

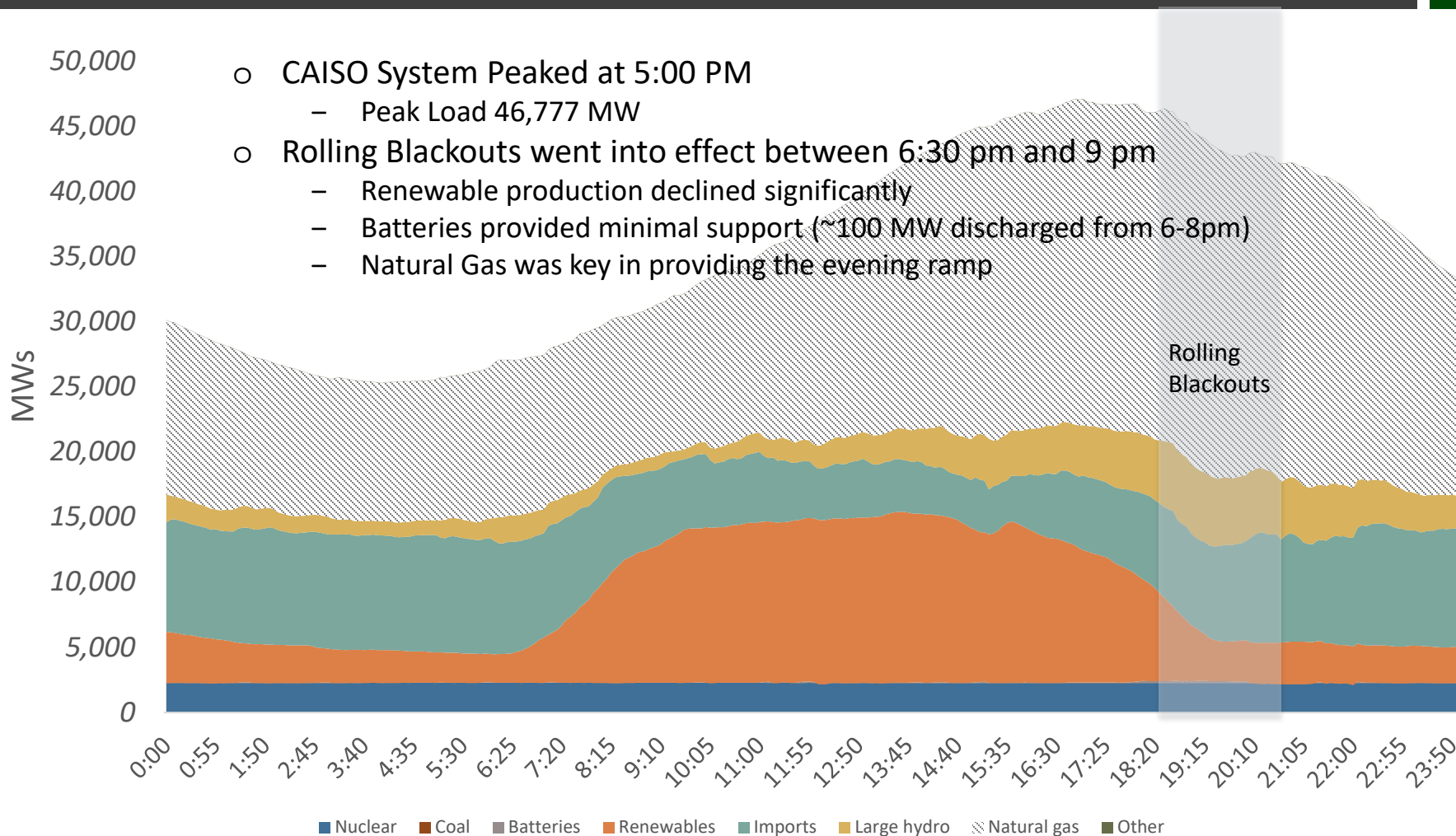
Review of August/Sept 2020 Electric System Interruptions to AMP Customers

September 21, 2020

Overview

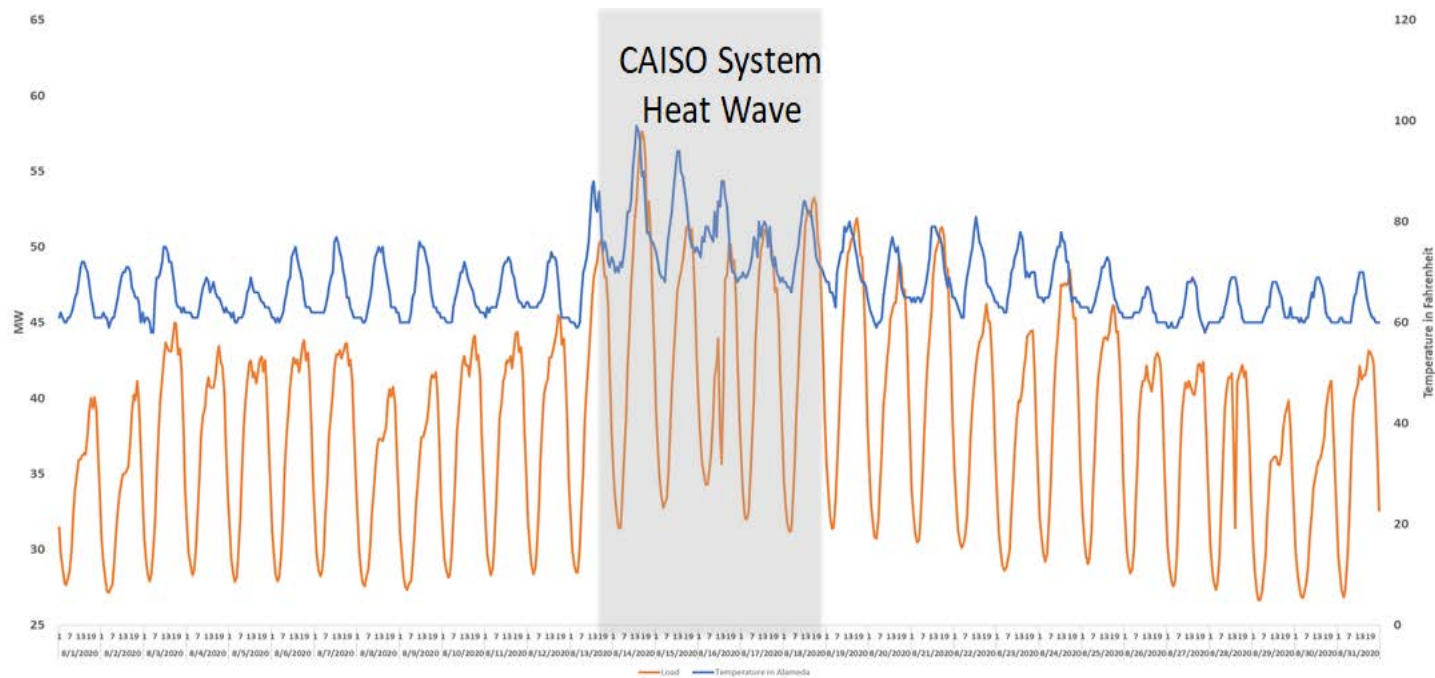
- CALIFORNIA Independent System Operator (CAISO) Heat Wave System Overview
- AMP's Heat Wave Load and Resources
- Heat Wave Outage Events & Response
- Other Events
- Lesson learned

CAISO Rolling Blackouts 8/14/2020



AMP's August Hourly Load Data

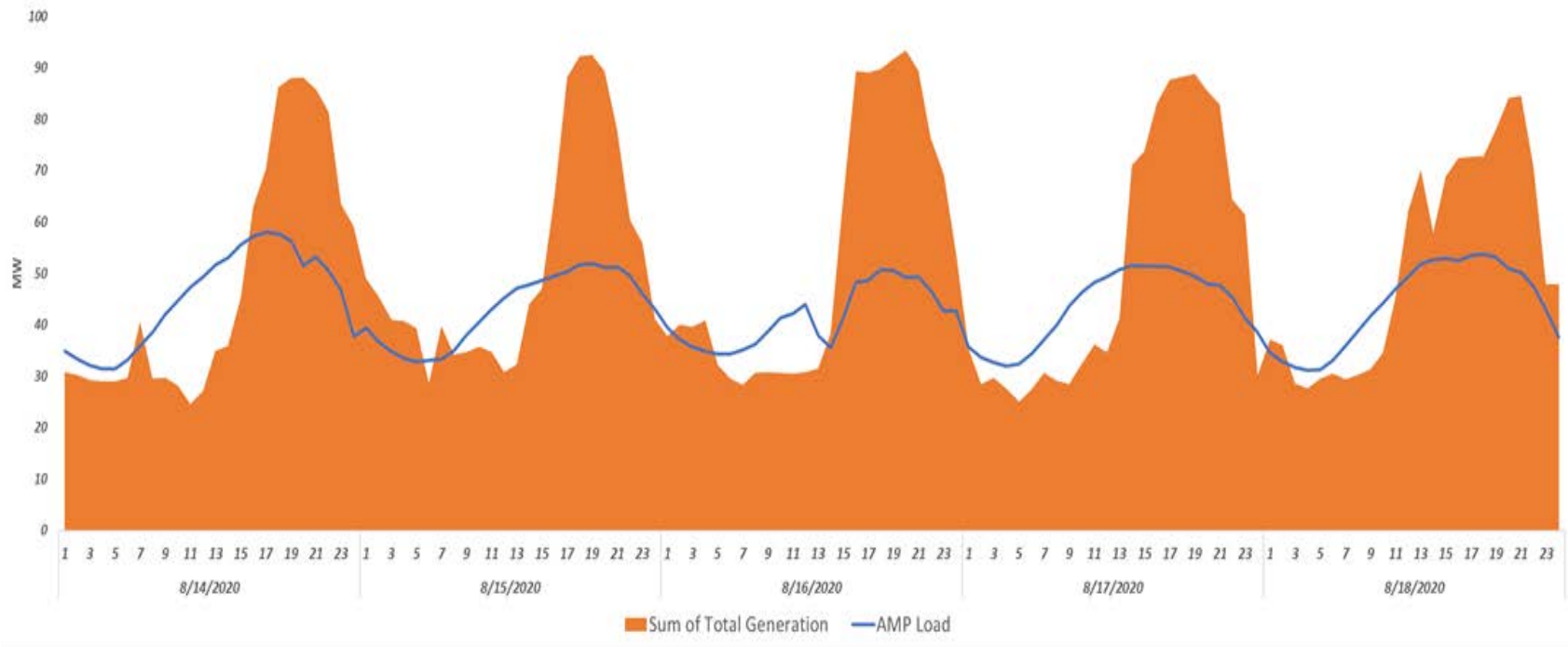
- AMP's Peak was on 8/14 at 57.62 MW between 4:00 and 5:00 PM
 - It happened at about the same time as CAISO Peak
- Alameda experienced multiple days of hot weather
 - Temperatures almost reached 100°F on 8/14



AMP's Resources during Heat Wave (8/14-8/18)

- AMP was fully resourced during the heat wave
- NCPA and AMP's dispatchable resources responded to the grid during the system emergency
 - NCPA Hydro and CTs provided maximum support

AMP's hourly Load and Generation



What Happened on 8/14/2020?

- Agencies are still evaluating, but some preliminary information provides insight into issues.
- Due to hot weather, CAISO system exceeded the CEC 2020 1 in 2 peak forecast.
- Significant renewable supplies (solar) rise quickly in morning but drop off dramatically in late afternoon. Natural gas units and imports typically fill needs.
- Utilities plan for this and have sufficient reserve margin built in to account for units going down or higher load. CAISO's ability to handle uncertainties around forecasts and reliance on imports will be re-evaluated after the incident.
- AMP has sufficient supplies to meet customer demands, but when instructed by CAISO to curtail load must follow instruction.

California Independent System Operator: Alerts

- Flex alert: Call for consumers to voluntarily conserve energy
- Stage 1 emergency: Demand may exceed supply; strong need for conservation
- Stage 2 emergency: Conservation isn't working; additional power plants ordered online
- Stage 3 emergency: Supply is not meeting demand; load shedding imminent



Electric utilities are ordered by the CAISO to begin rolling outages to protect the stability of the grid.

Protocol for Rotating Outages in Alameda

- AMP follows an established procedure for dropping load
 - Load is dropped for one-hour circuit by circuit, not by geographical location.
 - Once power to a circuit has been dropped, it moves to bottom of list and won't be dropped again until nine other circuits have been dropped.
- Last rotating outage in Alameda: 19 years ago.

AMP Circuits

- 13** Distribution circuits in Alameda
- 3** Critical load circuits (hospital, EOC, police, etc.)
- 10** Circuits eligible for rotating outages

Heat Wave Event

Timeline of Events: Friday, Aug. 14:

- **3:25 PM:** CAISO declared Stage 2 Emergency
 - **6:38 PM:** CAISO declared Stage 3 Emergency
 - **6:45 PM:** AMP ordered to shed load immediately
 - 5 MW in West End dropped
 - 3,500 customers affected
 - Mid-island teed up to be next, followed by East End and Bay Farm
 - **7:50 PM:** Grid stabilized, power restored
 - AMP shed only one circuit
- Notifications were received from different entities including CAISO, RC West, And NCPA*
- There was no time between the declaration of Stage 3 Emergency and CAISO's order for Load Shedding for AMP*
- AMP was expecting to drop another circuit after the first load drop but didn't have to do it*



Heat Wave Event

Customer Outreach, Friday, Aug. 14

- AMP posted CAISO flex alerts to social media on Friday morning asking customers to conserve.
- Due to lack of notice from CAISO, AMP was unable to inform customers before shedding load.
- Shortly after circuit dropped, AMP communicated via social media and website, and notified city representatives, police and fire, who in turn communicated via their channels and AC Alert.

Heat Wave Event

Saturday, Aug. 15:

- **6:00 PM:** AMP alerted to be ready to shed load within 30 minutes
 - AMP, city, fire and police worked together to alert customers that mid-island would be first, followed by followed by East End and Bay Farm
- **7:15 PM:** Grid stabilized, rotating outages called off before started
 - AMP, city, fire and police continued to provide updates

Sunday, Aug. 16:

- **12 Noon:** Lightning strikes on Jenney substation and utility pole causing outage to 10,000 customers in East End, Bay Farm, Coast Guard Island
 - AMP and city coordinate to provide communications throughout day
- **2:30 PM:** Crews restore power to all but 50 customers
- **7:35 PM:** Crews restore power to remaining 50 after replacing three transformers.

Heat Wave Event

Monday, Aug. 17:

- **2:00 PM:** AMP alerted to be ready to shed load within one hour
 - AMP, city, fire and police coordinate messaging
- **7:30 PM:** Grid stabilized, rotating outages never ordered
 - AMP, city, fire and police continued to provide updates

Tuesday, Aug. 18:

- **9:00 AM:** Planned outage to replace backyard pole begins, affecting 75 customers
- **12:30 PM:** Crews complete pole replacement; power restored
- **3:00 PM:** CAISO declares stage 2 emergency
 - AMP, city, fire and police coordinate messaging throughout day
- **8:00 PM:** CAISO cancels stage 2 emergency.

Heat Wave Event

Wednesday, Aug. 19:

- **12 Midnight:** Leaking transformer discovered on Bay Farm; replacement requires outage for 33 customers
- **4:30 AM:** Transformer replaced; power restored
- **8:00 AM:** Flex alerts posted throughout day; CAISO declares no emergencies

Other Events

Wednesday, Aug. 28:

- New SF6 breaker at Cartwright being put into service
- **1:48 PM** -Relay tripped and power out to 7K customers
- **2:26PM** – Power restored
- After Action report being prepared
- Project is part of Cartwright system upgrades that improves reliability in west end area.

Sunday, Sept 5th:

- **8pm** – Outage on Circuit affecting approximately 3000 customers
- Circuit is same one that was first on list to be dropped due to rolling outage direction from CAISO on August 14th
- At same time reports received of gunshots in vicinity of Cartwright location immediately adjacent to damaged riser
- **12:40am** - All load restored
- AMP staff preparing after action report and working with APD

Review

- AMP communications:

- Between August 13-19, AMP posted 75+ updates and responses on Twitter and Facebook



- Moving forward, AMP will continue posting information as received from Grid operator
- For rolling blackouts, AMP will include list of rotation and general information on location
- AMP will use web-based email subscription service GovDelivery to notify customers

Review

- AMP/PIO/Police/Fire communication protocols:
 - AMP has the expertise to convert highly technical information into meaningful messages
 - AMP will take lead to ensure accurate information gets out to community
 - AMP and City PIO have different engagement protocols on social media. City PIO actively engages on numerous forums (Peeps, etc)
 - City PIO will seek AMP input on any proposed response on social media. Due to competing priorities during emergencies, it may not be possible (or necessary) to respond on all social media forums
 - In general, communication protocols work, but unique circumstances make it more challenging (COVID, etc)
- AMP will review its protocols for rolling blackouts to determine if changes are necessary (i.e., 30 minutes per block vs current 60 minutes per block)