Emergency Load Reduction Program (ELRP)

California IOUs Taking Actions to Prepare for Potential Extreme Weather in Summers 2022 and 2023

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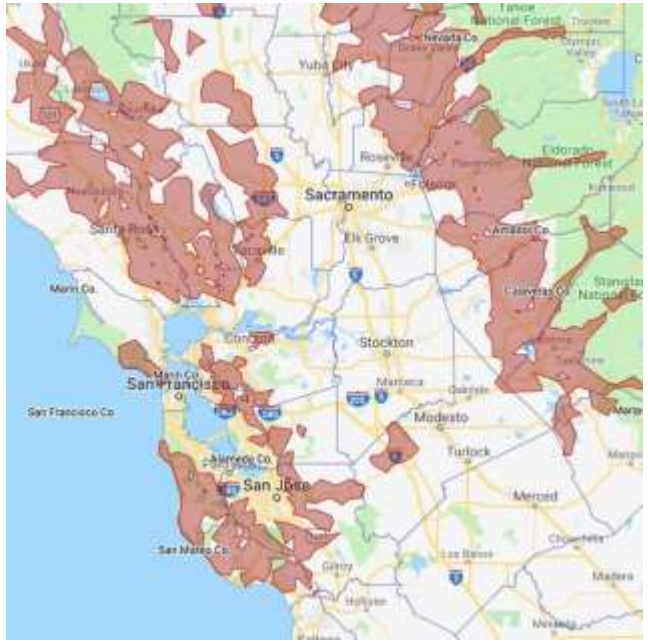
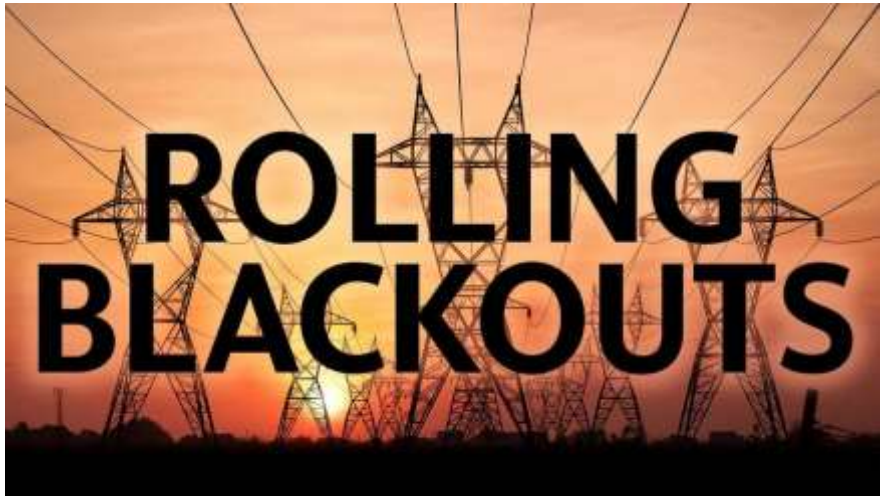
The California Summer of 2020





California ISO

- First time since 2001 with lack of available generation to meet demand
- Impacts were mitigated by voluntary, uncompensated demand response
- Renewable variability, thermal retirements, & climate change will result in increased uncertainty

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

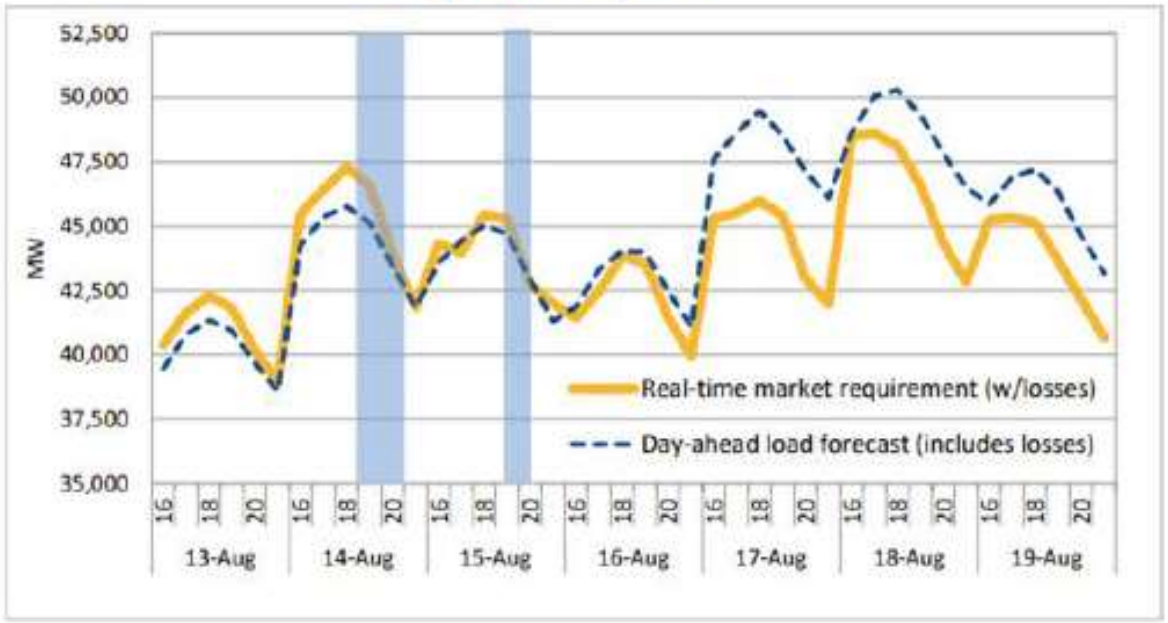
	1998	1999	2000	2001	2002	2003	2004	2005	2006
Flex Alert*	N/A	N/A	20	26	1	0	6	7	18
Restricted Maintenance Operations	8	12	77	168	18	10	16	13	16
Transmission Emergency	N/A	N/A	N/A	N/A	N/A	N/A	6	5	0
Alert	7	2	34	180	3	0	1	0	1
Warning	8	6	85	181	4	0	2	2	5
Stage 1 Emergency	7	4	55	70	2	1	1	1	3
Stage 2 Emergency	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	TOTALS
Flex Alert*	3	4	2	1	5	8	**120**
Restricted Maintenance Operations	11	10	18	2	9	19	**513**
Transmission Emergency	0	1	2	3	2	0	**34**
Alert	0	0	0	0	9	0	**239**
Warning	0	0	0	1	7	4	**316**
Stage 1 Emergency	0	1	0	0	0	0	**146**
Stage 2 Emergency	0	0	0	0	6	1	**118**
Stage 3 Emergency	0	0	0	0	2	0	**41**
1-Hour Probable Load Interruptions	0	0	0	0	1	0	**1**

http://www.caiso.com/Documents/AWE-Grid-History-Report-1998-Present.pdf

CAISO Day-Ahead load forecast vs. real time load
August 13- August 19



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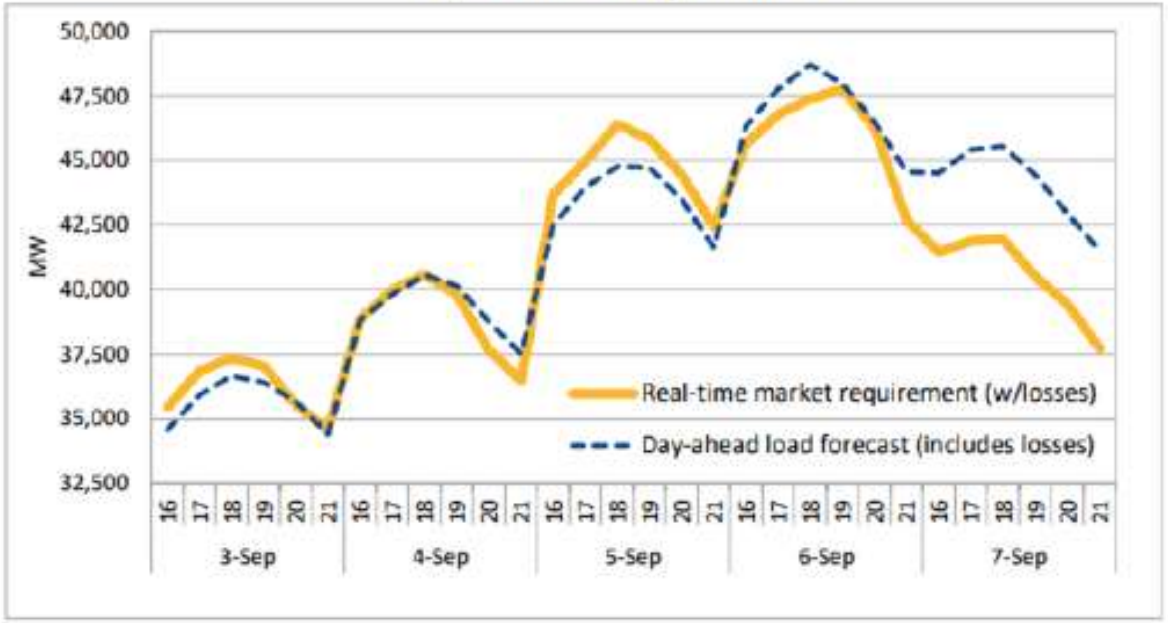
CAISO Day-Ahead load forecast vs. real time load
September 3- September 7



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- Real-time demand exceeded day-ahead forecast
- California Independent System Operator (CAISO) called Stage 3 Emergencies on Aug 14th and 15th due to deficiencies in reserves
- Rolling power outages were required to shed load

1 & 2 http://www.caiso.com/Documents/ReportonMarketConditionsIssuesandPerformanceAugustandSeptember2020-Nov242020.pdf

CPUC Initiative Background

Background

- California experienced unprecedented blackouts in 2020 for the first time since 2001
- Root cause analysis showed demand > supply

Assessment Findings

- The CPUC, CEC & CAISO identified energy shortages in the range of 2,000-3,000 MW
- Commission determined that new supply & demand-side projects could address future shortages

Summer Reliability CPUC Proceeding

- New Supply–side efforts were introduced
- New Demand-side efforts were introduced (E.g. ELRP Residential & VGI)

Background of the CPUC Emergency OIR

- On **November 19, 2020**, the CPUC initiated Rulemaking **(R.)20-11-003** to establish policies, processes, and rules to ensure reliable electric service in California in the event of an extreme weather event in 2021. This was in response to the **rotating outages** that occurred in the **summer of 2020**.

- **Phase 1** of this proceeding was codified by **Decision 21-03-056** on **March 25, 2021**, which authorized both supply side options and demand side activities, such as the Flex Alert program, modifications to the Critical Peak Pricing tariff, and initiated the Emergency Load Reduction Program, for **summers of 2021 and 2022**.

- On **July 30, 2021**, Governor Newsom signed an **emergency proclamation** to "free up energy supply to meet demand during extreme heat events…and to expedite deployment of clean energy resources this year and next year". In response to the proclamation, on **August 2, 2021**, the assigned Administrative Law Judge initiated **Phase 2** of R.20-11-003.

What is the Emergency Load Reduction Program?

- The ELRP is managed by the State's three large investor-owned utilities (IOUs) - Pacific Gas & Electric, San Diego Gas & Electric, and Southern California Edison called upon only as a last resort during an emergency grid situation issued by the California Independent System Operator (CAISO).
- The ELRP pays customers who voluntarily reduce electricity demand during a grid emergency.
- The State's three IOUs handle customer enrollment, event communication, and per event compensation.
- The ELRP started in Summer 2021 with nearly 200 megawatts (MW) of enrolled non-residential customer participation. The program was called on four times in the early summer 2021, and customers received payments of approximately $1 million for voluntary reductions in demand achieved through the ELRP.
- In December 2021, the CPUC expanded the ELRP for Summers 2022 and beyond to include participation by residential customers. Nearly half of California consumers will be automatically enrolled in the residential program.

ELRP Phase 2 Summary

ELRP Details	Description
Overview	The Emergency Load Reduction Program (ELRP) is a statewide pay-for-performance (non-punitive) demand response pilot that pays customers for incremental load reduction that occur during system emergencies during the summer months. ELRP is out of market (no RA, CAISO, CEC obligation)
Target customers	ELRP targets a combination of residential & non-residential customers as well aggregators who are responsible for executing certain sub programs
Sub Programs	ELRP is broken into 8 sub programs under two categories. Category A is customers and aggregators not participating in demand response programs. Category B is DR providers participating in market integrated supply-side Demand response programs
Enrollment	SCE anticipates enrolling approximately 1.8M customers. Most of these customers will be defaulted into SCE Residential ELRP
Marketing	The CPUC wants SCE to target CARE/FERA (Opt-in target) and DAC (Low Income) customers in addition to high energy users (opt-in). Focus on DR fundamentals and making customers aware that a new program exists that they can be paid for it. SCE to leverage community-based organizations to spread the word
Incentive	Customers will be paid $2/KWh of verified incremental load reduction. Exports are allowed, rules apply
Pilot duration & timing	ELRP is a multi-year pilot (2021 to 2025) and can be dispatched between May 1st and October 31st of each year. Events last 1-5hrs
Dispatch Parameters	ELRP can be dispatched up to 60 hours per year during system emergencies (May 1 – Oct 31). Sub programs have different runtime minimums. ELRP will be triggered by Flex Alerts and EEA alerts
Budget	The Overall ELRP budget is $186M in 2022 and 2023. Program Admin: 30.4M | Marketing: 4M | Incentives: 152M
Technology	A1, A2 & A6 – Agnostic | A3 – Rule 21 exporting DERs | A4 – Solar Paired Batteries | A5 – EV Batteries & Charging Infrastructure

ELRP Workstreams – Group B

Group A - Customers and aggregators not participating in Demand Response (DR) programs

Subgroup	Target	Program Overview
A1	Non-Residential	Non-residential customers can participate in ELPR by nominating an estimated target load to be reduced during ELRP events. Participation is voluntary and non-punitive. Bundled and Unbundled customers can participate. Customers must have an approved SCE interval meter. Customers peak demand must be equal to or greater than 100 KW
A2	BIP Aggregators & Other Aggregators	BIP *aggregators are* eligible to participate in ELRP. If a BIP aggregator chooses not to participate, its customers may independently participate in ELRP under A.1, subject to the applicable criteria and requirements. For SCE, participating BIP aggregators may add and nominate only non-residential customers eligible under A.1 in our ELRP portfolio.
A3	Non-Residential Rule 21 Exporting DERs	Bundled and Unbundled non-residential NEM customers with a minimum threshold set at 25KW based on physical interconnection capacity. Customer can't be enrolled in market integrated DR program, must possess a rule 21 interconnected device (including prohibited resources), BTM device must meet minimum export threshold of 25KW.
A4	VPP Aggregators	An aggregator managing a BTM virtual power plant (VPP) aggregation consisting of storage paired with net energy metering (NEM) solar or stand-alone storage deployed with residential (bundled or unbundled) or non-residential (bundled or unbundled) customers. Min threshold of 500KW & 20hrs
A5	Vehicle Grid Integration Aggregators	SCE will work with VGI aggregators to dispatch any combination of electric vehicles and charging stations – including those that are capable of managed one-way charging (V1G) and bi-directional charging and discharging (V2G) deployed with residential (bundled or unbundled) or non-residential (bundled or unbundled) customers. Aggregator "Fleet" must meet a minimum threshold of 25 KW & other technical requirements
A6	Residential	Bundled and unbundled residential customers. CCA cannot be opted out. CARE/FERA and high usage customers will be opted in. To direct marketing focus on CARE, DAC and low income per state.

ELRP Workstreams – Group B

Group B - DR Providers participating in market-integrated-supply-side DR Programs

Subgroup	Target	Program Overview
B1	3rd Party DRPs	A third-party DRP with a market-integrated proxy demand resource (PDR) is eligible to participate in ELRP. Group B participants will list the Proxy Demand Resources (PDRs) that will participate in ELRP and nominate an estimated target load reduction quantity (August) to be achieved during an ELRP event by each participating PDR resource. Participation during an ELRP event is entirely voluntary, and no financial penalties will result from not meeting or exceeding the nominated target load reduction quantity during the event.
B2	CBP	

ELRP Notification Protocols

ELRP will utilize both **DAY-AHEAD** and **DAY-OF** event notifications to reduce load.

•The **DAY-AHEAD** trigger is tied to a day-ahead Alert declaration by the CAISO per the Alert, Warning and Emergency escalation process, which is declared by 3pm the day before the day of concern. Following the Alert, the IOUs have complete discretion to activate Group A customers—either all participants simultaneously or in a selectively staggered manner—and ask them to prepare to reduce electricity demand during the designated event period. In the case of Residential ELRP, the program is triggered in response to a day-ahead Flex Alert issued by the CAISO.

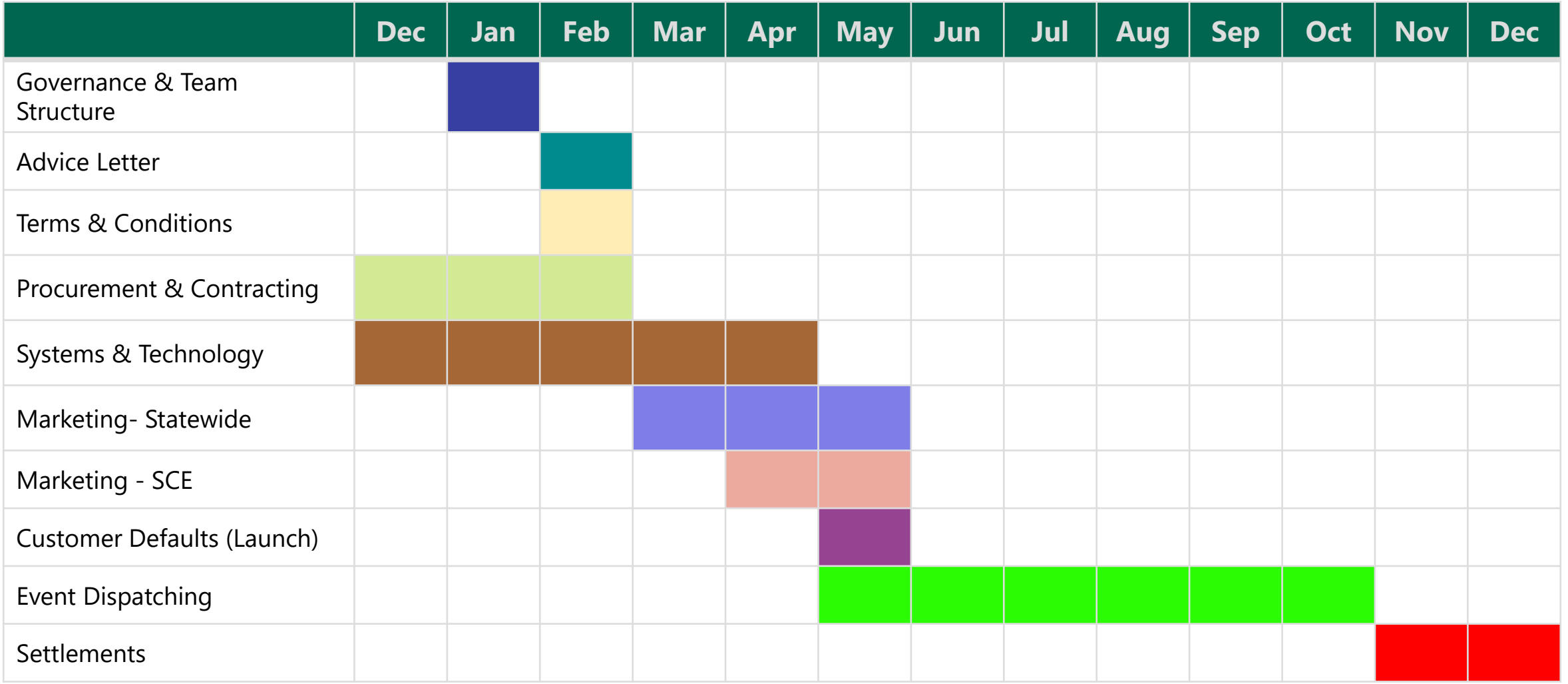
•The **DAY-OF** trigger follows any Warning or Emergency declaration by the CAISO. As with the day-ahead trigger, the IOUs exercise discretion in calling an ELRP event based on anticipated grid conditions and activating participants to reduce electricity demand during the event.

•Prior to 2020, the CAISO issued a total of 20 Flex Alerts over a 10-year period. By comparison, the CAISO issued a total of 8 grid emergency declarations (Alerts, Warnings, or Emergency (Stage 1, 2, or 3) that would have triggered ELRP over the same period, if ELRP had existed in those earlier years.

Alerts, Warnings & Events Table

CAISO AWE Levels	NERC EEA Levels	Comments
Restricted Maintenance Operations		Issued in real time or in advance
Transmission Emergency		Issued in real time
Notifications of forecasted reserve deficiencies		
Alert	EEA-1	Issued in advance – day ahead by 1500
Warning	EEA-1	Issued in real time
Warning – triggering DR programs	EEA-2	Issued in real time
Stage 1	EEA-2	Issued in real time
Stage 2	EEA-3	Issued in real time
Stage 3	EEA-3	Issued in real time

ELRP Implementation Timing



Additional Items

•**Adjustment and Expansion of Existing Demand Response Programs** –Modifications were also made to enhance participation and performance of other existing demand response programs. These programs provide incentives for commercial and industrial customers to reduce their use of electricity when the grid is stressed.

•**New Energy Efficiency Programs** – A new energy efficiency program for the Summers of 2022 and 2023 for rapid deployment of energy savings at peak or net peak times, with payments to consumers made on a performance basis and energy savings measured at the meter; and augmentation of several existing energy efficiency programs that have proven to deliver savings rapidly and reliably.

•**New Smart Thermostat Incentive Program** – Providing $22.5 million in incentives to install smart thermostats in hot climate zones. The smart thermostats will allow customers to reduce air conditioning usage a few degrees during critical times and get paid for the energy savings, with special protection for low-income customers that qualify for the CPUC's California Alternate Rates for Energy (CARE) or Family Electric Rate Assistance (FERA) Programs.

•**New Dynamic Rate Plans** – Adoption of two Dynamic Rates pilot programs to test the effectiveness of customer response to electricity rates that change rapidly during grid emergencies. One pilot will shift agricultural water pumping to off-peak times in response to price signals, while the other pilot will test how dynamic rates affect customer end-uses, such as electric vehicle charging.

For More Information

https://www.cpuc.ca.gov/ELRP

https://elrp.olivineinc.com/

https://www.sdge.com/emergency-load-reduction

https://www.sce.com/elrp