



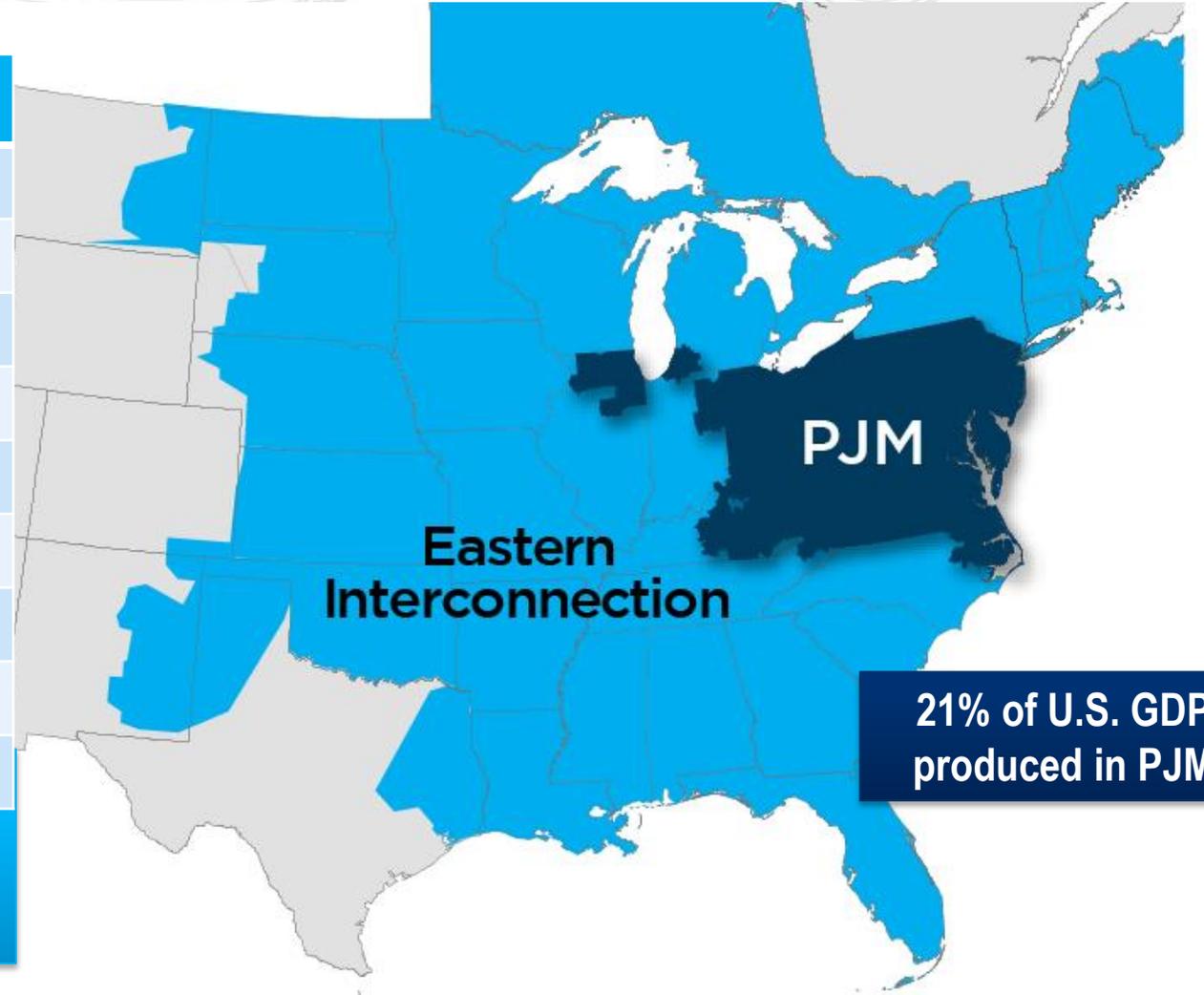
# Summer 2018 PJM Reliability Assessment

Pennsylvania Public Utility Commission  
June, 2018

## Key Statistics

Member companies	1,040+
Millions of people served	65
Peak load in megawatts	165,492
MW of generating capacity	178,563
Miles of transmission lines	84,042
2017 GWh of annual energy	773,522
Generation sources	1,379
Square miles of territory	243,417
States served	13 + DC

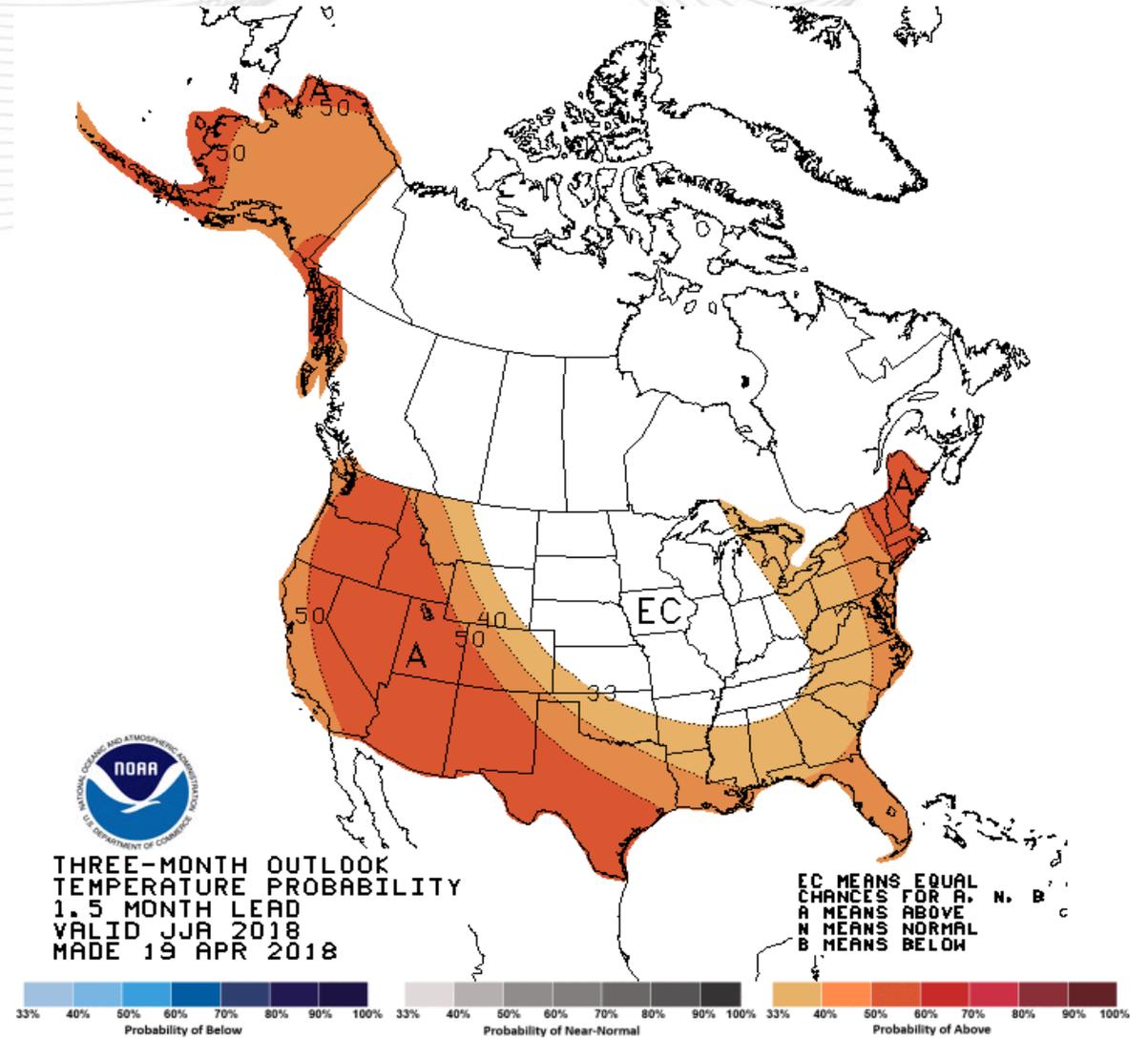
- 28% of load in Eastern Interconnection
- 20% of transmission assets in Eastern Interconnection



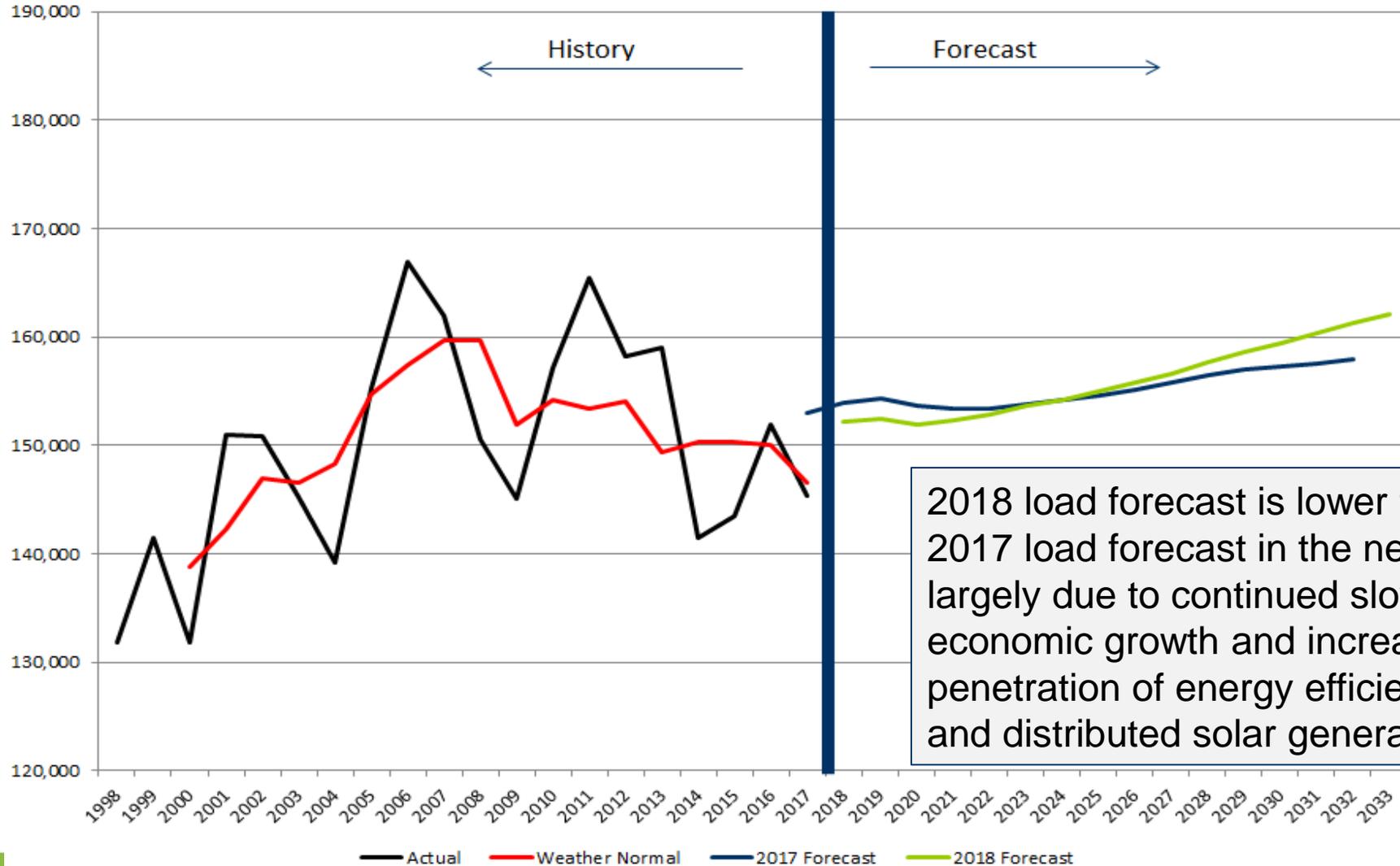
As of 2/2018

Current forecast suggests a higher probability of above average temperatures for the entire RTO.

There is a greater chance of above average temperatures in the eastern half of the RTO than in the west.



## Summer Peak Demand For PJM RTO



2018 load forecast is lower than 2017 load forecast in the near term largely due to continued slow economic growth and increased penetration of energy efficiency and distributed solar generation.



# PJM Load and Capacity Comparison: 2017 vs. 2018

## 2017

Forecast Load (MW) Total	Demand Response (MW)	Forecast Load Less Demand Response (MW)	Installed Generation Capacity (MW)	Reserve Margin (MW)	Reserve Margin	Required Reserve Margin
152,999	9,120	143,879	185,804	41,925	29.1%	16.6%

## 2018

Forecast Load (MW) Total	Demand Response (MW)	Forecast Load Less Demand Response (MW)	Installed Generation Capacity (MW)	Reserve Margin (MW)	Reserve Margin	Required Reserve Margin
152,108	9,095 <sup>1</sup> (est.) ↓	143,013 ↓	184,010 ↓	40,997	28.7% ↓	16.1% ↓

<sup>1</sup>DR estimate is based on methodology used in RTEP and described in PJM Manual 19

2017 (Metered Peak Load: 145,331 MW on 7/19/17 at HE 18)



# Glossary for Load and Capacity Summary Slide

**Forecast Load** – Expected peak demand, based on normal peak day weather (Total Internal Demand-TID)

**Demand Response** – Contractually interruptible load and other customer load willing to be interrupted at the direction of PJM. Compliance check is performed at end of summer.

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

**Installed Generation Capacity** – The MW sum of two groups of generators: All generators in PJM that have capacity interconnection rights and are not committed to serve external load plus all external generators that cleared in RPM and are committed to serve PJM load

**Reserve (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 RPM process (Installed Reserve Margin-IRM)

The **Reserve Margin (%)** must exceed the **Required Reserve Margin (%)** to satisfy the reliability requirement.

- Historically about 7% of PJM capacity is “forced out” of service during the peak summer period
- Scheduled generator maintenance is coordinated to minimize peak period impacts
- Water levels are expected to be normal for hydro units

- 8,000 MW of wind generation in the PJM markets
  - 1,367 MW in Pennsylvania
- 1,528 MW of solar-powered generation in the PJM markets
  - 20 MW in Pennsylvania
- 4,055 MW of solar-powered distributed generation in the PJM territory
  - 309 MW in Pennsylvania
- Change in Pennsylvania generation since June 1, 2017
  - 33 MW of generator deactivations
  - 1,247 MW of generator additions

- Summer Seasonal Assessment
- Conduct emergency drills to ensure readiness
- System Operator Training
- Assess the weather outlook daily
- Review projected load and capacity
- Coordinate with neighboring systems to discuss the upcoming season conditions



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

Load Forecast (sum of zonal peaks)	158,010 MW
Preliminary RTO Net Interchange	4,150 MW** (Importing)
PJM RTO Installed Capacity	184,010 MW
Discrete Generator Outages	12,285 MW

\*\* 4,150 MW of net interchange is modeled in the Operations base case and accounts for external pseudo tied capacity resources.

### Study Conclusions

- **No reliability issues identified for base case and N-1 analyses**
- Some off-cost generation re-dispatch required to control local thermal issues
- All voltage issues were resolved with capacitors
- Sensitivity studies – no concerns identified

- PJM expects to be able to reliably serve expected peak loads—peak loads are expected to be higher this summer than in summer 2017 which had very mild peak day weather.
- PJM generation (including firm external purchases) saw a net decrease of 1,800 MW between 2017 and 2018. The projected summer 2018 reserve margin of 28.7% exceeds the required reserve margin of 16.1%.
- The transmission system is expected to perform adequately based on applicable reliability criteria.