PJM Winter Preparedness 2020/2021

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PJM Interconnection

Illinois Commerce Commission
November 18, 2020
## Key Statistics

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member companies</td>
<td>1,040+</td>
</tr>
<tr>
<td>Millions of people served</td>
<td>65</td>
</tr>
<tr>
<td>Peak load in megawatts</td>
<td>165,563</td>
</tr>
<tr>
<td>Megawatts of generating capacity</td>
<td>186,788</td>
</tr>
<tr>
<td>Miles of transmission lines</td>
<td>84,236</td>
</tr>
<tr>
<td>2019 gigawatt hours of annual energy</td>
<td>787,307</td>
</tr>
<tr>
<td>Generation sources</td>
<td>1,446</td>
</tr>
<tr>
<td>Square miles of territory</td>
<td>369,089</td>
</tr>
<tr>
<td>States served</td>
<td>13 + DC</td>
</tr>
</tbody>
</table>

- 27% of generation in Eastern Interconnection
- 26% of load in Eastern Interconnection
- 20% of transmission assets in Eastern Interconnection

21% of U.S. GDP Produced in PJM

As of 2/2020
• **Existing Capacity:** Natural gas represents approximately 41 percent of the total installed capacity in the Illinois service territory while nuclear represents approximately 40.9 percent. In PJM natural gas and nuclear account for approximately 42.4 and 17.7 percent of total capacity.

• **Interconnection Requests:** Natural gas represents 53 percent of new interconnection requests in Illinois, while solar represents approximately 27.8 percent of new requests.

• **Regional Transmission Expansion Plan (RTEP) 2019:** Illinois’ 2019 RTEP projects total approximately $115 million. Approximately 72 percent of that represents supplemental projects. These investment figures only represent RTEP projects that cost at least $5 million.
**Load Forecast:** Illinois’ load within the ComEd zone is projected to grow at about 0.1 percent annually over the next ten years. The overall PJM RTO projected load growth rate is 0.6 percent.

**2022/23 Capacity Market:** No Base Residual Auction was conducted in 2019.

**1/1/19 – 12/31/19 Market Performance:** Illinois’ average hourly LMPs were below PJM average hourly LMPs.

**Emissions:** 2019 carbon dioxide, sulfur dioxide, and nitrogen oxide emissions are all down from 2018.
Illinois – Existing Installed Capacity
(CIRs – as of Dec. 31, 2019)

- Coal, 3,842 MW
- Natural Gas, 10,544 MW
- Solar, 3 MW
- Wind, 509 MW
- Oil, 272 MW
- Nuclear, 10,517 MW

Total: 25,687 MW
The summer and winter peak megawatt values reflect the amount of forecasted load to be served by each transmission owner in the noted state. Amounts were calculated based on the average share of each transmission owner's real-time summer and winter peak load in those areas over the past five years.

The Load Forecast was produced prior to COVID-19 and will be updated before the next Base Residual Auction to reflect changes in load patterns.
PJM Statements on 2020/2021 Winter Preparedness

- **Forecast:** PJM forecasts winter peak demand at approximately 136,500 MW
  - PJM has over 186,000 MW of supply and demand-side resources
  - PJM’s all-time winter peak is 143,434 MW, set on Feb. 20, 2015

- **Analysis:** PJM analyzes the expected demand for electricity, weather predictions and other factors to develop its forecast for winter operations

- **Coordination:** PJM works with members to prepare for cold weather by testing resources, conducting drills and surveying generators for fuel inventory

- **Checklist:** PJM’s preparation checklist includes increasing staffing for weather emergencies and maintenance activities to ensure equipment is ready for winter conditions

- **Gas Supply:** PJM closely coordinates with natural gas supply and transportation across the region

- **Pipelines:** PJM studies potential pipeline service disruptions and the effect on generators.
### 2020/2021 Winter Seasonal Assessment

#### 50/50 Non-diversified Peak Load Base Case

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAS Load Forecast</td>
<td>136,449 MW</td>
</tr>
<tr>
<td>Preliminary RTO Net Interchange</td>
<td>4,000 MW** (Exporting)</td>
</tr>
<tr>
<td>Preliminary RTO Installed Capacity</td>
<td>186,294 MW (preliminary)</td>
</tr>
<tr>
<td>Discrete Generator Outages</td>
<td>15,942 MW</td>
</tr>
</tbody>
</table>

** 4,000 MW of net interchange is modeled in the Operational Assessment Task Force base case and accounts for historical and forecasted Pseudo Tie data.

**PEAK LOAD ANALYSIS**

- No reliability issues identified.
<table>
<thead>
<tr>
<th>Sensitivity Studies</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>External contingencies that could impact PJM reliability</td>
<td>No reliability concerns</td>
</tr>
<tr>
<td>N-1-1 Relay trip conditions</td>
<td>No cascading outage concerns identified</td>
</tr>
<tr>
<td></td>
<td>• All networked transmission overloads were controlled pre-contingency</td>
</tr>
<tr>
<td>Max-Cred Contingency Analysis</td>
<td>No reliability concerns</td>
</tr>
<tr>
<td>Transfer Interface Analysis</td>
<td>No reliability concerns</td>
</tr>
<tr>
<td>BGE/PEPCO Import Capability</td>
<td>No reliability concerns</td>
</tr>
<tr>
<td>90/10 Load Forecast study (141,368 MW)</td>
<td>No uncontrollable or unexpected issues observed at the elevated load levels.</td>
</tr>
<tr>
<td>Gas Pipeline Disruption Study</td>
<td>No reliability concerns</td>
</tr>
</tbody>
</table>
Summary of Activities

- Pre-Winter Reactive Capability Verification
- Cold Weather Checklist
- Seasonal Fuel Inventory and Emissions Survey
- Cold Weather Exercise
- NERC Webinar
Pre-Winter Reactive Capability Verification

• Pre-Winter Review: From October 1 through October 31
• Generation Owners review their unit reactive capabilities in eDART
• Update parameters as necessary
• Provide acknowledgement via eDART
Cold Weather Preparation Guideline and Checklist

- Provides generators with a guide to prepare units for cold weather operation
- Based on Manual 14-D, Attachment “N”
  - Minor changes since 2019
- Survey in eDART
  - Starting November 1st and ending on December 15th
Seasonal Fuel Inventory and Emissions Survey

• Required for reliable operations planning purposes
• Focused on fuel supply and delivery details, fuel inventory and emissions limitations
• Enhances PJM situational awareness in preparation for severe weather
• Survey open in eDART mid-October through mid-November
Cold Weather Exercise – Change for 2020

- PJM no longer facilitating a formal exercise
- Generation resources asked to self-schedule for testing
  - Day-ahead preferred, real-time acceptable with proper notice to PJM dispatch
- During month of December
- Temperature forecast below 35 degrees
Winter Prep for Severe Cold Weather Webinar

- Occurred on 9/3/20 1400-1500 EPT
- Preparation for the upcoming winter weather, including:
  - Lessons Learned
  - Reliability Guideline: Generating Unit Winter Weather Readiness
  - 2019-2020 winter items of interest
Power Up with the PJM Now App!

- See real-time demand
- Track power prices
- Get notifications

GET IT ON Google Play
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2020/2021 PJM Winter Preparedness

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