



# Illinois Commerce Commission 2015 Summer Preparedness

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# 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:
  - “Shoulder months” (Mid March- May and Mid September – November) have “planned outages” for maintenance / construction of both transmission and generation assets
  - 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 hot or cold weather event matters:
  - Have there been other hot / cold weather events recently (units “tested”)
  - 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”)
  - Equipment breaks / needs maintenance
  - May be less participation in demand response
- Is there wind / snow / transmission line (“Asset”) damage?
  - ‘Derechos’ (very high winds over a large area), Hurricane Sandy in 2012 was horrendous
  - Transmission lines can be blown down / substations damaged
  - 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

Forecast Load (MW) Total	Demand Response and Energy Efficiency (MW)	Forecast Load Less Demand Response (MW)	Installed Generation Capacity (MW)	Reserve Margin (MW)	Reserve Margin	Required Reserve Margin
157,279	11,160 <sup>1</sup> (est)	146,119	193,220	37,101	25.4%	16.2%

<sup>1</sup>Includes 522 MW of Energy Efficiency

## 2015

Forecast Load (MW) Total	Demand Response and Energy Efficiency (MW)	Forecast Load Less Demand Response (MW)	Installed Generation Capacity (MW)	Reserve Margin (MW)	Reserve Margin	Required Reserve Margin
155,544	8,543 <sup>1</sup> (est)	147,001	177,650	30,649	20.8%	15.6%

<sup>1</sup>Includes 522 MW of Energy Efficiency

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)