



Staff Memo Item 17

TO: East Bay Community Energy Board of Directors
FROM: Michael Susko, Power Resources Manager
SUBJECT: August Heat Wave Summary (Informational Item)
DATE: September 16, 2020

Recommendation

Receive a presentation on the historic heat wave and state-wide rolling blackouts during August 14th and 15th.

Background and Discussion

On August 14th and 15th California experienced rolling blackouts across the state, a situation not experienced since the California Energy Crisis in 2000-2001. The combination of high system demand, an unanticipated loss of supply, and low net import availability created unsustainable system conditions. Grid operators cut power after shifting to a State 3 emergency with up to 4 million customers experiencing an outage.

CAISO did anticipate increased loads and high temperatures. CAISO issued orders restricting maintenance operations, issued alerts regarding potential system reserve deficiency, and issued a Flex Alert, a call for customers to voluntarily reduce their electricity use.

On August 14th, circumstances worsened due to a confluence of events including an unexpected natural gas plant tripping offline, a historic heat storm across the West, and a failed CAISO Flex Ramp test which contributed to shortages on imports. The grid could not support the demand in the evening ramp once solar generation fell off. Utilities were ordered to cut power to customers.

On August 15th there were similar conditions as the day prior, including a failed CAISO Flex Ramp test which again stranded some imports, as well as further supply constraints due to material fluctuations in wind output during the evening ramp. This was further magnified from another day of unexpected losses in some gas generating resources. The grid could not support the demand in the evening ramp once solar generation fell off. Utilities were ordered to cut power to customers.

On August 16th and 17th there were no rolling blackouts due to reduced peak demand and increased supply led by the Governor's office, CAISO, load serving entities, energy supply side and demand side organizations, and the people of California.

Fiscal Impact

There are no fiscal impacts related to the release of the presentation on the heat wave and blackouts during August 14th and 15th.

Attachments

- A. August Heat Wave Summary Presentation



August Heat Wave Summary

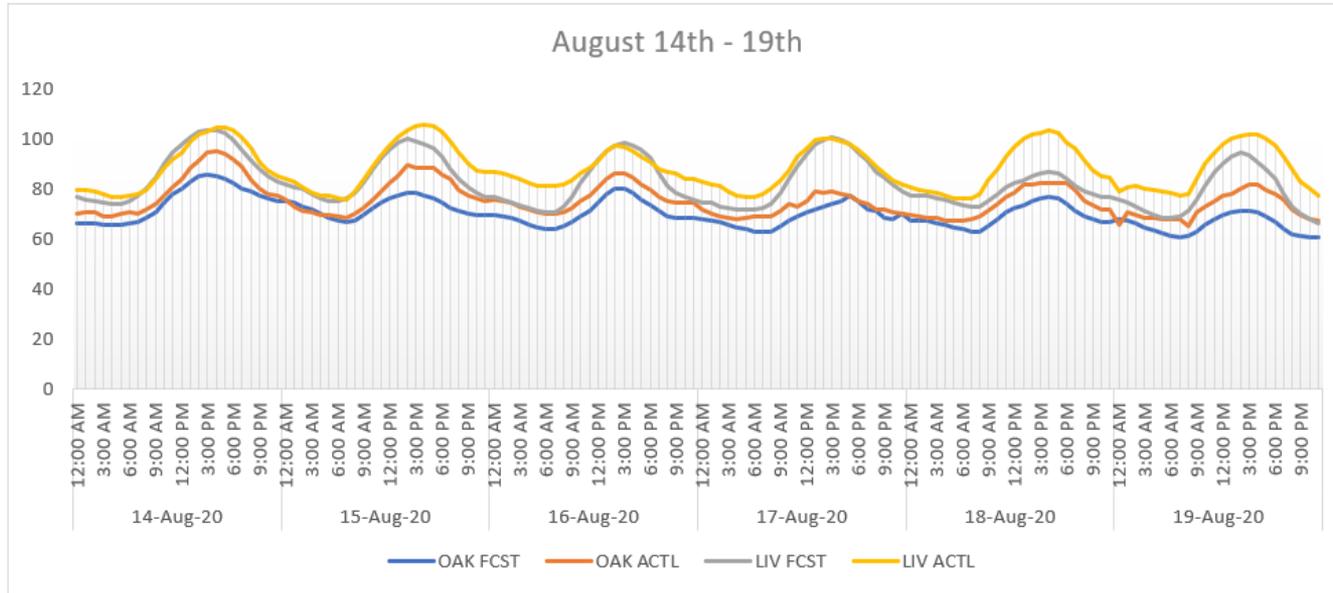
Presented By: Michael Susko
Date: September 16, 2020



Aug Heat Wave Introduction

- California experienced rolling blackouts on August 14th and 15th across the state due to a combination of high system demand due to a record heat wave, an unanticipated loss of supply, and low net import availability due to hot temperatures throughout the West
- Up to 4 million customers experienced an outage
- CAISO anticipated increased loads and high temperatures and reacted with several orders and alerts, though has received criticism for not providing enough warning / outreach
- Confluence of Events
 - A historic heat storm across the entire West
 - Natural gas plants tripped offline
 - Material fluctuations in wind output
 - Critical shortages on imports (due to the heat wave and failed CAISO Flex Ramp Tests)
 - The grid could not support the demand in the evening ramp once solar generation fell off

Record persistent high temperatures



- August 2020 was the hottest August on record in California
- Death Valley reached 130° on Aug 16th, the highest temperature recorded worldwide since 1931
- The Bay Area broke numerous temperature records including 95° in Oakland, 95° in San Francisco, and 103° in San Jose.

Outages

- CAISO did anticipate increased loads and high temperatures. CAISO issued orders restricting maintenance operations, issued alerts regarding potential system reserve deficiency, and issued a Flex Alert, a call for customers to voluntarily reduce their electricity use.
- **August 14th** – circumstances however worsened due to an unexpected natural gas plant tripping offline, a historic heat storm across the West and a failed CAISO Flex Ramp test, contributing to shortages on imports. The grid could not support the demand in the evening ramp once solar generation fell off. Utilities were ordered to cut power to customers.
- **August 15th** – similar conditions as the day prior, including a failed CAISO Flex Ramp test which stranded some imports, and further supply constraints due to material fluctuations in wind output during the evening ramp. This was further magnified from another day of unexpected losses in some gas generating resources. The grid could not support the demand in the evening ramp once solar generation fell off. Utilities were ordered to cut power to customers.
- **August 16th and 17th** – No rolling blackouts due to reduced peak demand and increased supply led by the Governor’s office, CAISO, load serving entities, energy supply side and demand side organizations, and the people of California.

Call to Action across California

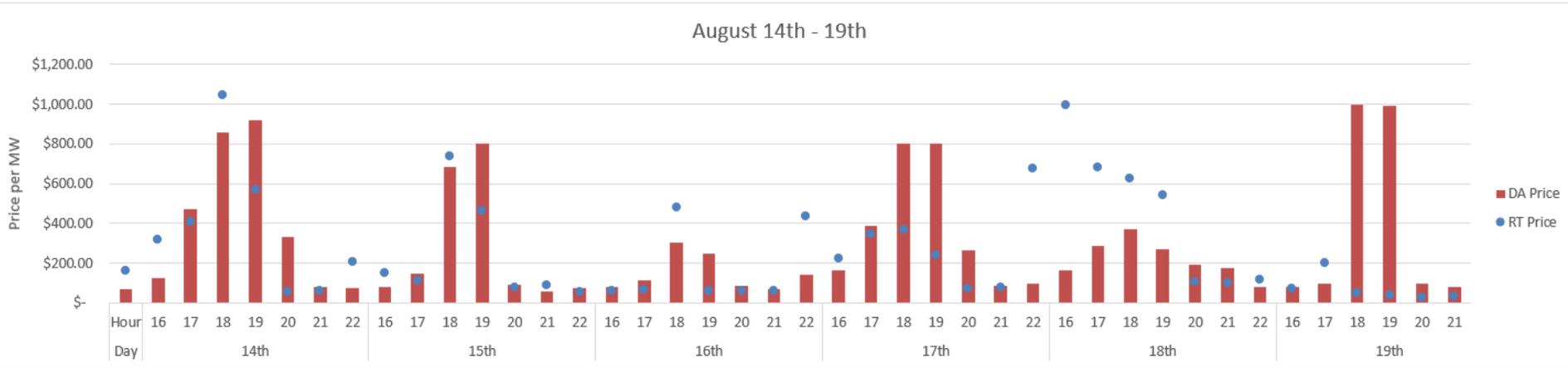
- Conservation Messaging
 - The CAISO, CEC and CPUC supported the Governor's Office and the California Governor's Office of Emergency Services to publicly request electricity customers lower energy use during the most critical time of the day, 3:00 pm to 10:00 pm
 - The CAISO Issued Flex Alerts and warnings
 - EBCE, along with the CPUC, CAISO, IOUs, and other CCAs actively pursued conservation messaging and advertising
- Demand Side
 - Demand Response and backup generators called upon. EBCE has contracted with DR suppliers and validated they performed during the heat wave
 - Data Center use of backup generation
 - US Navy and Marine Corp ship disconnections
 - Home battery charging adjustments
- Supply Side
 - CAISO executed significant event Capacity Procurement Mechanism to procure additional supply resources
 - Department of Water Resources (DWR) and Metropolitan Water District (MWD) adjusted water operations
 - CEC worked with the City and County of San Francisco to maximize power output at Hetch Hetchy
 - CEC worked with private power producers to contribute additional generation from IPP portfolios focused on CSPV
 - PG&E deployed temporary generation, that was procured for public safety power shutoff purposes
 - LADWP and SCE brought in additional general capacity

Financial Impacts

	Hedge Coverage	Load MWh	Energy & Capacity Costs	Hedge Perf.	Net Energy Costs
14-Aug	73%	22,768	\$ (4,873,818)	\$ 1,673,164	\$ (3,200,654)
15-Aug	78%	21,462	\$ (3,606,682)	\$ 1,072,063	\$ (2,534,619)
16-Aug	68%	21,066	\$ (2,268,399)	\$ 369,308	\$ (1,899,091)
17-Aug	75%	22,344	\$ (4,785,070)	\$ 1,584,700	\$ (3,200,370)
18-Aug	74%	22,631	\$ (4,625,284)	\$ 861,792	\$ (3,763,492)
19-Aug	76%	21,836	\$ (3,842,810)	\$ 1,505,123	\$ (2,337,687)
August Average, w/o 14th-19th	94%	17,479	\$ (1,085,597)	\$ (94,131)	\$ (1,179,728)
August Average	90%	18,357	\$ (1,649,742)	\$ 152,029	\$ (1,497,713)
July Average	98%	16,593	\$ (747,929)	\$ (228,121)	\$ (976,050)

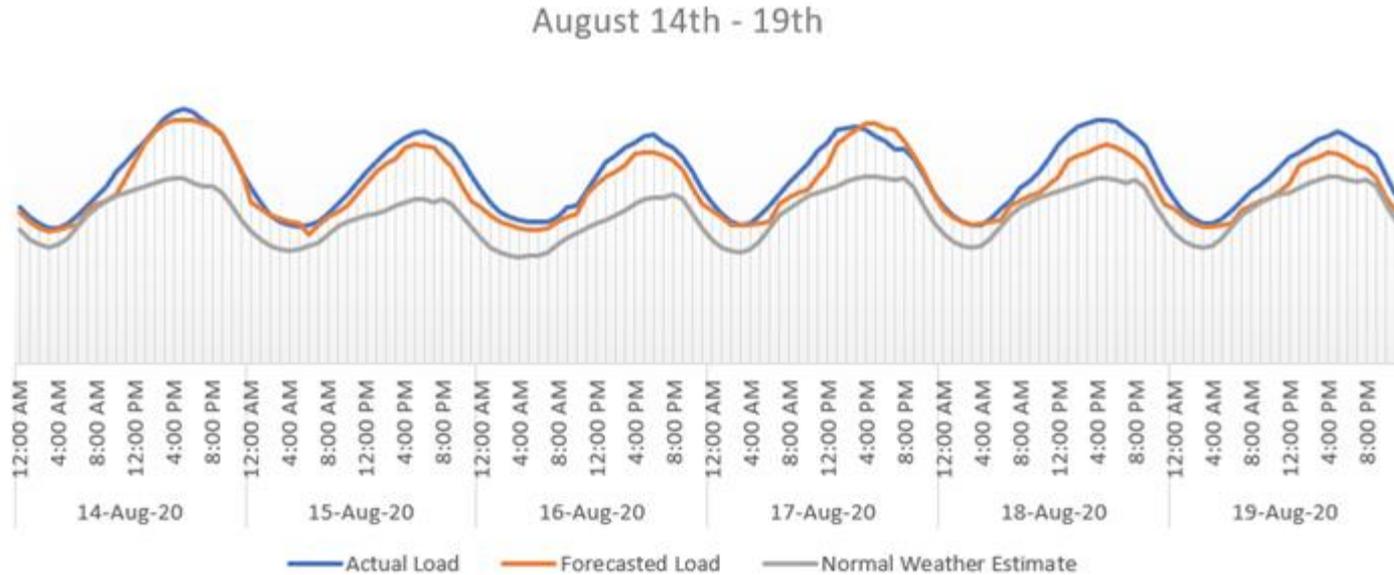
- Revenue reconciliation is in process. Increased revenues partially offsets increase in energy costs
- EBCE met all system RA obligations for 2020, including August RA requirements
- EBCE procured in compliance to our risk management guidelines and hedge targets

Day Ahead and Real Time Hourly Pricing



- Note: Hours shown here reflect peak hours in the late afternoon and evening ramp. Pricing in non-peak hours was \$30 - \$80/MWh

Actual Load vs. Day-Ahead Load Forecast



- During peak hours demand was up to 50% higher than normal
- Even with unusually high temperatures, our load forecast proved to be reasonably accurate

System-wide actions for reliability improvement

- Improve peak demand forecast process
- Review resource adequacy obligations
- Enable more distributed energy resources and load flexibility
- Review available capacity of solar and wind resources
- CPUC ordered 3,300MW of new capacity online by 2023
- Expand demand response programs
- Increase battery storage procurement
- Gas generation extensions to support the transition