CALIFORNIA ENERGY COMMISSION

CALIFORNIA NATURAL RESOURCES AGENCY

California Energy Commission

STAFF REPORT

Localized Health Impacts Report

Projects Awarded Funding Under Solicitation GFO-22-612 — Electric School Bus Bi-Directional Infrastructure

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California Energy Commission

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PREFACE

This Localized Health Impacts Report (LHI Report) assesses the local health impacts from projects proposed to receive Clean Transportation Program (CTP) or similar funding. Preventing or minimizing health risks from pollution is vital in any community, but especially in those that are at high-risk due to preexisting poor air quality and other factors. Environmental justice (EJ) communities, low-income communities, and minority communities are considered the most impacted by any project that could increase air pollution. Therefore, they are considered "high-risk communities." This LHI Report:

- Identifies proposed projects located in high-risk communities.
- Analyzes the potential health impacts to communities from project-related emissions or pollution, based on information submitted by the project awardees.
- Describes the plans for community outreach for each project.

Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007), which created the CTP, also directed the California Air Resources Board (CARB) to develop guidelines to ensure the CTP improves air quality. CARB's *AB 118 Air Quality Guidelines*, approved in 2008, are published in the California Code of Regulations (CCR), Title 13, Motor Vehicles, Chapter 8.1. Those guidelines require the CEC to issue LHI Reports (13 CCR Section 2343):

"(6) Localized health impacts must be considered when selecting projects for funding. The funding agency must consider environmental justice consistent with state law and complete the following:

"(A) For each fiscal year, the funding agency must publish a staff report for review and comment by the public at least 30 calendar days prior to approval of projects. The report must analyze the aggregate locations of the funded projects, analyze the impacts in communities with the most significant exposure to air contaminants or localized air contaminants, or both, including, but not limited to, communities of minority populations or low-income populations, and identify agency outreach to community groups and other affected stakeholders.

"(B) Projects must be selected and approved for funding in a publicly noticed meeting."

In addition, the CEC issues LHI Reports for certain projects that are similar to CTP projects but do not receive CTP funding.

The CEC publishes this LHI Report at least 30 days before approving projects at a publicly noticed meeting. This report includes projects that may require a conditional-use permit, discretionary permit, or California Environmental Quality Act (CEQA) review. The CEC interprets "permits" to suggest discretionary and conditional-use permits, because they require a review of potential impacts to communities and the environment before issuance. Since ministerial-level permits do not review public health–related pollutants, CEC staff does not assess projects requiring only ministerial-level permits in this report.

ABSTRACT

This Localized Health Impacts Report describes the potential health impacts to communities from projects seeking California Energy Commission (CEC) funding under Grant Solicitation GFO-22-612. This grant initiative is to fund projects that enable managed charging and bidirectional power flow for electric school buses and their associated infrastructure. Under California Code of Regulations Title 13, Section 2343, this report is available for public comment for 30 days before projects can be approved at a publicly noticed business meeting.

CEC staff has proposed four projects for Clean Transportation Program or similar grant funding awards under Solicitation GFO-22-612. Most of these projects have several locations. Based on project site information provided by the awardees, four of the eight communities where these projects are located are considered high-risk communities. Staff does not anticipate a net increase in the pollution burden for the communities where these projects are located.

Keywords: Air pollution, California Air Resources Board (CARB), Assembly Bill (AB) 118, California Environmental Quality Act (CEQA), electric vehicles (EVs), electric vehicle supply equipment (EVSE), environmental justice (EJ) indicators, Environmental Justice Screening Method (EJSM), localized health impacts (LHI)

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EXECUTIVE SUMMARY

The California Energy Commission's (CEC's) Clean Transportation Program provides funding to support innovation and accelerate the development and implementation of advanced transportation and fuel technologies. The CEC also provides funding from programs that are similar to but separate from the Clean Transportation Program. An example of a similar program is the funding described in Section 74 of the Budget Act of 2021 (Senate Bill 129, Skinner, Chapter 69, Statutes of 2021).

Under California Code of Regulations Title 13, Section 2343, this Localized Health Impacts Report describes the GFO-22-612 projects proposed for funding that may require certain kinds of permits or environmental review. The CEC is required to assess the local health impacts of projects proposed for Clean Transportation Program funding.

This report focuses on how project-related emissions or pollution could affect community health. Environmental justice communities, low-income communities, and minority communities are at higher risk of harm from pollution. Project locations in these communities are considered "high-risk community project locations." CEC staff identifies high-risk communities using a combination of demographic and environmental data. Environmental data for air quality come from the California Air Resources Board. Demographic data are from the U.S. Census Bureau and the California Employment Development Department.

CEC staff proposes four projects for Clean Transportation Program or similar grant funding awards under Solicitation GFO-22-612, titled "Electric School Bus Bi-Directional Infrastructure." This initiative seeks to fund projects that support the ability to enable managed charging and bidirectional power flow for electric school buses and their associated infrastructure. Charging equipment with bidirectional power flow enables vehicles to receive electricity for battery charging and to send stored electricity back through the charging cable to minimize disruptions during power outages. Staff analyzed localized health impact information submitted by the project awardees. Based on project site information provided by the awardees, four of the eight communities (El Cajon, Long Beach, Napa, and Stanislaus County) where proposed projects are located are considered high-risk. Community members near the proposed project sites may be at a higher risk of negative health impacts from pollution. However, staff does not anticipate a net increase in the pollution burden for the communities where these projects are located. Instead, staff expects the projects to reduce pollution levels by supporting the transition of school bus fleets to zero-emission vehicles.

CHAPTER 1:
Projects Proposed for Funding

Background

Assembly Bill (AB) 118 (Núñez, Chapter 750, Statutes of 2007) created the Clean Transportation Program (CTP). AB 118, amended by Assembly Bill 109 (Núñez, Chapter 313, Statutes of 2008), authorizes the California Energy Commission (CEC) to "develop and deploy innovative technologies that transform California's fuel and vehicle types to help attain the state's climate change policies." Assembly Bill 8 (Perea, Chapter 401, Statutes of 2013) reauthorized the CTP to January 1, 2024. Assembly Bill 126 (Reyes, Chapter 319, Statutes of 2023) reauthorized the CTP through July 1, 2035.

The Budget Act of 2021 (Assembly Bill [AB] 128, Ting, Chapter 21, Statutes of 2021, as amended by Senate Bill [SB] 129, Skinner, Chapter 69, Statutes of 2021 and SB 170, Chapter 240, Statutes of 2021) provides funding that is related to but separate from the CTP.

On April 3, 2023, the CEC released a competitive grant solicitation titled "GFO-22-612 - Electric School Bus Bi-Directional Infrastructure" (GFO-22-612). GFO-22-612 offered grant funding for projects that support enabling managed charging and bidirectional power flow for electric school buses (ESBs) and associated infrastructure. The objective of this solicitation is to reduce the impact of public safety power shutoffs (PSPS) and wildfires by creating additional energy resources during periods of high electricity demand. ESBs with bidirectional capabilities can help offset some of the impacts and challenges of grid reliability and PSPS events.

GFO-22-612 requires that projects partner with at least one school district and will be conducted in two phases. Projects awarded through Phase 1 will install bidirectional charging stations at key building sites throughout California that support school districts and create bidirectional charging infrastructure blueprints that will assist other school districts in planning for the installation of bidirectional charging infrastructure. Phase 2 will allow project teams awarded in Phase 1 to utilize the bidirectional charging infrastructure blueprints to replicate the initial projects at additional California school districts.

On September 27, 2023, the CEC posted a notice of proposed awards (NOPA)[1] identifying the four projects awarded grant funding under GFO-22-612 Phase 1. This LHI Report assesses the locations of each of those projects. Table 1 lists the proposed project location(s) for each of the awardees and the corresponding environmental justice (EJ) indicators. EJ indicator definitions are in Chapter 3 of this LHI Report, and EJ indicator analysis is in Table 3. In some cases, the city listed in the postal address for a project may differ from the geographic entity

1 Willis, Crystal. 2023. "Notice Of Proposed Awards." California Energy Commission. Accessed October 6, 2023. Cover letter available at https://www.energy.ca.gov/sites/default/files/2023-09/GFO-22-612_NOPA_Cover_Letter_2023_09_27_ada.docx, and table of awardees available at https://www.energy.ca.gov/sites/default/files/2023-09/GFO-22-612_NOPA_2023_09_27_ada.xlsx.

assigned by the U.S. Census Bureau. In these cases, the census location (county, place, or census designated place) used for EJ indicator analysis is listed in parentheses in the table below.

Table 1: Project Details With EJ Indicators

Proposed Awardee	Project Title	Project Location	EJ Indicator(s)
BorgWarner	Grid-Supporting and Cost-Saving Vehicle-to-Everything (V2X) Solutions for California School Districts	2323 N Moorpark Rd, Thousand Oaks, CA 91360	Age
BorgWarner	Grid-Supporting and Cost-Saving Vehicle-to-Everything (V2X) Solutions for California School Districts	3133 South St, Long Beach, CA 90805	Minority, Poverty, Unemployment
The Mobility House LLC	Implementing Bidirectional School Bus Charging Using Open Standards to Create a Statewide Blueprint for School Districts	3200 Loveridge Rd, Pittsburg, CA 94565	Minority
The Mobility House LLC	Implementing Bidirectional School Bus Charging Using Open Standards to Create a Statewide Blueprint for School Districts	351 School St, Pittsburg, CA 94565	Minority
The Mobility House LLC	Implementing Bidirectional School Bus Charging Using Open Standards to Create a Statewide Blueprint for School Districts	43770 S Grimmer Blvd, Fremont, CA 94538	Minority
The Mobility House LLC	Implementing Bidirectional School Bus Charging Using Open Standards to Create a Statewide Blueprint for School Districts	1340 Menlo Ave, Napa, CA 94558	Minority, Age
Nuvve Holding Corp.	RESCHOOL: Resilient Energy Solutions for Schools	721 E Park Ave, El Cajon, CA 92020	Poverty, Unemployment
Nuvve Holding Corp.	RESCHOOL: Resilient Energy Solutions for Schools	4710 Cardin St, San Diego, CA 92111	Minority
Storer Transportation	Electric School Bus Bidirectional Infrastructure-Storer Transportation	501 Beard Ave, Modesto, CA, 95354 (Stanislaus County)	Minority, Poverty, Unemployment

Source: CEC staff

Funding for these projects is contingent upon approval at a publicly noticed CEC business meeting and execution of a grant agreement.

Public Comment

As provided by Title 13 of the CCR, Section 2343, a 30-day public review period applies to this LHI Report from the date it is posted on the CEC website. The original posting date for this report is at https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program/localized-health-impacts-reports.

The CEC encourages comments by email. Please include your name or your organization's name in the name of the file. Send comments in either Microsoft® Word format (.doc) or Adobe® Acrobat® format (.pdf) to FTD@energy.ca.gov.

A hard copy can be mailed to:

California Energy Commission
Fuels and Transportation Division
715 P Street, MS-44
Sacramento, CA 95814-5512

All written comments will become part of the public record and may be posted to the Internet. News media should direct inquiries to the Media and Public Communications Office at 916-654-4989 or by email at mediaoffice@energy.ca.gov.

CHAPTER 2:
Project Descriptions

As part of the GFO-22-612 process for selecting projects, applicants must provide LHI information for their proposed project and location. This information includes the expected impact of the project on local communities and the outreach effort the applicant has made to engage disadvantaged communities or other local communities. This chapter summarizes the information submitted by the awardees. The awardees identify disadvantaged communities using the CalEnviroScreen[2] screening tool developed by the Office of Environmental Health Hazard Assessment.

Note: Applicants use different methods for estimating emissions reductions, so that estimates may vary significantly between similar projects.

BorgWarner

BorgWarner's proposed project, titled "Grid-Supporting and Cost-Saving Vehicle-to-Everything (V2X) Solutions for California School Districts," will deploy 23 BorgWarner 125-kilowatt (kW) vehicle-to-everything (V2X) bidirectional charging stations at two school bus depots operated by American Transportation Services. ESBs at these two locations will serve the Conejo Valley Unified School District (CVUSD), Los Angeles County Office of Education, and Pacific Palisades Charter High School. This project will partner with ESB manufacturer Lion and Fermata Energy, a technology company providing communications and metering equipment. Project construction, including trenching to install high- and low-level cables, is not expected to generate a significant amount of truck traffic or emissions. The project will also replace 20 diesel buses at CVUSD with Lion Type D ESBs, eliminating tailpipe emissions of criteria pollutants such as nitrogen oxides (NOx), particulate matter (PM), carbon monoxide (CO), sulfur oxides (SOx), and volatile organic compounds (VOCs).

Outreach efforts from BorgWarner include technical outreach through panel discussions at various bidirectional charging forums and cowriting a white paper concerning bidirectional technology. Fermata Energy will also conduct an educational email marketing campaign targeting school districts and school bus fleet operators with bidirectional charging information.

The Mobility House LLC

The Mobility House LLC's (TMH's) proposed project, titled "Implementing Bidirectional School Bus Charging Using Open Standards to Create a Statewide Blueprint for School Districts," will install eight 60 kW and four 120 kW ESB chargers at bus depots in three school districts:

2 This tool ranks U.S. Census tracts based on geographic, socioeconomic, public health and environmental hazard criteria. See "CalEnviroScreen." Office of Environmental Health Hazard Assessment. Accessed October 6, 2023. Available at https://oehha.ca.gov/calenviroscreen.

Fremont Unified School District, Pittsburg Unified School District, and Napa Valley Unified School District. These community resilience hubs are expected to reduce net emissions from school bus fleet operations by replacing diesel buses with ESB. The project team assumes one Lion Type D ESB consumes 23,400 kilowatt-hours (kWh) of electricity each school year (180 days), driving an average of 100 miles per day at 1.7 kWh per mile. With these assumptions, ESBs and electric vehicle supply equipment (EVSE) implemented through this project are expected to reduce greenhouse gas (GHG) emissions by 454.2 short tons, as shown in Table 2.

Table 2: Fueling Infrastructure and Electric School Bus Emissions Reductions

	GHGs (short tons)	CO (lb)	NOx (lb)	PM10 (lb)	PM2.5 (lb)	VOC (lb)	SOx (lb)
Level 2 Electric Vehicle Supply Equipment	130.9	339.6	530.7	4.6	4.2	23.6	1.0
Electric School Bus	323.3	611.5	751.0	1.2	1.2	15.5	4.7

Source: CEC staff

Outreach efforts include leveraging each district's existing communications channels to engage with the primary users of project sites. TMH will also present information about the community resilience hubs of the project at town hall meetings, educational forums, neighborhood associations, and community leadership groups. Project-specific content highlighting the advantages of bidirectional charging integration and ways that the project supports local and state education initiatives will also be posted on social media platforms. TMH will establish an advisory board to offer quarterly project updates, virtually or in person, to community-based organizations (CBOs).

Storer Transportation

Storer Transportation's proposed project, titled "Electric School Bus Bidirectional Infrastructure-Storer Transportation," will install 37 bidirectional chargers at two bus yards servicing school districts in Stanislaus County. The project will partner with ESB manufacturer Storer Coachways and direct-current fast charger (DCFC) power conversion system manufacturer BorgWarner. Additional truck traffic from general material transport during construction is expected to generate 4.95 tons of carbon dioxide (CO_2). By transitioning from traditional fossil fuel-powered buses to ESB, Storer Transportation estimated a total reduction of 102,483 tons of CO_2 emissions.

Outreach efforts include public meetings to provide project and bidirectional charging infrastructure information.

Nuvve Holding Corporation

Nuvve Holding Corporation's proposed project, titled "RESCHOOL: Resilient Energy Solutions for Schools," will install three bidirectional DCFCs, a stationary battery energy storage system, and grid inverter at the San Diego Unified School District. It will also integrate three existing

DCFCs at the Cajon Valley Unified School District with stationary battery energy storage systems and grid inverter. No project generated emissions are expected. By replacing traditional diesel-powered school buses with ESBs, the project expects to reduce GHG emissions and air pollutants.

Outreach efforts include presentations to school districts and the community (for example, school district board of education, city officials, chamber of commerce, and community-based organizations) from Energetics, a project partner.

CHAPTER 3:
Location Analysis

This LHI Report identifies projects located in high-risk communities, using staff's adaptation of the Environmental Justice Screening Method (EJSM).[3] *High-risk communities* are those with social vulnerability indicators, high exposure to pollution, and greater health risks. This LHI Report is not intended to be a detailed pollution analysis of proposed projects, nor is it intended to substitute for the environmental review conducted as part of the California Environmental Quality Act (CEQA).

CEC staff identifies high-risk community project locations using data from the California Air Resources Board (CARB), the U.S. Census Bureau, and other public agencies. CEC staff analyzes the data to assign EJ indicators for each project location specified in the LHI Report. The proposed project location must meet a two-part environmental and demographic standard to be considered in a "high-risk community."

Part 1: Environmental Standard

Communities meet the environmental standard if they have a high concentration of air pollutants. These pollutants include ozone, particulate matter 2.5 microns in diameter or smaller ($PM_{2.5}$), or particulate matter 10 microns in diameter or smaller (PM_{10}). The environmental standard uses CARB air quality monitoring data on nonattainment[4] status for these pollutants.

Using 2022 data,[5] all projects are in communities that meet the environmental standard since they are within a nonattainment zone for ozone, $PM_{2.5}$, or PM_{10}. This finding indicates that there may be existing poor air quality where the proposed projects are located.

Part 2: Demographic Standard

Communities meet the demographic standard if they have two or more EJ indicators for minority, age, poverty, and unemployment. Staff defines the EJ indicator thresholds as the following:

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3 Pastor Jr., Manuel (University of Southern California), Rachel Morello-Frosch (University of California, Berkeley), and James Sadd (Occidental College). 2010. *Air Pollution and Environmental Justice: Integrating Indicators of Cumulative Impact and Socio-Economic Vulnerability Into Regulatory Decision-Making*. California Air Resources Board. Accessed October 6, 2023. Available at https://ww2.arb.ca.gov/sites/default/files/classic/research/apr/past/04-308.pdf

4 A *nonattainment* area is a geographic area that does not meet the Ambient Air Quality Standards (state, national, or both) for a given pollutant. See "Maps of State and Federal Area Designations." California Air Resources Board. Accessed October 6, 2023. Available at https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations.

5 Ibid.

1. A minority subset represents more than 30 percent of a given city's population.
2. The percentage of people living in a city who are younger than 5 years of age, or who are 65 years of age or older, is more than 1.2 times (more than 20 percent higher than) the state average for those age categories.
3. A city's poverty rate exceeds the state average poverty rate.
4. The city (or county if city data are unavailable) unemployment rate exceeds the state average unemployment rate.

The demographic standard uses the U.S. Census Bureau's American Community Survey five-year estimates[6] on race, ethnicity, age, and poverty, and the California Employment Development Department's monthly data[7] on unemployment. Specifically, this LHI Report uses city-level[8] and county-level[9] unemployment data. Unemployment data are not seasonally adjusted.

Analysis Results

Staff finds that four of the eight communities where these projects are located meet the criteria for high-risk communities since they meet both the environmental and demographic standards. In Table 3, a **bold** number followed by an asterisk (*) indicates categories that exceed a given EJ indicator threshold. A city/county name in **bold**, followed by a dagger (†), indicates a high-risk community.

6 American Community Survey codes DP05 and S1701 were used to find data. See "Explore Census Data." U.S. Census Bureau. Accessed October 6, 2023. Available at https://data.census.gov/cedsci/.

7 Overview page with data from most recent and previous months: "Unemployment Rate and Labor Force." Employment Development Department. Accessed October 6, 2023. Available at https://labormarketinfo.edd.ca.gov/data/unemployment-and-labor-force.html.

8 Most recent data only: "Monthly Labor Force Data for Cities and Census Designated Places (CDP)." Employment Development Department. Accessed October 6, 2023. Available at https://labormarketinfo.edd.ca.gov/file/lfmonth/allsubs.xls.

9 Most recent data only: "Monthly Labor Force Data for Counties." Employment Development Department. Accessed October 6, 2023. Available at https://labormarketinfo.edd.ca.gov/file/lfmonth/countyur-400c.pdf.

Table 3: EJ Indicators by Project Location City Demographic

Site Location	American Indian and Alaska Native (2021)	Asian (2021)	Black or African American (2021)	Hispanic or Latino (Any Race) (2021)	Native Hawaiian and Pacific Islander (2021)	Under 5 Years of Age (2021)	65 Years of Age and Over (2021)	Below Poverty Level (2021)	Unemploy-ment (August 2023)
California	**0.9%**	**14.9%**	**5.7%**	**39.5%**	**0.4%**	**6.0%**	**14.4%**	**12.3%**	**5.1%**
EJ Indicator Threshold	**30%**	**30%**	**30%**	**30%**	**30%**	**7.2%**	**17.3%**	**12.3%**	**5.1%**
El Cajon city†	0.4%	4.5%	7.0%	27.1%	0.5%	7.2%	12.9%	**19.1%***	**7.5%***
Fremont city	0.5%	**61.4%***	2.8%	12.5%	0.6%	5.9%	12.6%	4.9%	4.4%
Long Beach city†	1.0%	13.0%	12.1%	**43.9%***	0.5%	5.8%	12.0%	**15.4%***	**5.6%***
Napa city†	0.7%	2.9%	0.7%	**39.6%***	0.1%	5.4%	**17.6%***	7.9%	3.7%
Pittsburg city	1.3%	18.2%	13.9%	**43.9%***	0.7%	6.9%	12.6%	10.3%	5.1%
San Diego city	0.6%	17.2%	6.0%	**30.1%***	0.5%	5.6%	13.3%	11.6%	4.2%
Stanislaus County†	1.1%	5.8%	3.0%	**47.9%***	0.6%	7.0%	13.0%	**13.6%***	**6.5%***
Thousand Oaks city	0.5%	9.8%	1.7%	19.4%	0.1%	5.1%	**19.4%***	6.6%	4.5%

Sources: CEC staff, Employment Development Department, and U.S. Census Bureau.

Summary

If funded, the proposed projects would result in an expanded supply of bidirectional DCFC at key sites that support California school districts. Furthermore, these projects will reduce the impact of PSPS events and wildfires by creating additional energy resources during periods of high electricity demand.

Based on EJSM standards, CEC staff has identified four of the eight communities (El Cajon, Long Beach, Napa, and Stanislaus County) where these projects are located as high-risk communities. These communities are at a higher risk of adverse health effects from pollution. However, staff found no indication that the projects identified in this LHI Report would negatively affect community health. Staff does not anticipate a significant increase in local pollutants, and the project awardees identified minimal project construction activities that would generate additional truck traffic, criteria emissions, or pollutants. In fact, these

proposed projects may create a net benefit for the surrounding communities by replacing diesel school buses with ESBs and reducing harmful criteria air pollutants, toxic air contaminants, and greenhouse gases (GHGs) that contribute to climate change.

GLOSSARY

Term	Definition
Bidirectional charging	The ability for a plug-in electric vehicle to not just receive electricity to charge its battery, but to send stored electricity back through the charging cable. This ability has various potential uses, such as allowing an electric vehicle to power a home for some time during a grid power outage.
California Code of Regulations (CCR)	The official compilation and publication of the regulations adopted, amended, or repealed by state agencies under the Administrative Procedure Act (APA). Properly adopted regulations that have been filed with the Secretary of State have the force of law.
California Environmental Quality Act (CEQA)	A statute that requires state and local agencies to identify the significant environmental impacts of their actions and avoid or reduce those impacts, if feasible.
CalEnviroScreen	A screening tool that evaluates and ranks census tracts in California based on potential exposures to pollutants, adverse environmental conditions, socioeconomic factors, and prevalence of certain health conditions.
Carbon dioxide (CO_2)	A colorless, odorless, highly poisonous gas formed by the incomplete combustion of certain fuels, including gasoline.
Community-based organization (CBO)	An organization that is intended to serve a particular geographic area and is based mainly in the community which it serves.
Criteria air pollutant	An air pollutant for which acceptable levels of exposure can be determined and for which the U.S. Environmental Protection Agency has set an ambient air quality standard. Examples include ozone (O_3), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur oxides (SO_x), and particulate matter (PM_{10} and $PM_{2.5}$).
Direct-current fast charger (DCFC)	High-speed charger for electric vehicles. DC fast charging uses direct current (DC) and can provide more power than either Level 1 or Level 2 charging.
Disadvantaged community	A designation by the California Environmental Protection Agency used to identify areas disproportionately affected by environmental pollution or hazards, due to geographic, socioeconomic, public health, and environmental factors.

Term	Definition
Electric vehicle (EV)	A vehicle that is powered partly or completely by electricity. This often refers to battery-electric vehicles, which have no engine and store all the energy in batteries. The term can also include other vehicle types, such as plug-in hybrids.
Electric school bus (ESB)	An electric vehicle that is a school bus.
Environmental justice (EJ)	The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.
Environmental Justice Screening Method (EJSM)	An approach that combines environmental and demographic indicators to inform agency outreach and engagement practices regarding environmental justice.
Grant funding opportunity (GFO)	Where the California Energy Commission offers applicants an opportunity to receive grant funding for projects meeting certain requirements.
Level 2 charger	Medium-speed charger for electric vehicles. Level 2 uses alternating current (AC) at a higher voltage (for example, 240 volts) than Level 1, providing more power.
Localized health impacts (LHI)	Potential health impacts to communities.
Medium-duty and heavy-duty (MDHD)	Classes 4–6 medium-duty trucks generally weigh between 14,000 and 26,000 pounds. Classes 7 and 8 heavy-duty trucks weigh between 26,001 and 33,000 pounds.
Metric ton	A unit of weight equal to 1,000 kilograms or 2,205 pounds.
Nitrogen oxides (NO_x)	A general term including nitric oxide (NO), nitrogen dioxide (NO_2), and other oxides of nitrogen. Nitrogen oxides are typically created during combustion processes and are major contributors to smog formation.
Notice of proposed awards (NOPA)	A document identifying projects that are proposed to receive funding under a California Energy Commission funding opportunity, such as a grant funding opportunity.
Particulate matter (PM)	Any material besides pure water that exists in a solid or liquid state in the atmosphere. The size of particulate matter can vary from coarse, wind-blown dust particles to fine particles resulting from combustion.

Term	Definition
$PM_{2.5}$	Particulate matter with particles 2.5 microns in diameter or smaller. Also called "fine particulate matter."
PM_{10}	Particulate matter with particles 10 microns in diameter or smaller. Also called "coarse particulate matter."
Public safety power shutoff (PSPS)	Electric investor-owned utilities proactively cutting power to electrical lines when strong winds, heat events, and related conditions are present to reduce the risk of fires caused by electric infrastructure.
Reactive organic gas (ROG)	Closely related to the term "volatile organic compound" (VOC). ROGs are a group of chemical gases that may contribute to the formation of smog.
Short ton	An Imperial unit of mass equal to 2,000 pounds.
Sulfur oxides (SO_x)	A group of pungent, colorless gases formed primarily by the combustion of sulfur-containing fossil fuels, especially coal and oil. Considered major air pollutants, sulfur oxides may impact human health and damage vegetation.
Toxic air contaminant	An air pollutant, identified in California Air Resources Board regulations, which may cause negative health effects even at very low concentrations.
Volatile organic compound (VOC)	Closely related to the term "reactive organic gas" (ROG). VOCs are carbon-containing compounds that evaporate into the air (with a few exceptions), and often have an odor. VOCs contribute to the formation of smog, and/or may themselves be toxic. Some examples include gasoline, alcohol, and the solvents used in paints.
Zero-emission vehicle (ZEV)	A vehicle that produces no emissions from the onboard source of power. Common examples are battery-electric vehicles and fuel-cell electric vehicles.

Sources: California Air Resources Board, California Public Utilities Commission, CEC Energy Glossary, University of Michigan School of Public Health, and U.S. Environmental Protection Agency