



Attachment #5.4.1
Return to Agenda

Briefing on system operations

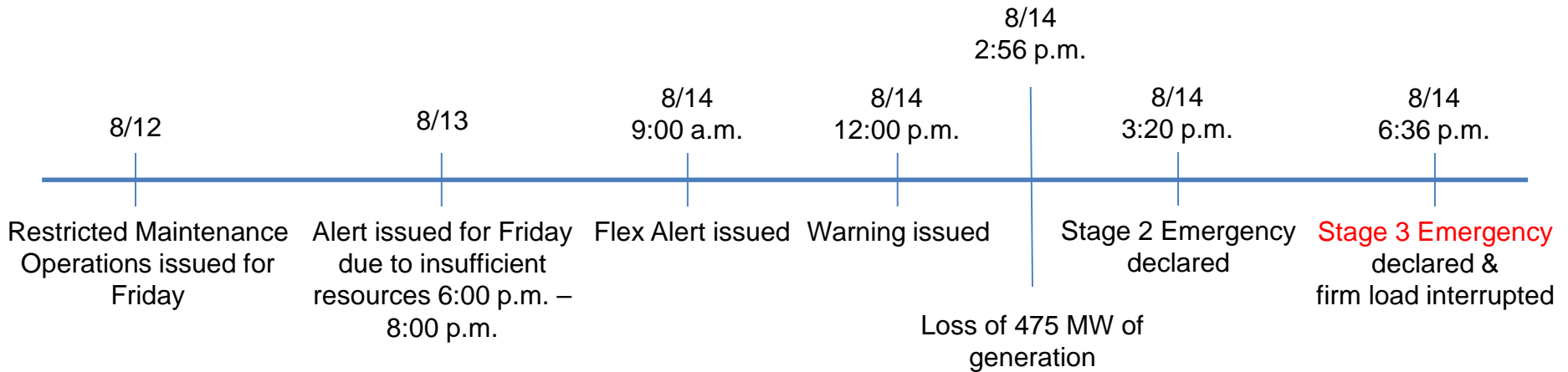
John Phipps
Director, Real Time Operations

Board of Governors Meeting
General Session
August 17, 2020

Operating Principles

- NERC & WECC Standards
- CAISO Tariff
- CAISO Operating Procedures
 - Operating Procedure 4420 Alerts, Warnings, and Emergencies
- **Restricted Maintenance Operations** requires generators and transmission operators to postpone any planned outages for routine equipment maintenance, ensuring all grid assets are available for use.
- **Alert** Issued by 3 p.m. the day before anticipated operating reserve deficiencies. The ISO may require additional resources to avoid an emergency.
- **Warning** indicate that grid operators anticipate using electricity reserves. Activates demand response programs (voluntary load reduction) to decrease overall demand.
- **Stage 1 Emergency** is declared by the ISO Contingency Reserve shortfalls exist or are forecast to occur. Strong need for conservation.
- **Stage 2 Emergency** is declared by the ISO when all mitigating actions have been taken and the ISO is no longer able to provide for its expected energy requirements. Requires ISO intervention in the market, such as ordering power plants online.
- **Stage 3 Emergency** is declared by the ISO when unable to meet minimum contingency reserve requirements, and load interruption is imminent or in progress. Notice issued to utilities of potential electricity interruptions through firm load shedding.

Timeline of events for Friday August 14, 2020



Sequence of events Friday August 14

12:00 p.m.	Unable to secure additional energy, a Warning was issued effective 12:00 p.m. through midnight
2:56 p.m.	Loss of generation – 475 MW
2:58 p.m.	Dispatched contingency reserves to recover
3:20 p.m.	Forecasting a shortage of energy for next few hours - Declared CAISO Stage 2 Emergency, began procuring Emergency Assistance from external entities
5:15 p.m.	Dispatched approximately 800 MW of demand response to maintain load and resource balance
6:36 p.m.	Unable to maintain load and contingency reserve obligation – ordered 500 MW of load shed pro-rata to CAISO Utility Distribution Companies (UDC's) – Stage 3 Emergency declared
6:46 p.m.	Ordered an additional 500 MW of load shed pro-rata to CAISO UDC's
7:56 p.m.	Load decreased and resources were adequate to meet CAISO load and contingency reserve obligations. Ordered all load to be restored.

Sequence of events Saturday August 15

4:10 p.m. to 5:10 p.m.	Total wind output increased quickly requiring other generation to ramp down quickly
5:10 p.m. to 6:05 p.m.	Total wind decreased quickly requiring other generation to ramp up quickly. CAISO ACE was -1421 MW.
6:13 p.m.	While recovering our ACE, a generator ramped down quickly from 400 MW.
6:25 p.m.	Ordered 470 MW of load shed pro-rat from UDC's
6:47 p.m.	Received Emergency Assistance, wind ramped back up, load began to trend down, additional resources available. Ordered all load be restored.

Monday & Tuesday Outlook

- Monday August 17, 2020
 - Load forecast 49,792 MW
 - Resource deficiency from 111 MW to 4,400 MW

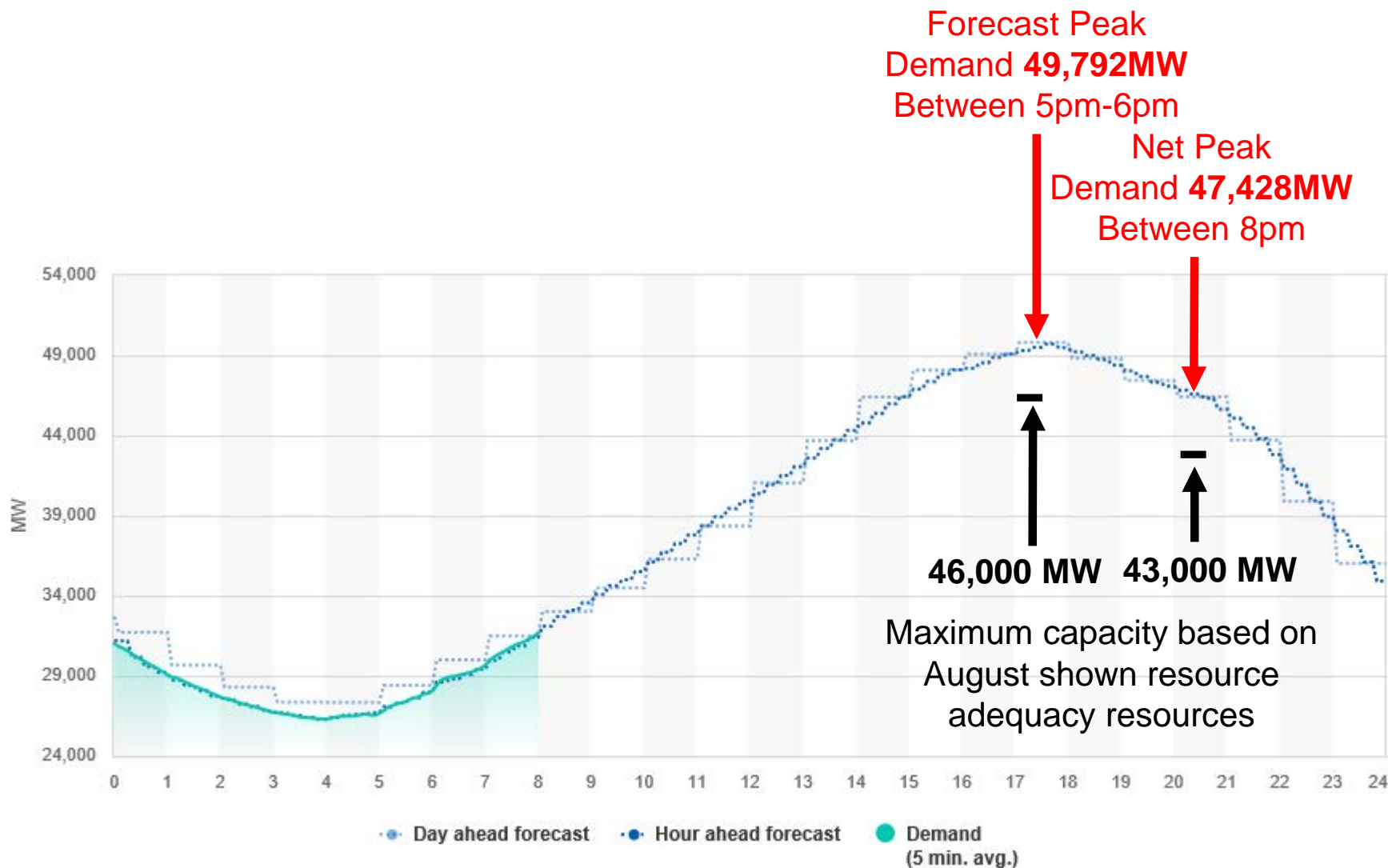


- Tuesday August 18, 2020
 - Load forecast 50,123
 - Resource deficiency to be determined

Capacity to meet demand based on resources contracted and available under resource adequacy programs

- Capacity to meet peak hour load approximately **46,000 MW** but can be ultimately be affected by:
 - Resource and transmission outages
 - Fires affecting transmission availability
 - Availability of imports based on west wide load and supply conditions
 - Cloud cover affecting solar production
 - Weather conditions affecting wind production
 - Hydro conditions
 - Ambient derates to conventional generators due to heat
- Capacity to meet 8 pm (net load peak) demand approximately **43,000 MW**
 - Lower due to no solar production after sunset

Forecast demand for August 17, 2020



Measures taken to mitigate shortfall

- Actively collaborating with numerous entities such as utilities within the balancing area, the California Energy Commission, and neighboring Balancing Authorities.
- Issued flex alerts and warnings
- Procuring available emergency energy
- Called on demand response programs and other demand relief
- Executed significant event Capacity Procurement Mechanism
- Suspended convergence bidding
- Put demand on notice of potential curtailment