



California ISO

Summer Readiness 2025 Refresher Training for Scheduling Coordinators

Prepare for increased electricity demand during the summer season and focus on emergency response, communication, and operational coordination

Slides and recording will both be available on [caiso.com](https://www.caiso.com)

Presentation will begin at 09:02 am PPT

Agenda

- **Lessons learned from 2024**
- **Review CAISO Emergency Playbook**
- **Walkthrough Energy Alert (EA) notification levels and what happens during each**
- **How to (un)subscribe to EA notifications**
- **Where to find additional information**

Participate



Add questions and comments in the Chat



Raise hands in WebEx to ask questions



Please stay muted until asking questions

OVERVIEW OF SUMMER 2024

2024 Statistics

Peak demand

48,323 MW

Sept 5 at 4:59 p.m.

Previous year:

44,534 MW on Aug 16 at 5:59 p.m.

Based on 1-minute averages, and includes dynamic transfers.

New record

Peak demand served by renewables

20,612 MW (51.8%)

Aug 12 at 5:03 p.m.

Previous year:

15,524 MW (38.2%) on July 18 at 5:57 p.m.

This indicates the highest amount of renewables serving peak electricity demand on any given day.



1 MW



900 homes

New record

Solar peak

19,650 MW

Aug 23 at 12:10 p.m.

Previous year:

16,056 MW on Sept 26 at 11:32 a.m.

Wind peak

6,322 MW

May 15 at 10 p.m.

Previous year:

6,317 MW on May 28 at 5:39 p.m.

Peak net imports

9,566 MW

July 3 at 2:52 a.m.

Previous year:

10,480 MW on May 20 at 11:36 p.m.

100 MW

90,000 homes

20,000 MW

18,000,000 homes

Added installed storage capacity

4,190 MW

Previous year:

2,684 MW

Total installed storage capacity:

11,454 MW

Western Energy Imbalance Market (WEIM)

Gross benefits:

\$1.57 billion

Previous year:

\$1.65 billion

Total gross benefits:

\$6.62 billion

Visit [WEIM](#)

WEIM ISO GHG savings:

117,466 mTCO₂

Previous year:

133,507 mTCO₂

Total WEIM ISO GHG savings:

1,043,034 mTCO₂

See [ISO GHG emissions tracking reports](#)

48,000 MW

43,200,000 homes

Prepare for summer operations

Summer Loads and Resources Assessment

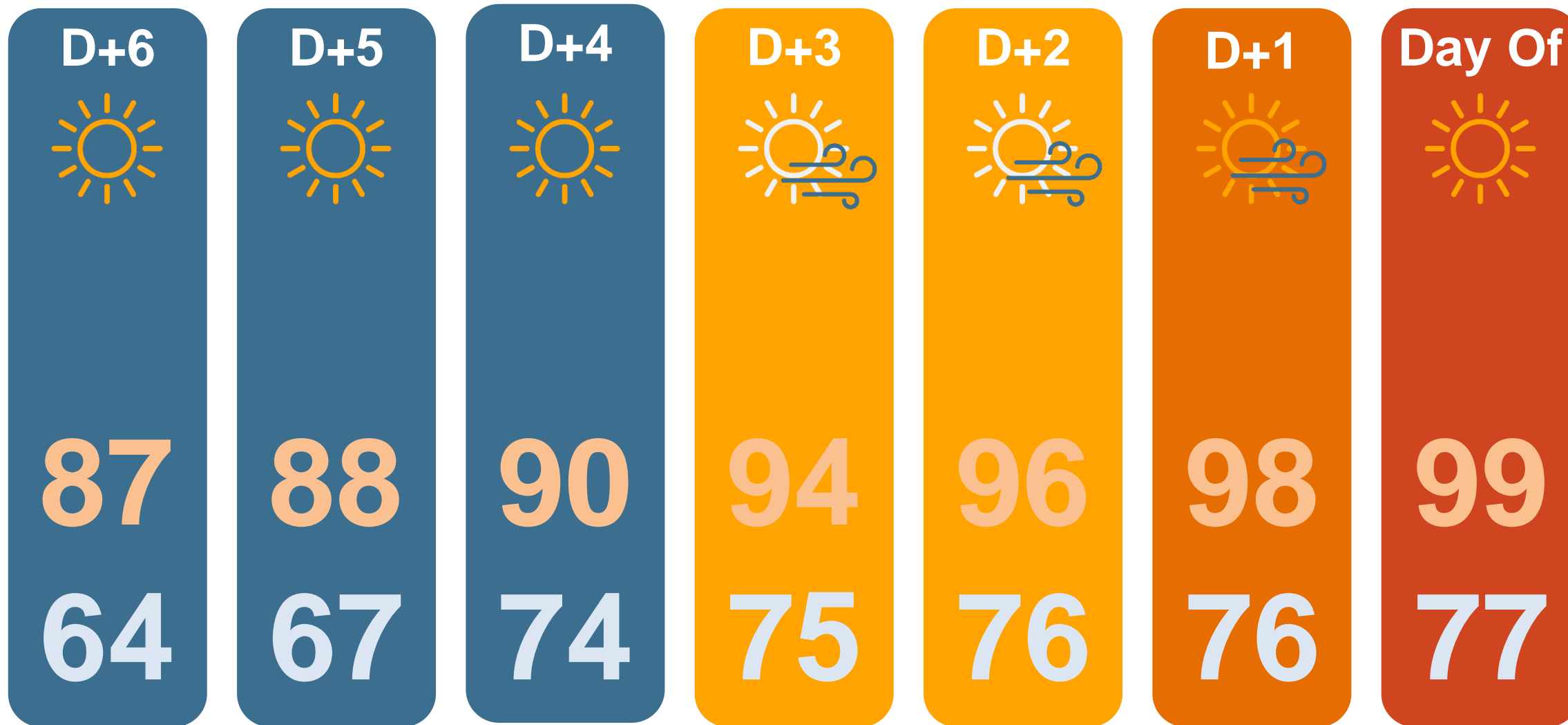
evaluates expected 2025 summer supply and demand conditions for the California Independent System Operator (ISO) balancing authority area (BAA)

This document indicates continued improvement in resource availability for the upcoming summer driven by accelerated resource development



CAISO EMERGENCY PLAYBOOK

7 Day Outlook



7-day resource adequacy capacity trend

Today's Outlook

Demand

Supply

Emissions

Prices

AS OF 11:00 05/05/2025

Current

Demand trend

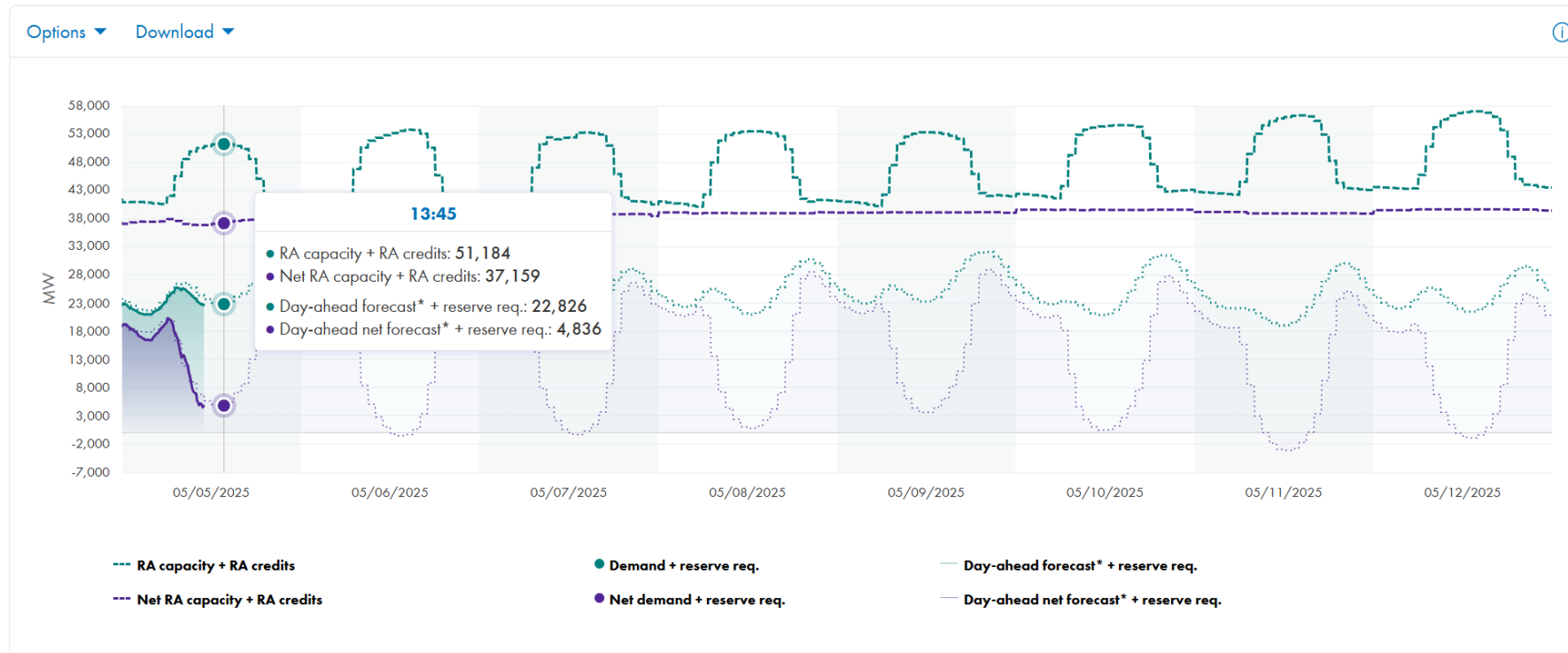
Net demand trend

Resource adequacy trend

7-day resource adequacy trend

7-day resource adequacy capacity trend

Resource adequacy capacity forecast for today plus the next 7 days, in megawatts, compared to demand forecast plus reserve requirements.



4 – 7 Days Out

D+6



D+5



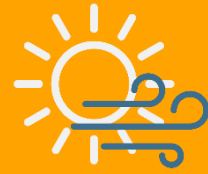
D+4



D+3



D+2



D+1



Day Of



Monitor demand forecast 7 days out, assess resource adequacy, system conditions, weather, and other potential grid impacts, and plans for next possible steps

4 – 7 Days Out

Operational Coordination

- Utilities
- Neighboring Balancing Authorities (BAs)
- Emergency Load Reduction Program (ELRP) Board
- RC West

Depending on actual and potential system conditions, outreach and coordination re: possible extreme event to:

- Governor's Office (GO)
- Long-Start Strategic Reserve Resource Scheduling Coordinators (LS-SRR SCs)

Consider need for DOE 202c orders and whether other government agency assistance may be needed

Public and Customer Communications

CAISO may issue Flex Alert and/or EEA Watch notice via:

- ISO Today mobile app
- MNS
- Email
- Today's Outlook
- News release
- Daily Briefing notice
- Social media
- FlexAlert.org

De-escalate / all-clear notices issued via:

- ISO Today mobile app
- MNS
- Email
- Today's Outlook
- Social media

CAISO may issue High temperature heads up via:

- CAISO website
- CAISO social media

1 – 4 Days Out

D+6



D+5



D+4



D+3



D+2



D+1



Day Of



Review and validate most current information on actual and potential system conditions, resource adequacy, weather, and other potential factors impacting the grid

1 – 4 Days Out

Operational Coordination

To prepare entities for possible conservation efforts and free up additional supply, CAISO may initiate communication to:

- Water agencies (CDWR, MWD)
- Neighboring BAs
- Emergency Load Reduction (ELRP) Board
- Utilities
- RC West
- Regulatory Agencies

Coordinate the following:

- Requests for Department of Energy (DOE) 202c Orders
- Emergency supply above approved permit and/or GIA
- Long-Start Strategic Reserve Resource Scheduling Coordinators (LS-SRR SCs)
- Governor's Office (GO) Proclamation of a State of Emergency and/or GO Executive Orders

Public and Customer Communications

CAISO may issue Restricted Maintenance Operations (RMO) via:

- ISO Today mobile app
- MNS
- Email
- Today's Outlook

Also publicly posted:

- DOE Orders
- GO Proclamations and Orders

1 Day Out

D+6



D+5



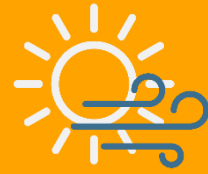
D+4



D+3



D+2



D+1



Day Of



Review and validate Day Ahead Market results and most current information on actual and potential system conditions, resource adequacy, weather and other potential factors impacting the grid

1 Day Out

Operational Coordination

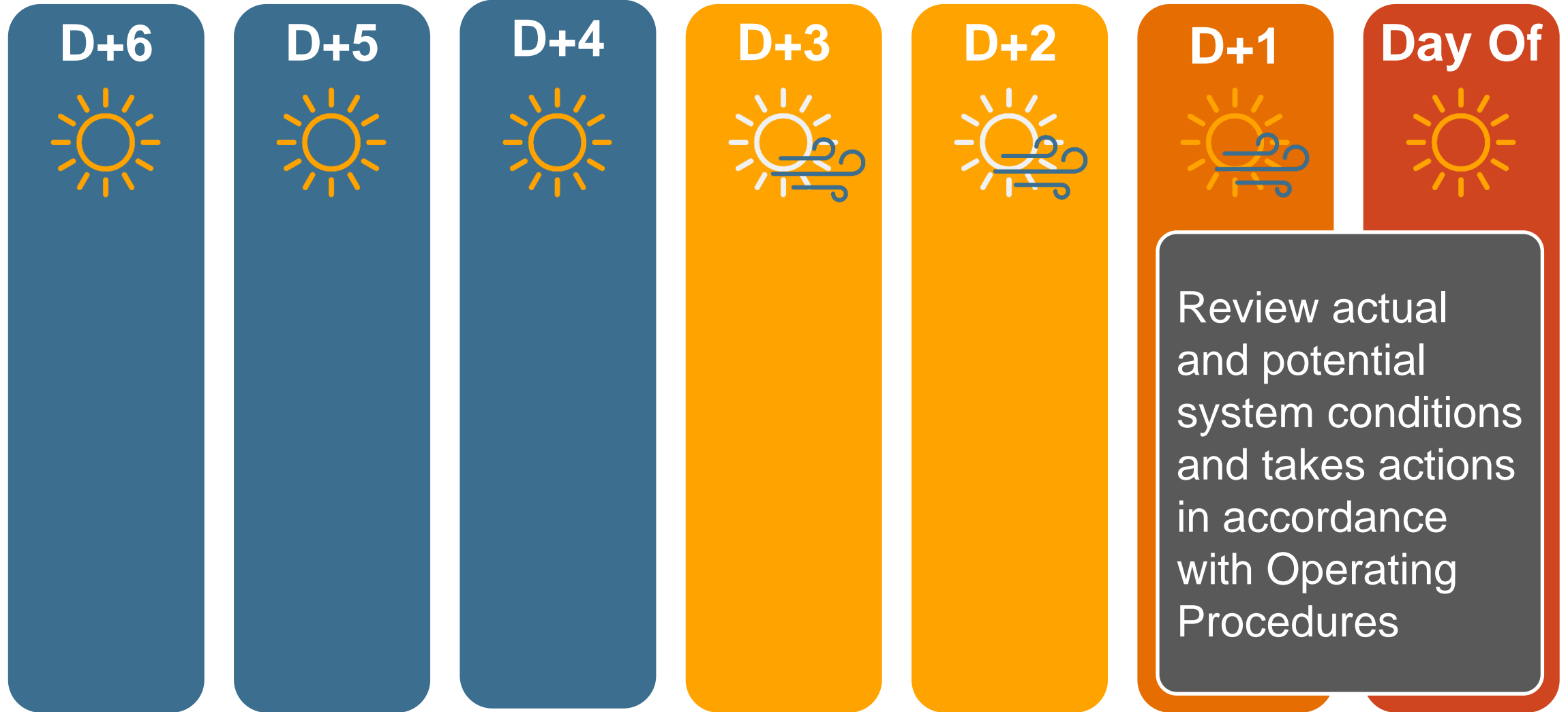
- Utilities
- Neighboring BAs
- ELRP Board
- RC West

Public and Customer Communications

CAISO may issue Flex Alert and/or EEA Watch notice via:

- ISO Today mobile app
- MNS
- Email
- News release
- Daily Briefing notice
- Social media
- FlexAlert.org

Operating Day



Operating Day

Operational Coordination

- Utilities
- Neighboring BAs
- Emergency Load Reduction Program (ELRP) Board
- RC West
- Short Start Strategic Reserve Resource Scheduling Coordinators (SS-SSR SCs), during active Energy Emergency Alerts (EEA)

Public and Customer Communications

CAISO may issue Flex Alert and/or EEA Watch notice via:

- ISO Today mobile app
- MNS
- Email
- Today's Outlook
- News release
- Daily Briefing notice
- Social media
- FlexAlert.org

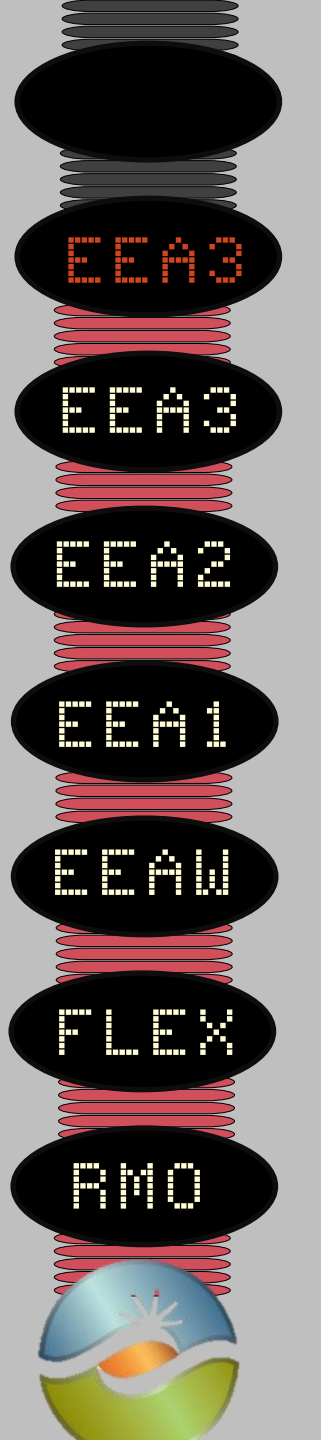
De-escalate / all-clear notices issued via:

- ISO Today mobile app
- MNS
- Email
- Today's Outlook
- Social media

ENERGY EMERGENCY ALERTS (EEA)



World's Tallest Thermometer
Baker, CA



Firm Load Interruption / Ordering Rotating Outages

Prepare For Possible Rotating Outages

Load reduction programs and emergency operating plans

Real-time energy supply tight

Day-ahead energy supply tight

Incentivize customers to conserve energy

Maintenance postponed to ensure resource availability

Emergency Notifications

Energy shortages can be caused by persistent high heat, equipment failure, weather events, or natural disasters, such as wildfires. When electricity supply is tight, the California ISO uses an alert system to keep the public informed. The ISO recently transitioned to a series of notifications that match the North American Electric Reliability Corporation's (NERC) Energy Emergency Alert (EEA) system to be consistent with alerts used by the RC West and other balancing authorities in the Western Electricity Coordinating Council (WECC).

[Learn more about EEAs.](#)

● Flex Alert

A Flex Alert is a call to consumers to voluntarily conserve electricity when the ISO anticipates energy supply may not meet high electricity demand. Reducing energy use during a Flex Alert can prevent more dire measures, such as moving into EEA notifications, emergency procedures, and even [rotating power outages](#). Visit the ISO's [Flex Alert](#) website for energy conservation tips and to sign up for notifications.



● Restricted Maintenance Operations

When high demand is anticipated, the ISO will caution utilities and transmission operators to avoid taking grid assets offline for routine maintenance to assure that all generators and transmission lines are available.

● Transmission Emergency

Declared for any event threatening or limiting transmission grid capability, including line or equipment overloads or outages.

To learn more about emergency notifications, go to [ISO System Emergency procedures](#).

To monitor grid conditions, visit [Today's Outlook](#) and download the [ISO Today mobile app](#).

● Energy Emergency Alert Watch (EEA Watch)

Analysis shows all available resources are committed or forecasted to be in use, and energy deficiencies are expected. This notice can be issued the day before the projected shortfall or if a sudden event occurs. Consumers are encouraged to conserve energy.

● Energy Emergency Alert 1 (EEA 1)

Real-time analysis shows all resources are in use or committed for use, and energy deficiencies are expected. Consumers are encouraged to conserve energy.

● Energy Emergency Alert 2 (EEA 2)

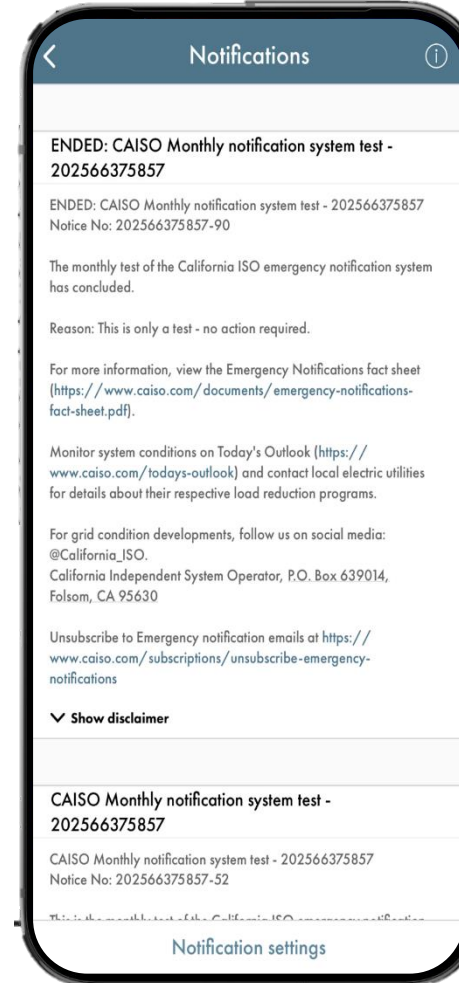
ISO requests emergency energy from all resources and has activated emergency energy programs. Consumers are urged to conserve energy to help preserve grid reliability.

● Energy Emergency Alert 3 (EEA 3) – Preparing for rotating power outages

The grid operator is unable to meet minimum reliability reserve requirements and has declared the initial step of an EEA 3. Utilities have been alerted to prepare for outages, but rotating outages have not been ordered.

● Energy Emergency Alert 3 (EEA 3) – Ordering rotating power outages

The grid operator has ordered utilities to begin rotating power outages to protect grid reliability. The final step of an EEA 3 is declared when electricity supply is not sufficient to meet demand and required reserves are unable to be maintained.



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App Store

Restricted Maintenance Operations (RMO)

What is happening in the Balancing Authority Area (BAA)?

Actual or potential impacts to balancing and/or transmission operation

What's needed?

Reschedule planned work to keep equipment and resources in service if outages could threaten grid reliability

By when?

Ideally issued in advance, day ahead

Flex Alert

What is happening in the Balancing Authority Area (BAA)?

Potential energy shortages or gas curtailments, ongoing grid issue (fire, natural disaster), variable or uncertain temperature forecast, cloud cover, etc.

What's needed?

Public awareness to reduce the demand for energy by voluntary means

By when?

Ideally issued in advance, day ahead

EEA Watch

What is happening in the Balancing Authority Area (BAA)?

Day ahead analysis is forecasting one or more hours energy deficient

RC Confirm / Translate

All available generation projected to be in use

What's needed?

Additional bids, incremental dispatch

By when?

Issued in advance, day ahead by 15:00 PPT

EEA 1

What is happening in the Balancing Authority Area (BAA)?

Real time analysis is forecasting one or more hours energy deficient

RC Confirm / Translate

All available generation in or projected to be in use

What's needed?

Be prepared for use of load management programs

By when?

Issued in real time, ideally hours ahead

EEA 2

What is happening in the Balancing Authority Area (BAA)?

All available resources are in use expected energy requirements will no longer be met
BA is still able to maintain Contingency Reserve (CR) requirements

RC Confirm / Translate

Load management procedures in effect

What's needed?

Additional bids, incremental dispatch, incrementally reduce exports, emergency assistance, evaluate transmission limitations

By when?

Issued in real time, current or next hour(s)

EEA 3 / Preparing for Rotating Power Outages

What is happening in the Balancing Authority Area (BAA)?

Counting armed firm load as non-spin contingency reserves

RC Confirm / Translate

BA unable to maintain Contingency Reserves (CR), firm load interruption is imminent

What's needed?

Emergency assistance, evaluate transmission limitations

By when?

Issued in real time, current or next hour(s)

EEA 3 / Preparing for Rotating Power Outages

- CAISO BA will contact the UDC/MSS entities capable of interrupting load (rotating outages) in 10 minutes
 - Could be needed if a contingency occurs to help keep the grid stable

**EEA 3 – Preparing for Rotating Power Outages
is NOT an instruction to interrupt firm load**

**CAISO will issue Operating Instructions for firm load removal
DO NOT act based on System Status Update emails**

- In order to minimize delayed actions, UDC/MSS entities which are not capable of interrupting load in 10 minutes, shall wait for further instructions from CAISO and prepare to attend stations or take whatever actions are necessary if rotating outages are required.

EEA 3 – Ordering Rotating Power Outages

What is happening in the Balancing Authority Area (BAA)?

Unable to maintain CR, manual load shedding is starting / in progress

RC Confirm / Translate

BA unable to maintain Contingency Reserves (CR), firm load interruption is in progress

What's needed?

Receive firm load shed operating instructions (rotating outages) via blast call

By when?

Issued in real time, “within in 10 minutes” in current or next hour(s)

EEA 3 – Ordering Rotating Power Outages

- **EEA 3 – Ordering Rotating Power Outages**
- CAISO BA no longer able to meet demand and will initiate firm load shed operating instructions (rotating outages) **via blast call**.
- Will still require load armed as contingency reserve to be available for contingency

Utilities should communicate with customers and rotate load blocks hourly in accordance with your respective emergency plans

Year	2022	MW Shed	500	Display Load Column
Shed Values				CAISO
	Zone	Fixed Pro-Rata Share	MW Curtailed	
<input checked="" type="checkbox"/>	Pacific Gas and Electric	46.38%	232.06	
<input checked="" type="checkbox"/>	Southern California Edison	39.09%	195.59	
<input checked="" type="checkbox"/>	San Diego Gas & Electric	8.50%	42.52	
<input checked="" type="checkbox"/>	NCPA	2.30%	11.51	
<input checked="" type="checkbox"/>	Riverside	1.22%	6.11	
<input checked="" type="checkbox"/>	Anaheim	1.00%	5.01	
<input checked="" type="checkbox"/>	Pasadena	0.51%	2.55	
<input checked="" type="checkbox"/>	Vernon	0.36%	1.80	
<input checked="" type="checkbox"/>	Valley Electric	0.30%	1.50	
<input checked="" type="checkbox"/>	Azusa	0.13%	0.66	
<input checked="" type="checkbox"/>	Banning	0.10%	0.50	
<input checked="" type="checkbox"/>	Corona	0.04%	0.20	

Restoration – Emergency Downgrade and Return to Normal

- 1. If firm load shed was required, CAISO BA will restore firm load as soon as system conditions allow**
- 2. MW restoration values will be determined by Shift Manager pro rata**
- 3. Downgrade from EEA 3 to EEA 2**
Operating Instructions to restore firm load
Operating Instructions to no longer “arm” firm load as Contingency Reserves
- 4. Downgrade from EEA 2 to EEA 1**
Operating Instructions and dispatch ended for RDRR and all available energy from UDC/MSS
- 5. End EEA 1 and EEA Watch**
- 6. Continued updates to Reliability Coordinator (RC) until event over and CAISO BA returned to EEA 0 with all Emergency notices cancelled**

CAISO communication methods

	X (formerly Twitter)	GMS	Emergency notification, MNS, Today's Outlook, ISO Today mobile app	Notice	Customer service email	System status update email	Blast call
Restricted Maintenance Operations		X	X				
Flex Alert (day ahead)	X		X	X			
Flex Alert (day of)	X		X	X			
EEA Watch (day of)	X	X	X	X		X	
EEA 1	X	X	X	X		X	
EEA 2	X	X	X	X		X	
EEA 3	X	X	X	X		X	X
All clear	X	X	X	X	X		

Subscribe or Unsubscribe

If you **would like to be added** to the Emergency Alert (EA) notification distribution list, sign up on the [caiso.com Emergency notifications page](#)

RC West area alerts also available on the [RC West subscriptions page](#)

Operational Procedures

NERC Standards

- [COM-002-4 - Operating Personnel Communications Protocol](#)
- [EOP-011-1 – Emergency Operations](#)

RC West Procedures

- [RC0410 – System Emergencies](#)

CAISO BA Procedures

- [4420 – System Emergency](#)
- [4410 – Emergency Assistance](#)
- [4510 – Load Management](#)
- [4510A](#)

<https://www.caiso.com/rules/Pages/OperatingProcedures/Default.aspx>

Summer Readiness

- **Communicate** between Scheduling Coordinator and Resource Operator to ensure adequate control of resources
- **Respond to Operating Instructions** within required time parameters, consistent with Tariff requirements
- **Submit detailed outage cards** reflecting physical limitations
- **Ensure proper set up for resource testing and performance**
- **Be ready** to respond to emergency notifications
- **Register accurate information in Master File**
- **Actively monitor your resources**
- **Report suspicious activity**



Q & A