System Operations Report

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Average Load Forecast Error

September 2021
Hourly Error: **1.50%**  Peak Error: **1.56%**

![Chart showing average load forecast error from September 2019 to September 2021 with hourly and peak error percentages for each month. The chart includes data for all hours, peak hours only, winter, summer, 25-month average, and 25-month average.]
Daily Peak Forecast Error (September)

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.
• One spinning event
• Two reserve sharing events with the Northeast Power Coordinating Council (NPCC)
• The following Emergency Procedures occurred:
  – 12 Post-Contingency Local Load Relief Warnings (PCLLRW)
  – 2 Hot Weather Alerts
  – 4 High System Voltage
  – 1 Shortage Case Approved
• 1 Shortage Case Approved

• The approved Shortage Case occurred on:
  – 09/27/21:
    – 1 Shortage Case for 17:05
    – During peak load time, one large unit tripped
The 13-month average forced outage rate is 4.13% or 8,241 MW.
The 13-month average total outage rate is 15.44% or 30,718 MW.
2020-2021 Planned Emergency, Unplanned, and Total Outages by Ticket

Note: “Unplanned Outages” include tripped facilities. One tripping event may involve multiple facilities.
PCLLRW Count Vs. Peak Load – Daily Values For 3 Months

MW (Thousands)

07/01/21 08/01/21 09/01/21

RTO Peak Load
PCLLRW Count
**Spin Response**

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

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<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>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>09/27/21</td>
<td>16:56:05</td>
<td>17:04:30</td>
<td>00:08:25</td>
<td>RTO</td>
<td>679.5</td>
<td>385.1</td>
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<tr>
<th>Event</th>
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<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>
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<tbody>
<tr>
<td>1</td>
<td>09/27/21</td>
<td>16:56:05</td>
<td>00:08:25</td>
<td>RTO</td>
<td>1136.5</td>
<td>1136.5</td>
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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 4.13% or 8,241 MW.
The 13-month average total outage rate is 15.44% or 30,718 MW.
PCLLRW Count Vs. Peak Load – Daily Values For 13 Months
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