



CLIMATE HEAT IMPACT RESPONSE PROGRAM (CHIRP)

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Introduction

California is making major efforts to further enhance grid reliability to address stresses caused by climate change and the resulting increase in wildfires, heat waves, and drought conditions. The impacts are often disproportionately borne by the state's most vulnerable and disadvantaged populations. Because disruptions to our energy supply¹ across the state risk public health, multiple agencies are working to make these disruptions rare. On July 30, 2021, considering the energy shortfalls that were projected for the state during these extreme weather events, Governor Newsom signed a Proclamation of a State of Emergency (Proclamation)². The Proclamation called for expediting clean energy projects and reducing demand on the electric grid during extreme heat events. It suspended certain emissions requirements to allow greater energy production during critical times when extreme heat events or a reduction in transmission capacity threaten energy supply. It also directed the California Air Resources Board (CARB) to mitigate any resulting emissions. The U.S. Department of Energy later issued a complementary order authorizing operations of these facilities in this manner, and emphasizing the importance of mitigation.

This mitigation plan addresses that requirement, specifically for the summer and autumn 2021 period covered by the Proclamation – and provides a structure that can be used if such events requiring mitigation occur in the future. The Proclamation directed utility customers operating backup generators and facilities that operate above permitted requirements during extreme heat events to provide data on their operations to CARB. In turn, CARB was directed to develop by November 15, 2021, and then promptly implement, a State-funded plan to mitigate additional emissions authorized by the Proclamation beyond ordinarily permitted levels. The Proclamation required the mitigation funding to be invested in programs that improve air quality in communities with a particular focus on disadvantaged communities, and to reduce risk to sensitive populations. The majority of the provisions of the Proclamation were in effect from July 30, 2021 through October 31, 2021. While the Climate Heat Impact Response Program (CHIRP) mitigation plan may not be deployed during 2021, the Proclamation notes the importance of maintaining grid reliability in 2022. Staff developed a mitigation plan that is flexible and can be deployed quickly if the need arises in the future. California is working hard to reduce grid emergencies, but they can still occur, and this program is designed to mitigate the impacts when they do occur.

To fulfill CARB's duties under the Proclamation, CARB staff developed CHIRP. There are two components to CHIRP: emissions reporting and the mitigation plan. Reporting parameters were developed in consultation with the California Public Utilities Commission (CPUC), the California Energy Commission (CEC), the air districts, and electric utilities in order to fulfill the reporting requirements of the Proclamation. The mitigation plan was developed in consultation with community advocates, environmental justice organizations, CPUC, the CEC, and local air districts. The plan has a strong focus on ensuring investments take place in the impacted and disadvantaged communities where the emission sources are located and

1 <https://www.caiso.com/Documents/AWE-Grid-History-Report-1998-Present.pdf>

2 <https://www.gov.ca.gov/wp-content/uploads/2021/07/Energy-Emergency-Proc-7-30-21.pdf>

proposes to support a wide range of projects that mitigate emissions, reduce risk to sensitive populations, and add resiliency to the grid.

The Proclamation signed on July 30, 2021 was the first State of Emergency to direct CARB to gather emissions data and develop a mitigation plan to address emissions associated with extreme heat events. When the California Independent Systems Operator (CAISO) projects an energy shortfall, it has the ability to issue a variety of notices depending on the severity of the supply shortfall and the need for additional generation. In general, these events have been rare in recent history. While the mitigation plan was developed in response to the Proclamation to be implemented when CAISO³ projected an energy shortfall caused by extreme heat or a reduction in transmission capacity and issues a grid warning or grid emergency notice, it is intentionally broad to allow for it to be deployed in the future, if the need arises. These CAISO events are intended to increase supply and reduce demand on the grid in advance of anticipated increases in demand, and are completely separate and distinct from Public Safety Power Shutoff (PSPS) events where the utilities shut off power in anticipation of increased wildfire danger.

There have been no CAISO grid warnings or grid emergency notices between July 30, 2021 and October 31, 2021. Staff is further assessing a very limited set of eligible emissions associated with the commissioning of new facilities in Yuba City and Roseville. The Executive Officer will work in partnership with other decisionmakers appropriate mitigation under this Plan if needed.

While CARB may not be requesting funding to implement CHIRP during 2021, the Proclamation notes the continued importance of grid reliability programs in 2022.

Coordination and Outreach Efforts

CHIRP reporting requirements were developed by CARB in consultation with California's local air districts, the CEC, and CPUC. This collaboration was necessary to better understand location data of emissions sources, emission data, and permitting requirements for sources like backup generators and thermal power plants. We anticipate further collaboration if the need to mitigate emissions occurs and the CHIRP mitigation plan is set in motion.

CARB staff also conducted a public meeting on September 16th to engage communities and other stakeholders in a discussion on our proposed program goals and draft plan. Stakeholders expressed concerns with California's aging grid and interest in prevention measures as well as mitigation measures. There was strong support for projects that would mitigate emissions from extreme heat events and prevent future emissions from grid warning and emergencies in impacted communities and priority populations. Potential project categories discussed were vehicle-to-grid technologies, better energy storage solutions, weatherization, green barriers, and community air monitoring. If the need arises for

³ CAISO is a non-profit public benefit corporation that manages the energy supply in 80% of California.

mitigation, and funding is available, staff have a plan of action to work with impacted communities.

As this program responds to emergencies, the exact nature of the plan and community engagement is designed to be adaptive. This mitigation plan is intentionally broad so that CARB can address community needs when the time comes for mitigation. In the future, if the need arises for mitigation, CARB will implement the plan in close partnership with impacted and disadvantaged communities. CARB staff would continue to coordinate internally with the Office of Environmental Justice and the Office of Community Air Protection during plan implementation. Staff's outreach and engagement approaches would follow standards for equitable community engagement, investment and other critical equity principles to address environmental justice and to advance equity. CARB would also explore which communities may require additional, more tailored outreach, in close collaboration with environmental justice and community-based organizations with the goal of flexible and equitable communication with impacted residents.

In order to share information more widely, staff also created a public facing webpage⁴. This webpage will be updated as needed to allow for the most current information to be shared publicly and with community residents. CARB also developed a specific CHIRP email address CHIRP@arb.ca.gov to allow for questions to be submitted and directed to the appropriate staff.

Program Goals

The CHIRP mitigation plan supports a wide range of projects that both mitigate emissions and reduce risk to impacted and disadvantaged communities and sensitive populations. During the development of the plan, staff considered the following program goals, which would guide evaluation of specific projects implemented through the CHIRP mitigation plan:

- Mitigate excess emissions generated and reduce exposure during CAISO-designated grid warning and grid emergency events.
- Consult and engage affected communities throughout the planning process to determine desired community-focused projects that yield long-term/sustainable benefits.
- Focus on projects to mitigate and reduce current emissions impacts and build grid resiliency to reduce future emissions impacts.
- Develop a program that is complementary and not redundant to other incentive programs, and that is flexible if the need to mitigate arises in the future.
- Provide transparency through regular updates to public and community partners on project progress and outcomes, including through CARB's public webpage, public meetings, and one-on-one discussions.

⁴ <https://ww2.arb.ca.gov/our-work/programs/climate-heat-impact-response-program-chirp>

Program Design

The CHIRP mitigation plan depends on four basic elements as shown in Figure 1. First, CAISO would need to project a shortfall in the energy supply and issue a grid warning or grid emergency notice. Under the Proclamation, certain emissions requirements would be suspended to address the energy shortfall. Then, CARB would gather emissions data associated with the event, determine the funding needed to mitigate the event, request the funding from Department of Finance, and then deploy funding to mitigate emissions and reduce health risk. CARB staff would collaborate with communities, the CEC, CPUC, air districts, and utilities through each step of the process.

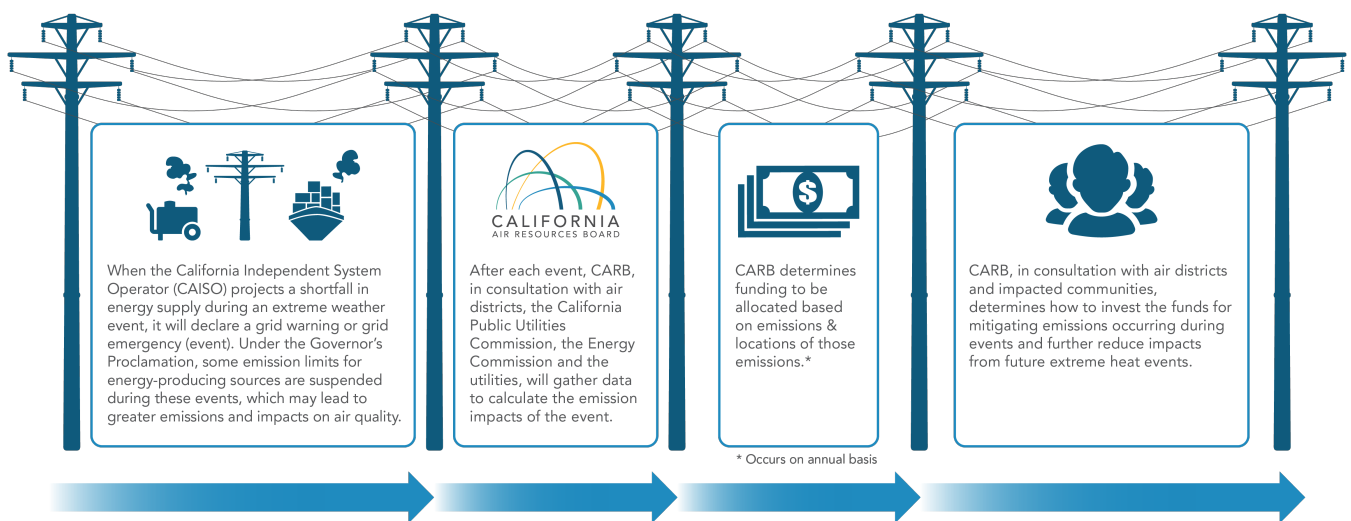


Figure 1. Climate Heat Impact Response Program Process

Reporting Requirements for Emergency Deployments

The flow of data for determining the emissions impacts related to CAISO grid warning or emergency events is depicted in Figure 2. After each event, certain entities were required to submit emissions data to CARB. The Proclamation, in paragraphs 3(g) and 3(h), set reporting requirements for utilities that have customers participating in the California State Emergency Program (CSEP). The CSEP offers incentives for utility customers to reduce their demand on the electric grid during extreme heat events, which they can do by, among other things, using backup generators for their own energy needs. The utility was required to provide information to CARB regarding how much backup generation the customer intended to use, and if available, information on whether the backup generation was portable or stationary, and the federal emissions tier for each generator. The utility was required to provide this data, along with an estimate of the total load reduction achieved each month by zip code. This data was to be submitted, via email, to CHIRPReporting@arb.ca.gov.

CSEP is just one program that incentivizes demand reduction to the grid by deploying technologies and other measures behind the meter. Additional programs that should be

monitored for mitigation purposes, if the need for mitigation arises in the future, include the CPUC's Emergency Load Reduction Program (ELRP) and two utility programs (i.e., the base interruptible program and agricultural load reduction program). Because it is often difficult for utilities to know exactly which measures a customer deploys behind the meter to reduce demand on the grid, CARB staff would make a health-conservative estimate that any reduced demand is from the use of backup diesel generators. If more refined data is available, staff would adjust the estimates appropriately.

Paragraph 6 of the Proclamation set reporting requirements for electricity-generating facilities that operate in excess of permitted requirements. Within 48 hours, these facilities were required to notify CARB, the CEC, and the local air district of operations in excess of permitting requirements or conditions identified in the CEC certificate or air district permit. Within 30 days of the event, the facility was required to submit a report that included the following:

- Facility name and address (including zip code)
- Air district permit number
- Equipment type
- Describe what condition(s) under the air district permit or the CEC license were not adhered to during this event, including emission limits if applicable
- Actual time of operation during the event
- The number of hours of operation in excess of the established limits
- Excess emissions generated during the event
- The basis for the excess emission estimate (CEMs, emission factor, etc.)
- Additional fuel used beyond permit limitations during the event (e.g., mmbtu of natural gas)
- Additional energy produced (in MWh) beyond permit limitations during event

Additionally, Paragraph 10 of the Proclamation contemplated a streamlined process to license new power generators to deliver net peak energy before October 31, 2021. Pursuant to this paragraph, CEC licensed new electricity generating units in Yuba City and Roseville for a total of 120 megawatts. Under the CEC licenses and an order issued by the U.S. Department of Energy, the new units must report emissions information to CARB. If the need to mitigate arises in the future, CARB would work with our partners at the CEC and local air districts to determine the emissions impacts from these facilities.

Finally, the Proclamation, in paragraph 5, established a process to allow ships to use their auxiliary engines rather than shore power, in order to reduce electric demand during extreme heat events. Because these sources can have a significant emissions impact, the Proclamation not only required CAISO to have issued a grid warning or emergency notice, but also for the Governor's Office of Emergency Services to publish a notice pursuant to the Proclamation. While the Proclamation did not have reporting requirements for auxiliary engine use, per CARB regulation, ships at berth are required to report to CARB the duration of time the ship did not plug into shore power, along with a copy of the CAISO grid warning or emergency notice and the Office of Emergency Services notice.

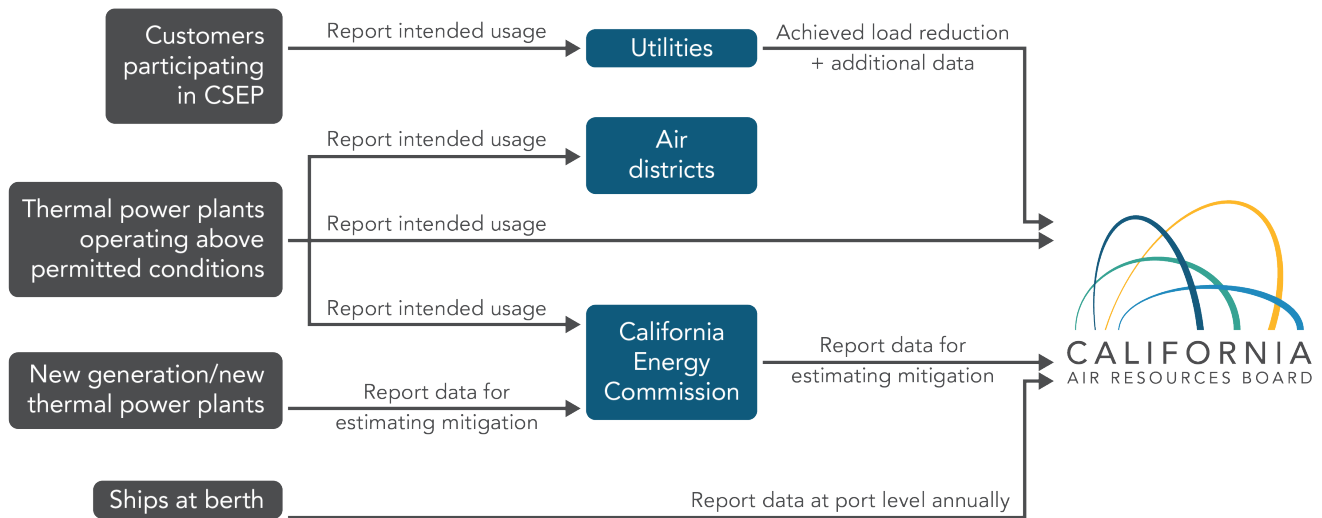


Figure 2. Reporting Requirements and Data Flow

Determining Mitigation Funding Amount

While there were no CAISO grid warnings or emergency notices issued between July 30, 2021 and October 31, 2021 CARB developed a methodology for determining the amount of funding necessary to mitigate excess emissions. If there is a need to mitigate extreme heat events in the future, this methodology would be updated with current assumptions. Annually, CARB would quantify how much funding is needed to mitigate the emissions that occurred above ordinarily permitted levels. Staff propose doing this based on the well-established cost-effectiveness methodology utilized in the Carl Moyer program. Cost-effectiveness is the measure of dollars provided to a project for each weighted ton of covered emissions reduced. In this case, to determine the funding needed for mitigation, staff set the cost-effectiveness value at \$500,000 per weighted ton of emissions, which is the proposed threshold set in the Carl Moyer program for zero-emission vehicle technologies. This value was selected because the CHIRP mitigation plan includes conversion of combustion technologies to zero-emission technologies – an important goal for the State. The first step for determining the funding needed to mitigate emissions consists of using the Carl Moyer formula, the annual weighted surplus emission reductions in tons per year for the reported CHIRP emissions. The annual particulate matter (PM) emission reductions are weighted by a factor of 20 to account for diesel PM toxicity and then added to the annual oxides of nitrogen (NOx) and reactive organic gas (ROG) reductions to calculate the weighted annual emission reduction. To get the mitigation funding amount, the weighted annual emission reductions are then multiplied by the cost-effectiveness value (CEV).

Formula 1: Determining Funding Needed for Mitigation

$$\text{Mitigation Funding Amount} = \text{CEV} * (\text{NOx} + \text{ROG} + (20 * \text{PM}_{2.5}))$$

After establishing a mitigation funding amount, CARB would submit a mitigation plan to the Department of Finance that identifies the funding needed for mitigation, along with an

outreach plan, a list of communities where the investments would take place, and list of potential project categories that can be implemented to mitigate impacts and reduce risk in impacted and disadvantaged communities.

Eligible Project Categories

CARB's current suite of incentive programs house a variety of project types that could be considered for CHIRP mitigation and evaluated against the program goals set out above. Because project categories already exist across many different programs at CARB, projects could be implemented quickly. Specific details of this plan, including how to implement, what projects to implement, and who will be implementing, would be developed in close partnership with the impacted communities. This list of potential projects is intended to grow as a result of this outreach and partnership. If a community has interest in a project category that CARB does not currently have in our portfolio, we propose that the Board delegate authority to the Executive Officer to approve new categories after a public process is conducted.

In an effort to provide expeditious implementation and align with the Federal emission reduction mandates and State climate mitigation goals, eligible zero-emission projects could leverage existing programs. Examples include, but are not limited to the following:

- Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)⁵
- Clean Off Road Equipment Voucher Incentive Project (CORE)⁶
- Clean Mobility Options (CMO)⁷
- Sustainable Transportation Equity Project (STEP)⁸
- Carl Moyer Program⁹
- Community Air Protection Incentives¹⁰
- Funding Agricultural Replacement Measures for Emission Reductions (FARMER)¹¹

In addition to CARB incentive programs, where feasible, mitigation projects could align with approved Community Emissions Reduction Programs (CERP)¹² and Supplemental Environmental Projects (SEP)¹³. Ultimately, funding would be allocated to appropriate projects based upon the CHIRP program goals set out above, community needs, and any other relevant considerations.

5 <https://californiahvip.org/>

6 <https://californiacore.org/>

7 <https://www.cleanmobilityoptions.org/>

8 <https://ww2.arb.ca.gov/our-work/programs/low-carbon-transportation-investments-and-air-quality-improvement-program-1>

9 <https://ww2.arb.ca.gov/our-work/programs/carl-moyer-memorial-air-quality-standards-attainment-program>

10 <https://ww2.arb.ca.gov/our-work/programs/community-air-protection-incentives>

11 <https://ww2.arb.ca.gov/our-work/programs/farmer-program>

12 <http://ww2.arb.ca.gov/capp>

13 <https://ww2.arb.ca.gov/our-work/programs/supplemental-environmental-projects-sep>

Mitigation Project Reporting and Outcomes

In order to provide transparency to communities and other members of the public, awarded projects would be required to provide, at minimum, semi-annual updates which would be posted to the CHIRP website. Additionally, at the close out of the project, staff would require, at minimum, a final report that can be posted to the CHIRP website.

Summary

The July 30th Proclamation directed CARB to develop and promptly implement a mitigation plan to address emissions that occur during CAISO grid warnings and emergencies from July 30, 2021 through October 31, 2021. While there have been no CAISO grid warnings or grid emergencies during this timeframe, staff is further assessing a very limited set of eligible emissions associated with that the commissioning of new facilities in Yuba City and Roseville. The Executive Officer will work in partnership with other decisionmakers appropriate mitigation under this Plan if needed.

While CARB may not be requesting large-scale funding to implement CHIRP during 2021, the Proclamation notes the continued importance of grid reliability programs in 2022. Staff set out to develop a mitigation plan that is flexible and can be deployed quickly if the need arises in the future.