutes*
Spin Response: May

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Start Time</th>
<th>End Time</th>
<th>Duration</th>
<th>Region</th>
<th>Tier 1 Estimate (MW)</th>
<th>Tier 1 Response (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>05/26/21</td>
<td>10:17:34</td>
<td>10:27:35</td>
<td>00:10:01</td>
<td>RTO</td>
<td>1138.4</td>
<td>811.0</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Start Time</th>
<th>End Time</th>
<th>Duration</th>
<th>Region</th>
<th>Tier 2 Assigned (MW)</th>
<th>Tier 2 Response (MW)</th>
<th>Tier 2 Penalty (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>05/26/21</td>
<td>10:17:34</td>
<td>10:27:35</td>
<td>00:10:01</td>
<td>RTO</td>
<td>685.2</td>
<td>600.2</td>
<td>85.0</td>
</tr>
</tbody>
</table>

*Tier 2 Response is equal to Tier 2 Assigned for events with duration less than ten minutes*
Presenter: [Hong Chen, hong.chen@pjm.com]

[System Operations Report]

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Appendix
Goal Measurement: Balancing Authority ACE Limit (BAAL)

• The purpose of the new BAAL standard is to maintain interconnection frequency within a predefined frequency profile under all conditions (normal and abnormal), to prevent frequency-related instability, unplanned tripping of load or generation, or uncontrolled separation or cascading outages that adversely impact the reliability of the interconnection. NERC requires each balancing authority demonstrate real-time monitoring of ACE and interconnection frequency against associated limits and shall balance its resources and demands in real time so that its Reporting ACE does not exceed the BAAL (BAAL_LOW or BAAL_HIGH) for a continuous time period greater than 30 minutes for each event.

• PJM directly measures the total number of BAAL excursions in minutes compared to the total number of minutes within a month. PJM has set a target value for this performance goal at 99% on a daily and monthly basis. In addition, current NERC rules limit the recovery period to no more than 30 minutes for a single event.
The 13-month average forced outage rate is 3.93% or 7,785 MW.
The 13-month average total outage rate is 15.46% or 30,620 MW.