



Review of April 8, 2024 Total Solar Eclipse Impacts to PJM Footprint

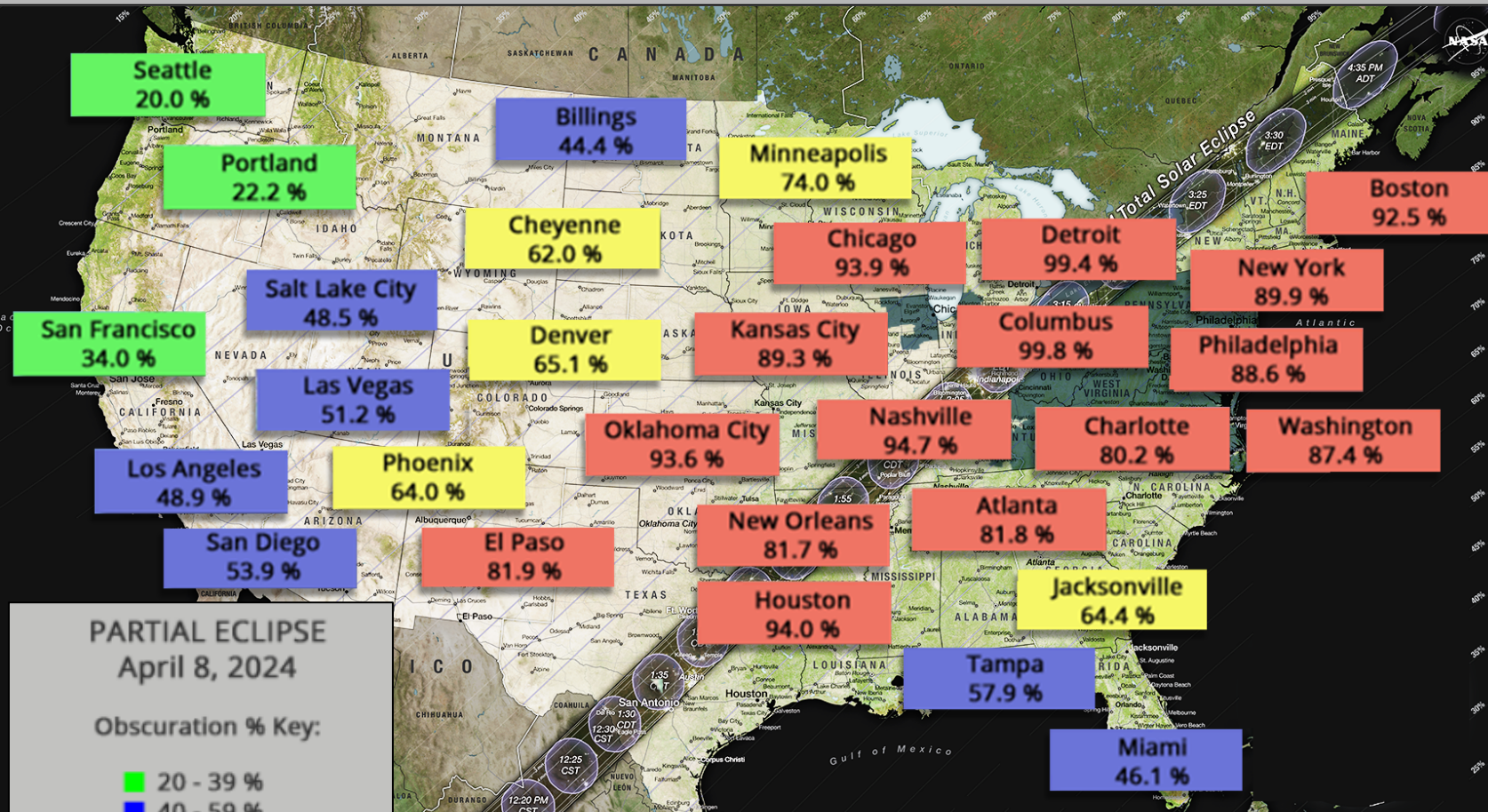
Kevin Hatch

Michael Stewart

Operations Committee Meeting

May 2, 2024

Total solar eclipse across South-Central and Eastern United States



PARTIAL ECLIPSE
April 8, 2024

Obscuration % Key:

- 20 - 39 %
- 40 - 59 %
- 60 - 79 %
- 80 - 99 %

(Percentages shown are only representative samples)

Source: Map adapted by NationalEclipse.com from original at eclipse.gsfc.nasa.gov. Eclipse predictions courtesy of Fred Espenak, NASA/Goddard Space Flight Center.

Monday, April 8, 2024

85-100% Obscuration
Mid-afternoon | During spring

Different from past:

October 2023
<40% Obscuration
Early morning | During fall

August 2017

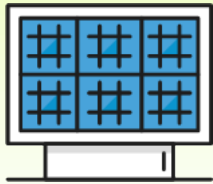
70%-90% Obscuration
Early afternoon | During summer

Installed capacity solar and grid-connected MW:

13x increase
for grid-connected

2.7x increase
for behind-the-meter

Generation



Metered solar
(grid-connected)



Non-metered solar
(behind-the-meter)

Load



Temperature



Consumer behavior



Day Ahead:

4,800 MW

4,200 MW

< 500 MW

< 500 MW

Actual:

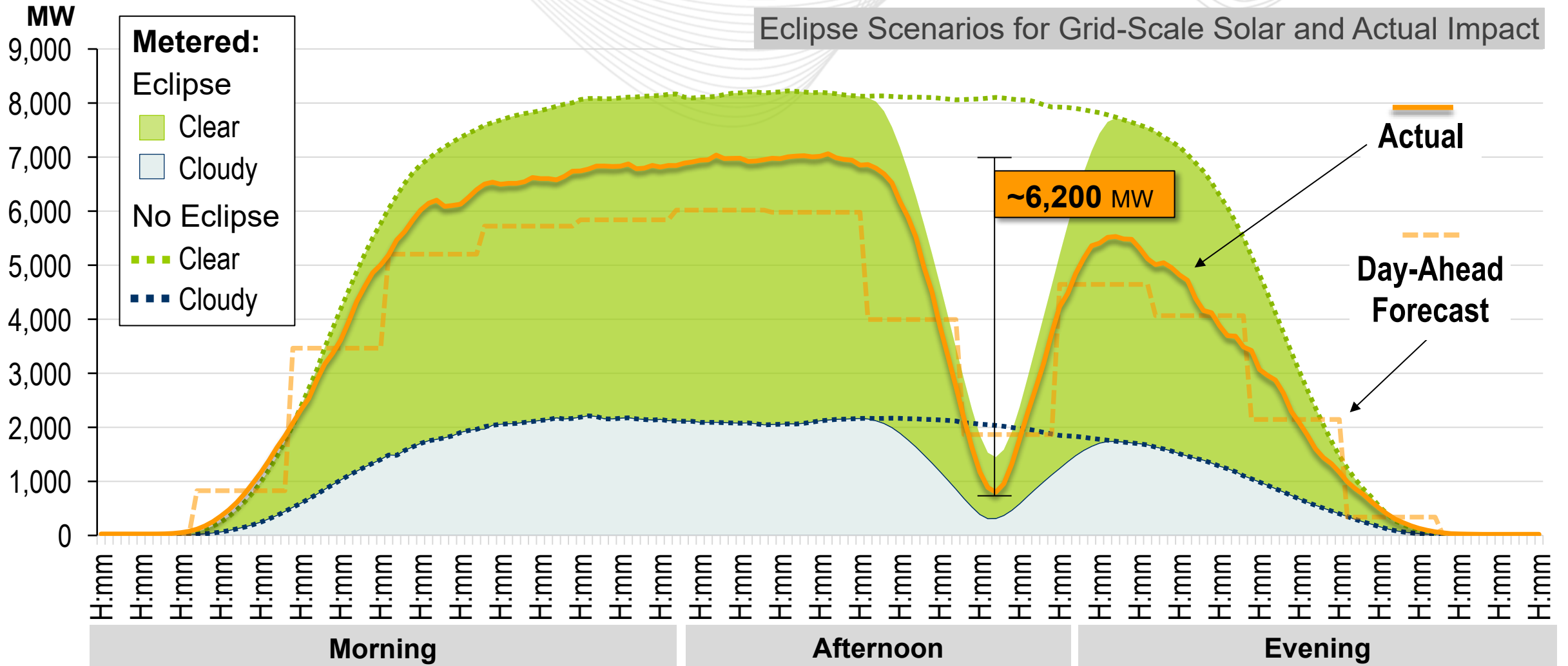
6,200 MW

4,900 MW

< 500 MW

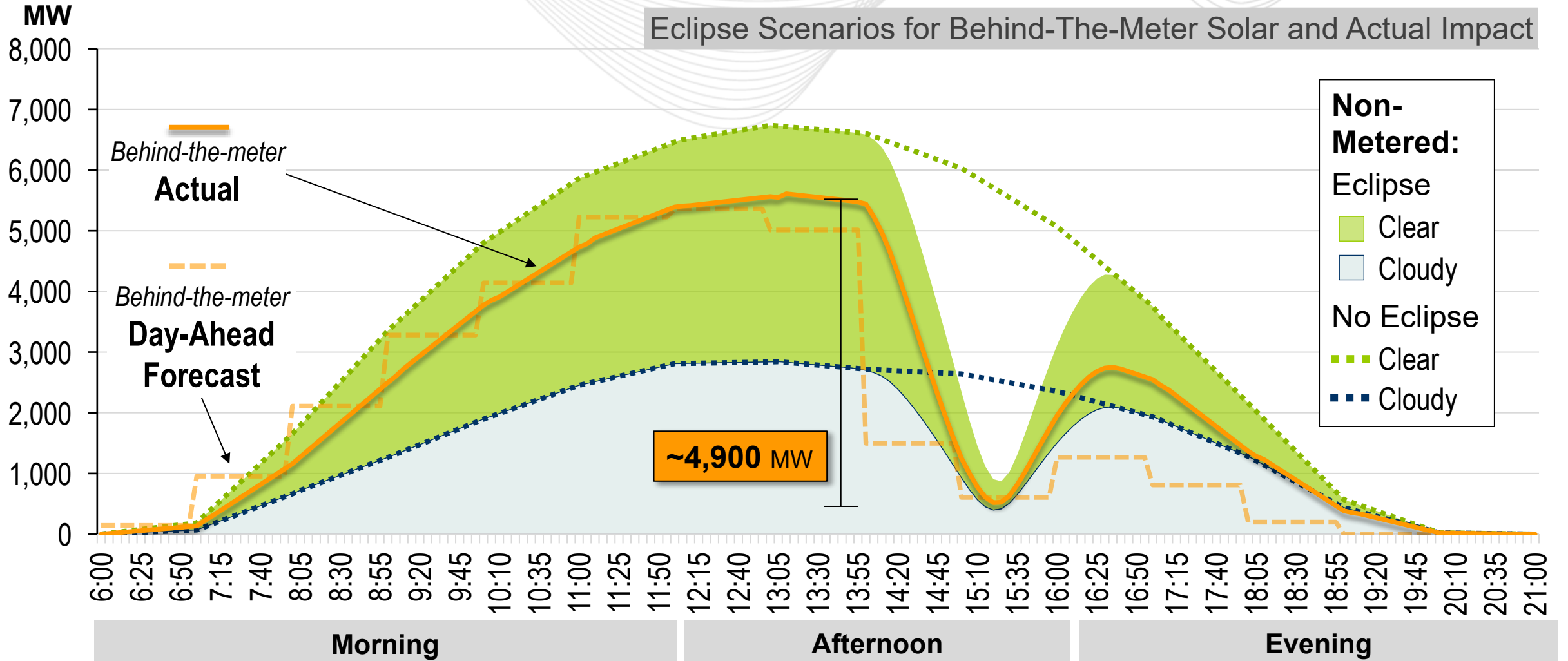
< 500 MW

Eclipse Scenarios for Grid-Scale Solar and Actual Impact

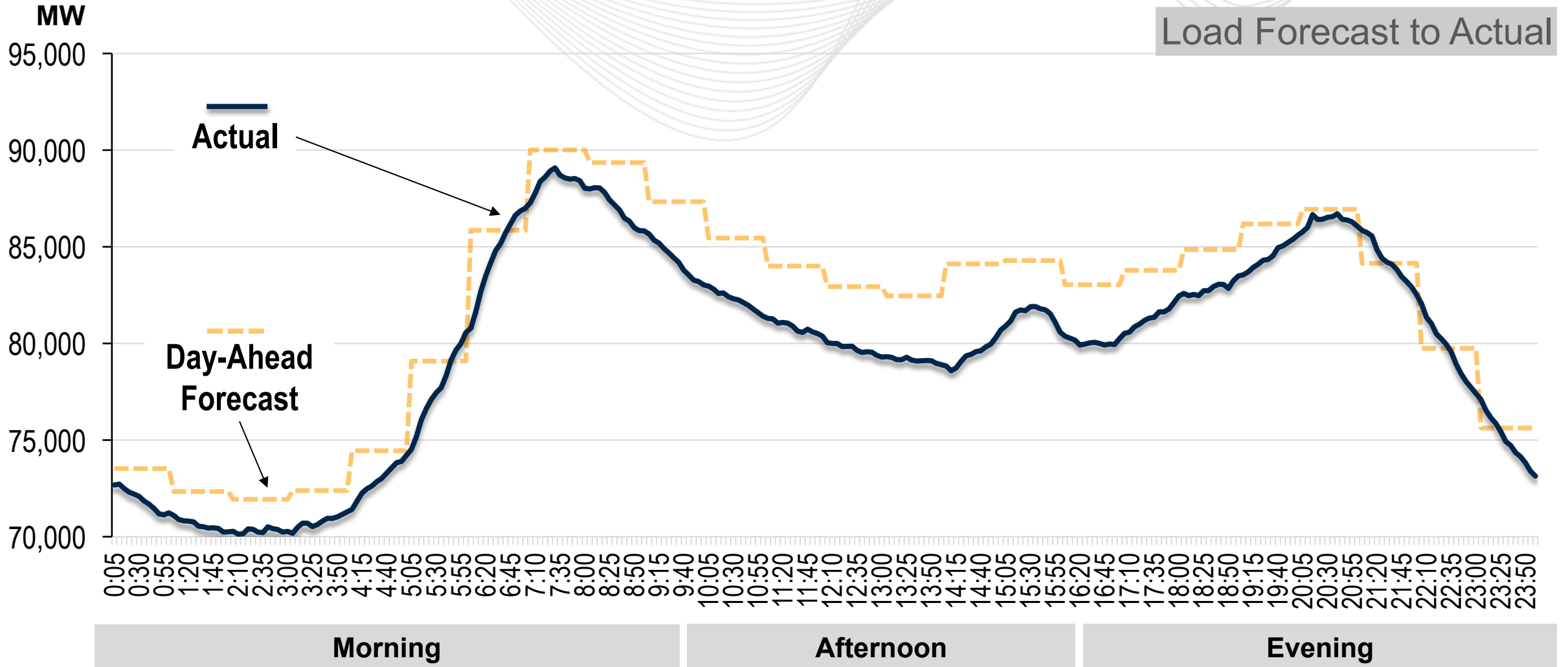


The preceding is an excerpt of a more complete Work Product. Source: data and analysis provided by UL Services Group LLC

Eclipse Scenarios for Behind-The-Meter Solar and Actual Impact



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- Eclipse hours
 - Day-ahead load forecast captured the behavior/load shape expected during time of eclipse
 - Increase in load resulting from behind-the-meter loss
 - Decrease in load (in some regions) due to cooling temperatures
- Entire day
 - More sunshine in zones with higher behind-the-meter penetration, led to steeper drop in load than anticipated in day-ahead forecast
 - Apparent impacts from widespread closures (schools, work); most pronounced in western regions

- ACE control and Hz was maintained very well through event
- On peak regulation requirement was doubled to 1600 MWs
 - Extended regulation by one hour to 1200 MWs
- Ran more CTs than anticipated due to additional drop out in solar and wind
 - A steam unit that was called on for anticipated congested FTS which increased congestion as solar generation decreased

Presenter/SME:

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