Illinois Commerce Commission
2015 Summer Preparedness

May 29, 2015
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PJM Interconnection
When are transmission system operations most challenged?

Some common sense indicators:

- Season of Year
- Day of Week
- Duration / Damage
- Operating Challenges
  - and weather matters.
• Season of the year matters:
  o “Shoulder months” (Mid March- May and Mid September – November) have “planned outages” for maintenance / construction of both transmission and generation assets
  o Can exacerbate managing transmission system
    – “Work arounds” are more difficult, load pockets are created, some assets on planned outage can’t be restored quickly
The day of the week matters:

- Work day loads are always higher given equivalent temperatures. Weekend / holiday loads are always lower.

- Mondays are tougher as the first day of hot or cold weather:
  - Long work week ahead, equipment start up concerns, shift changes

- Thursdays and Fridays are easier due to patterns of demand (fewer work week days ahead, leave early Friday afternoon)
Duration of Event / Asset Damage Implications

• Duration of hot or cold weather event matters:
  o Have there been other hot / cold weather events recently (units “tested”)
  o Long / frequent hot / cold weather can be challenging (load patterns “saturate” – heaters or AC run round the clock instead of cycling in off periods / run time limits / “performance deterioration”)
  o Equipment breaks / needs maintenance
  o May be less participation in demand response

• Is there wind / snow / transmission line (“Asset”) damage?
  o ‘Derechos’ (very high winds over a large area), Hurricane Sandy in 2012 was horrendous
  o Transmission lines can be blown down / substations damaged
  o Transmission lines / substations can be difficult to physically reach for maintenance / restarts
Summer and Winter events present different operational challenges:

- **Summer time event (usually hot weather):**
  - One peak load each day (about 5 - 6 pm) and usually have higher summer peak loads
    - Generation assets usually operate well in hot weather
    - Transmission lines can have challenges -- over-heat / sag / become congested

- **Winter time event (usually cold weather):**
  - Two peak loads each day (about 7 am and 5:30 pm). Each daily peak usually lower than summer peak
    - Generation assets can have a difficult time starting / operating
    - Natural gas supply availability challenges / coal piles freeze
  - Usually few transmission line problems
# PJM Load and Capacity Comparison: 2014 vs. 2015

## 2014

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<tbody>
<tr>
<td>Forecast Load (MW) Total</td>
<td>11,160¹ (est)</td>
<td>146,119</td>
<td>193,220</td>
<td>37,101</td>
<td>25.4%</td>
<td>16.2%</td>
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¹Includes 522 MW of Energy Efficiency

## 2015

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<tr>
<td>Forecast Load (MW) Total</td>
<td>8,543¹ (est)</td>
<td>147,001</td>
<td>177,650</td>
<td>30,649</td>
<td>20.8%</td>
<td>15.6%</td>
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2014 (Actual Peak Load: 141,867 MW on 6-17-14 at HE 18)
**Forecast Load** – Expected peak demand, based on normal weather (Total Internal Demand)

**Demand Response (DR)** – Contractually interruptible load and other customer load willing to be interrupted at the direction of PJM. Assumes 5% of the load will be DR

**Energy Efficiency** - Project that involves the installation of more efficient devices/equipment, exceeding current standards and meets the requirements of the PJM Reliability Assurance Agreement.

**Forecast Load Less Load Management** – Expected peak demand after demand response has been implemented (Net Internal Demand-NID)

**Installed Generation Capacity** – Total MW output of all generators that cleared in the Reliability Pricing Model capacity market (internal and external including Fixed Resource Requirement capacity) and are committed to serve PJM load

**Reserve (Megawatt - MW)** – Installed Generation Capacity minus Net Internal Demand

**Reserve Margin (%)** – Reserve expressed as a percent of Net Internal Demand

**Required Reserve Margin (%)** – PJM required planning reserve, as determined by the capacity market process (Installed Reserve Margin-IRM)