



# Summer Reliability and Emergency Load Reduction Program

## Non-Residential Direct Enrollment

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*Federal Energy Management Program*

# Summer Reliability

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- “Extreme drought, increased demand and the continued potential for widespread heating events and other disruptions continue to leave the ISO grid with a high degree of vulnerability for reliability during the summer months.” – *CAISO 2022 Summer Loads and Resources Assessment*
  - CAISO has reported near-record low hydro capacity for summer 2022, with April snow water content at 38% of normal
  - Supply chain constraints have led to delays in installation of additional storage resources and peak loads have largely recovered from the impacts of COVID
  - CAISO model does not take into account more extreme weather events beyond those projected from recent historical data or wildfire events that could limit key transfer paths or resources

# Increasing Grid Reliability Issues in California

Summary of Restricted Maintenance Operations, Alert, Warning, Emergency, and Flex Alert Notices Issued from 1998 to April 2022

- Climate change has led to increasing temperatures, lower hydro capacity, and higher probability of wildfires (and transmission outages)
- 2020 saw the first EEA Stage 3 emergency since the California Energy Crisis (2001)

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Flex Alert*	N/A	N/A	20	26	1	0	6	7	18
Restricted Maintenance Operations	8	12	77	168	18	10	16	13	16
Transmission Emergency	N/A	N/A	N/A	N/A	N/A	N/A	6	5	0
Alert	7	2	34	180	3	0	1	0	1
Warning	8	6	85	181	4	0	2	2	5
Stage 1 Emergency	7	4	55	70	2	1	1	1	3
Stage 2 Emergency	5	1	36	65	1	0	0	2	1
Stage 3 Emergency	0	0	1	38	0	0	0	0	0
Voluntary Load Reduction Program	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3

	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	2021	2022 (Jan-May)	TOTALS
Flex Alert*	3	4	2	1	5	8	0	120
Restricted Maintenance Operations	11	10	18	2	9	19	0	513
Transmission Emergency	0	1	2	3	2	0	0	34
Alert	0	0	0	0	9	0	0	239
Warning	0	0	0	1	7	4	0	316
Stage 1 Emergency	0	1	0	0	0	0	0	146
Stage 2 Emergency	0	0	0	0	6	1	0	118
Stage 3 Emergency	0	0	0	0	2	0	0	41
1-Hour Probable Load Interruptions	0	0	0	0	1	0	0	1

Source: CAISO Grid Emergencies History Report

# Summer Reliability

- CAISO's projected probability of EEA 2 and EEA 3 (i.e. pending grid emergencies) has increased from 2021 to 2022
- Probability for unserved energy has decreased, reflecting a lower probability for firm load shedding

**Probability of system capacity shortfall**

2022		
System Capacity Shortfall	Shortfall Probability	Number of Shortfall Cases (out of 2,000)
EEA 3 Threshold (Stage 2)	15.1%	301
EEA 3 – 50% of contingency reserves from firm load (Stage 3)	7.7%	154
Unserved energy EEA 3 - firm load interruption	4.0%	80
2021		
System Capacity Shortfall	Shortfall Probability	Number of Shortfall Cases (out of 2,000)
EEA 3 Threshold (Stage 2)	6.4%	128
EEA 3 – 50% of contingency reserves from firm load (Stage 3)	4.8%	96
Unserved energy EEA 3 - firm load interruption	4.6%	91

Source: CAISO 2022 Summer Loads and Resources Assessment

# What is the Emergency Load Reduction Program (ELRP)?

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- The ELRP pilot was first launched in 2021 to access additional load reduction during times of high grid stress and emergencies
- Main Goals:
  - Access additional load reduction during times of high grid stress and emergencies
  - Avoid rotating power outages while minimizing cost to customers
- Program offers financial incentives to reduce energy usage during times of high grid stress and emergencies
- Utilized for system-wide CAISO grid reliability needs, not localized grid needs
- 5-year pilot program, 2021-2025
  - Subject to revision in years 2023-2025

# ELRP Groups

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- There are five different pathways to participate in ELRP as a non-residential customer directly enrolling with the utility:
  - **Sub-Group A.1. – Non-Residential Customers directly enrolling with the utility**
  - Sub-Group A.2. – Non-Residential Aggregators
    - This subgroup includes BIP aggregators
  - Sub-Group A.3. – Distributed Energy Resources (DERs)
  - Sub-Group A.4. – Virtual Power Plants (VPP) Aggregators
  - Sub-Group A.5. – Electric Vehicle (EV) and Vehicle-Grid Integration (VGI) Aggregators

## Subgroup A.1 Eligibility Requirements

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- Bundled and unbundled non-residential customers that meet all of the following criteria may directly participate in ELRP:
  - Customer's service account is classified as non-residential; and
  - Customer's service account must be able to reduce load by a minimum of one kilowatt during an ELRP event; and
  - Customer's service account is not simultaneously enrolled in another DR program offered by an IOU, demand response provider (DRP), or Community Choice Aggregator (CCA), with the exception that dual enrollment is allowed in PG&E's Base Interruptible Program (BIP) subject to compliance with the BIP tariff.
    - Customers participating in aggregator-based DR programs such as CBP (including those receiving AutoDR benefits) can participate in ELRP if their aggregator is signed up

# ELRP Events

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Parameter	Details
Program Availability	<ul style="list-style-type: none"><li>• May – October</li><li>• Seven (7) days per week</li><li>• 4 p.m. to 9 p.m. (Pacific Time Zone)</li></ul>
Event Duration	<ul style="list-style-type: none"><li>• 1-hour minimum</li><li>• 5-hour maximum</li></ul>
Event Dispatch Types	<ul style="list-style-type: none"><li>• Email, text by default</li><li>• OpenADR and API integrations available</li></ul>
Annual Dispatch Limit	Up to 60 hours
Consecutive Day Dispatches	No constraints (limits)



# Target Load Reduction

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- At the time of enrollment, customers must submit their Energy Bid, defined as the estimated **target load reduction** quantity to be achieved during an ELRP event.
- Minimum target load reduction: 1kW
- There are no penalties associated with not meeting the target load reduction in an ELRP event
- Example: a service account has the following load reducing technologies available during program hours:
  - EV chargers capable of reducing **50kW**
  - Lighting in building capable of reducing **100kW**
  - Total target load reduction: **150kW**
- This service account will be **expected** to reduce their consumption by 225kW during an ELRP event, however they will be compensated for any load reduction above 1kW.

# Load Reduction Strategies

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Examples of potential load reduction strategies across different sectors below:

Customer Sector	Load Reduction Strategies
Office Buildings	<ul style="list-style-type: none"><li>• Increase HVAC temperature set points</li><li>• Discharge on-site generator</li><li>• Dim or turn off lighting in low occupancy areas</li></ul>

Participants can also make changes to occupant/employee behavior, including:

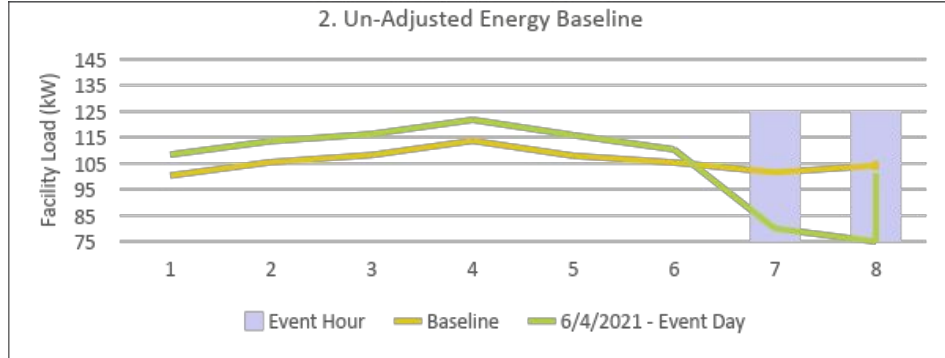
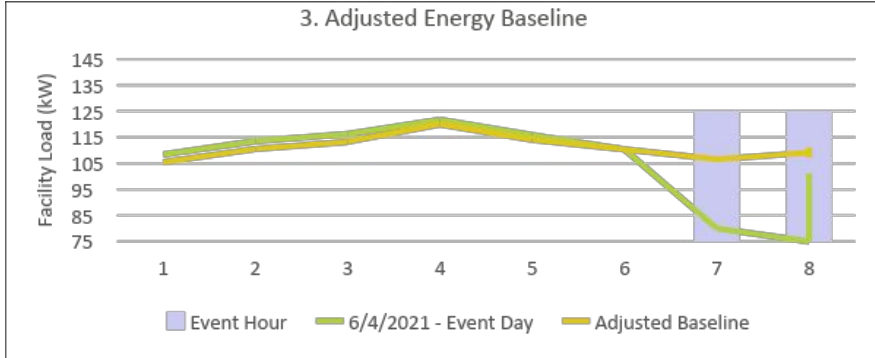
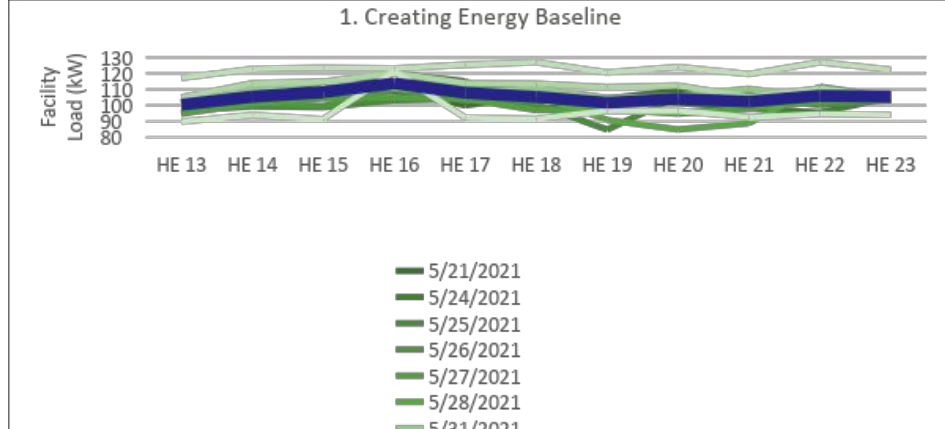
- Hold a contest between different buildings for biggest reduction in usage
- Tell employees that can to work from home on the day of an event
- Use ELRP incentive money to pay for community improvements

# Performance Measurement

10-in-10 Baseline Methodology picks 10 similar days in the past plus day-of adjustment (up to 40%) to create baseline.  
 (Weekend and holidays will be based on 4 similar days).

The difference between the event day load and the baseline is the measured performance.

Example:  
 Event Day is 6/4/21 from 6-8pm.



# Settlement

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- **\$2/kWh** for load reduction during ELRP events
- Payments will be made in the form of a check mailed to participants
- Payments will be made once per year targeted for January 2023
- Using the example from the last slide,
  - Total settlement value =  $\$2/\text{kWh} \times \Sigma(\text{load reduction in each hour}) = \$2/\text{kWh} \times 130\text{kWh} = \mathbf{\$260}$

# Summary

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- **\$2/kWh** for load reduction during ELRP events
- **No penalties** or collars around the nominations
- Minimum nomination is 1kW
- No technology upgrades necessary – agencies can participate through behavioral change
- Notifications can be by text
- Analysis support can be provided

# Contacts

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