

A lit candle in the background and an open book with a pen in the foreground.

CAISO and California Rolling Blackouts: Unanswered Questions

Loretta Lynch @lmlynchenergy

CAISO = A Private Nonprofit Corporation, Not A Government Agency



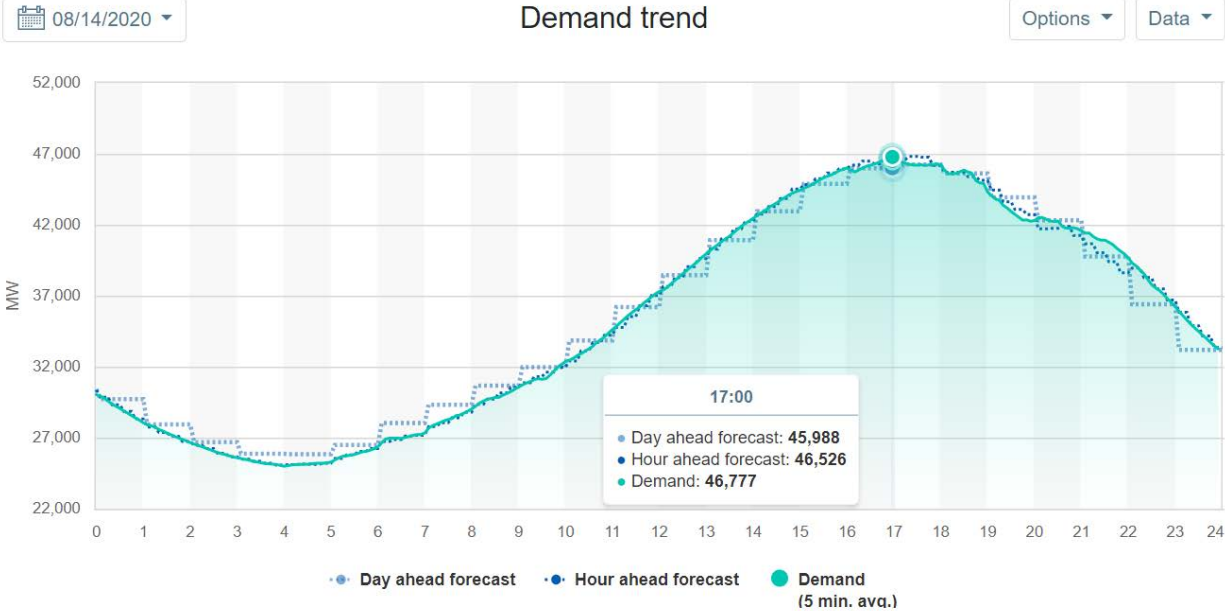
CAISO Peak Load History 1998 - 2019



Year	Megawatts at Peak Load*	Date	Time
1998	44,659	August 12	14:30
1999	45,884	July 12	16:52
2000	43,784	August 16	15:17
2001	41,419	August 7	16:17
2002	42,441	July 10	15:01
2003	42,689	July 17	15:22
2004	45,597	September 8	16:00
2005	45,431	July 20	15:22
2006	50,270	July 24	14:44
2007	48,615	August 31	15:27
2008	46,897	June 20	16:21
2009	46,042	September 3	16:17
2010	47,350	August 25	16:20
2011	45,545	September 7	16:30
2012	46,846	August 13	15:53
2013	45,097	June 28	16:54
2014	45,089	September 15	16:53
2015	46,519	September 10	15:38
2016	46,232	July 27	16:51
2017	50,116	September 1	15:58
2018	46,427	July 25	17:33
2019	44,301	August 15	17:50

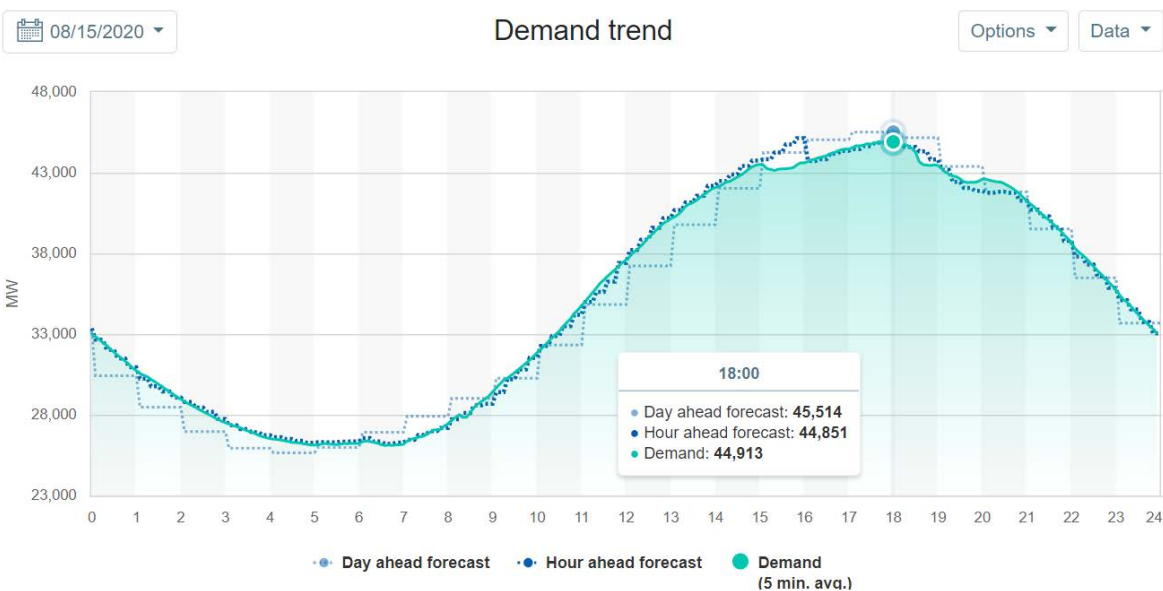
Peak Demand During the August 14th and 15th Heat Wave

August 14th



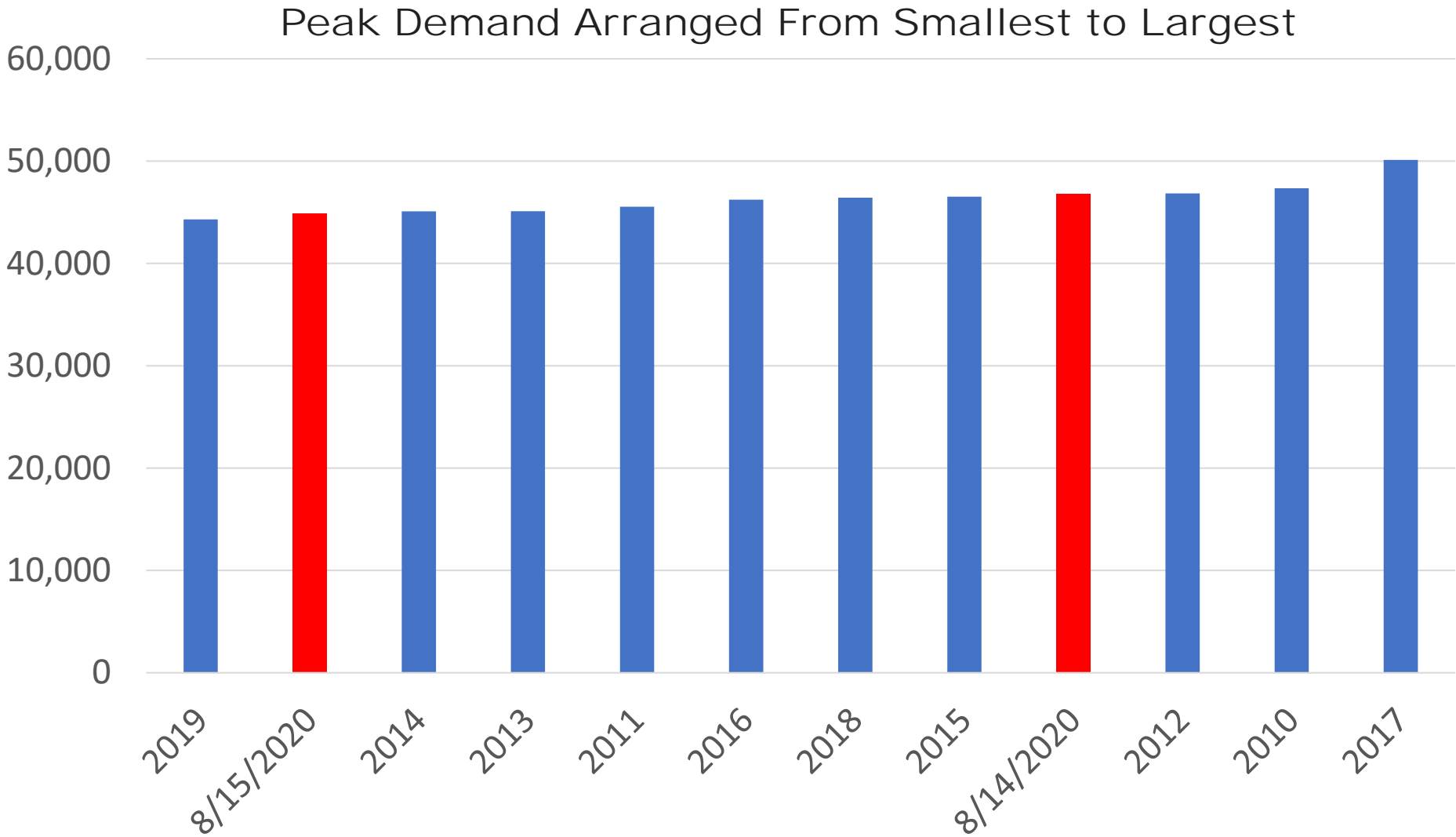
Peak Demand 5PM
46,777 MW

August 15th



Peak Demand 6PM
44,913 MW

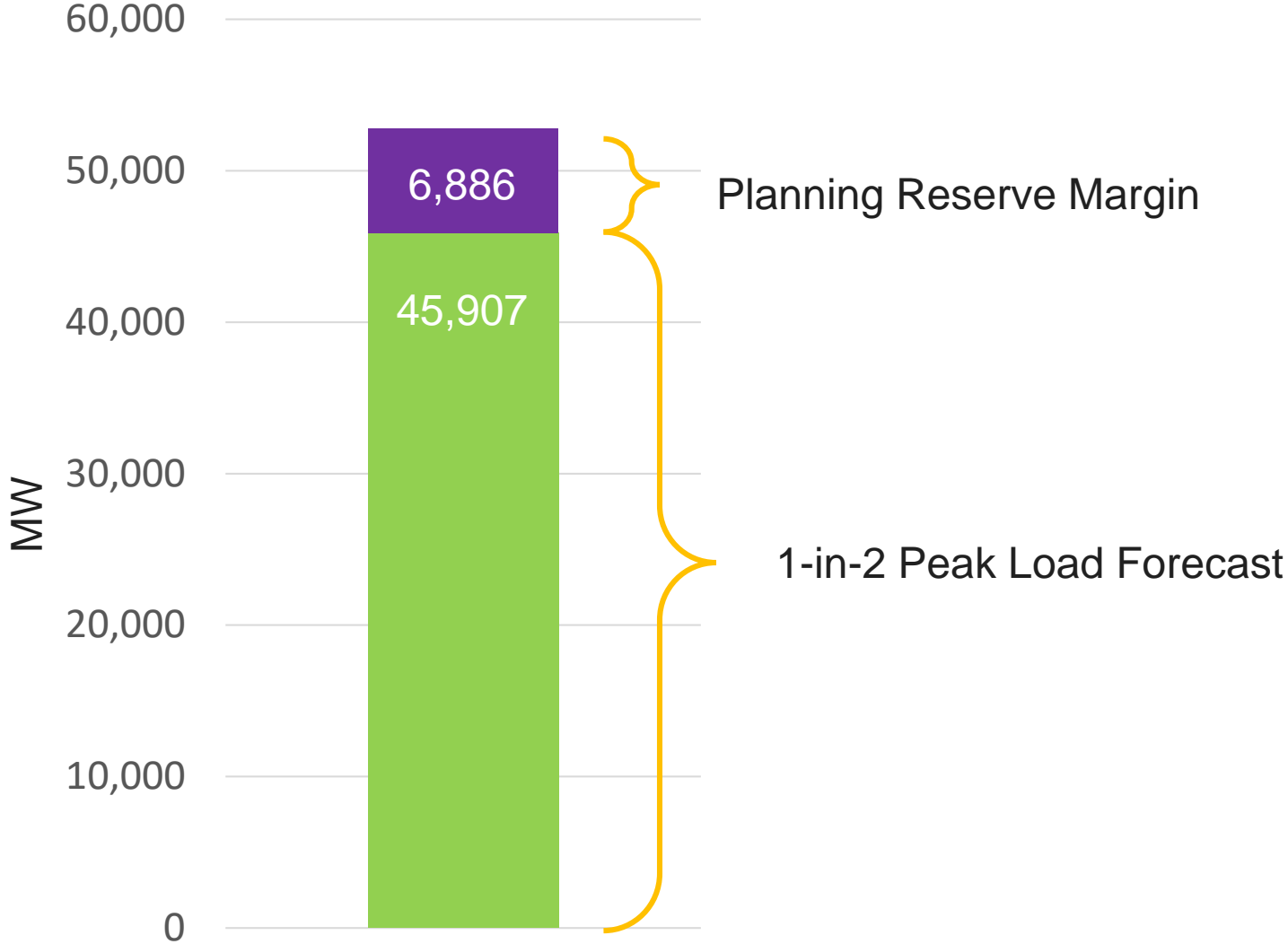
2010-2020 Historical Peak Demand Plus Aug 14th & Aug 15th



Source: CAISO's Today's Outlook, <http://www.caiso.com/TodaysOutlook/Pages/index.html> and CAISO's Peak Load History <https://www.caiso.com/Documents/CaliforniaISOPeakLoadHistory.pdf>

Planning Reserve Margin 2020

2020 Peak CAISO Demand Forecast	
2020	MW
1-in-2	45,907
1-in-5	47,755
1-in-10	48,457



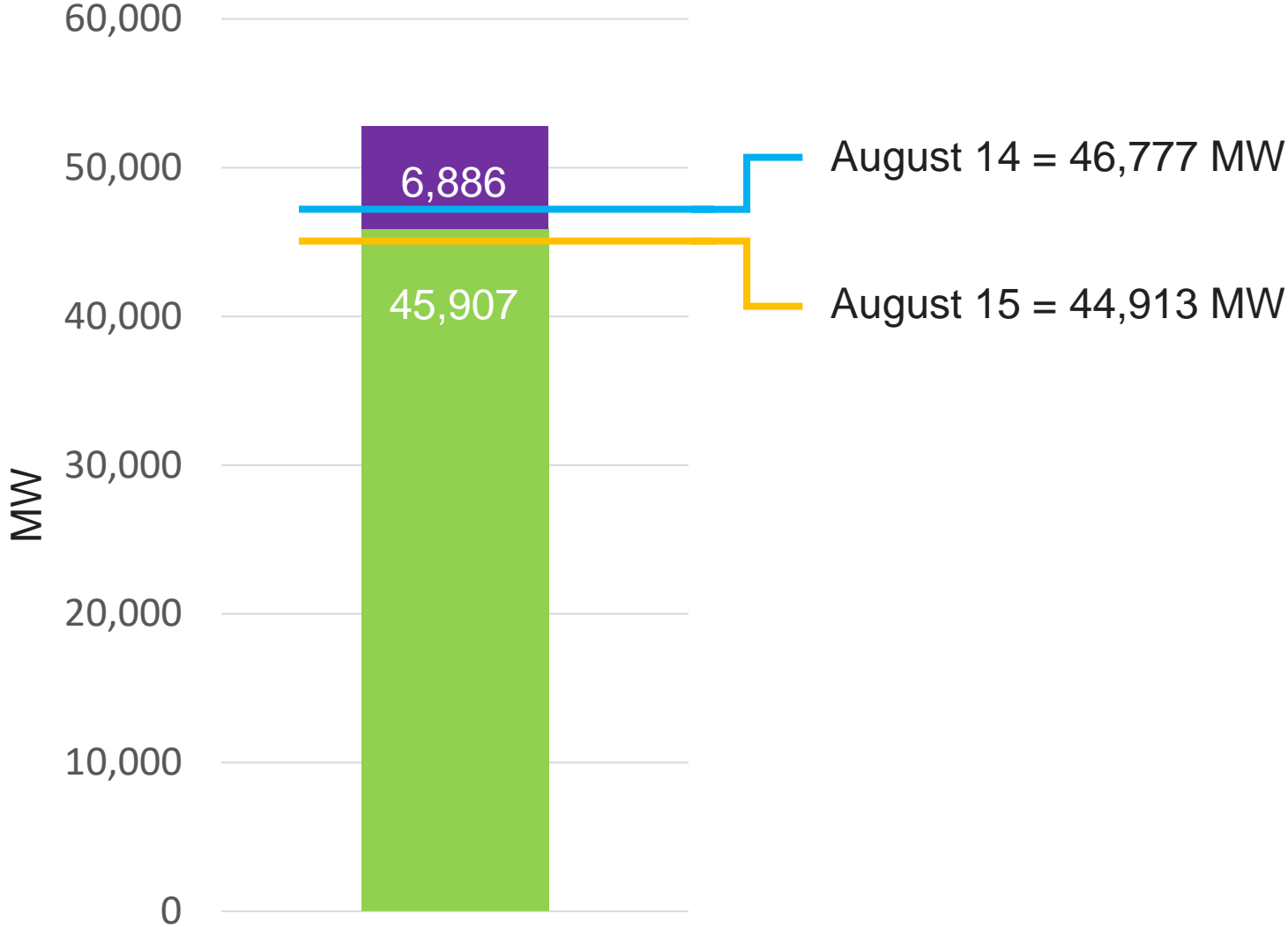
Planning Reserve Margin = 1-in-2 Peak Load Forecast + 15% = **52,973 MW**

Loretta Lynch [@lmlynchenergy](https://twitter.com/lmlynchenergy)

Source: CAISO's 2020 Summer Loads and Resources Assessment, Table 6, p. 20 <http://www.caiso.com/Documents/2020SummerLoadsandResourcesAssessment.pdf>

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CALIFORNIA
POWER
BLACKOUTS: THE
CORPORATE
GRID OPERATOR
IS RESPONSIBLE

- For two days in August, the corporation that has operated California's power market since the late 1990s, CAISO, declared a Stage 3 emergency that plunged much of the state into blackouts.
- Energy traders immediately pushed prices up from about \$35/MwH to over \$3,000.
- But CAISO immediately pointed the blame on state officials, and claimed that increased power demand for A/C due to heat wave, combined with too few natural gas power plants and unreliable renewable energy was to blame.

CAISO Alert, Warning, and Emergency Notices

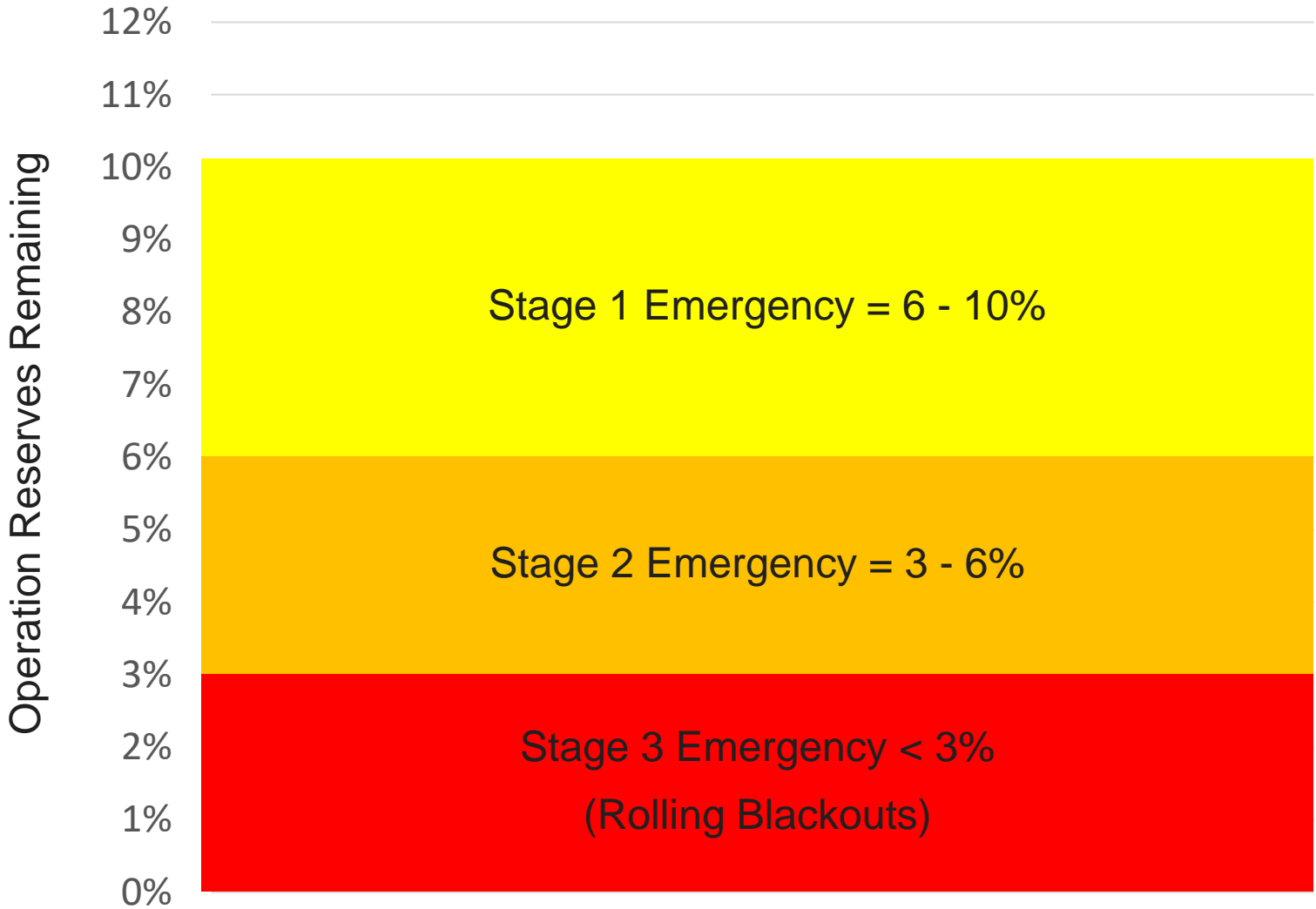
	2007	2008	2009	2010	2011	2012	2013	2014	2015
Flex Alert*	6	3	0	0	2	2	3	1	2
Restricted Maintenance Operations	18	10	6	7	15	23	9	8	10
Transmission Emergency	4	0	6	2	2	0	0	1	0
Alert	1	0	0	0	0	0	0	0	1
Warning	3	1	2	1	1	0	0	1	2
Stage 1 Emergency	1	0	0	0	0	0	0	0	0
Stage 2 Emergency	0	0	0	0	0	0	0	0	0
Stage 3 Emergency	0	0	0	0	0	0	0	0	0

	2016	2017	2018	2019	2020
Flex Alert*	3	4	2	1	3
Restricted Maintenance Operations	11	10	18	2	5
Transmission Emergency	0	1	2	3	1
Alert	0	0	0	0	7
Warning	0	0	0	1	7
Stage 1 Emergency	0	1	0	0	0
Stage 2 Emergency	0	0	0	0	6
Stage 3 Emergency	0	0	0	0	2

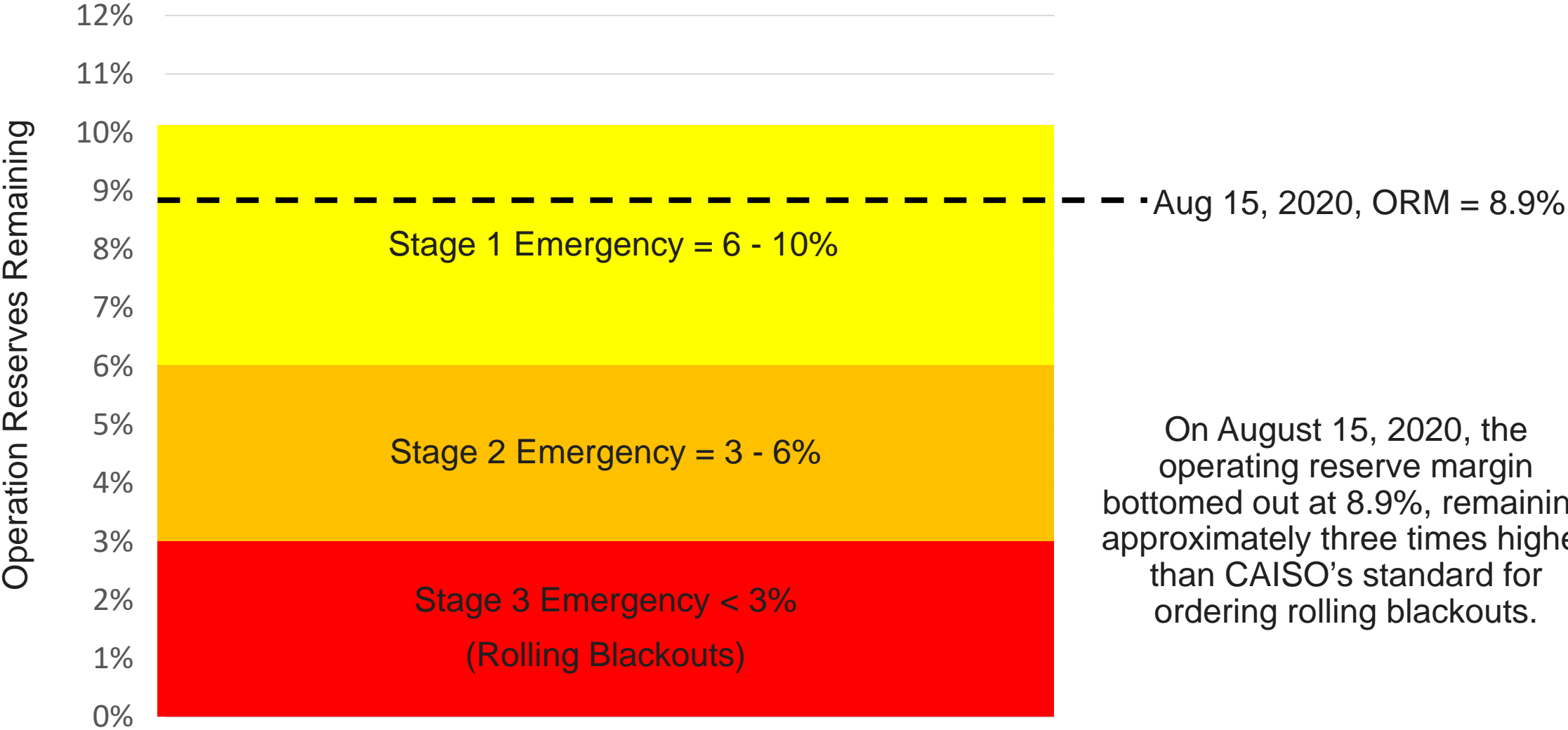


Source: CAISO's AWE Grid History Report
<http://www.caiso.com/Documents/AWE-Grid-History-Report-1998-Present.pdf>

CAISO's Emergency Stages vs. *Operating* Reserve Margin



CAISO's Emergency Stages vs. *Operating Reserve Margin*



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Source: Energy Analyst, David Marcus, in New York Times
<https://www.nytimes.com/2020/08/16/business/california-blackouts.html#:~:text=Managers%20of%20the%20electric%20system,of%20the%20state's%20peak%20years>

CAISO's Own Market Monitor Warned About CAISO's Market & RA Contracts Problems For Years

- In 2018 & 2019 the DMM warned about potential system-level market power in the CAISO's energy markets [and the need to mitigate potential system level market power in the CAISO's energy markets](#).
- RA imports, as well as thermal resources within the CAISO under capacity-only RA contracts and energy limited renewable resources with limited output during the hours when net loads – - and the potential for uncompetitive supply conditions – are highest. Such resources typically provide more limited benefits in terms of hedging LSEs' energy costs and mitigating potential system-level market power. . . .
- In 2018, DMM observed increases in both the quantity of imports used to meet RA obligations and the quantity of import RA capacity bid in at high prices in the day ahead market during peak summer hours. Specifically, DMM has recommended that the CAISO [address] [whether or not RA imports need to be backed by specific generation resources and how such requirements should be enforced in practice](#). In addition, [DMM has recommended that the CAISO consider establishing some type of real-time bidding obligation for RA imports](#) that are not scheduled in the day-ahead in the real-time market.
- DMM notes that [RA requirements met by capacity-only imports may be especially problematic from the perspective of both system reliability and energy market power](#). Unlike most resources within the CAISO, [capacity-only imports have no real-time bidding obligation and cannot be called upon by the CAISO](#) at any point after the day ahead market.
- Imports used to meet RA requirements are not subject to any type of bid or price mitigation. Thus, increased reliance on such capacity-only imports to meet RA requirements may decrease both system reliability and CAISO market competitiveness.



Tyson Slocum
@TysonSlocum

Wall St energy traders know the IDs of power plants that went offline causing the blackouts - so why is #CAISO claiming it's proprietary? The private grid operator needs to serve the public, not protect energy traders @zackhale



CAISO urged to name gas plants that contributed to outages; state asked to probe

The California ISO should identify natural gas-fired plants that unexpectedly went offline and contributed to the state's recent rolling blackouts, Public Citizen said. ...
spglobal.com

8:20 AM · Aug 26, 2020 · Twitter Web App

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10 Retweets 6 Quote Tweets 42 Likes



Slide courtesy of Tyson Slocum of Public Citizen

UNANSWERED QUESTIONS THAT CA FAMILIES AND BUSINESSES DESERVE TO KNOW

Why Blackout CA with 8+% Reserves Already Purchased?

- How could just 2 “offline” plants identified by the ISO -- Blythe = 496MW (offline @ 2:57 pm) and Panoche = loss of 248 MW – cause rolling blackouts given the almost 7,000MW already-purchased reserves that should have been available?
- Why didn't the ISO call on all the resources that CA LSE's had already purchased for reserve power?
- Why did ISO suspend its convergence bidding market on Aug. 17th & why allow it to start back up on Aug.22nd? What did the ISO see that caused it to conclude: “the convergence supply positions may be facilitating demand schedules in the day-ahead market, while the CISO faced the possibility that it would have to curtail scheduled based on what the system could actually support physically to maintain reliability.” (ISO Stakeholder Q&A published 9/11/2020)
- Why does the ISO allow exports during heat waves or other times of tight supply?
- Why didn't the ISO call on all DR resources instead of pushing voluntary conservation?

Investigate How The ISO Runs CA's Grid & Electricity Markets

Misfeasance or Malfeasance: Could the ISO's Blackouts & Shortages Drive Other Policy Goals?

The ISO's explanations do not match up with the facts

The ISO refuses to explain what was happening – specifically – in the ISO-created convergence bidding market and whether its operation contributed to Labor Day supply problems.

The ISO allowed thousands of MW of exports during heat waves and Stage 1s, while they were pleading with Californians to conserve energy

After significant pushing, the ISO identified 2 power plants as the culprits – and initially blamed wind, too.

The Munis did not experience supply problems and did not black out any customers because of lack of supply or transmission constraints.

SO WHY DID BLACKOUTS HAPPEN IN AUGUST AND PROBLEMS OCCURRED OVER LABOR DAY WEEKEND?

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Dive Brief:

- The U.S. Department of Energy this weekend issued an order allowing additional dispatch of three natural gas-fired plants in the California Independent System Operator's (CAISO) footprint through the end of the week, if needed, in light of "exceptional levels of electricity demand" spurred by a heatwave in the state.
- The order comes after CAISO on Sunday requested leeway on environmental and air quality permit limitations for the plants, due to high electricity demand forecasts this week. The order would allow the system operator to dispatch up to 100 MW of additional generation.
- The DOE order's scope pales in comparison to the thousands of megawatts of voluntary conservation that enabled California to keep its

URGED BY CAISO,
CALIFORNIA WATER
BOARD EXTENDS LIFE
OF 4 DIRTY FOSSIL
POWER PLANTS IN
DIRECT RESPONSE TO
BLACKOUTS

ENVIRONMENT SEPTEMBER 1, 2020 / 7:22 AM / UPDATED 15 DAYS AGO

California approves extending the lives of four aging gas plants

By Reuters Staff

2 MIN READ



(Reuters) - California, which imposed rolling blackouts during an oppressive heat wave on two days last month, on Tuesday extended the lives of four aging natural gas plants it has been seeking to retire for a decade.

The unanimous vote by four members of the State Water Resources Control Board follows an analysis last year that identified a potential electricity capacity shortfall beginning in the summer of 2021, according to agency documents. One board member was absent from the meeting.

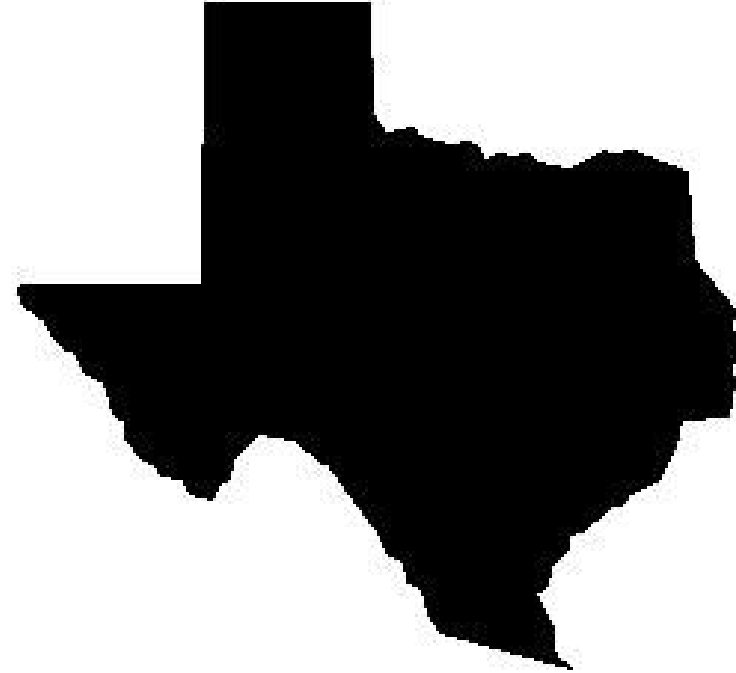


CAISO vs. ERCOT



CAISO calls for rolling blackouts

Operating reserve margin = 8.9%
for approximately 20 minutes on
August 15, 2020



ERCOT 100% reliable in 2019

Planning reserve margin = 8.6%
for entire summer of 2019
through “record-setting electric
demand and high temperatures.”

Watch for Policy Recommendations in the Forthcoming Joint Agencies Report That Give the ISO More Power and Territory

- The ISO wants the PUC to impose even higher RA procurement obligations. But what good are reserves if the ISO won't call them when CA needs the power?
 - Either the RA contracts are not good enough or
 - The ISO-determined market rules allow its markets to work so that RA providers need not supply actual electricity
- The ISO has long wanted to regionalize its markets and grid operation – they may claim that they won't fail if we give them more authority and more territory.
 - Why would other states join with CA given the ISO's failure to keep the lights on?
 - Why would other states expose themselves to the ISO's convergence bidding markets that allow arbitrage opportunities between markets?
 - Why would CA want to give up control over the ISO board --- and hand that control over to the FERC?

CAISO's Planning Standards for Staged Emergencies

“A stage 1 emergency is usually issued when the CAISO anticipates or forecasts the system will not be able to maintain the required contingency reserve level, and there are insufficient additional resources (in or out of market) to maintain or recover the contingency reserves required. The CAISO will usually issue a stage 1 emergency when the operating reserve is seesawing above, then below the contingency reserve requirement and load continues to increase or energy supplies continues to decline. A stage 2 is an indication that all the steps available under a stage 1 do not resolve or recover the reserve deficiency and the system is using non-spin reserves to meet load and spin requirements, thereby making non-spin and contingency reserves deficient. A stage 3 is an indication the system cannot maintain the spinning reserve requirement, generally 3 percent of load, and firm load interruption is imminent or in progress.”