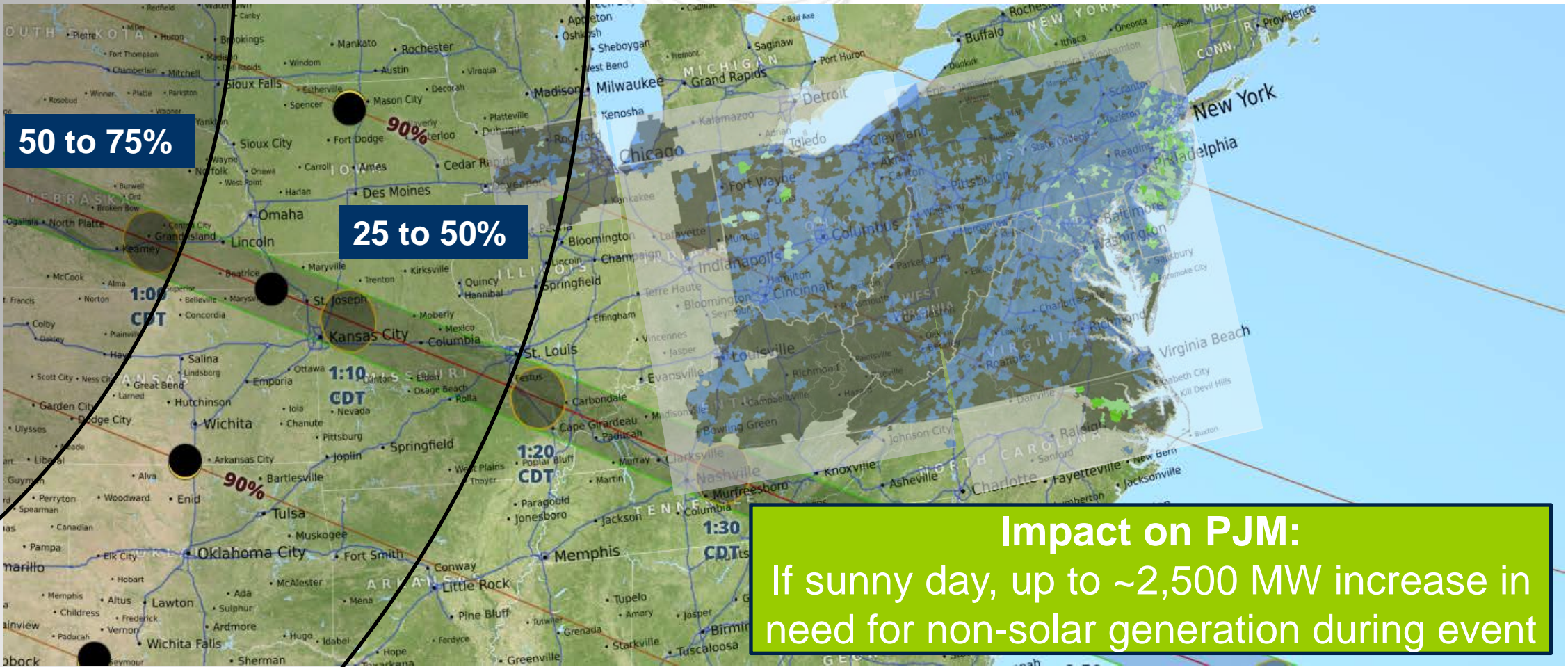


# Solar Output During August 21, 2017 Total Solar Eclipse



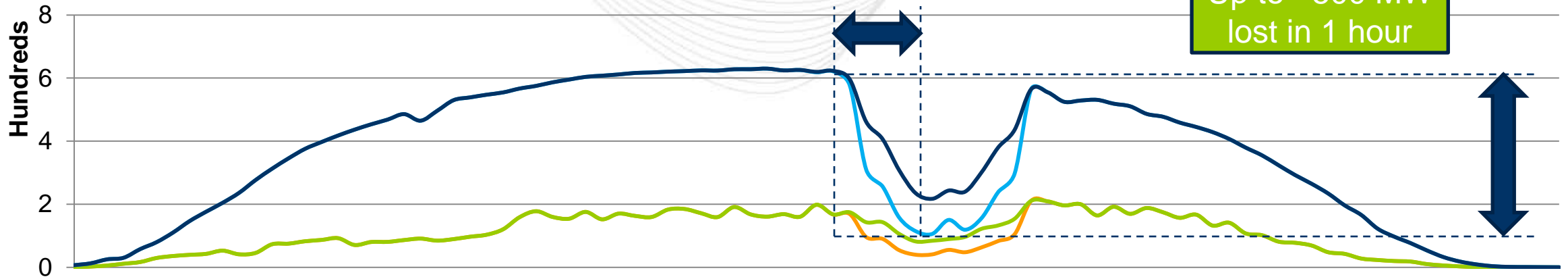
13:30 13:40 13:50 14:00 14:10 14:20 14:30  
 14:40 14:50 15:00 15:10 15:20 15:30 15:40



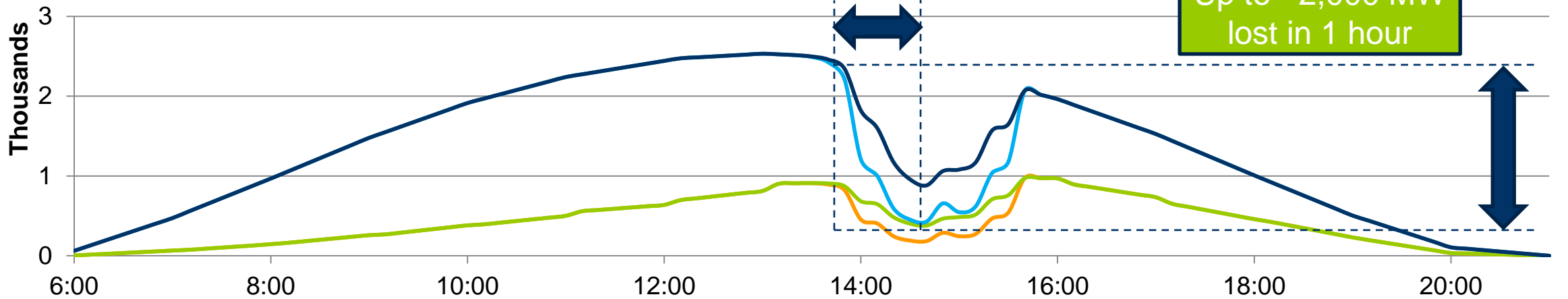
Source of eclipse map: [NASA](https://www.nasa.gov) | Source of PJM solar map: PJM Environmental Information Services

# Estimated Solar Output on August 21, 2017

## Grid-Connected Solar Output



## Behind-the-Meter Solar Output

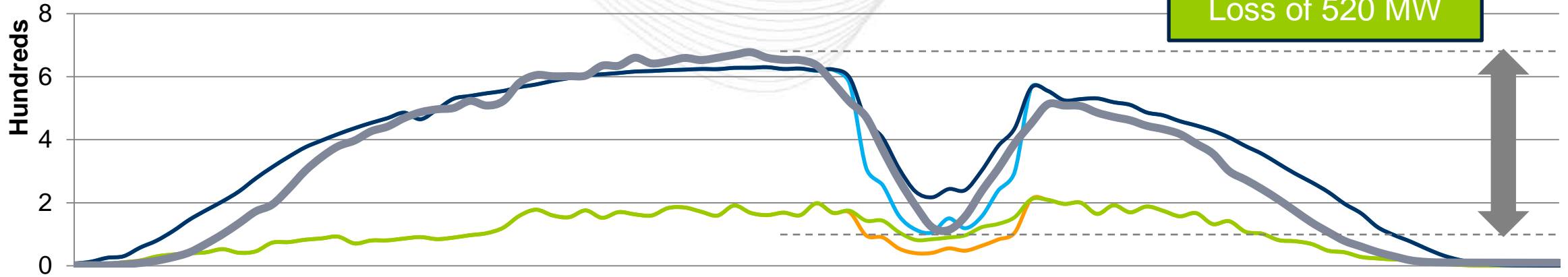


— Overcast - More Conservative   
 — Overcast - Less Conservative   
 — Sunny - More Conservative   
 — Sunny - Less Conservative

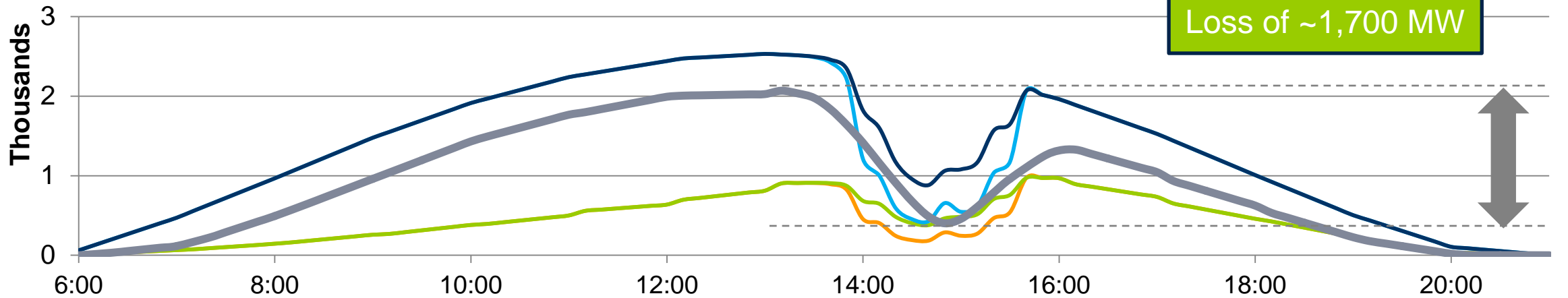


# Estimated and Actual Solar Output on August 21, 2017

### Grid-Connected Solar Output

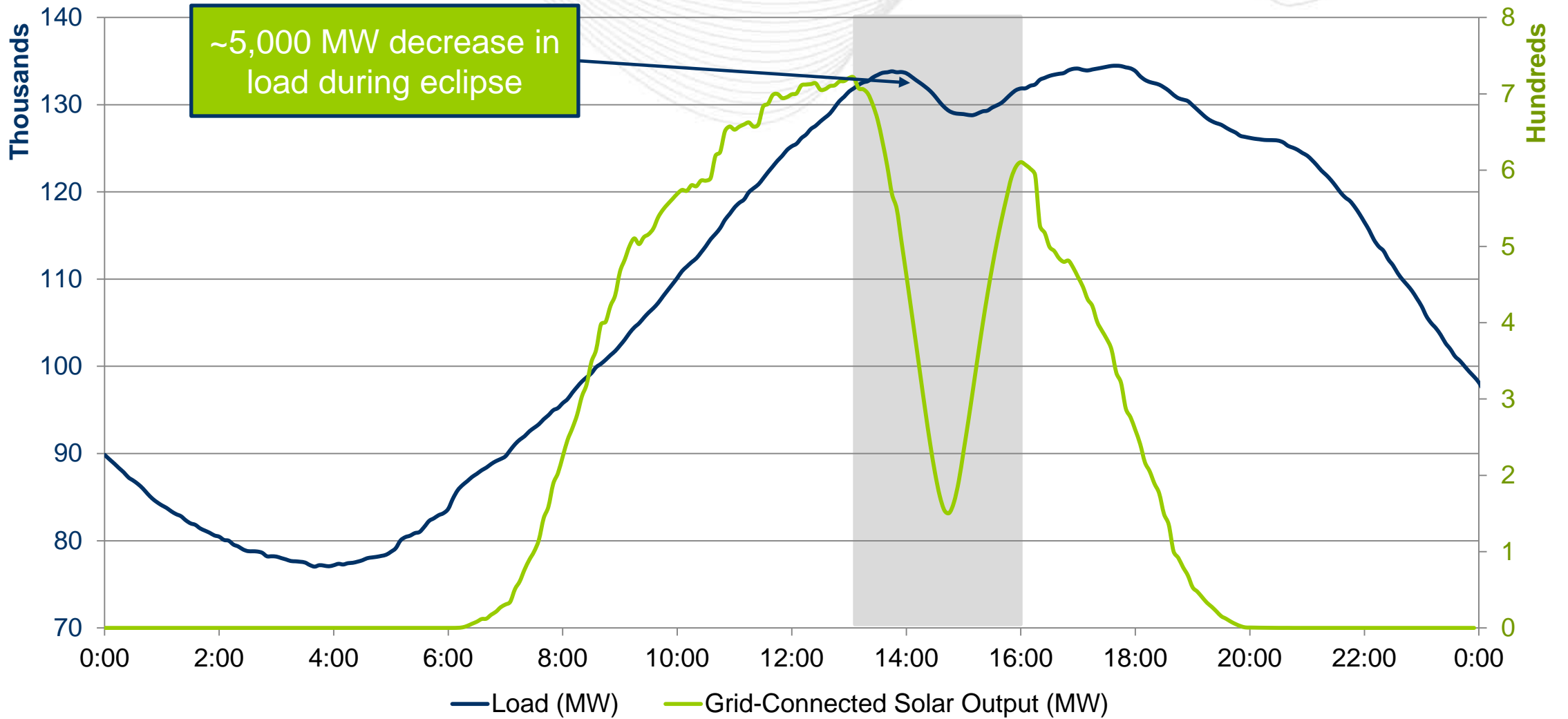


### Behind-the-Meter Solar Output

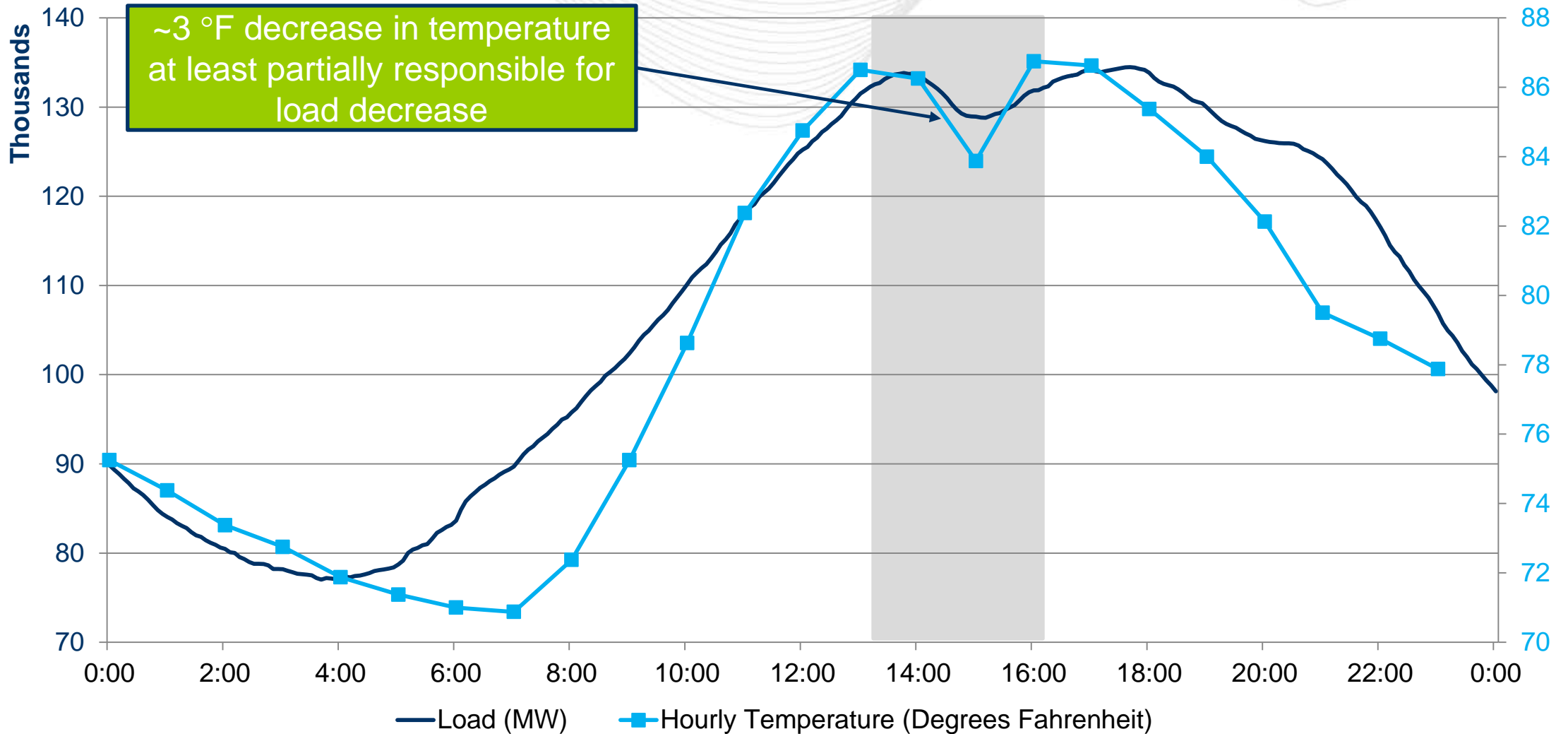


— Low - More Conservative   
 — Low - Less Conservative   
 — High - More Conservative   
 — High - Less Conservative   
 — Estimated Actual

## RTO Load and Solar Output on August 21, 2017



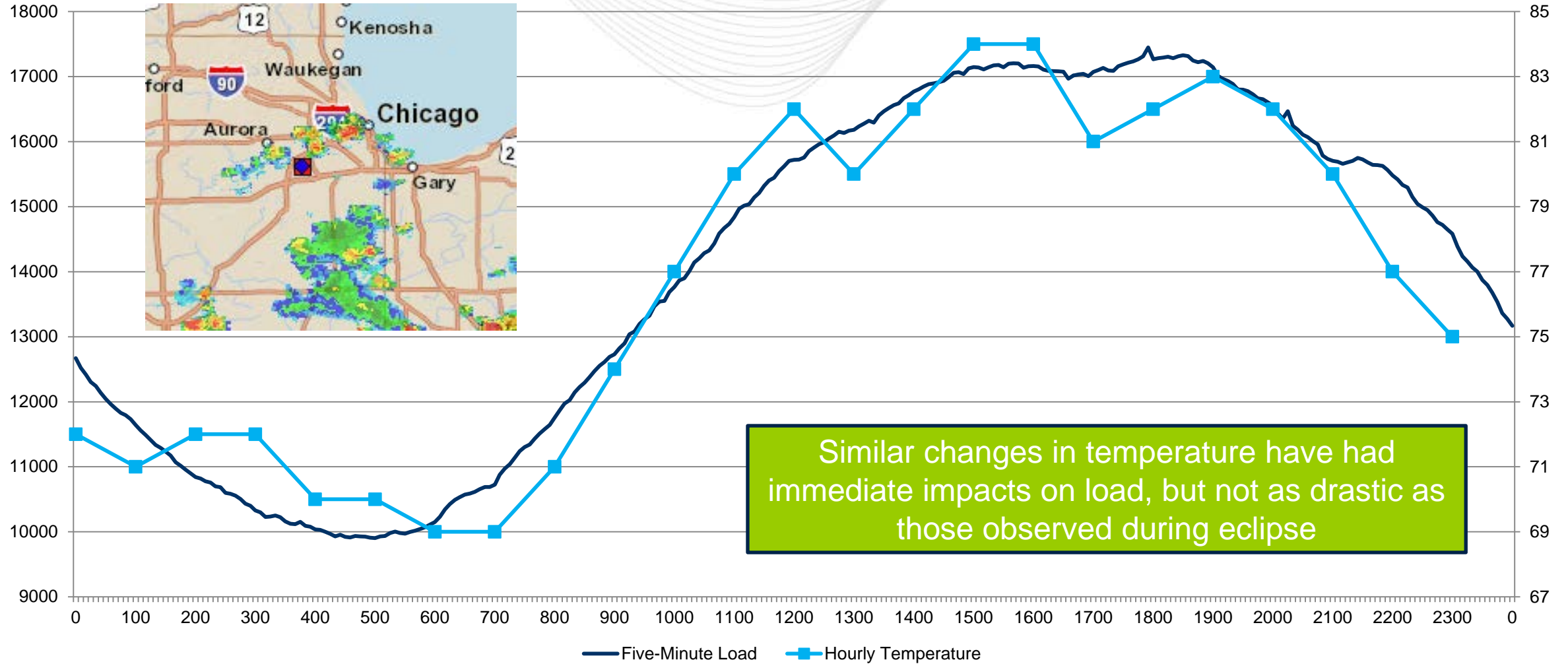
## RTO Load and Temperature on August 21, 2017



Factor that Impacted Load	Direction of Impact	Expected Amount of Impact
Reduced behind-the-meter solar	+	~1,700 MW
Increased lighting load	+	Low
Human behavior	–	Inconclusive – not quantifiable
Decreased temperature	–	Inconclusive – forecast models not trained on intra-hour values

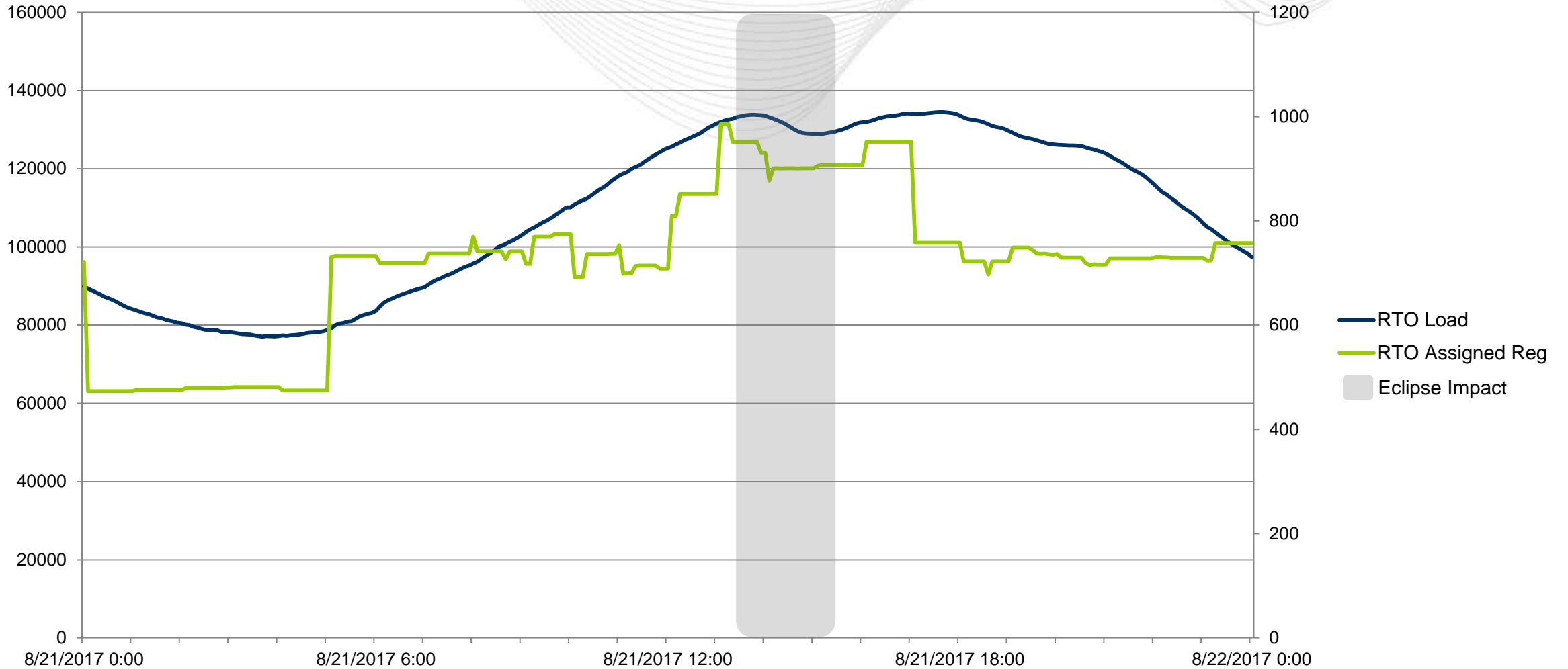
# Example of Load Impacted by Temperature Reduction

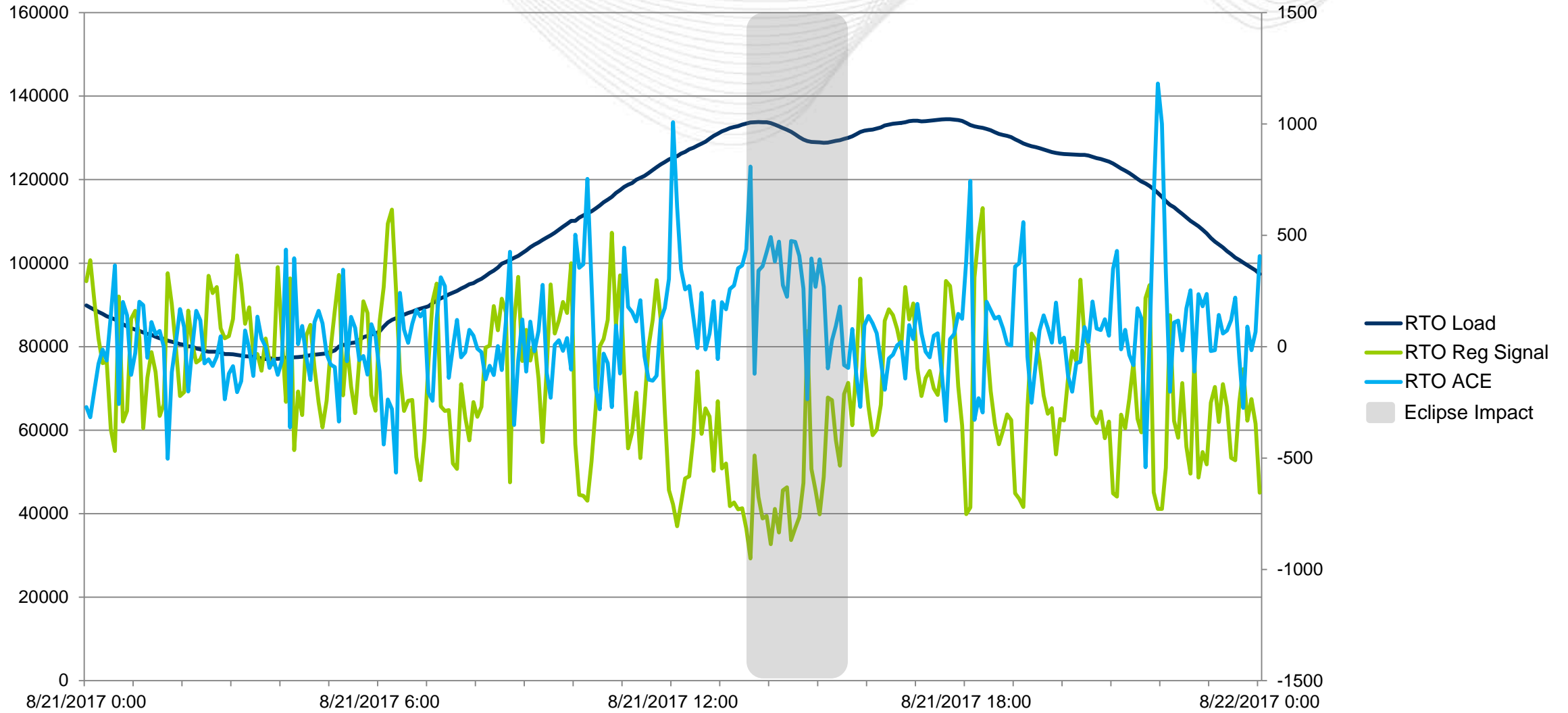
## ComEd Load vs. Temperature During August 1 Thunderstorms





# Increased Assigned Regulation





- Projections of solar output during eclipse were largely accurate
- Load decreased by twice amount that solar output decreased
  - May be different in 2024 with additional installed solar
  - Human behavior is important factor that is not well understood
  - Behind-the-meter assumptions will be difficult to verify
- Current load forecast models are not trained to reflect significant intra-hour temperature changes
- Additional coordination needed for accurate weather forecasts