



Summer Readiness 2023

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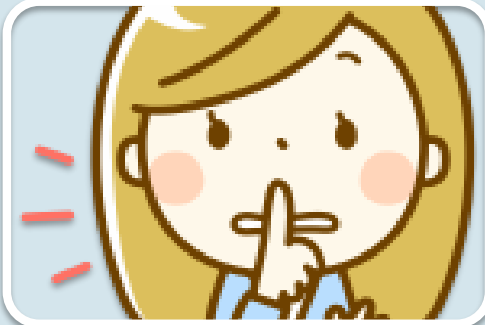
Sr. Manager, Customer Readiness

May 25, 2023

Updated 5/25/2023

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Housekeeping



Make sure to keep yourself muted unless you have a question



If you have a question, you may either ask over the phone or in the chat



If you want to ask a question, you can virtually “raise your hand” in WebEx

Agenda

In this training, we will:

- Review the key takeaways from summer 2022
- Discuss the CAISO Emergency Playbook
- Walkthrough the each of the EA notification levels and what happens during each
- Learn the process to subscribe/unsubscribe to EA notifications
- Review 2022/2023 releases that may have summer impacts
- Discuss the resources you can use to get additional information



Key Takeaways from Summer 2022

- Create and post (on www.caiso.com) a public version of the “Emergency Playbook” for reference during summer heat events – Process and Communications
- Consistent w/ playbook, add “Forecasted System Conditions” section to internal system emergency operations procedures
- Improve coordination of CAISO communication roles and responsibilities
- Improve look ahead data and information & system operations tools
- Strengthen criteria for the California Flex Alert
- Clarify emergency notice language for CAISO BA EEA 3
- Improve de-escalation notices

EMERGENCY PLAYBOOK REVIEW

Emergency Playbook: 4 – 7 days out

	4-7 Days Out
Operational Assessments	Monitors demand forecast 7 days out, assesses resource adequacy, system conditions, weather, and other potential grid impacts, and plans for next possible steps
Operational Coordination with External Entities	Depending on actual and potential system conditions, outreach and coordination re: possible extreme event to: <ul style="list-style-type: none">• 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 High temperature heads up via <ul style="list-style-type: none">• CAISO website• CAISO social media

Emergency Playbook: 1 – 4 Days Out

	1-4 Days Out
Operational Assessments	Reviews and validates most current information on actual and potential system conditions, resource adequacy, weather, and other potential factors impacting the grid.
Operational Coordination with External Entities	<p>To prepare entities for possible conservation efforts and free up additional supply, CAISO may take the following actions:</p> <p>Initiate communication to:</p> <ul style="list-style-type: none"> • Water agencies (CDWR, MWD) • Neighboring Balancing Areas • Emergency Load Reduction Board (ELRP) Board • Utilities • RC West • Regulatory Agencies <p>Coordinate the following:</p> <ul style="list-style-type: none"> • Requests for DOE 202c Orders • Emergency supply above approved permit and/or GIA • GO Proclamation of a State of Emergency and/or GO Executive Orders
Public and Customer Communications	<p>CAISO may issue Restricted Maintenance Operations (RMO) via:</p> <ul style="list-style-type: none"> • ISO Today mobile app • MNS • Email • Today's Outlook <p>Also publicly posted:</p> <ul style="list-style-type: none"> • DOE Orders • GO Proclamations and Orders

Emergency Playbook: 1 Day Out

	1 Day Out
Operational Assessments	Reviews and validates Day Ahead Market results and most current information on actual and potential system conditions, resource adequacy, weather and other potential factors impacting the grid.
Operational Coordination with External Entities	Operational coordination with: <ul style="list-style-type: none">• Utilities• Neighboring BAs• ELRP Board• RC West
Public and Customer Communications	CAISO may issue Flex Alert and/or EEA Watch notice via: <ul style="list-style-type: none">• ISO Today mobile app• MNS• Email• News release• Daily Briefing notice• Social media• FlexAlert.org

Emergency Playbook: Operating Day

	Operating Day
Operational Assessments	Reviews actual and potential system conditions and takes actions in accordance with Operating Procedures.
Operational Coordination with External Entities	Operational coordination with: <ul style="list-style-type: none"> • Utilities • Neighboring BAs • ELRP Board • RC West
Public and Customer Communications	CAISO may issue Flex Alert and/or EEA Watch notice via: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • ISO Today mobile app • MNS • Email • Today's Outlook • Social media

ENERGY EMERGENCY ALERTS (EEA) OVERVIEW

Emergency Alert (EA) Levels

Emergency Alert Levels
Flex Alert
Restricted Maintenance Operations
Transmission Emergency
EEA Watch
EEA 1
EEA 2
EEA 3*
EEA 3 – Firm Load Interruption*

Note: The ISO has made slight wording changes to each EEA notification for the 2023 summer season

Emergency Notification Levels

Notifications Levels	BA What is happening?	What's Needed?	By When?
Flex Alert	Potential energy shortages or gas curtailments, ongoing grid issue (fire, natural disaster), variable or uncertain temperature forecast, cloud cover, etc.	Public awareness to reduce the demand for energy by voluntary means	Ideally issued in advance – day ahead
Restricted Maintenance Operations	Actual or potential impacts to balancing and/or transmission operations	Reschedule planned work to keep equipment and resources in service if outages could threaten grid reliability	Give advanced notice (1 day+) if possible
Transmission Emergency	Could be system wide or could be local transmission limitation DR/interruptible/non-firm load dispatched-off	Load management procedures may be in effect in impacted area Additional bids, incremental dispatch, emergency assistance, evaluate transmission limitations	Issued in real time – current/ next hour(s)

Emergency Notification Levels (cont.)

NERC EEA Levels	BA What is happening?	RC Confirm/ Translate	What's Needed?	By When?
EEA Watch	<u>Day ahead</u> analysis is forecasting one or more hours energy deficient	All available generation projected to be in use	Additional bids, incremental dispatch	Issued in advance – day ahead by 1500
EEA 1	<u>Real time</u> analysis is forecasting one or more hours energy deficient	All available generation in or projected to be in use	Be prepared for dispatch of DR resources	Issued in real time, ideally hours ahead
EEA 2	All available UDC/MSS energy DR/ interruptible/ non-firm load dispatched-off	Load management procedures in effect	Additional bids, incremental dispatch, incrementally reduce exports, emergency assistance, evaluate transmission limitations	Issued in real time – current/ next hour(s)

Emergency Notification Levels (cont.)

NERC EEA Levels	BA What is happening?	RC Confirm/ Translate	What's Needed?	By When?
EEA 3 (Prepare for Potential Rotating Outages)	Counting armed firm load as non-spin contingency reserves	BA unable to maintain CR, firm load interruption is imminent	Emergency assistance, evaluate transmission limitations	Issued in real time - current/ next hour(s)
EEA 3 – Firm Load Interruption (Ordering Rotating Outages)	Unable to maintain CR, manual load shedding is starting/ in progress	Unable to maintain CR, firm load interruption is in progress	Receive firm load shed operating instructions (rotating outages) via blast call.	Issued in real time – “w/ in 10 minutes” current/ next hour(s)

D+7 through D+2 processes

CAISO BA actions include but not limited to the following:

- Communications issue a “Heatwave Bulletin” news release
- Display a 7 day outlook graph on website with load forecast & RA capacity trends
- Issue a **Restricted Maintenance Operations (RMO) notice**
- Coordinate with all California water agencies the possibility of adjusting pump load
- Coordinate with other BAs re: their forecasted conditions

D +1 Actions

CAISO BA actions include but not limited to the following:

- **Flex Alert** notification issued before or after DA market
- **RMO** Issued if not already issued
- Market results published by 1300 - market unable to meet DA forecasted load
- **EEA Watch** notice issued per procedure by 1500
 - Request RC West issue EEA Watch for next day
- Send message regarding infeasibilities and possible export & wheel curtailments
- Communicate with ELRP Board

Day of Process – EEA 1

CAISO BA actions include but not limited to the following:

- When system conditions require CAISO BA issues **EEA 1** notice
 - Request RC West issue EEA 1 for CAISO BA
- Continuous communication with CAISO LSEs and neighboring BAs of conditions including forecasted deficiencies
 - If there is potential for counting firm load as Contingency Reserves or firm load removal, System Status Update emails will include prorata share estimates by hour.

EEA 2

CAISO BA actions include but not limited to the following:

- Dispatch of:
 - RDRR resources
 - All unloaded generation above RA designation.
 - All available remaining Interruptible Load is called upon and any pump load that can be dropped is called on.
 - Excess Contingency Reserves while still maintaining Contingency Reserve Obligation
 - All available energy from load following MSS
- Allows CAISO BA to arrange for emergency assistance

EEA 3

- Allows CAISO BA to use firm load as contingency reserve
- CAISO BA will only 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
- **This is not an instruction to interrupt firm load**

The screenshot shows a web interface for CAISO. At the top, there are controls for 'Year' (set to 2022), 'MW Shed' (set to 500), and 'Display Load Column'. Below this is a table titled 'Shed Values' with a 'CAISO' button on the right. The table has columns for 'Zone', 'Fixed Pro-Rata Share', and 'MW Curtailed'. There are 12 rows, each with a blue checkmark in the first column. The rows are: Pacific Gas and Electric (46.38%, 232.06), Southern California Edison (39.09%, 195.59), San Diego Gas & Electric (8.50%, 42.52), NCPA (2.30%, 11.51), Riverside (1.22%, 6.11), Anaheim (1.00%, 5.01), Pasadena (0.51%, 2.55), Vernon (0.36%, 1.80), Valley Electric (0.30%, 1.50), Azusa (0.13%, 0.66), Banning (0.10%, 0.50), and Corona (0.04%, 0.20).

	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

EEA 3 – Prepare for Potential Rotating Outages

- The notice issued by Operations will be titled “EEA 3”, but note that social media and news releases will indicate “EEA 3 – Prepare for Possible Rotating Outages”
 - Title difference is due to a limitation with the current operations notification system. This will be addressed later this year with a notification system replacement project.
 - Details in the operations notice will indicate using load as reserves, and no firm load interruption at this time

CAISO will issue Operating Instructions for firm load removal – do not act based on System Status Update emails.

EEA 3 – Ordering Rotating Outages (Firm Load Interruptions)

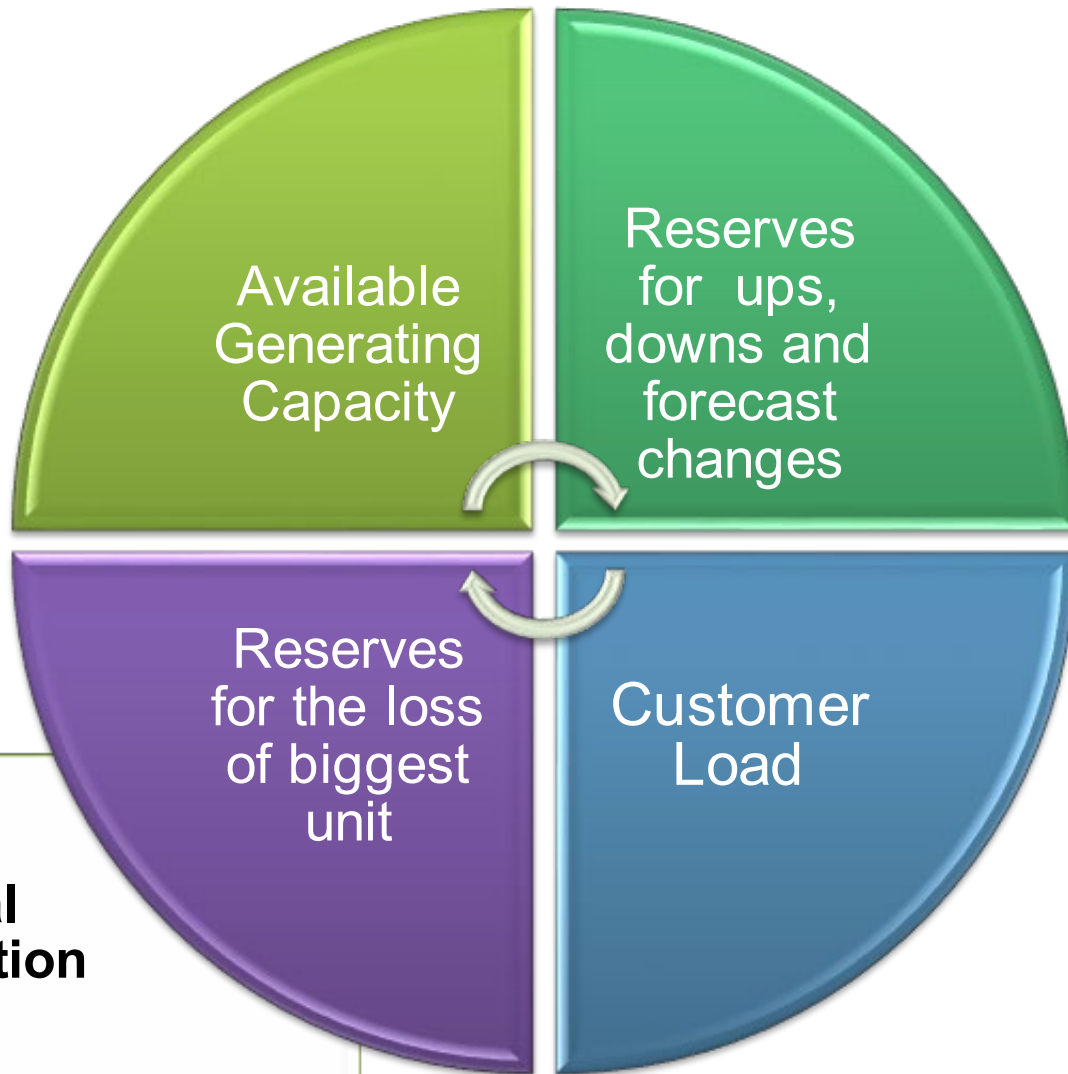
- The notice issued by Operations will be titled “EEA 3 – Firm Load Interruption”, but note that social media and news releases will indicate “EEA 3 – Ordering Rotating Outages”
- This notice is a separate notice from the initial EEA 3
- CAISO BA no longer able to meet demand and will initiate firm load shed operating instructions (rotating outages) via blast call.
- Will still require load armed as contingency reserve to be available for contingency
- Continue hourly updates to UDC/MSS entities

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

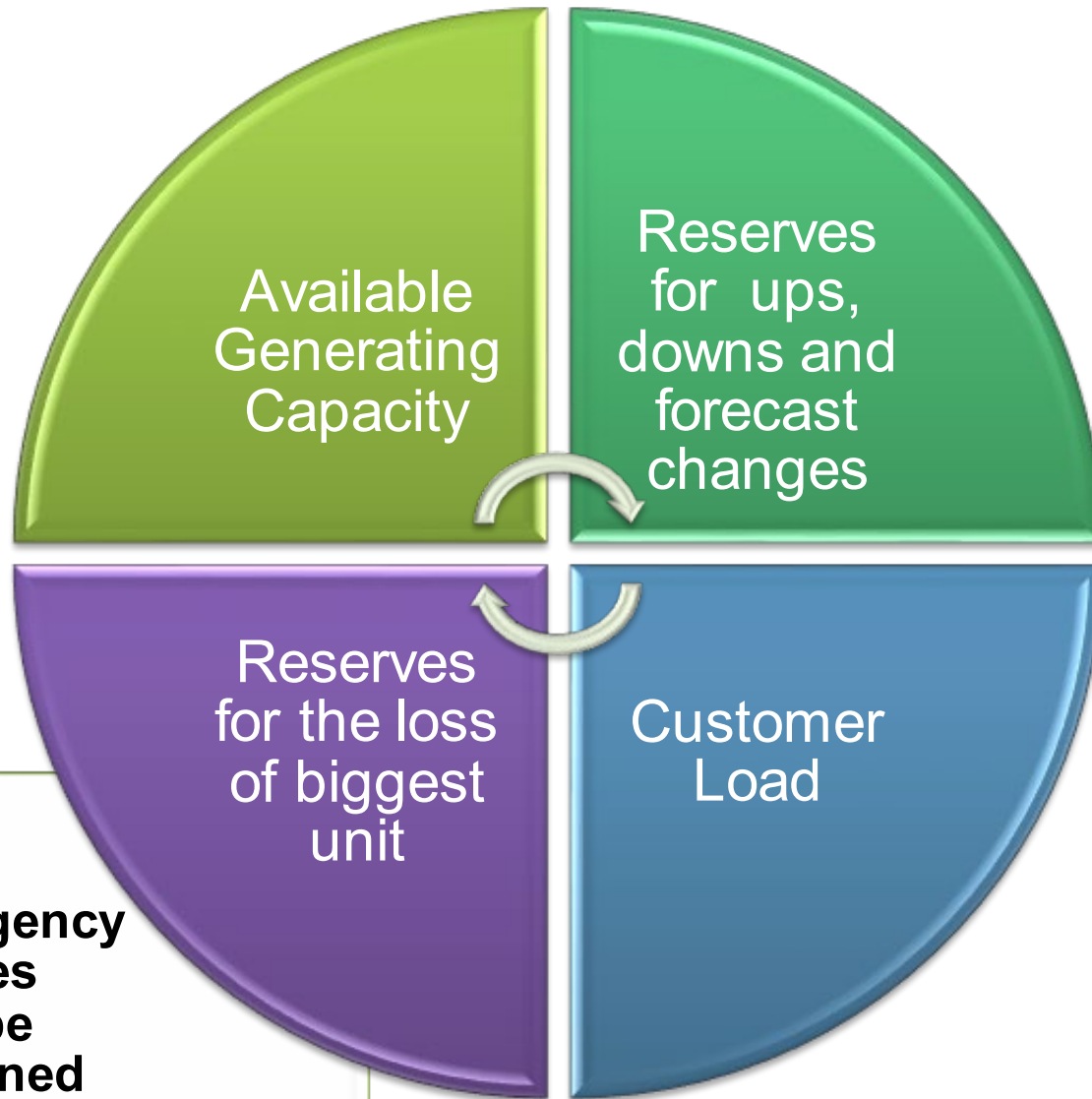
Restoration – Emergency Downgrade

Return to Normal

- If firm load shed was required, CAISO BA will restore firm load as soon as system conditions allow
- MW restoration values will be determined by Shift Manager prorata.
- Downgrade from EEA 3 to EEA 2
 - Operating Instructions to restore firm load
 - Operating Instructions to no longer “arm” firm load as Contingency Reserves
- Downgrade from EEA 2 to EEA 1
 - Operating Instructions/ dispatch ended for RDRR and all available energy from UDC/MSS
- End EEA 1 and EEA Watch
 - No concerns serving load and meeting CR requirements
- Continued updates to RC until event over and CAISO BA returned to EEA 0 with all Emergency notices cancelled

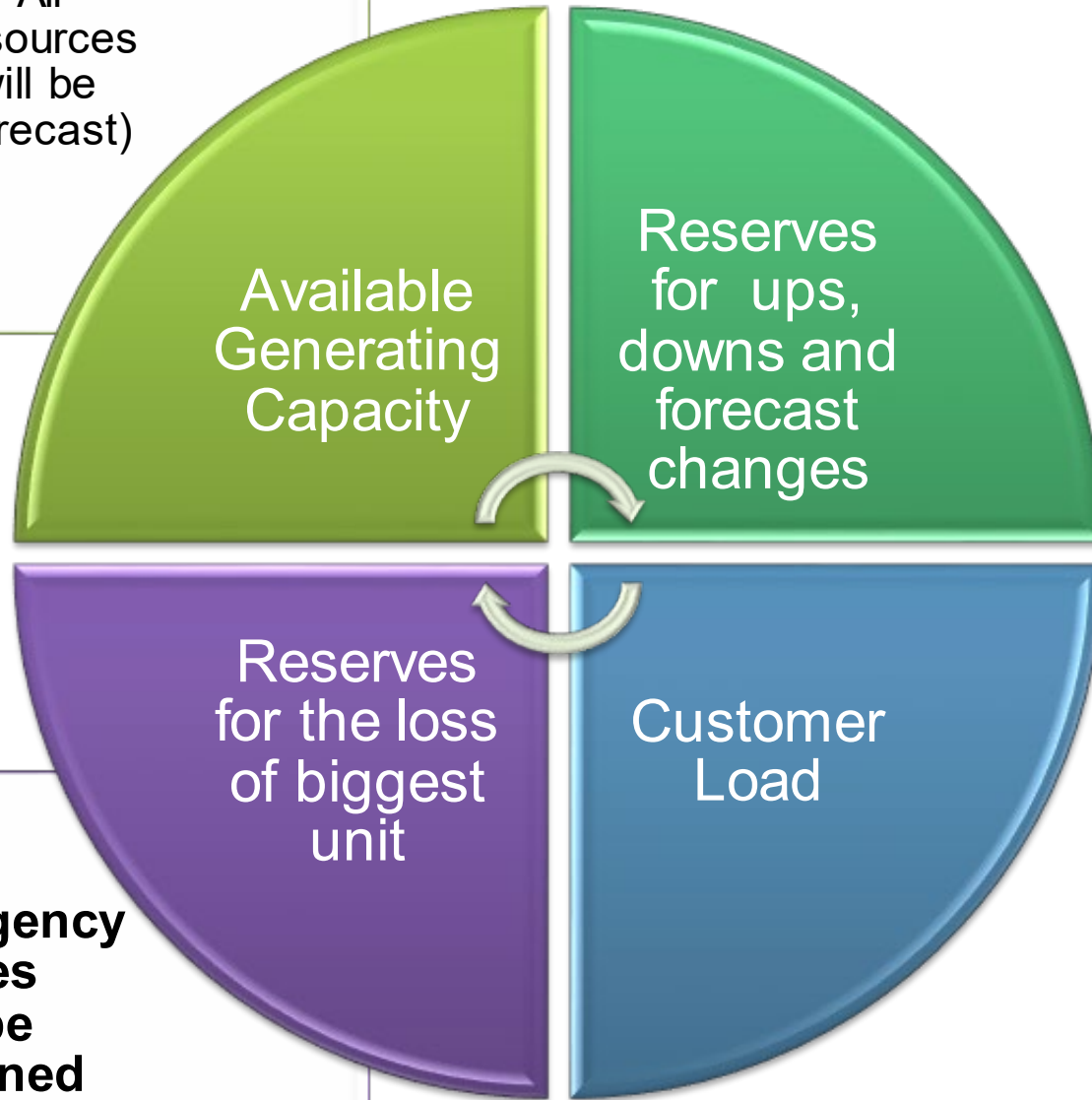


- **Normal Operation**



- **Contingency Reserves **MUST** be maintained**

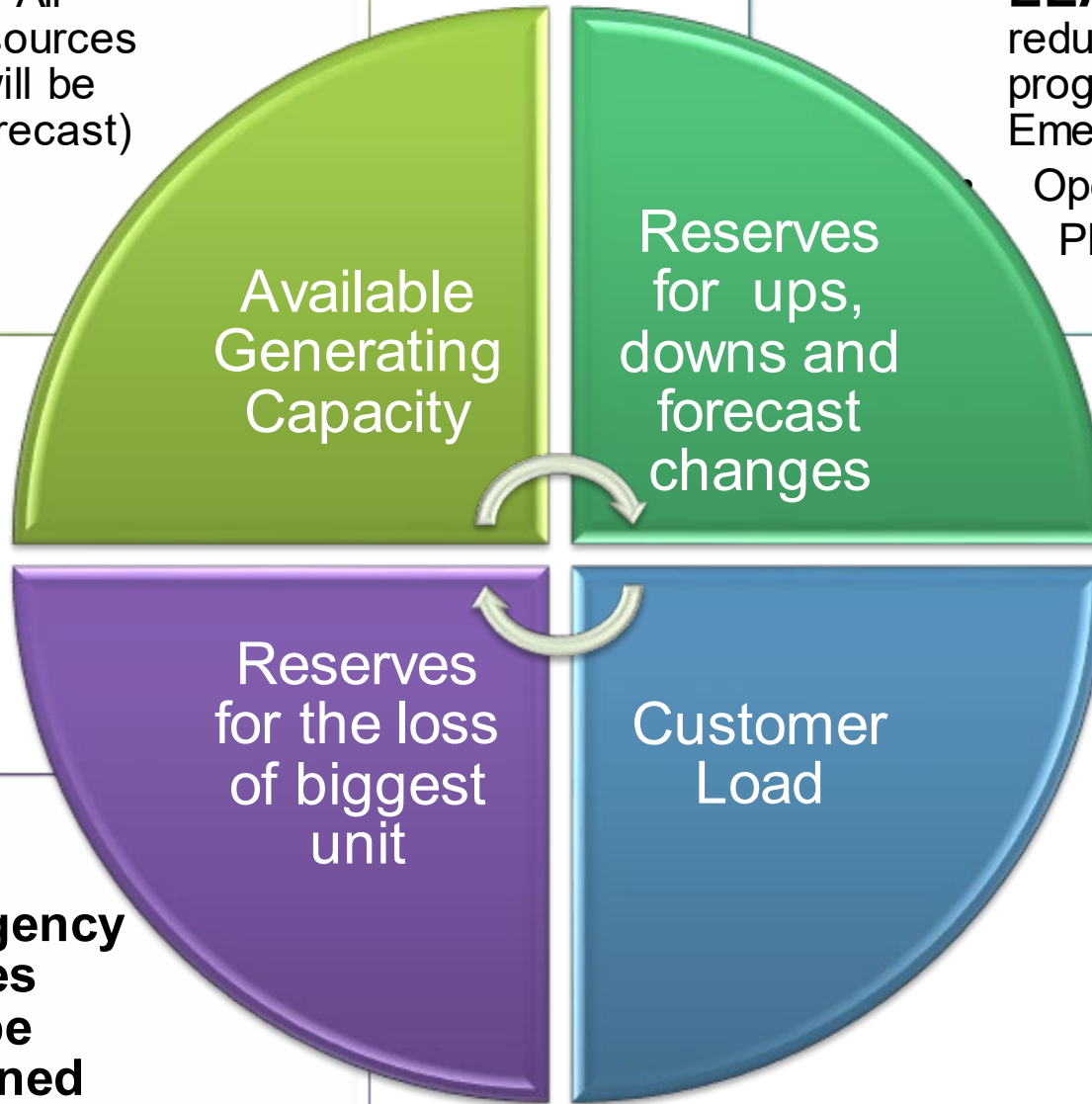
- **EEA1** = All energy sources are, or will be used (forecast)



- **Contingency Reserves** **MUST** be maintained

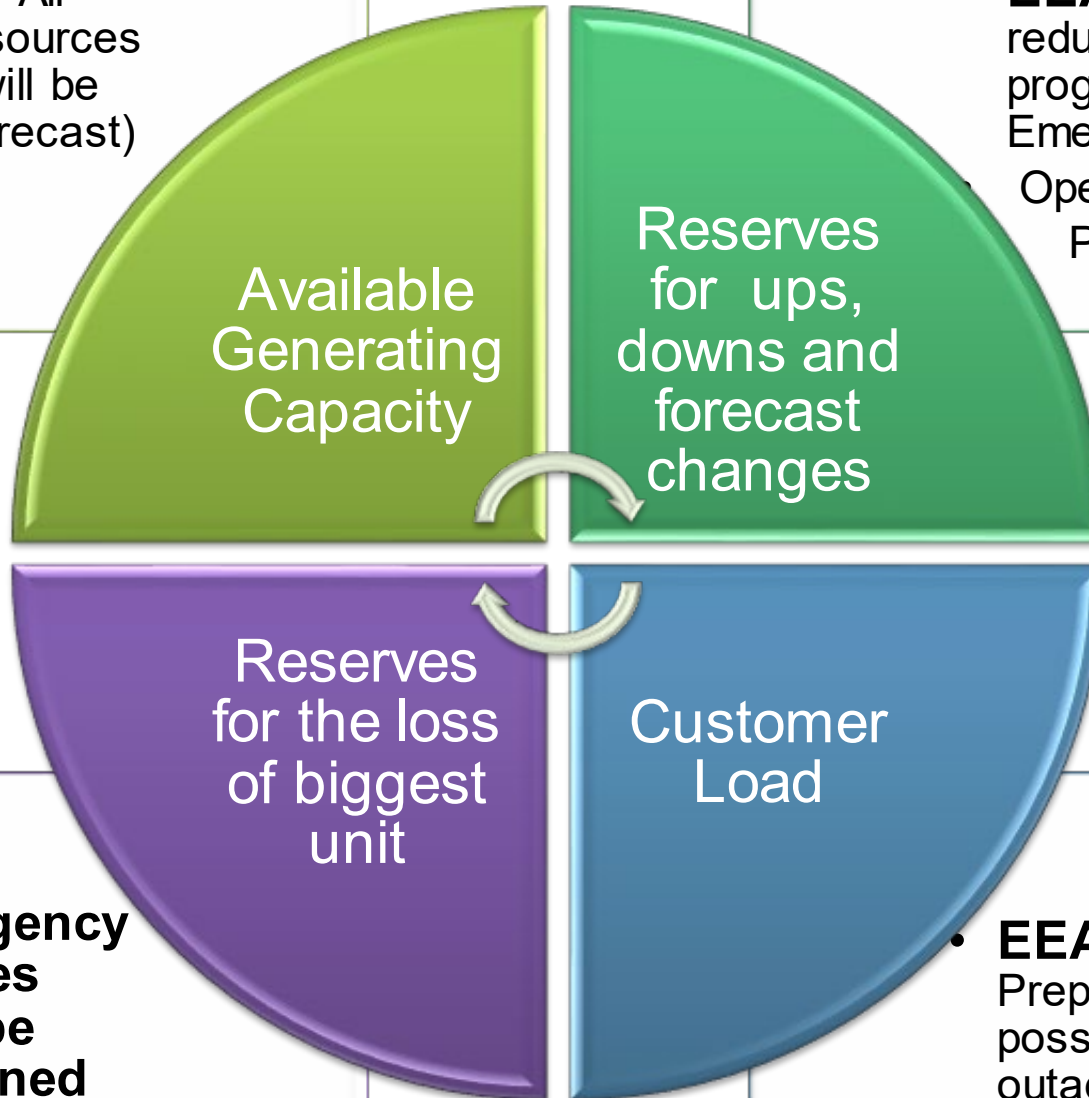
- **EEA1** = All energy sources are, or will be used (forecast)

- **EEA2** = Load reduction programs and Emergency Operating Plan(s) used



- **Contingency Reserves** **MUST** be maintained

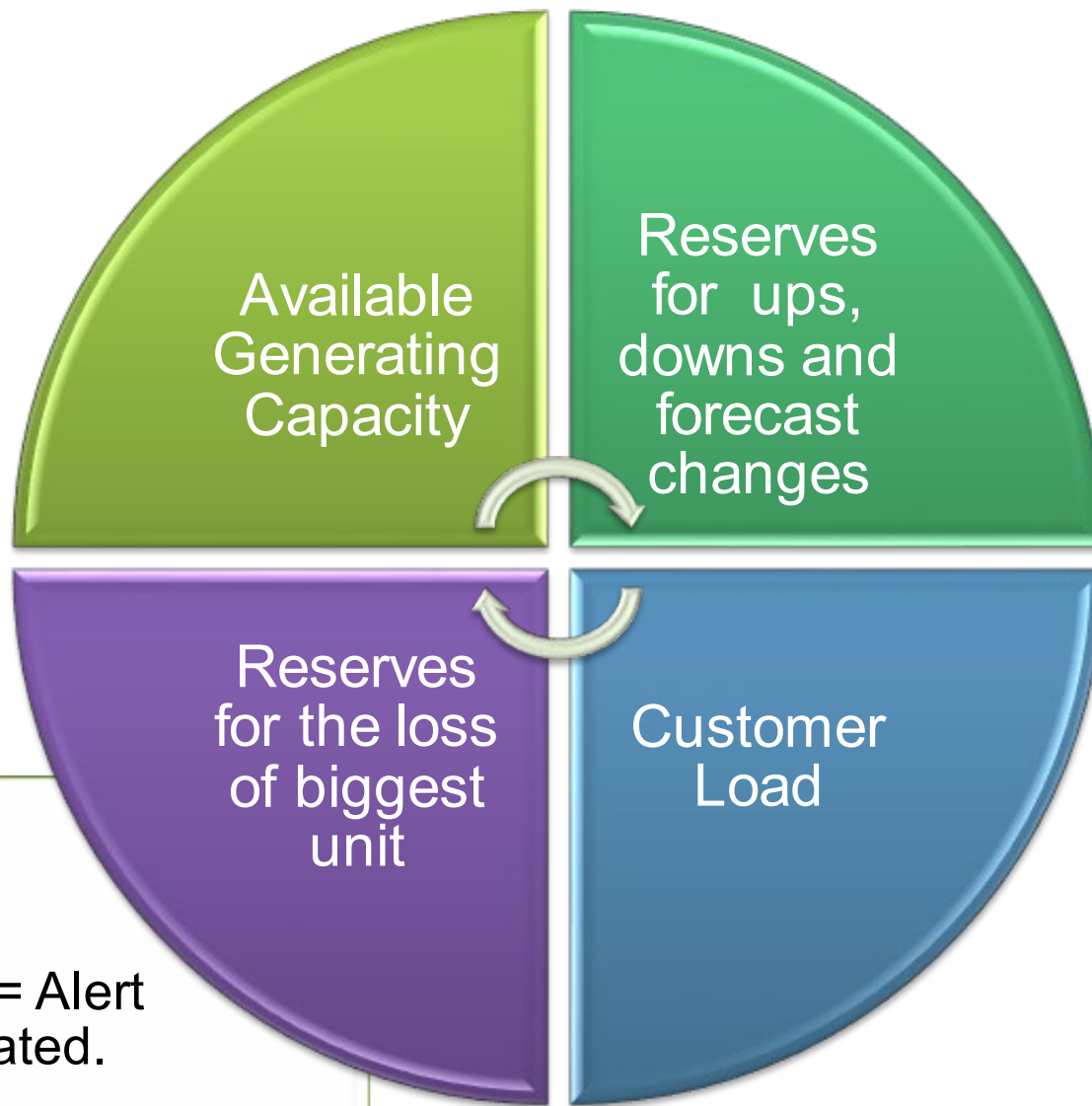
- **EEA1** = All energy sources are, or will be used (forecast)



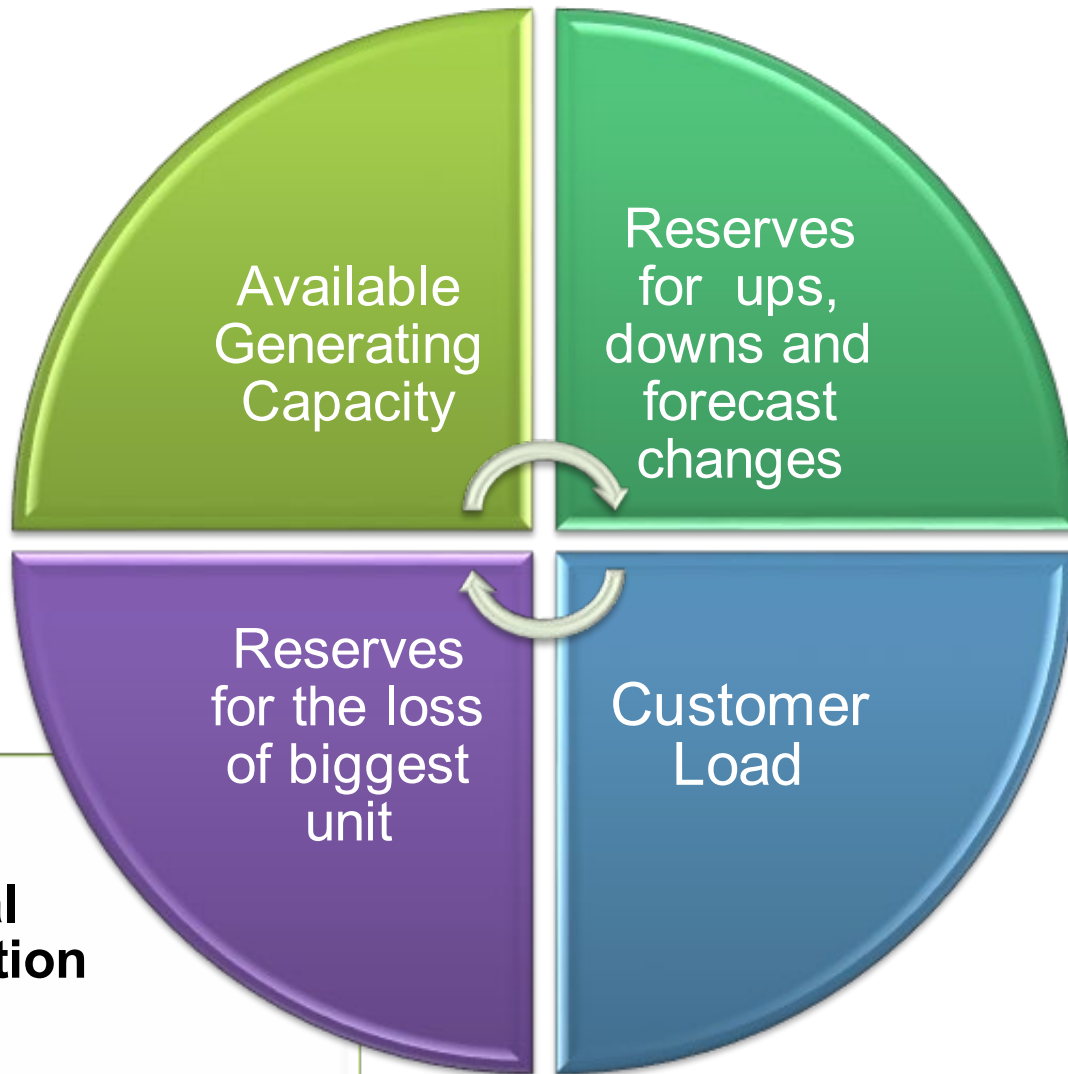
- **EEA2** = Load reduction programs and Emergency Operating Plan(s) used

- **Contingency Reserves MUST be maintained**

- **EEA3** = Prepare for possible rotating outages, Firm Load shed

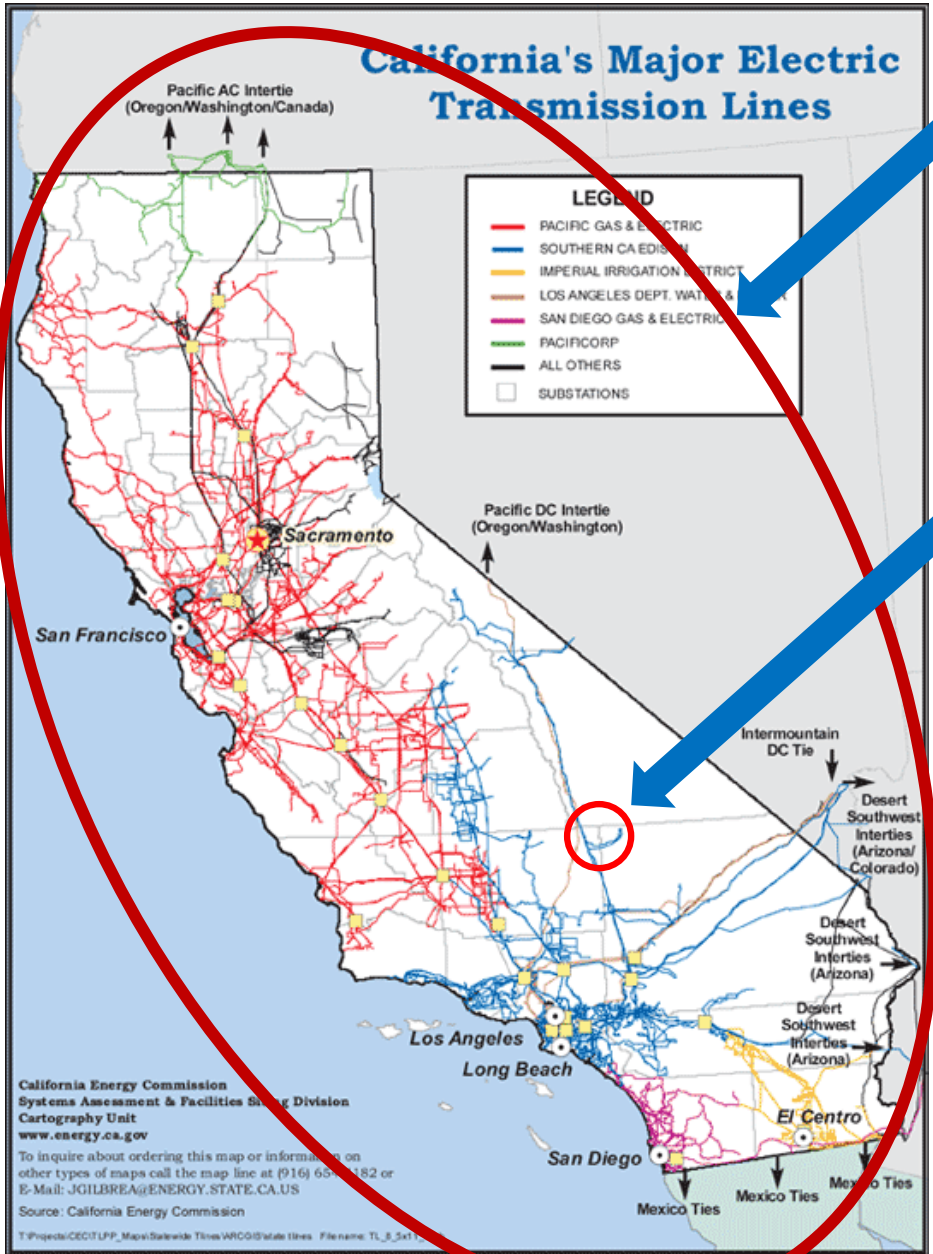
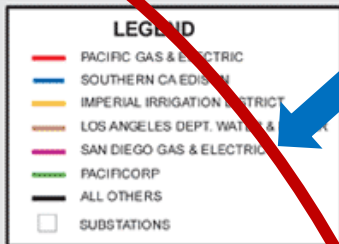


- **EEA 0** = Alert Terminated.



- **Normal Operation**

California's Major Electric Transmission Lines



Being short on energy (**Flex Alerts, EEAs**) affects the whole system.

A **Transmission Emergency** affects only a particular location based on transmission lines, flows, and equipment.


It's possible to have one or both alerts at the same time.

California Energy Commission
Systems Assessment & Facilities Planning Division
Cartography Unit
www.energy.ca.gov
To inquire about ordering this map or information on other types of maps call the map line at (916) 664-182 or E-Mail: JGILBREA@ENERGY.STATE.CA.US
Source: California Energy Commission
F:\Projects\CEC\TLPF_Maps\Statewide\Lines\WRCG\State\Lines File name: TL_3_541

SUBSCRIBING TO EMERGENCY NOTIFICATIONS

ISO Communication Methods

The ISO Communications Method document houses information on all of the ways that we send out emergency notification information



ISO communication methods

The ISO offers various communications methods for various events. The following communication methods are available.

- **Daily Briefing** is a summary of the day's events.
- **Twitter**; follow the ISO via the following
 - @ISONotices all ISO notices
 - @California_ISO primary channel for ISO notices
 - @FlexAlert Conservation tips and FlexAlert when a grid warning or emergency occurs
- **MNS** – Market notification system; system status update
 - Publicly via [QASIS](#), click "System Operator"
 - By [registering for MNS service](#)
 - In CIDI tool, upper right corner of home page
 - In the [Market Participant Portal](#) (restricted)
- **GMS** – Grid messaging system
 - Messages sent to all balancing authorities
- **Customer service emails**, primary contact for each scheduling coordinator, transmission operators, public information, Emergency Services as provided to their respective entities
- **Emergency alerts** (formerly AWE - Alerts)
 - If you want to receive emergency alerts, add you to the distribution list.
 - EA notifications are also published to the distribution list.
- **System status update e-mails**
 - This is an operations distribution list only for operational staff. To be added to this list, request "addition" to be added.

Day-ahead Warnings are sent through

- Notices (Daily Briefing)
- MNS

Energy Emergency Alert (EEA) Watch are sent through

- Twitter
- MNS
- EA e-mail and ISO Today mobile app

EEA 1 notifications are sent through

- Notices (Daily Briefing)
- MNS
- EA e-mail and ISO Today mobile app

EEA 2 notifications are sent through

- Notices (Daily Briefing)
- MNS
- EA e-mail and ISO Today mobile app

EEA 3 notifications are sent through

- Notices (Daily Briefing)
- MNS
- EA e-mail and ISO Today mobile app
- Twitter

Cancellation or downgrading of events will have the same communication method as the original issuance.

	Twitter	MNS	GMS	EA notification	Notice	Customer service email	System status update email	Blast call
Restricted Maintenance Operations		X	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		X	
EEA 1	X	X	X	X	X		X	
EEA 2	X	X	X	X	X		X	
EEA 3	X	X	X	X	X		X	X
All clear	X	X	X	X	X	X		

California Independent System Operator
www.caiso.com | 250 Outcropping Way, Folsom, CA 95630 | 916.351.4400
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Notification Methods

	Twitter	MMS	GMS	EA notification	Notice	Customer service email	System status update email	Blast call
Restricted Maintenance Operations		X	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		X	
EEA 1	X	X	X	X	X		X	
EEA 2	X	X	X	X	X		X	
EEA 3	X	X	X	X	X		X	X
All clear	X	X	X	X	X	X		

<http://www.caiso.com/Documents/ISOCommunicationMethods.pdf>

Subscribing and Unsubscribing

- If you **would like to be removed** from the EA notification distribution list:
 - Submit a CIDI ticket requesting to be removed from the distribution list
- If you **would like to be added** to the EA notification distribution list:
 - Submit a CIDI ticket with “EA request for addition” in the Subject field requesting to be added

Remember to check your junk and/or trash folders in case the notification emails ends up in one of these folders!

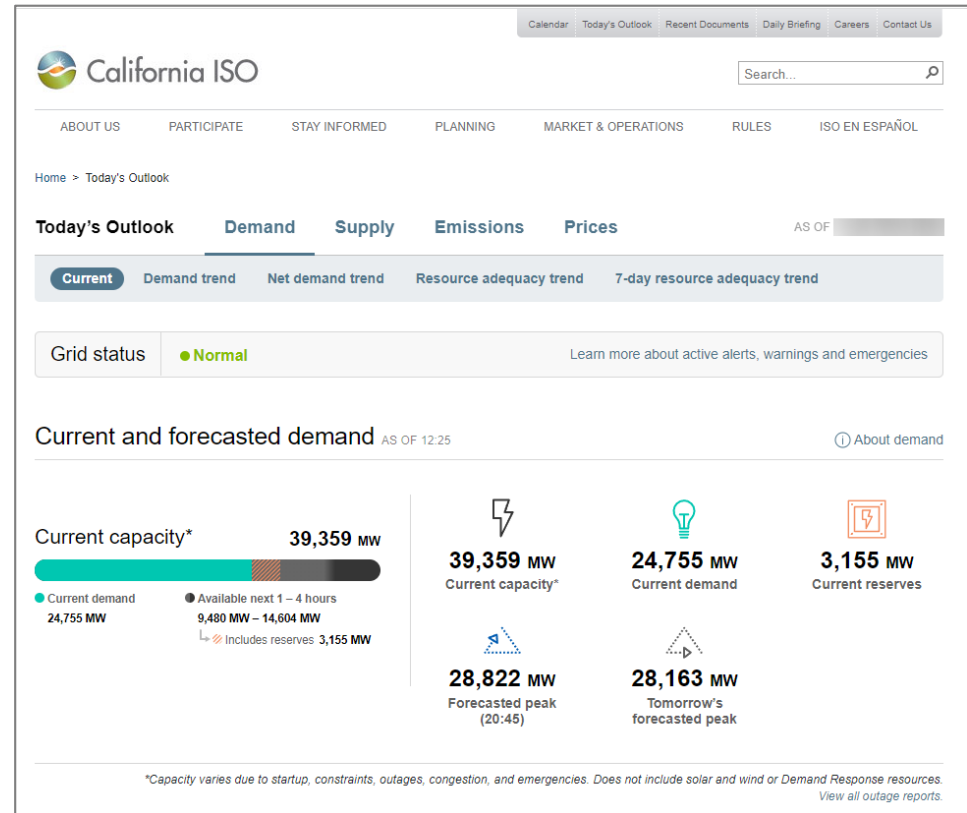
2022/2023 SUMMER IMPACTING ENHANCEMENTS

2022/2023 Releases that Impact Summer Readiness

- **Transmission Service Market Scheduling Priorities – Phase 1**
 - Supporting export resources
 - High priority vs. low priority resources
 - [Slide deck](#) and [training video](#)
- **RDRR Bidding Enhancements**
 - Track 1 [slide deck](#) and [training video](#)
 - Track 2 [slide deck](#) and [training video](#)
- **Demand Response within the WEIM BAAs**
 - [WEIM BPM](#) and [slide deck](#)

Today's Outlook Enhancements

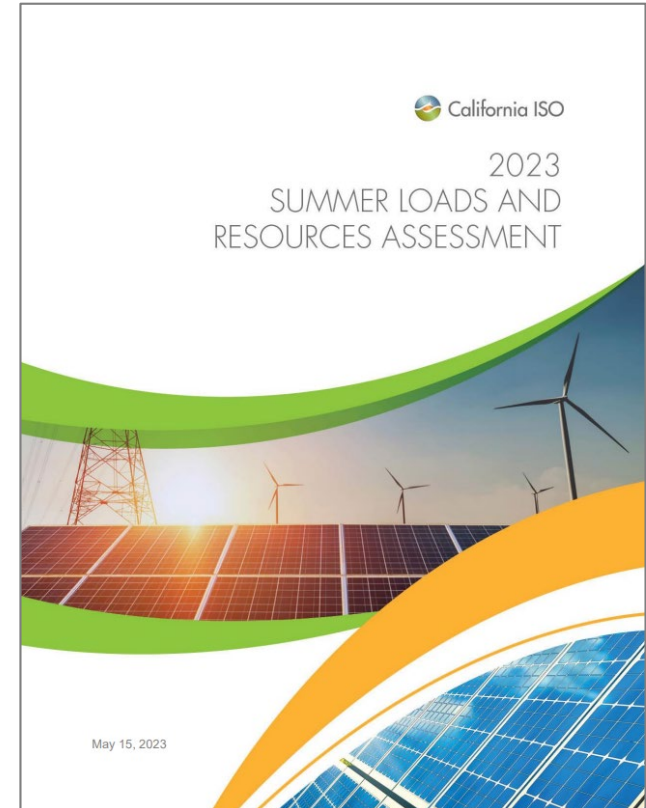
- **Today's Outlook and ISO Today Mobile App updates (2022)**
 - [Slide deck](#) and [video](#)
- **Data Transparency Improvements**
 - [Readiness note](#)



ADDITIONAL RESOURCES

2023 Summer Load and Resources Assessment

- **2023 Summer Loads & Resources Assessment**
 - Located on the caiso.com website [here](#)
 - Joint Agency Media Briefing on 2023 Summer Energy Reliability [here](#)
- **Energy Matters blog**
 - Located on the caiso.com website [here](#)
 - Overview of the assessment



Additional Resources – Operational Procedures

NERC Standards

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

RC West Procedures

[\(https://www.caiso.com/rules/Pages/OperatingProcedures/Default.aspx\)](https://www.caiso.com/rules/Pages/OperatingProcedures/Default.aspx)

- [RC0410 – System Emergencies](#)

CAISO BA Procedures

[\(https://www.caiso.com/rules/Pages/OperatingProcedures/Default.aspx\)](https://www.caiso.com/rules/Pages/OperatingProcedures/Default.aspx)

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



Final Questions



Please take time to fill out our training evaluation!

For more detailed information on anything presented, please visit our website at:

www.caiso.com

Or email us at CustomerReadiness@caiso.com