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STATE OF CALIFORNIA

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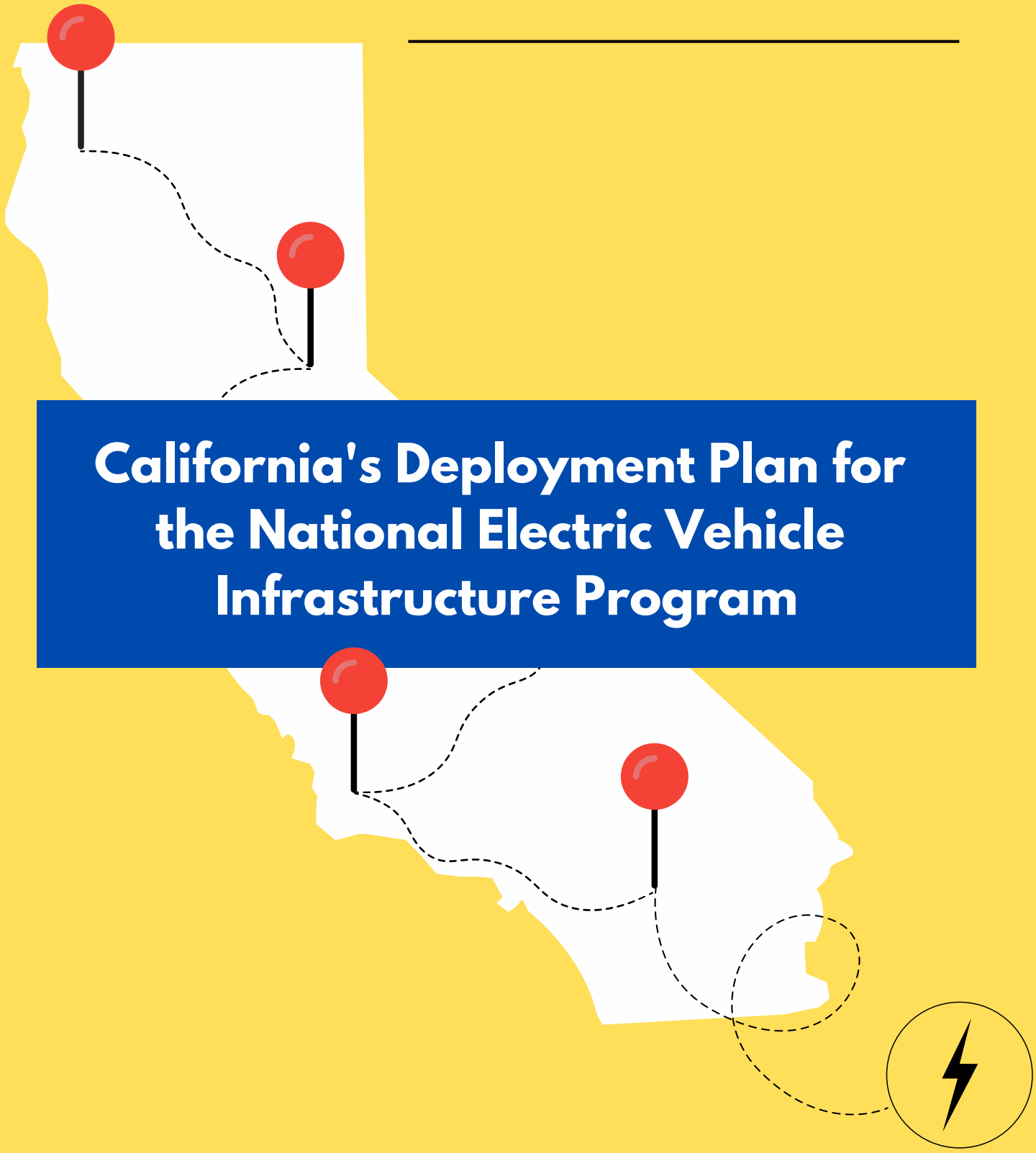

California's Deployment Plan for the National Electric Vehicle Infrastructure Program

PREPARED BY

Caltrans

CALIFORNIA ENERGY COMMISSION

California Department of Transportation
California Energy Commission

Primary Authors & Contributors
Brian Fauble
Tiffany Hoang
Madison Jarvis
Thanh Lopez
Jim McKinney
Mike Nicholas
Larry Rillera
Charles Smith

Project Managers
Tracey D-Aoust Roberts
California Department of Transportation

Dustin Schell
California Energy Commission

Coordinating Lead Authors
Barby Valentine
Zero Emission Vehicle Hub Manager
Director's Office of Sustainability
California Department of Transportation

Mark Wenzel
Office Manager
Light-Duty Electric Vehicle Infrastructure and Analysis Office
California Energy Commission

Tony Dang
Deputy Director of Sustainability
California Department of Transportation

Hannon Rasool
Deputy Director of Fuel and Transportation Division
California Energy Commission

California's Plan for Electric Vehicle Infrastructure Deployment

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Abbreviations & Terms

AFC	Alternative Fuel Corridor
AFDC	Alternative Fuels Data Center
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CEC	California Energy Commission
CFAC	California Freight Advisory Committee
CPUC	California Public Utilities Commission
CTC	California Transportation Commission
DACAG	Disadvantaged Communities Advisory Group for CEC and CPUC
DCFC	Direct Current fast chargers
Deployment Plan	Electric Vehicle Infrastructure Deployment Plan
EV	Electric Vehicle
EVITP	Electric Vehicle Infrastructure Training Program
EVSE	Electric Vehicle Supply Equipment
GFO	Grant-Funding Opportunity
GO-Biz	Governor's Office or Business and Economic Development
IIJA	Infrastructure Investment and Jobs Act
IOU	Investor-Owned Utility
Joint Office	Joint Office of Energy and Transportation a partnership between the United States Department of Transportation and United States Department of Energy
NAAC	National American Advisory Committee
NEVI	National Electric Vehicle Infrastructure Formula Program
O&M	Operations and Maintenance
VMT	Vehicle Miles Traveled
ZEV	Zero Emission Vehicles
ZIP	ZEV Infrastructure Plan

Introduction

Through legislation and Executive Orders, California committed to reducing emissions in the transportation sector through the adoption of zero-emission vehicles (ZEVs) ranging from passenger cars to heavy-duty trucks. To support widespread adoption of electric vehicles (EVs), California is striving to meet a deployment of 250,000 public and shared private electric vehicle chargers by 2025 and forecasts the need for 1.2 million by 2030. This target includes public chargers that are available at parks, shopping centers, hotels, public buildings, etc., and shared private electric vehicles, such as those found at workplaces and multi-unit dwellings. As of March 31, 2022, California has achieved almost a third of the target.[1]

Readily available charging infrastructure is a key component to the adoption of electric vehicles. Electric vehicle drivers, especially those with access to only one vehicle, need to be able to drive to the same places that they drove to in gasoline or diesel-powered vehicles. Access to electric vehicle chargers needs to be available to all drivers, including those in disadvantaged, low-income, Tribal, and rural communities. EV adoption is growing rapidly and charging infrastructure needs to meet the demand.

On November 15, 2021, President Biden signed the Infrastructure Investment and Jobs Act (IIJA), which included significant funding to advance ZEV infrastructure in the form of formula and discretionary grant funding. California's share from the National Electric Vehicle Infrastructure (NEVI) Formula Program is estimated at $384 million over 5 years. California agencies and communities will also be eligible to apply for additional funding as part of the $2.5 billion discretionary Charging and Fueling Infrastructure grant program.

In February 2022, the newly created Joint Office of Energy and Transportation, a partnership between the United States Department of Transportation and United States Department of Energy, developed and issued NEVI formula program guidelines and guidance for the development of the Electric Vehicle Infrastructure Deployment Plans (Deployment Plan). These guidelines provide each state with the flexibility to develop a plan for the NEVI funds that meets the needs and goals of the state.

To maximize NEVI investments and benefits to travelers in the state, California's initial Deployment Plan includes ongoing engagement and outreach efforts to shape the continued development and refinement of plan elements. The initial Deployment Plan will focus on investments in light-duty vehicle charging infrastructure and will consider projects that can also accommodate medium- and heavy-duty charging infrastructure.

Deployment of NEVI-funded infrastructure will build on the existing infrastructure along the state's Alternative Fuel Corridors (AFC) by filling gaps in the AFC network and upgrading existing sites to meet current AFC criteria to achieve "fully built out" status. California may nominate additional routes for AFC designation, with consideration given to rural locations and historically disadvantaged and low-income communities

[1] https://business.ca.gov/industries/zero-emission-vehicles/plug-in-electric-vehicle-charging-station-progress/

where private investment in Electric Vehicle Supply Equipment (EVSE) is lacking. Additionally, emphasis will be placed on the deployment of EVSE along the highways and routes that lead to the National Parks and Forests within the state, as well as many of California's State Parks, forests, and beaches.

The Deployment Plan will be updated each year to reflect the progress from the previous year, identify new challenges and opportunities, highlight the deployment plans for the coming years, and ensure alignment with California's EV charging infrastructure planning efforts, such as the state's Zero-Emission Vehicle Infrastructure Plan (ZIP). California is committed to reviewing the outcomes from the Deployment Plan to determine best practices, ensure that the Deployment Plan meets the program guidelines, and to confirm that the Deployment Plan is accomplishing the state's goals for a connected network of electric vehicle chargers.

Dates of State Plan for Electric Vehicle Infrastructure Deployment Development and Adoption

Development of California's Deployment Plan is a coordinated effort between the California Department of Transportation (Caltrans) and the California Energy Commission (CEC). As such, final state approval and adoption will be jointly authorized by the following:

- Caltrans Director
- California State Transportation Agency (CalSTA) Secretary
- California Energy Commission Lead Commissioner for Transportation

The table below indicates the anticipated key milestones for California's initial Deployment Plan.

Table 1: Key Milestones for California's NEVI Deployment Plan

Anticipated Date	Milestone
February - May 2022	Initial Draft Preparation Stakeholder Engagement
June 2022	Internal, State Agency, and Stakeholder Review
Early July 2022	Final Deployment Plan Completed
Late July 2022	Approval and Adoption of Deployment Plan
August 2022	Submittal of Deployment Plan to the Joint Office of Energy and Transportation
Late September 2022	Approval of the Deployment Plan by the Joint Office

Qtr. 4 2022	Pre-Solicitation Workshops Application Development
Qtr. 4 2022	Continued Engagement with Stakeholders and Communities, including Tribal Governments
Qtr. 4 2022 – Qtr. 1 2023	Publish Solicitation
Qtr. 1 2023	Application Scoring and Review
Qtr. 2 2023	Preparation of Agreements for Deployment of Charging Infrastructure
Qtr. 2 – Qtr. 3 2023	Execution of Agreements and Commencement of Projects.

State Agency Coordination

On September 23, 2020, Governor Newsom signed Executive Order N-79-20, setting the following zero-emission vehicle targets for California:

- 100% of in-state sales of new passenger cars and light-duty trucks will be zero-emission by 2035,
- 100% zero-emission medium- and heavy-duty vehicles in the state by 2045 where feasible and by 2035 for drayage trucks, and,
- 100% zero-emission off-road vehicles and equipment operations by 2035, where feasible.

To help meet these targets, Governor Newsom tasked the Governor's Office of Business and Economic Development (GO-Biz) to collaborate with multiple agencies and partners to direct the development of the Administration's ZEV Market Development Strategy (ZEV Strategy).[2] The ZEV Strategy outlines the roles of state agencies in building and incentivizing the ZEV market and presents each agency's objectives. Each year, the state agencies submit a brief action plan to GO-Biz, setting the priorities under their ZEV Strategy objectives and communicating key equity strategies the agency is seeking to implement, advance, and/or improve.

Collaboration between Caltrans and the CEC in the development of California's Deployment Plan was based upon each agency's core responsibilities, as well as those outlined within the ZEV Strategy. Caltrans manages more than 50,000 miles of California's highway and freeway lanes that serve those who walk, bike, drive, or use transit and plays a supporting role in the ZEV Strategy. The CEC is California's lead

[2] https://static.business.ca.gov/wp-content/uploads/2021/02/ZEV_Strategy_Feb2021.pdf

agency for zero-emission infrastructure. The CEC is responsible for evaluating the charging needs to support California's plug-in electric vehicle goals and analyzing grid integration, energy resilience, EVSE equipment standards, and funding needs to accommodate the growing ZEV infrastructure charging market.

In addition to responsibilities outlined in the ZEV Strategy, the California Air Resources Board (CARB), GO-Biz, and the California Public Utilities Commission (CPUC) played important roles in providing input and guidance during the development of the initial Deployment Plan. These state agencies are each responsible for components essential to a sustainable, connected network of EV chargers.

To maximize opportunities to utilize U.S.-made EV supply equipment, these state agencies also worked together to identify EV charger manufacturers that currently sell, manufacture, or operate in California. The effort identified six California manufacturers that manufacture non-proprietary DC fast chargers (DCFC).

To alleviate supply issues and encourage the utilization of U.S. made products, the CEC is developing funding incentives that expand California's in-state capacity of ZEV related manufacturing. This includes manufacturing of EV charging infrastructure, vehicles, and vehicle components such as EV batteries. However, projects to expand manufacturing capacity are labor- and capital-intensive and can take years to complete as manufacturers expand their production lines.

Public Engagement

Throughout the development of the initial Deployment Plan, California engaged with a variety of groups, including the general public, state and local government agencies, Native American Tribal Governments, industry representatives, and those representing rural and disadvantaged communities. The outreach was accomplished through the CalSTA/Caltrans Infrastructure Investment and Jobs Act Transition to ZEVs Sub-Working Group, informational workshops, presentations at regularly occurring state agency meetings, and small group meetings.

California anticipates additional engagement and outreach throughout the first year of the plan to reach additional stakeholders and community members. The purpose of the outreach and engagement is to build awareness of California's EV charging infrastructure efforts and the NEVI formula funding. Additional efforts will be made to continue to collect information, input, and feedback from community members, partner agencies, and stakeholders regarding challenges in EV adoption, and the siting, installation, and operation of EV chargers.

The Outreach Goals include:

- Build awareness and understanding of the Deployment Plan.

- Engage communities and involve them in the Deployment Planning process with an emphasis on engaging disadvantaged communities, low-income communities, and rural communities,
- Solicit meaningful input from stakeholders and local agencies by initiating broad, inclusive conversations and leveraging the expertise of our business partners,
- Strengthen relationships with Tribal governments, and
- Build support for the adoption of EVs through the deployment of EV charging infrastructure.

To gain additional strategic input and technical guidance to support the continued development of the Deployment Plan. California will continue to engage stakeholders and partner agency staff with experience in planning, designing, building, operating, and maintaining EV charging infrastructure. Additionally, engagement efforts will be directed towards advocacy groups and other stakeholders with a demonstrated interest in the advancement of EVs. The aim is to have diverse input representing all geographic areas of the state: urban, suburban, and rural. Additional effort will be made to include those groups representing disadvantaged, low-income, Tribal, and rural communities.

The engagement and outreach efforts support the goals and objectives of the NEVI Deployment Plan by:

- Providing technical and non-technical input to guide the further development of the Deployment Plan,
- Sharing data and contributing recommendations for additional alternative fuel corridor nominations,
- Contributing to the identification and prioritization of sites for EV charging infrastructure,
- Providing technical and electrical grid-based knowledge of geographic/service areas,
- Advising on data collection, evaluation, and best practices to enhance the Deployment Plan's technical or contracting requirements, and,
- Affording the development of a truly statewide plan through the engagement of those who represent a range of socioeconomic, ethnic, cultural, and geographic groups with a cross-section of people of various interests, and places of residence.

This additional outreach will enable California to fully engage with community-based organizations and those who represent and reside in disadvantaged, low-income, Tribal, and rural communities. The outreach will include more robust conversations with the Tribal governments, as well as those living in rural communities. Due to the size of the state, California will rely on Metropolitan Planning Organizations (MPOs), Regional Transportation Planning Agencies (RTPAs), and state agency liaisons to help with this engagement. Additionally, California will reach out to groups that promote clean energy and EVs within disadvantaged, low-income, Tribal, and rural communities.

Stakeholders Involved in Plan Development

Shortly after the IIJA was enacted, CalSTA convened the statewide IIJA Transportation Implementation Working Group. The Working Group was comprised of state and local agencies, the Federal Highway Administration, and other transportation stakeholders, including Tribal governments and the private sector. The goal of the Working Group was to develop action plans for implementing the programs within IIJA. From this effort, sub working groups were formed to facilitate in-depth discussions of specific policy areas.

The Transition to Zero Emissions sub-working group was formed to contribute to the development and implementation of California's Deployment Plan, determine the need for state legislative changes to implement the Plan, and determine how the Plan aligns with the state's goals and current planning efforts. The first meeting, which was held on March 1, 2022, included an overview of the IIJA zero-emission provisions and the state's initial thoughts for the program implementation concept.

The second meeting of the Transition to Zero Emissions sub-working group was held on April 5, 2022. This meeting included a discussion of the role of the NEVI Program in California's EV infrastructure investment landscape, the guiding principles that would lead the Deployment Plan's development, and a discussion of how Justice40 would be integrated with the data traditionally used by California to define disadvantaged and low-income communities.

The third meeting of the Transition to Zero Emissions sub-working group was held on May 16, 2022. The meeting included a review of the Round 6 Alternative Fuel Corridors nominations as well as a discussion on the prioritization of corridors. Additionally, the group discussed possible siting requirements.

The sub-working group was very engaged throughout the development of the Plan. Additionally, many of the attendees followed up with e-mails and phone calls to both provide input and request additional information.

Participants in the Transition to Zero Emissions sub-working group included representatives from the industries/agencies listed below:

- Business Associations
- California Air Resources Board
- California Department of Food & Agriculture
- California Energy Commission
- California Governor's Office of Business and Economic Development
- California High Speed Rail Authority
- California Office of Emergency Services
- California State Transportation Agency
- California Transportation Commission
- Chambers of Commerce
- Communications Infrastructure Provider
- Community Choice Energy Associations
- **Community-based organizations**

- County Governments with existing EV charging programs
- **Disadvantaged Communities Advisory Group**
- Electric Utilities
- Energy Consultants
- Environmental Consultants
- **Environmental justice, equity, and other community advocacy organizations with an interest in EV charging**
- EV advocacy groups
- EV charging infrastructure Service/Repair Companies
- Hydrogen Fuel Cell Manufacturer
- Local Air Districts
- Metropolitan Planning Organizations
- **Native American Advisory Committee**
- **Non-Profit organizations involved with green energy**
- Petroleum Fuel Manufacturer
- Port Authorities
- Private Fleet Operators
- Private sector EV charging station owners and network operators
- Public Transportation Agencies and Authorities
- Regional Transportation Planning Agencies
- Representatives of California State Assemblymembers
- Representatives of California State Senators
- Transportation Authorities
- University of California
- Vehicle manufacturers

In addition to the Transition to Zero Emissions sub-working group meetings, representatives from Caltrans and the CEC reached out to organizations and community groups with which the two organizations engage with on an ongoing basis.

California is home to 109 federally recognized Native American tribes with nearly 100 separate reservations or Rancherias.[3] In 1996, the Native American Advisory Committee (NAAC) was established to ensure that Caltrans receives direct advice from Tribal governments on issues pertaining to all modes of transportation within California. The NAAC meetings further government-to-government working relationships and provide an opportunity to share information. The members of the NAAC serve as advocates for all Native Americans of California and are nominated by Tribes and Indian organizations throughout the state.

Caltrans met with the NAAC on April 23, 2022, to provide an overview of the NEVI Formula Funding Program and California's NEVI Deployment Plan Concept. Caltrans and the CEC will continue to reach out to the tribes, as many of the Native American Tribes have facilities or own property in areas where there are currently gaps in EV charging infrastructure. The Native American Tribes can play an important role in

[3] https://www.courts.ca.gov/3066.htm#:~:text=How%20many%20California%20tribes%20are,lands%20that%20cross%20state%20boundaries. California Courts – Reviewed 05/04/2022

providing charging infrastructure along California's Interstates as well as in rural areas of the state.

The CEC and Caltrans also met several times with members of the Disadvantaged Communities Advisory Group (DACAG). The DACAG was formed in 2015 to ensure that disadvantaged communities benefit from proposed clean energy and pollution reduction programs. DACAG meets throughout the year to review CEC and CPUC clean energy programs and policies. Each member is either from, or represents, a disadvantaged community and the group reflects the diversity of California. During the meetings between DACAG, CEC, and Caltrans, DACAG members posed questions specific to areas of concern within the communities they represent. Employment opportunities and the reduction of harmful emissions from medium- and heavy-duty vehicles were stated as Deployment Plan outcomes that the group thought would most benefit their communities.

Freight and Goods Movement

In 2013, Caltrans established the California Freight Advisory Committee (CFAC). The CFAC is a chartered member advisory body representing public and private sector freight stakeholders, including representatives of ports, shippers, carriers, freight-related associations, the freight industry workforce, Caltrans, and local governments. The CFAC meets quarterly to participate in the development of the California Freight Mobility Plan and to advise the state on freight-related priorities, issues, projects, and funding needs.

Extensive and continuous stakeholder outreach is planned for the California Freight Mobility Plan update, which will include an analysis of the needed infrastructure, projects, and operations for the deployment of zero-emission medium- and heavy-duty vehicles and the development of freight corridors. During this outreach, Caltrans will have opportunities to engage with this group regarding the Deployment Plan.

Caltrans is currently coordinating with the California Transportation Commission (CTC) and a variety of freight industry stakeholders on the CTC's Clean Freight Corridor Efficiency Assessment. The goal of the assessment is to identify freight corridors and infrastructure needed to support the deployment of zero-emission medium- and heavy-duty vehicles. The CTC's assessment also considers the potential for emissions-reduction, truck parking facilities, congestion reduction, improved road safety, resiliency, and impacts to neighboring communities. The SB 671 committee meets a minimum of once monthly. In March 2022, the group discussed the need for alignment of the Clean Freight Corridors with the state's Alternative Fuel Corridors and the Deployment Plan. Outreach and engagement with this committee will continue throughout the ongoing development of California's Deployment Plan

Throughout the development of the initial Deployment Plan, many organizations requested meetings with Caltrans and the CEC to share information or asked for presentations to be delivered to their organization or group. Due to the time frame allowed for the Plan's development, Caltrans and the CEC were unable to accept all requests for meetings and presentations. However, Caltrans and the CEC will strive to contact these organizations prior to the Pre-Solicitation Workshop(s).

Public Outreach

Outreach to the general public for the initial plan was in the form of a live/online informational workshop. The workshop provided the public with an overview of the funding, the guiding principles that led the development of the Plan, and the Deployment Plan concept. The public was invited to provide comments or submit questions by email.

Additionally, the state will release the Deployment Plan for public comment in early June 2022. This will allow the general public and stakeholders an opportunity to review the draft Deployment Plan and provide additional comments prior to the state submitting the plan to the Joint Office of Energy and Transportation.

As indicated above, California will continue to engage the general public throughout implementation of the plan. This outreach will provide the public with information regarding the Plan, gauge the effectiveness of the Plan to date, and provide feedback for potential updates to the Plan.

Plan Vision and Goals

The vision for California's Deployment Plan is to build out EV charging stations to at least the minimum standards outlined in the NEVI Program guidance along the completed network of designated AFCs in an equitable and efficient manner. Connecting California's major population centers and increasing connectivity and service in rural areas will reduce barriers to EV adoption.

California's ZEV Market Development Strategy[4], discussed earlier, includes four pillars: vehicles, infrastructure, end users, and workforce. California's strategy for the infrastructure pillar is outlined in the draft ZIP.[5] The focus of the ZIP is to support the projected ZEV population with charging and fueling infrastructure. The draft ZIP lays out plans to support the development of convenient, accessible, reliable, and equitable EV charging.

California's current goals include:

1. Ensuring ZEV infrastructure will meet the needs of the growing ZEV market.
    - By 2025:
        - 250,000 battery-electric vehicle chargers, including 10,000 DCFC[6]

[4] https://business.ca.gov/industries/zero-emission-vehicles/zev-strategy/
[5] https://www.energy.ca.gov/sites/default/files/2022-04/CEC-600-2022-054.pdf
[6] Executive Order B-48-18 available at https://www.library.ca.gov/wp-content/uploads/GovernmentPublications/executive-order-proclamation/39-B-48-18.pdf.

- By 2030:
  - 1.2 million chargers, including 37,500 DCFC

2. Accelerating deployment and ensuring equitable outcomes.

California forecasts the need for a network of approximately 1.2 million public and private-shared chargers[7] by 2030. Federal funding from the NEVI Program will assist California in meeting its goals. Continued investment in DCFC deployment will be crucial to support long-distance travel, provide quick-opportunity charging, and serve drivers who do not have access to charging at home. Nearly every driver will need DCFC at some point. A robust DCFC network will create the backbone for mass EV adoption within California.

Seamless Travel
Public funding, electric utility investment, and private investment have contributed to California's ZEV charging infrastructure networks, and all will continue to be essential to meeting future goals. Funding through the NEVI Formula Program provides necessary support to build out the state's EV corridors to ensure seamless interstate travel for EV drivers and will be complemented by state funding.

In establishing the state's AFCs, local agencies in coordination with Caltrans submitted 20 interstates and 21 US Route/State Highways in the first five rounds of AFC nomination. In Round 6 of AFC nominations, Caltrans submitted an additional 20 interstate and US Route/State highways for electricity. The designations play a key role in expanding infrastructure to enable widespread consumer adoption of ZEVs. Consumers need confidence they can charge and fuel their vehicles not only within the communities where they live and work, but also along major routes. The nominations concentrate on corridors that provide an interconnected network across the state, allowing for intra- and interstate travel. Round 6 nominations focused on expanding access and connectivity to rural areas of the state, and corridors serving disadvantaged and low-income communities. Some proposed corridors, if designated, will enable or accelerate the deployment of DCFCs that likely wouldn't be completed without Federal Assistance.

Equity
Through workshops and outreach events, California will ensure equitable and collective decision-making in solicitation design to ensure charger installations are meeting the needs of the communities they serve while providing seamless access across the state.

Reliability
The solicitation process will enable the state to oversee project progress and maintain requirements stipulated in the NEVI Guidance. Reporting requirements will be essential in this solicitation to ensure chargers in the network are functioning with at least 97 percent uptime and meet the demand for corridor travelers.

[7] https://efiling.energy.ca.gov/getdocument.aspx?tn=238853

Buildout
California anticipates releasing the first solicitation in the winter of 2022. Based on timelines from previous EV charging installation projects, the first chargers should be operational in Q2 of 2025, with full buildout completed by 2030.

As EV adoption continues to increase in California and successive Deployment Plans are established, the state will continue its efforts in creating a connected network of EV chargers to enable convenient, accessible, reliable, and equitable EV charging for all EV drivers. The network will facilitate data collection, equitable access, and network reliability.

Contracting

Through the CEC, California has awarded over $1 billion in grant funding through dozens of competitive solicitations and first-come-first-serve solicitations, resulting in more than 15,000 planned or installed EV chargers throughout the state. In 2015 and 2106, CEC funded a corridor charging program. The state intends to utilize the CEC's grant solicitation experience to administer funding to the Deployment Plan projects. As part of this solicitation process, staff from Caltrans and the CEC, in coordination with other state agencies and the general public, will determine how the grant solicitation will be structured in order to best meet the goals and needs of the state and align with federal guidance. Fair and equitable selection of entities bidding for EV charging projects will be part of solicitation design.

The CEC and Caltrans will jointly develop a competitive grant-funding opportunity (GFO) seeking applications for funding to install DCFCs along California's AFCs. The GFO development process will include conducting research, meeting with stakeholders, defining the minimum eligibility and technical requirements, holding at least one public workshop to seek input, finalizing the GFO, and releasing the GFO to the public. Completed applications will be scored by an evaluation team comprised of staff from both agencies.

California will invite applicants to submit proposals for segments based on an analysis of gaps in the current network, future charger needs, and geography. Specific sites for stations will not be identified. Applicants, instead, will be invited to submit proposals for sites that meet performance standards for each segment including:

- DCFC power levels
- Number of chargers
- Maximum distance between charging stations

The standards for segments may exceed the NEVI Program minimum standards, depending on analysis of locations, traffic, existing electric utility infrastructure, and other factors. The analysis will consider "current and anticipated market demands for EV charging infrastructure, including with regard to power levels and charging speed,

and minimizing the time to charge current and anticipated vehicles."

Applicants may propose upgrading existing charging stations or building new charging stations. Upgrading existing stations to meet NEVI requirements may cost less than building new locations. Additionally, some existing charging stations include "stub-outs" with conduit ready for new installations. Funding new stations and upgrading existing ones may allow for greater deployment and access. The current approach is not to favor one model over another, but instead to evaluate applications based on the evaluation criteria.

Applicants will be responsible for locating sites that meet the requirements defined in the GFO, as well as for negotiating site agreements with each host to secure the site for at least the minimum term defined in the solicitation. The GFO may encourage applicants to utilize small businesses that meet the eligibility requirements as site hosts and may be included in the GFO's Project Locations evaluation criteria section.

To ensure efficient and effective deployment that aligns with broader goals, segments will be ranked according to funding priority. California expects to provide funding for projects in rank order until funding is exhausted. Each update of the Deployment Plan will assess completed solicitations and re-evaluate priorities.

Additional requirements may be added as part of the GFO, such as:

- Public access and minimum operating hours
- Multiple forms of payment, including credit and debit cards
- Customer support service in English and Spanish, at a minimum, during all standard operating hours by a toll-free telephone number and/or other means
- Adequate lighting and visibility in addition to Americans with Disabilities Act compliance

To ensure efficient ongoing operations and maintenance activities the solicitation will define operations and maintenance standards and requirements that will be incorporated into the agreement. For example, applications may include an Outreach and Communication Plan that would detail how the applicant will engage communities where EV charging infrastructure will be installed. More detail on California's approach is in the "Implementation" section.

Efficient and effective deployment will also be emphasized in the evaluation of applications. The CEC and Caltrans will evaluate all qualifying bids equitably.

Once all applications are scored, the highest scoring eligible application for each segment will be proposed for an award. The CEC will develop grant agreement packages with proposed awardees. Each grant agreement will include a defined Scope of Work, Budget, Schedule of Products, and Terms and Conditions. Agreements will require monthly calls and quarterly project reports to communicate progress and

quickly address any issues that may arise. In addition, periodic Critical Project Reviews will gauge progress. Finally, a percentage of the budget will serve as a retention to ensure compliance with all requirements, including operations and maintenance.

Existing and Future Conditions Analysis

State Geography, Terrain, Climate and Land Use Patterns

State Geography and Terrain

California is bordered by Oregon to the north, by Nevada and Arizona to the east, by the Mexican state of Baja California to the south, and by the Pacific Ocean to the west. Both the highest and lowest points in the 48 contiguous states are within the state of California—Mount Whitney and Death Valley, respectively.

The heartland of California is the Central Valley, which runs for 450 miles through the center of the state between the Coast Ranges to the west and the Sierra Nevada to the east. The valley is the state's agricultural center. Its single opening is the delta through which the Sacramento and San Joaquin rivers drain into San Francisco Bay. The valley is sealed off by the Cascade Range to the northeast and by the Klamath Mountains to the northwest. In the south, the Central Valley is closed off by the Tehachapi Mountains, which are regarded as a dividing wall between southern and central California.

While the terrain in the northwestern part of the state is rugged and heavily forested, most of eastern California is desert. The northeastern corner of the state is made up of barren plains and mountains, as well as a volcanic plateau. In the east-central region is the Trans-Sierra desert, which extends along the sheer east escarpment of the Sierra Nevada range and comprises part of the vast interstate Great Basin.

In the southeast lies the Mojave Desert, which, at more than 25,000 square miles, occupies one-sixth of the land area of California. Its landmarks are broad basins, eroded mountains, and fault blocks. Just south of the Mojave Desert is the lower Colorado Desert, which begins in the Coachella Valley and descends to the Imperial Valley adjacent to the Mexican border. More than 4,000 square miles of the desert lie below sea level, including the 300-square-mile Salton Sea, a lake with no outlet formed in 1905–07 when the nearby Colorado River broke out of its channel.

The Sierra Nevada extends for 430 miles. Aside from Mount Whitney (14,494 feet above sea level), 10 other peaks in the Sierra Nevada exceed 14,000 feet in elevation. East-west passes are few but high; some are found at more than 9,000 feet in elevation. There are three national parks in the Sierra Nevada: Kings Canyon, Sequoia, and Yosemite.

The roughly 1,100-mile-long coastline of California is generally mountainous, although lesser elevations surround the three major natural harbors, in San Diego, San Francisco,

and Eureka. Much of the terrain in Southern California is plateaus and valleys along the coast, which turns mountainous then to desert toward the eastern part of the state.

Climate

California's climate varies by geography. The climate of coastal California is often compared to that of the Mediterranean with warm, dry summers and wet, mild winters. Farther inland from the coast, the summers become drier and hotter, and the winters are wet and cold enough for frost to accumulate. Continuing east within the state, the climate changes with the elevation. Summer temperatures in the low-lying Colorado Desert can reach a high of 130 °F, while winter temperatures in the Sierra Nevada drop to freezing and provide the snow melt that feeds Yosemite's spectacular waterfalls.

In the mountainous regions there are four seasons, however, the majority of California's climate is marked by two seasons—a wet and a dry. Historically, precipitation ranges from more than 170 inches in the northwest to traces in the southeastern desert. Death Valley, with its lowest point at 282 feet below sea level, is the hottest and driest place in North America with an average annual rainfall of only about 2 inches. Coastal rainfall varies, with an annual precipitation average of about 14 inches in Los Angeles and about 20 inches in San Francisco.

Currently, however, California is in its third year of drought. The first four months of 2022 were the driest on record in California. California's two largest reservoirs are at critically low levels. The modest snowmelt seeped into dry ground instead of running off into streams and rivers that lead to the state's aqueducts and reservoirs.

Land Use Patterns

California's land use patterns are shaped by its geography and climate. The largest population centers are along the coast where the temperature is moderate. Nearly 19 percent of the state's population of over 39 million live in the cities of Los Angeles, San Diego, San Jose, and San Francisco. The population of Los Angeles alone exceeds that of 22 states. In these cities, land use is similar – high rise office buildings and dense housing make up the city center. Just outside of the downtown area are manufacturing facilities, then commercial areas with car dealerships and big box stores, and finally the suburbs. California is working to limit suburban sprawl by providing incentives to those who build high density housing or add an auxiliary dwelling unit (ADU) to their property.

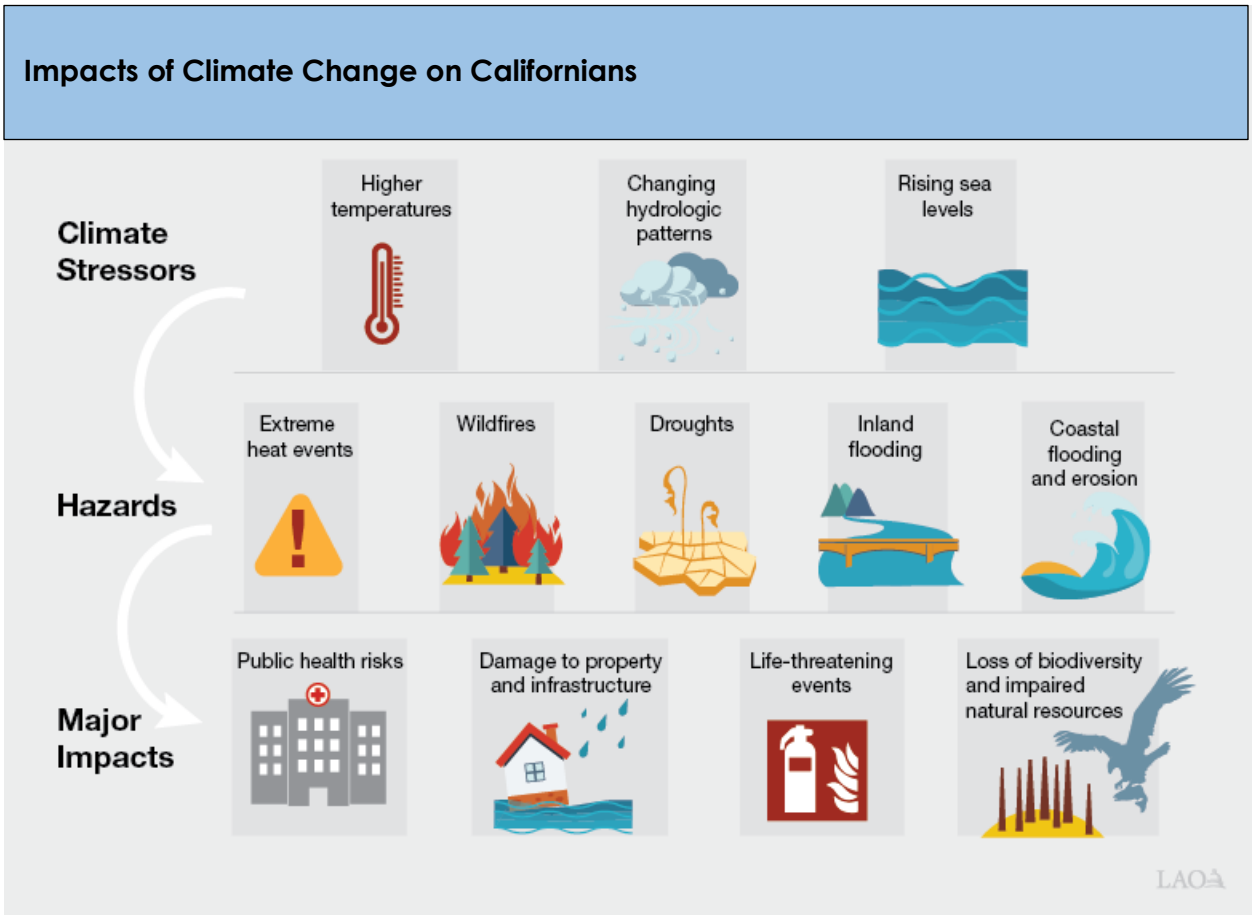
The cities in the middle of the state, although less populated, have similar land use patterns where the suburbs are often surrounded by farms. On the eastern side of the state the population is sparse, as is the development.

Current and Future Environmental Conditions

California is vulnerable to nearly every climate change stressor and extreme weather threat. Increasing temperatures, larger wildfires, heavier rainstorms, extended periods of drought, and rising sea levels and storm surges pose a significant risk to California's natural and human resources and to the state's infrastructure.

The effects of climate change have and will continue to impact the various regions throughout California. For example, increasing temperatures and rising sea-levels will have direct impacts on public health and infrastructure. Drought, coastal and inland flooding, and wildfire will continue to affect people's livelihoods and local economies. Changing weather patterns and more extreme conditions will impact tourism and rural economies in California, along with changes to agriculture and crops, which are critical to California's economic success. There will also be negative impacts to California's ecosystems, both on land and in the ocean, leading to local extinctions, migrations, and management challenges.

Figure 1: Excerpt from the California Legislative Analyst's Office's Climate Change Impacts Across California – Crosscutting Issues



https://lao.ca.gov/Publications/Report/4575

State Travel Patterns, Public Transportation Needs, Freight and Other Supply Chain Needs

Travel Patterns

People choose travel options based on where they live, where they work, how safe they feel, how far they are traveling, and the cost of each option, among other factors. In 2015 (California's base year for Transportation Planning), Californians used an automobile for 88 percent of all travel in the state. In many communities, the automobile remains the only viable or convenient means of transportation available.

Statewide Vehicle Miles Traveled (VMT) is used to calculate the total annual miles traveled by all vehicles in the state. Between 2001 and 2017, VMT grew by nearly 14 percent—about the same rate as population growth during this period. VMT is expected to increase by 13 percent but could rise by as much as 35 percent if the state experiences the additional growth forecasted by some. Much of the growth will occur in California's most populous regions of the Bay Area and Los Angeles, with the San Joaquin Valley, Sacramento region, and Inland Empire also experiencing a significant increase due to high population growth estimates, and relatively fewer non-auto options. [8]

While much will change over the coming decades, Californians will still be driving, and driving will remain the dominant mode of transportation. Non-auto mode share, primarily biking, walking, and transit, is projected to increase only one percentage point between 2015 and 2050[9]. Most of the shift will be due to people switching from driving to walking, with transit and biking experiencing minimal increases. In order to reach its climate goals, California must continue to advance clean fuel technologies, including ZEV technology and supportive infrastructure.

Public Transportation Needs

Electric vehicle charging for public transportation fleets will require a great deal of power. Upgrades to substations, microgrids, and general infrastructure improvements will be needed to provide the necessary charging capabilities. In addition to providing charging for the transit fleet, transit stations should include multi-modal charging stations that allow for a variety of charging levels for transit users' electric vehicles, bicycles, and scooters.

Freight and Other Supply Chain Needs

Freight transportation is a highly competitive business. Costs vary based on the type of goods being moved. While cost differences are relatively easy to quantify, reliability

[8]https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/ctp-2050-v3-a11y.pdf

[9] https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/ctp-2050-v3-a11y.pdf

differences are not. For freight operators to maintain reliability, they must be able to anticipate and accommodate expected delays—this includes delays related to downtime for vehicle charging.

Electric vehicle chargers for medium- and heavy-duty vehicles must be easily accessible. Charging needs will depend on vehicle size and duty cycle. Chargers serving long-haul drivers must be located at facilities that provide services that the drivers need such as food, showers, and parking for rest periods. Truck parking is in short supply within the state and throughout the nation. California will be challenged to simultaneously build out its truck parking supply to meet demand while building a network of EV chargers for large vehicles.

Additionally, in some parts of rural California there is limited access to adequate electrical infrastructure needed to establish charging facilities for medium- and heavy-duty vehicles.

AFC - Corridor Networks

California nominated a total of 20 corridors for the EV charging designation in the 2022/Round 6 Request for Nominations of AFCs. California continues to make significant progress building critical infrastructure along Interstates and State Routes. Nomination of these routes will allow for future expansion to increase clean transportation in support of air quality and climate goals.

California's success to date, and future plans to further develop the state's zero-emission vehicle infrastructure, rely on a robust and diverse network of stakeholders. Caltrans coordinated the nominations with Metropolitan Planning Organizations, Rural Transportation Planning Agencies, and local city and county governments throughout the state. The Governor's Office of Business and Economic Development also reached out for input from the Clean Cities Coalitions.

The Round 6 nominations placed emphasis on the rural, disadvantaged, and tribal areas within California. Nearly all the proposed corridors benefit disadvantaged communities as determined by CalEnviroScreen[10] and the Justice40[11] Initiative.

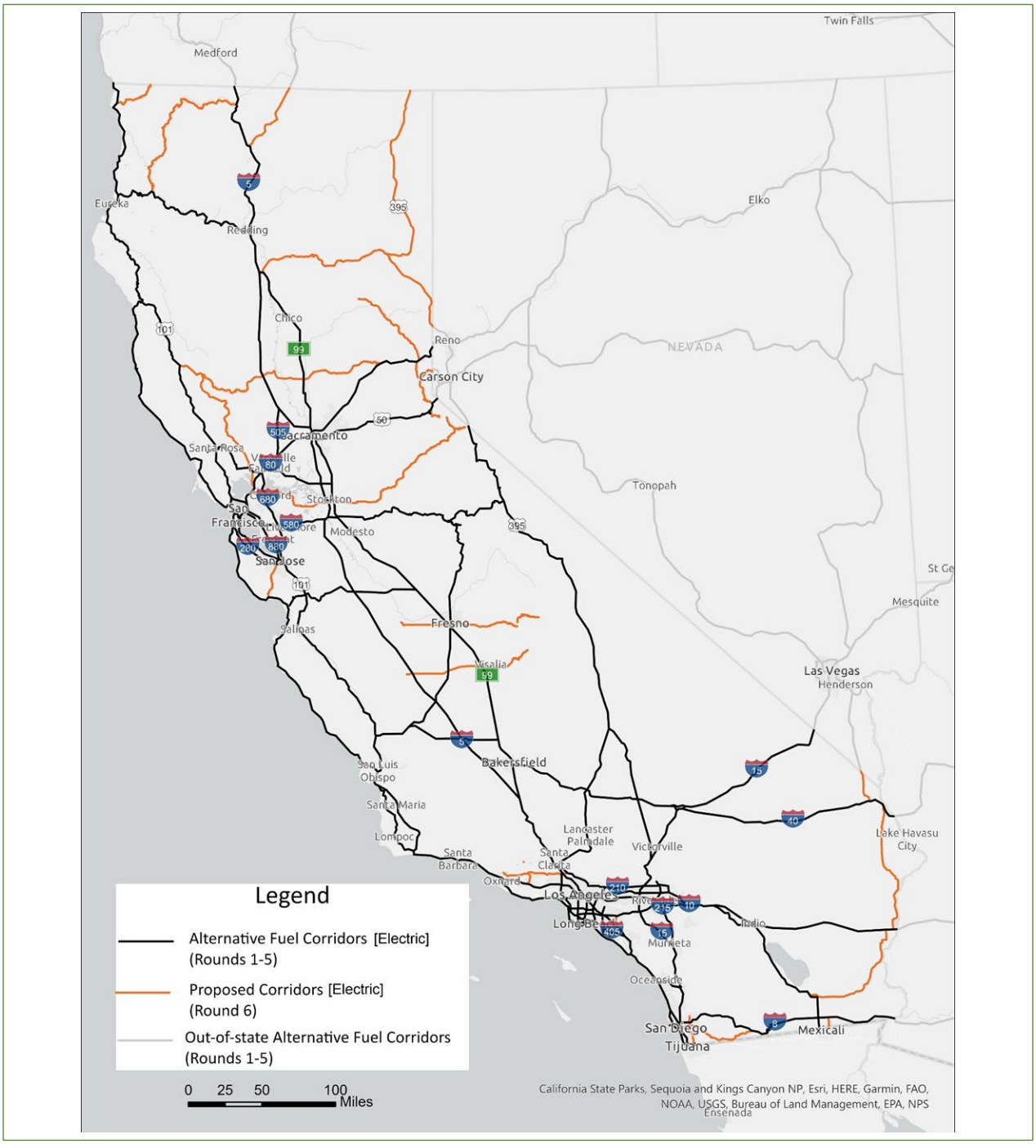
Designating the proposed corridors supports future charging infrastructure and adoption of ZEVs. With an extensive intra- and interstate network, consumers and

[10] CalEnviroScreen, an analytical tool created by the California Environmental Protection Agency (CalEPA), combines different types of census tract-specific information into a score to determine which communities are the most burdened or "disadvantaged."

[11] Electric Vehicle Charging Justice40 Map displays US Department of Energy/US Department of Transportation guidance disadvantaged communities.

businesses are likely to feel confident that they can fuel their vehicles both within and outside of their home and work communities.

Figure 2: Designated and Round 6 Proposed Corridors for Electric



Round 6 Nominations

Corridor	Miles	Start	End	Corridor Designation
SR-4	197	Hercules (I-80)	Bear Valley	Pending
SR-7	7	Holtville (I-8)	Mexico Border	Pending
SR-17	27	San Jose	Santa Cruz	Pending
SR-20	212	Fort Bragg (US-101)	Emigrant Gap (I-80)	Pending
SR-23	32	Moorpark (SR-118)	Thousand Oaks (US 101)	Pending
SR-28	10	CA/NV Border	Tahoe City	Pending
SR-29	106	Upper Lake (SR-20)	Vallejo (I-80)	Pending
SR-36	106	Red Bluff (I-5)	Susanville (US-395)	Pending
SR-55	18	Anaheim	Newport Beach	Pending
SR-78	90	Brawley	Blythe	Pending
SR-89	140	Quincy	SR-89 @ US-395	Pending
SR-94	64	San Diego (I-5)	Boulevard (I-8)	Pending
SR-96	147	Willow Creek (299)	Yreka (I-5)	Pending
SR-118	48	Saticoy (near Oxnard)	San Fernando	Pending
SR-125	22	Chula Vista (SR-52)	Santee (SR-905)	Pending
SR-180	113	Mendota	Kings Canyon National Park	Pending
SR-198	142	Coalinga (I-5)	Lemon Cove (Hwy 99)	Pending
SR-199	42	Crescent City (US 101)	CA/OR Border	Pending
US-97	54	CA/OR Border	Weed (I-5)	Pending
US-395	193	CA/OR Border	CA/NV Border	Pending

Corridor Pending Corridors

Corridor	Miles	Start	End
I-10	100	Indio	CA/AZ border
I-15	101	Yermo	Border CA/NV
I-210/SR-210	17	Sylmar (I-210/I-5 interchange)	Glendale (Pennsylvania Ave. exit 17)
I-40	144	Barstow	CA/AZ border
I-5	67	Colinga	Buttonwillow
I-8	154	El Cajon	CA/AZ border
SR-1	294	Fort Bragg	Monterey
SR-1	315	Camino Capistrano (@ I-5); Monterey	San Simeon
SR-111/SR-78/SR-86	12	White Water	Palm Springs

Corridor	Miles	Start	End
SR-120	162	Lathrop (intersection w/ I-5)	Lee Vining (intersection w/ US-395)
SR-14	5	Sylmar (start at intersection of SR-14 and I-5); Lancaster	Santa Clarita; Inyokern (end at intersection of SR-14 and US-395)
SR-152	102	Watsonville	Chowchilla
SR-299	100	Arcata	Douglas City
SR-41	150	Fish Camp	Shandon
SR-46	88	Paso Robles	McFarland
SR-58	71	SR-58/SR-14 interchange in Mojave	SR-58/I-5 interchange in Barstow
SR-905	9	CA/Mexico border	San Diego CA (at intersection with I-5)
US-101	46	Ukiah; Trinidad	Garberville; CA/OR Border
US-101	42	Trinidad	Klamath
US-395	352	Topaz	Hesperia

Corridor Ready Corridors

Corridor	Miles	Start	End
I-10	142	Santa Monica	Indio
I-105	21	El Segundo (California Street)	Norwalk (I-105/I-605 interchange)
I-110	24	Los Angeles (1230 W 3rd St)	San Pedro (I-110/SR-47 interchange)
I-15	187	San Diego (@start of I-15)	Yermo
I-205	13	Tracy (@ I-580)	Tracy (@I-5)
I-210/SR-210	69	Glendale (Pennsylvania Ave. exit 17)	Redlands (at SR-210/I-10 interchange)
I-215	45	San Bernardino	Murrieta
I-280	57	San Francisco (5th and King St)	San Jose (@ I-680)
I-405	62	Mission Hills (@ I-5)	Irvine (@ I-5)
I-5	470	CA/OR border	Colinga
I-5	260	Buttonwillow	CA/Mexico Border
I-505	39	Dunnigan (I-505/I-5 split)	Vacaville (I-505/I-80 interchange)
I-580	73	San Rafael (@ US 101)	Tracy (@I-5)
I-605	34	Duarte (I-605/I-210 interchange)	Seal Beach (I-605/I-405 interchange)
I-680	73	Cordelia	San Jose (@ I-280)
I-710	23	Los Angeles (@ E. Valley Rd)	Long Beach

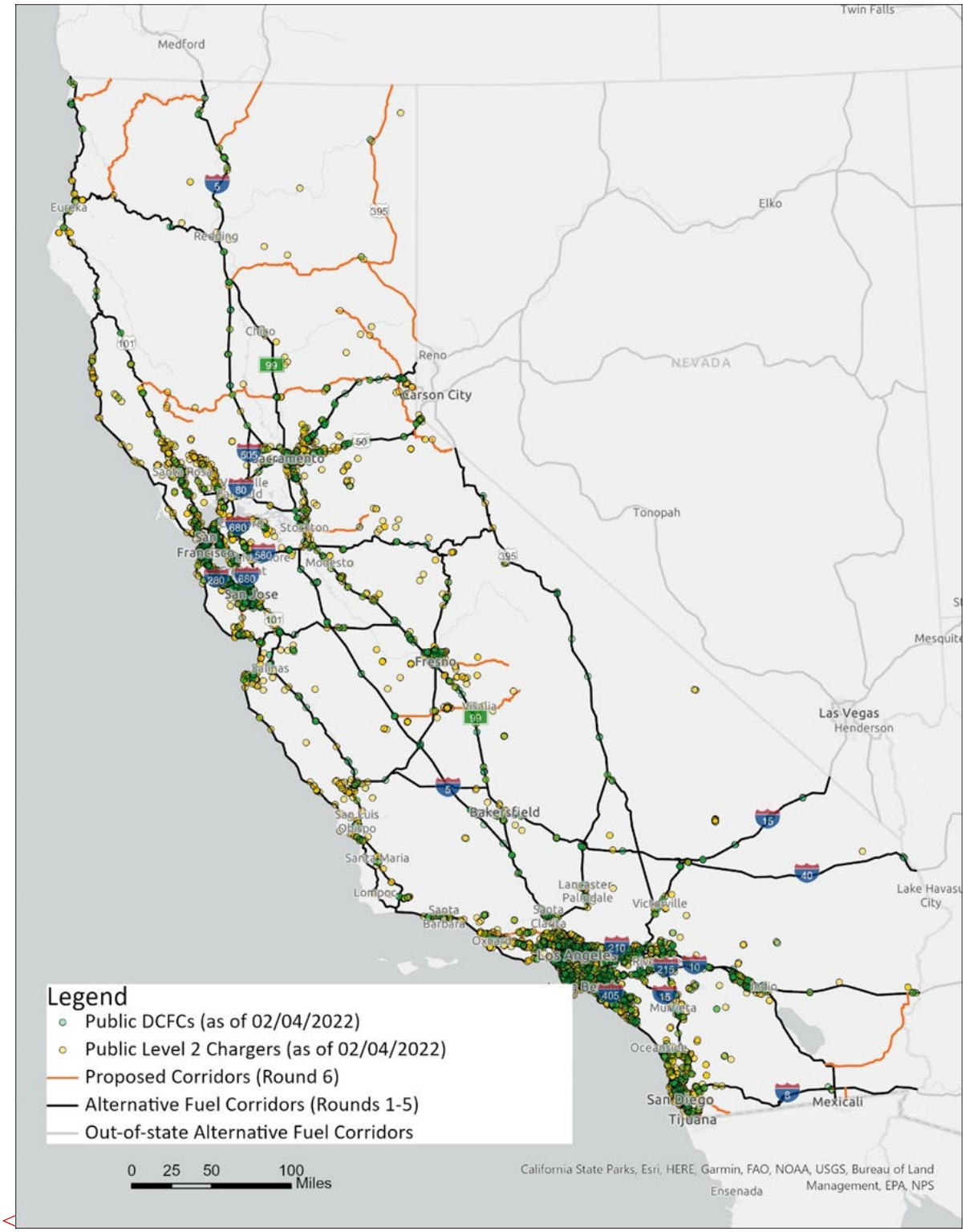
Corridor	Miles	Start	End
I-8	17	San Diego	El Cajon
I-80	206	San Francisco	Cisco Grove
I-805	28	San Diego (I-805/I-5 split in Sorrento Valley)	San Diego (I-805/I-5 split interchange in San Ysidro)
I-880	45	San Jose (@ I-280)	Oakland (@I-80)
SR-111/SR–78/SR-86	40	Palm Springs	Coachella
SR-12	104	Sebastopol (at intersection of SR-12/SR-116)	Lodi (SR-12/SR-99 interchange)
SR-14	43	Santa Clarita	Lancaster
SR-299	39	Douglas City	Redding
SR-39	21	La Habra (at intersection of SR-39/SR-72)	Huntington Beach (at intersection of SR-39/SR-1)
SR-58	85	Buttonwillow (at the intersection of I-5)	Mojave (SR-58/SR-14 interchange)
SR-60	78	Los Angeles (start @ I-10/I-5 interchange)	Beaumont (end @ I-10)
SR-78	17	Oceanside (at intersection of SR-78/I-5)	Escondido (at the intersection of SR-78/I-15)
SR-91	60	Gardena (SR-91/I-110 interchange)	Riverside (SR-91/I-215 interchange)
SR-99	425	Red Bluff	Wheeler Ridge
US-101	521	Los Angeles (starting @ I-10/I-5 interchange); Garberville	Ukiah; Trinidad
US-50	106	West Sacramento	South Lake Tahoe

Existing Locations of Charging Infrastructure Along AFCs

The US Department of Energy's Alternative Fuels Data Center (AFDC)[12] provides information on EV charging, including station location, port counts, connector types, and network providers. The complete table of existing locations of public charging infrastructure along AFCs can be downloaded from the AFDC. Figure 3 summarizes this data by displaying locations of existing public DCFC and Level 2 charging stations along electric corridors and Round 6-nominated electric corridors. As of February 2022, California has 1,581 public DCFC stations (6,764 DCFCs) and 12,568 public Level 2 stations (28,877 Level 2 chargers).[13]

[12] U.S. Department of Energy Alternative Fuels Data Center, available at https://afdc.energy.gov/.
[13] A station location is a site with one or more EVSE ports (i.e., chargers) at the same address. An EVSE port (or charger) provides power to charge only one vehicle at a time even though it may have multiple connectors.

Figure 3: Alternative Fuel Corridors and Existing Public DCFC and Level 2 Chargers in California



Source: U.S. Department of Energy Alternative Fuels Station Locator as of February 4, 2022

Known Risks and Challenges

As with any new program, there are challenges and risks associated with the National Electric Vehicle Infrastructure Program and its deployment. California identified known risks and challenges to mitigate and plan for their impact.

One set of challenges is associated with the business model for deploying infrastructure, especially in advance of vehicle adoption. Utilization rates, especially early on, may not be high enough to provide a return on investment for EV charging service providers. [14] To mitigate this, public funding, including the NEVI funding, is essential to bridging this gap; grant applicants will be incentivized by the evaluation criteria to minimize the amount of public funding they request. Other amenities and services which provide revenue for the site host may be necessary. Additionally, underutilization may still require regularly scheduled electric vehicle charger service and maintenance

Uncertainties in the application process may mean that a successful applicant is not able to complete the project under the terms it submits. In particular, this is a higher risk in an economic environment with high inflation, as seen in 2021 and the first half of 2022. It is also a risk that chargers are not operated beyond the required term of the agreement if utilization is not high enough. These risks are higher in areas with lower population density and travel demand. California's proposed Advanced Clean Cars II regulations[15] would result in a rapid increase in adoption of EV but risks and uncertainties about the role and utilization levels of DCFC and long-distance travel remain.

Associated with the utilization risk is a set of challenges for public awareness of chargers. In most cases, we expect that the stations funded under NEVI will require partnerships between site hosts and charging providers. Site hosts' willingness to participate will depend on their awareness of the benefits and challenges of hosting EV charging infrastructure, and their calculation of the future benefits and opportunity costs. EV service providers report spending significant time and resources in recruitment and education of potential site hosts. This presents an execution risk that may be higher in less-developed areas where there are fewer eligible properties to begin with. To mitigate this risk, organizations like Veloz[16] are working to increase public awareness.

A second set of challenges is associated with elements of charger installation. These include supply chain challenges, permitting, utility interconnection, and a trained and available workforce.

We have heard anecdotal evidence that supply chain challenges, common in many parts of the economy, are delaying delivery of EVSE. As installation of charging stations increases around the country, under NEVI and other programs, supply chain disruptions and shortages to EVSE and EVSE components could delay installation.

[14] https://www.npr.org/transcripts/940172037
[15] https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/advanced-clean-cars-ii
[16] https://www.veloz.org/

EVSE installations will also be required to receive construction permits from local governments, and this has sometimes been a lengthy process. To mitigate this risk, all cities and counties in California are required by law to streamline permitting processes for EV charging stations and limit project review to health and safety requirements in an expedited timeframe. Further information regarding permit streamlining is in the State, Regional, and Local Policy section.

Deployment of ZEV infrastructure has experienced slowdowns due to utility interconnection and energization. Electrify America has identified utility interconnection costs and timelines as a barrier to DCFC deployment, stating that as of the end of the third quarter of 2021, the new service utility interconnections averaged nearly nine months in California. EVgo noted bottlenecks in interconnections have delayed projects from six months to a year. EVgo notes that Southern California Edison's interconnection procedures have evolved and include clear application requirements, predictable timelines, and access to the utility's authorities when clarifications are needed. To mitigate this risk, in the resolutions approving the investor-owned utilities' (IOUs) Electric Vehicle Infrastructure Rules, the CPUC directed the IOUs to host a public workshop to discuss the barriers to timely EV charging service energization. Following the workshop, the IOUs are to propose an average timeline for EV charging interconnection of between 90 and 160 days.

California is committed to workforce development to help the transition to electric transportation, as described elsewhere in this plan. Including NEVI funding, the State of California is proposing about $3 billion in ZEV infrastructure over 5 years, with another approximately $1 billion proposed in funding from utilities regulated by the California Public Utilities Commission. This requires a rapid scaling of a trained and certified workforce to install and service EVSE. Under California law (Assembly Bill 841, 2020), EVSE located on the customer side of the electrical meter that is funded or authorized by specified state entities shall be installed by a contractor with the appropriate license and who is Electric Vehicle Infrastructure Training Program (EVITP) trained and certified.

According to EVITP, the training is currently available online and on-demand with EVITP examinations occurring in person as of early 2022. However, the adequacy of the number of licensed electricians/electrical contractors and EVITP trained- and certified workforce, as well as other critical occupations in this workforce sector, to meeting the rapid increase in demand is uncertain. This may be a bigger issue for projects in rural parts of the state or tribal areas. EVITP publishes a list of contractors that meet certain conditions for EVITP certification of their electricians.[17] As of the end of May 2022, there were large sections of the state served by AFC-designated highways without any locally headquartered contractors on the EVITP published list. To mitigate risks of having too few available EVITP certified electricians, the CEC is contracting with the community college system to expand the locations for in-person examinations to improve access to communities outside of the San Francisco Bay Area and Los Angeles area.

Finally, reliability of the EVSE network and of stations has been raised as an increasing

[17] https://evitp.org/california

concern, especially as the vehicle market grows beyond early adopters to mainstream consumers. To mitigate this risk, as discussed elsewhere, we are investigating how to track and measure the reliability of stations over time. The CEC held a public workshop March 11, 2022, to gather stakeholder input on how to define and measure reliability, publish reliability metrics for light-duty EV chargers, and discuss how to incorporate reliability metrics in future CEC EV charging infrastructure funding opportunities. The CEC intends to develop and publish reliability standards to increase uniformity and transparency. Consumer-facing apps and websites like PlugShare,[18] market surveys and studies,[19] and automakers' in-car navigation provide additional information.

EV Charging Infrastructure Deployment

The overarching strategy for EV charging infrastructure installations is to run a competitive GFO for applicants to propose projects to acquire, install, own, operate, and maintain EV chargers at stations that meet the NEVI requirements. California anticipates dividing the AFCs into segments based on geography, station size, and other attributes. For each segment, a grant will be awarded based on evaluation of the applications for that segment.

For the initial funding, California will prioritize segments that have infrastructure gaps. In future years, the segments would be re-evaluated and potentially re-ranked for one or more subsequent GFOs. Over time, we plan to use the NEVI funding to develop an interconnected network of stations that meet or exceed NEVI standards along all designated corridors and connect to neighboring states.

Funding Sources

In recognition that grant recipients will own and have the ability to receive revenue from the chargers, we anticipate that those recipients will provide a cost share that will cover at least the non-federal share of 20 percent of project costs. An evaluation criterion of minimizing public funding will incentivize applicants to provide higher cost shares, as well as to lower overall costs.

Previous successful GFOs and block grants executed by the CEC have offered DCFC funding with a required "match" share by the recipient. California anticipates that successful applicants for NEVI funding will provide at least the 20 percent cost-share required, from private funding and/or stacked incentives from utility or local government programs. If necessary to meet NEVI spacing requirements, the state will consider, in limited cases, providing cost-share from state funding.

[18] PlugShare Website: https://www.plugshare.com/

[19] J.D. Power. August 18, 2021. "Public Charging Experience for Electric Vehicle Owners Can Get Much Better, J.D. Power Finds." https://www.jdpower.com/business/press-releases/2021-us-electric-vehicle-experience-evx-public-charging-study; Umlaut. January 31, 2022. "US EV Charging Infrastructure – How Fast and How Convenient?" https://www.umlaut.com/en/stories/us-ev-charging-infrastructure-how-fast-and-how-convenient.

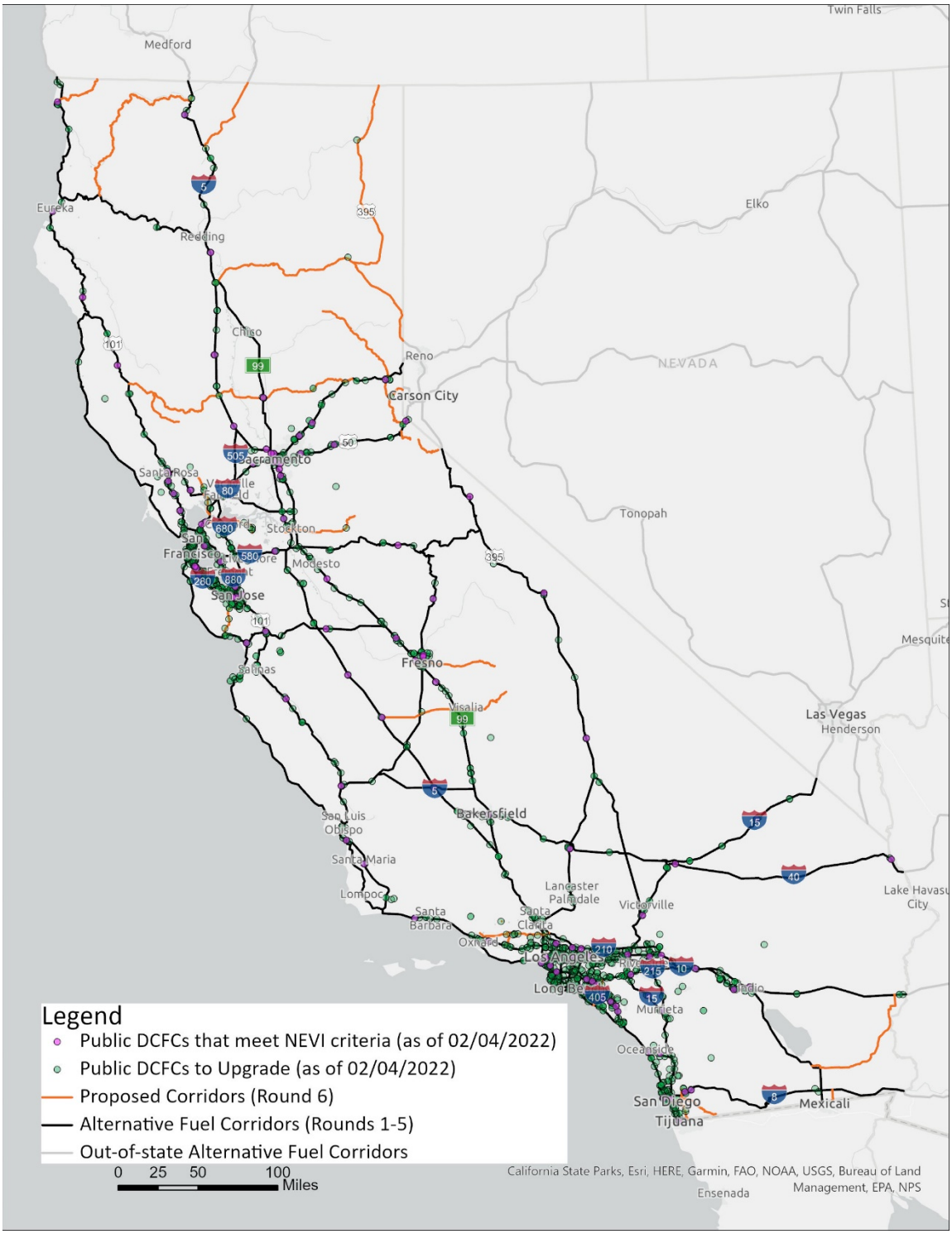
2022 Infrastructure Deployments/Upgrades

As described previously, California will divide the AFCs into segments based on an analysis of gaps in the current network, future charger needs, and geography. The gap analysis will begin with a review of existing infrastructure.

Figure 4 shows the locations of existing public DCFCs as of February 2022. Stations in purple meet the NEVI Formula Program standards: they are located less than 1 mile from an electric corridor exit, have a minimum of four CCS type 1 ports with a maximum charging power per port of at least 150 kW, and site power capacity of no less than 600 kW. As of February 2022, California has a total of 113 stations (592 DCFCs) that meet the NEVI Formula Program criteria.

Locations of proposed new installations should be no more than 50 miles from stations that meet the NEVI Formula Program standards and 1 mile from the corridor exit. Stations in green are the remaining public DCFCs in California (1,468 stations, 6,172 DCFCs) that do not meet the NEVI Program standards.

Figure 4: Existing DCFC Along Alternative Fuel Corridors

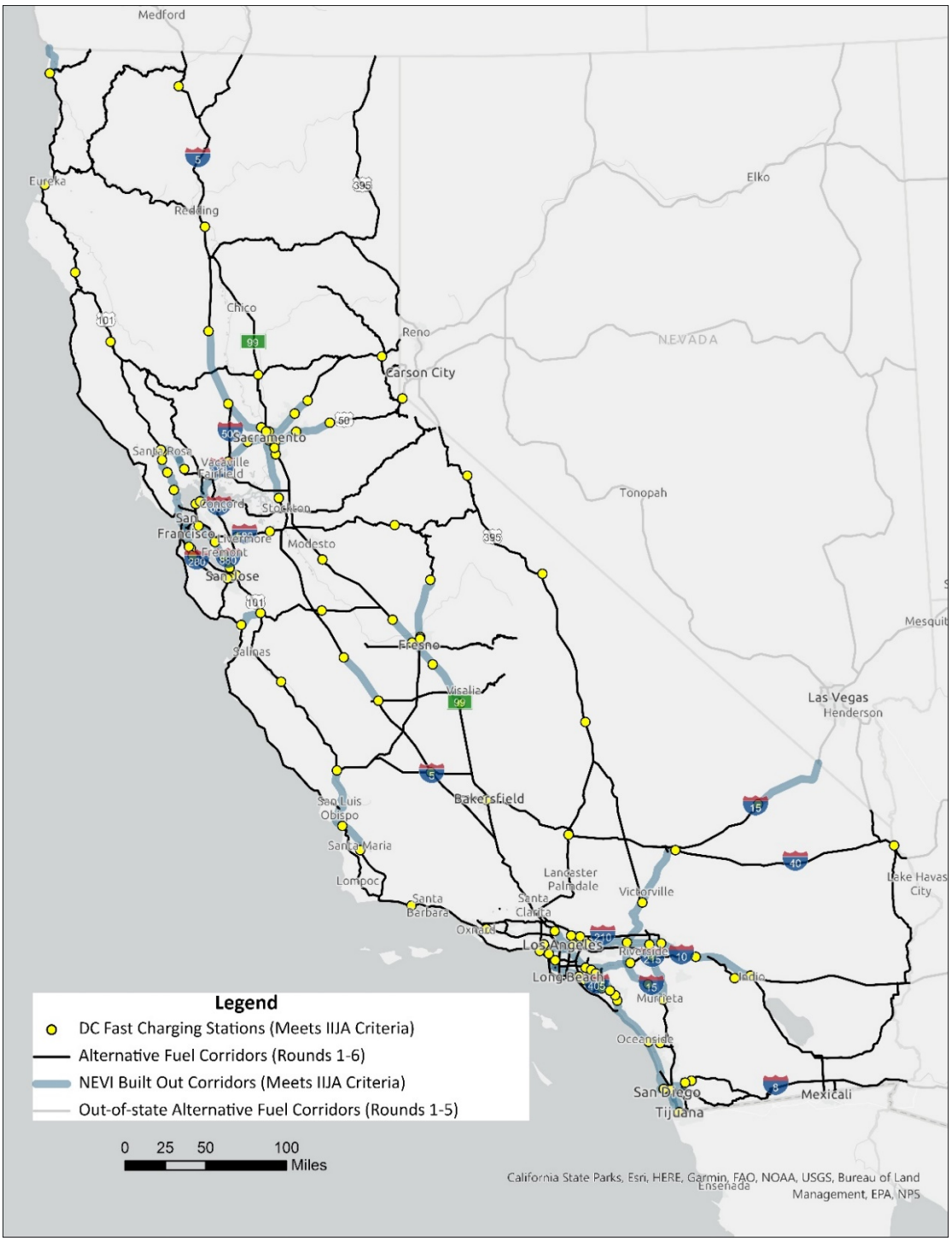


Source: U.S. Department of Energy Alternative Fuels Station Locator

Current DCFC deployment locations that meet NEVI Formula Program standards along electric corridors will inform the approximate locations of proposed new station installations. Figure 5 displays AFC Rounds 1 – 6 electric corridors with DCFC stations that

meet NEVI standards marked with yellow circles. "NEVI built-out" corridors sections are highlighted in blue. The gaps in DCFC infrastructure will be targeted as approximate locations for future stations funded through the NEVI Formula Program.

Figure 5: NEVI Built-Out Corridors and Gaps



Source: U.S. Department of Energy Alternative Fuels Data Center

Upgrades of Corridor Pending Designations to Corridor Ready Designations

California has forty-one corridors currently designated for electricity as an AFC from the first five rounds of AFC Nominations. The designated corridors consist of 20 Interstates, 18 State Routes, and 3 US Routes covering nearly 6,000 miles in California (see Table 1 for list of corridors and Figure 4 for a map).

Table 2: Round 1 – 5 Alternative Fuel Corridors (AFC) for Electricity

Corridor Type	Corridors
Interstate (I)	I-5, I-8, I-10, I-15, I-40, I-80, I-105, I-205, I-210, I-215, I-280, I-405, I-505, I-580, I-605, I-680, I-710, I-805, I-880
State Route (SR)	SR-1, SR-12, SR-14, SR-39, SR-41*, SR-46*, SR-58, SR-60, SR-78*, SR-86, SR-91, SR-111, SR-120, SR-152, SR-210, SR-299*, SR-905
US Route	US-50, US-101, US-395*

* Portions of the corridor are undesignated

California proposed twenty additional corridors for electricity for Round 6 of the AFC Designations (see Table 2 for list of corridors and Figure 4 for a map). The Round 6 nominations placed emphasis on rural, disadvantaged, and tribal areas within California.

Table 3: Round 6 Proposed Alternative Fuel Corridors (AFC) for Electricity

Corridor Type	Corridors
State Route	SR-4, SR-7, SR-17, SR-20, SR-23, SR-28, SR-29, SR-36, SR-55, SR-78, SR-89, SR-94, SR-96, SR-118, SR-125, SR-180, SR-198, SR-199
US Route	US-97, US-395

California continues to make progress building critical infrastructure along Interstate and State Routes to allow for inter- and intra-regional travel. If all Round 6 corridors become designated, California will have a total of 61 corridors (covering more than 7,601 miles) designated for electricity.

The previous rounds of designations required public DCFCs less than 50 miles apart, within 5 miles from the corridor exit, and having both CHAdeMO and Combined Charging System (CCS) connectors. The updated requirements led to additional analysis to determine which designated corridor segments meet the NEVI built out requirements. Additional guidelines and clarification regarding the corridors are currently pending from the Joint Office, including how to best analyze shorter segments for build out. Once the Joint Office comes to a determination, the number of NEVI built out segments may change. The current analysis assumes that built out corridor segments had to have a DCFC within one mile of each endpoint, stations less than 50 miles apart, and DCFCs meeting the NEVI criteria. The initial analysis indicates that most built our corridor segments are in urbanized areas, such as the San Francisco Bay Area, Sacramento, Los Angeles, and San Diego region (Figure 4).

For the initial funding, California will prioritize segments that have infrastructure gaps, i.e., do not meet the requirements for "Corridor Ready". Over time, California will utilize

NEVI funding to develop an interconnected network of stations that meet or exceed NEVI standards along all designated corridors and connecting to neighboring states.

A ranking process will be developed to prioritize corridors to focus DCFC deployments to convert corridors from pending, or ready under a previous definition, to "NEVI built out" in a cost-effective and efficient manner. Criteria under consideration for prioritization of corridors include, but are not limited to:

- **Corridor type:** The NEVI Formula Program Guidance includes guidance that "States should first prioritize investments along the Interstate Highway System." With the exception of a few short connectors, nearly all of California's interstates are designated for AFC electricity. However, due to changes in the AFC criteria, the majority of the Interstate Corridors have gaps.

- **Equity:** As part of the NEVI Guidance, states must target at least 40 percent of the benefits towards disadvantaged communities as identified by the EV Charging Justice40 Mapping Tool. The CEC's goal is to provide more than 50 percent of Clean Transportation Program funds towards projects that benefit low-income and disadvantaged communities.

- **Traffic and/or projected demand for corridor charging:** California will utilize two data sources to determine traffic and projected demand for EV charging within a corridor. Traffic counts indicating 2019 (pre-COVID) annual average daily traffic counts (AADT) will be used to rank the corridor segments. Due to the seasonality of some routes, traffic counts may be analyzed using the highest traffic or peak month of the year for the segment which may be more representative of the traffic conditions than the Annual ADT (total volume for the year divided by 365 days). The EVI-Road Trip model uses AADT to project the number and locations of DCFCs needed to enable electrified road trips from BEVs of 100 miles or more. Combining the EVI-Road Trip model with traffic count data allows a corridor to be ranked by traffic and/or projected demand for DCFC.

- **Existing/planned DCFC efforts:** In addition to public funding, the private sector, local air districts, and electric utilities in California are investing in public charging station installations. The state will focus efforts where other entities may not be willing to invest in deploying DCFC, such as harder to reach rural corridors and areas where bringing electricity to a site may be difficult.

- **Permit Streamlining:** Sites within jurisdictions that have implemented permit streamlining for EV stations, as described in the State, Regional, and Local Policy section, will offer efficiency and time savings.

The number of built out AFC corridors will be dependent on requirements in the solicitation and proposals received and awarded.

Increases of Capacity/Redundancy along Existing AFC

California has hundreds of DCFC stations located along highways built before the NEVI requirements were introduced. These sites may serve as prime locations and critical sites to be upgraded as part of the Deployment Plan. As part of two previous programs, DCFC corridor sites funded by the CEC were mandated to install stub-outs, ready-to-go infrastructure for additional chargers. The requirement specified that all conduit ran for the charging stations must be sized to accommodate chargers of 150 kW or larger. Although utility transformers and supporting equipment may need to be upgraded, additional trenching would not be required to add or replace existing chargers with higher-powered chargers. Additionally, the amount of time required for planning, design/engineering, and permitting will also be reduced. Building stub-outs can lead to substantial decreases in costs and time.

Electric Vehicle Freight Considerations

In October 2021, California's Governor Newsom signed SB 671 to establish the Clean Freight Corridor Efficiency Assessment. The bill requires the CTC to identify freight corridors, or segments of corridors, as priority candidates for the deployment of zero-emission medium- and heavy-duty vehicles by December 2023. The assessment's findings and recommendations will be incorporated into the California Transportation Plan. Subsequently, the California Freight Mobility Plan will include a description of needed infrastructure, projects, and operations needed to develop the freight corridors identified in the assessment.

The SB 671 effort includes both public and private sector stakeholders including the following:

- Academia
- California Air Resources Board (CARB)
- California Department of Transportation (Caltrans)
- California Energy Commission (CEC)
- California Public Utilities Commission (CPUC)
- Environmental organizations
- Freight industry (i.e., trucking firms, ports, distributors)
- Governor's Office of Business and Economic Development (GO-Biz)
- Local governments
- Metropolitan planning organizations,
- Public health representatives
- Regional transportation planning agencies
- Stakeholders from low-income and disadvantaged communities

In February 2022, the stakeholders identified priority corridors throughout the state. The priority corridors identified, not surprisingly, aligned with the Alternative Fuel Corridors nominated in Rounds 1 – 5. Thus, indicating that the corridors that are most important for goods movement are amongst those that are a priority for all types of travel.

Public Transportation Considerations

The majority of EV charging for public transportation fleets in urban settings will mostly likely be conducted at the agency's bus barns or yards. However, in rural areas where bus routes are longer, these fleets may find it advantageous to utilize public DCFC that are near turn around points at the ends of routes. Publicly accessible DCFC could allow transit drivers to add range to the vehicle while they take a lunch or stretch break.

Public transportation fleets are an important part of emergency evacuation planning. As such, back up batteries and solar power generation should be considered, as appropriate. In areas prone to wildfire, electricity service providers find it necessary to shut down power during high wind events to prevent fires caused by downed power lines. The rural areas need reliable charging infrastructure to enable emergency response by the public transportation fleets.

FY23-26 Infrastructure Deployments

California's proposed structure for the Deployment Plan is intended to be durable and flexible to achieve the goals of the NEVI program with future years' funding. In each year of the program, California will revisit the segment definitions, charging needs, and rankings; and evaluate equity needs, deployment, station utilization along with complementary investments from the private sector, electric utilities, and other public funding programs. Market and technology developments, and forecasts for both vehicles and charging infrastructure, will be reviewed in conjunction with stakeholder input and other information. We anticipate creating a total of 3 – 4 grant funding opportunities during the life of the program.

If the NEVI funding, in combination with other investments, is sufficient to build out California's corridors, the state will propose other uses for the funding, such as increasing corridor charging capacity by adding or upgrading chargers and stations to provide additional equity, capacity, and redundancy. Other options include increasing DCFC capacity near demand centers and increasing the focus on medium- and heavy-duty charging.

State, Regional, and Local Policy

California currently has two existing permit streamlining laws for EV charging infrastructure. The intention of these laws is to make the permitting process for EV stations consistent and expedient across California. Assembly Bill 1236 (Chiu, 2015), mandates that all California cities and counties adopt ordinance to expedite the permitting process for new EV charging stations and provide a checklist to applicants. AB 970 (McCarty, 2021) builds on this legislation and codifies specific timelines for the permitting process.

To assist cities in implementing these laws, the Governor's Office of Business and Economic Development (GO-Biz) developed a permitting guidebook, Fact Sheet,

permitting Scorecard, and a Frequently Asked Questions Page. GO-Biz is in the process of updating the Electric Vehicle Charging Station Permitting Guidebook to reflect the evolving landscape of EV charging equipment.

GO-Biz also manages an EV Charging Station Permit Streamlining Map to create a shared understanding of EV charging station permit streamlining across the state and track compliance with California laws AB 1236 and AB 970. The objective of the map is to allow communities to use these tools to easily replicate success, leverage lessons learned, and save time as we all work to aggressively build out California's ZEV infrastructure network.

California's existing EV permit streamlining laws provide a strong foundation to further build out EV infrastructure in the state. GO-Biz is in regular communication with EV charging stakeholders, private/public companies, cities/counties, and utility providers. As of May 1, 2022, California had 190 jurisdictions with streamlined permitting, 128 jurisdictions in the process of streamlining, and 222 jurisdictions that need to adopt the legislation.

The funding available through NEVI should serve to further advance permit streamlining efforts across the state. GO-Biz will utilize existing resources and communication networks to best prepare jurisdictions to receive NEVI funds and build out EV infrastructure. To expediate the completion of the projections funded through NEVI, California may give funding priority to jurisdictions that are fully streamlined or have started the streamlining process.

Implementation

The CEC has studied EV charging infrastructure reliability since summer of 2021. These efforts have revealed anecdotal evidence that indicate a shortcoming in the overall reliability of EV charging infrastructure throughout California. This negatively impacts the overall user experience for EV drivers and is considered a barrier to EV adoption. It is imperative that reliability is maintained.

CEC staff, in collaboration with Caltrans, CPUC, and CARB, are investigating and developing mechanisms to ensure the reliability of publicly funded chargers. Broadly speaking, these are likely to include maintenance, recordkeeping, and reporting requirements that all funding recipients must agree to meet as a condition of funding. These requirements will be included in NEVI funding agreements to ensure that the minimum 97 percent uptime requirement is met.

Strategies for EVSE Operations & Maintenance

California's goal is to require applicants for projects funded through NEVI to meet a minimum uptime requirement of 97 percent to provide a detailed Operations & Maintenance (O&M) Plan in their application, and to meet robust maintenance, recordkeeping, and reporting requirements. We expect that operations and maintenance costs would be eligible expenses for agreements with NEVI funds and are

exploring the possibility of provisions that would make funding available only after recipients provide evidence that the chargers operated reliably.

CEC's two most recent light-duty EV charging solicitations, the Rural Electric Vehicle (REV) Charging and the Reliable, Equitable, and Accessible Charging for multi-family Housing (REACH) both required minimum time uptimes of 97 percent for 5 years from the commissioning of charging equipment. California plans to adopt the same requirements for the projects funded through the NEVI program.

Applicants will be required to submit an O&M Plan to demonstrate that the equipment will be operational at least 97 percent of the time based on the hours of operation. Additionally, the O&M plan will address customer service, site host training, process and timelines for upkeep, and repair turnaround time. California expects most types of malfunctions and repairs to be addressed within 48 hours of the initial notice, and the O&M Plan will outline how this repair time will be achieved. For significant or complex issues leading to downtime (such as vandalism), the equipment should be repaired in 2 – 5 days. The O&M Plan will also identify the party responsible for payment of all operating costs, including but not limited to payment of leases, rents, royalties, licenses, fees, taxes, revenue sharing, utilities, and electric power supply for the charging equipment and supporting elements, such as area lighting.

Additionally, the O&M Plan will address who will be responsible for ensuring the maintenance of the charging station pedestals, and all ancillary equipment, including but not limited to any awnings, canopies, shelters and information display kiosks or signage associated with the charging station. This includes providing all needed repairs or desired and approved alteration, as well as cleaning the equipment and keeping it safe and presentable.' California is also collaborating with the charging industry, automakers, standards organizations, community organizations and other stakeholders to develop robust maintenance, recordkeeping, and reporting requirements to enable the verification of uptime, preventative maintenance, corrective maintenance, and interoperability standards are met.

Strategies for Identifying Electric Vehicle Charger Service Providers and Station Owners

California will conduct research, hold workshops, and meet with EV charger manufacturers and network providers while designing the GFO. To spread awareness, notices for the GFO public workshops will be sent using CEC's email lists. This will enable the establishment of requirements for the GFO and help communicate with potential applicants.

The GFO will establish the minimum requirements for eligible sites. Depending on their proposed business models, potential applicants will be responsible for soliciting interested site hosts or station owners and making sure the site hosts meet the GFO's eligible site requirements. The proposed charging station location will be identified on the application and evaluated on the degree to which it meets or exceeds the GFO's minimum requirements. Ample time will be provided before application due dates to allow applicants to locate potential sites, negotiate with site hosts, and prepare a letter

of intent.

Strategies for EVSE Data Collection & Sharing

The CEC frequently requires funding recipients to collect and report utilization and reliability data. Past CALeVIP program participants [20] agreed to supply data through their EVSPs. As a result, the CEC developed a standard list of utilization data that all funding recipients will be required to provide for an agreed upon period following commissioning.

As noted in the 'Network Reliability' section below, the CEC is also developing standard data relevant to reliability that funding recipients will be required to report to the CEC. We are exploring unifying both the utilization and reliability data requirements into a single data requirements approach that can be incorporated into all funding agreements. California will include data collection and reporting requirements into agreements with station developers under the NEVI Program.

The data from industry accepted protocols, such as OCPP, tracks metrics that inform both utilization and charger reliability. The CEC is currently evaluating how data is collected, stored, and transmitted to the CEC; what specific data can or should be required; and whether or how to aggregate and publish this data or resultant analyses.

In parallel, Atlas Public Policy and the Society for Automotive Engineers (SAE) are creating standard data requirements. The CEC is actively engaging with these groups and collaborating to align requirements as much as possible. The long-term goal for these efforts will be a unified set of data to track use and reliability of publicly funded charging infrastructure.

Strategies to Address Resilience, Emergency Evacuation, Snow Removal/Seasonal Needs

Due to varied climate and geography, California has experienced a variety of natural disasters and extreme weather events, including earthquakes, wildfires, flooding, mud slides, and snowstorms. During these events it is important to have charging infrastructure that is reliable in the event of evacuations. A challenge in maintaining reliability in the infrastructure is that the weather events often lead to power and communication outages. Additionally, in recent years, utilities have begun shutting down power during high winds in an effort to prevent fires.

California will look to technology advancements and innovation to provide power during extreme weather events and emergency evacuations. Battery backup and storage, often coupled with solar power, are some of the technologies currently under consideration.

Additionally, California is looking at opportunities for charging stations to inform drivers of potential disaster events. Earthquake Warning California is the country's first publicly available statewide warning system that could provide crucial seconds to get to safety

[20] https://calevip.org/

before any shaking is felt. Managed by the Governor's Office of Emergency Services (Cal OES), Earthquake Warning California uses ground motion sensors from across the state to detect earthquakes before humans can feel them and can notify Californians to "Drop, Cover and Hold On" in advance of an earthquake. The earthquake warnings are currently available through a download of the MyShake App. California is looking into ways to incorporate the warning system into charging stations to warn drivers to move away from structures such as signs or solar canopies that could cause them harm during an earthquake.

Strategies to Promote Strong Labor, Safety, Training, and Installation Standards

Workforce Training & Safety

California has cultivated and developed strong partnerships with the crafts and trades associated with transportation electrification, broadly, and with EVSE installations, specifically. The state will work with these partners to establish a strong labor force of trained individuals to support and enhance the industry. Specific partnerships with the EVSE workforce and labor include those with the National Electrical Contractors Association (NECA), the International Brotherhood of Electrical Workers (IBEW), and Jobs to Move America (JMA). State workforce agency partners that support labor, apprenticeships, and training, for EVSE installation, service, and replacement include the California Workforce Development Board (CWDB), the California Employment Training Panel (ETP), the California Community Colleges (Colleges), the Division of Apprenticeship Standards (DAS) in the Department of Industrial Relations (DIR), and the California Conservation Corps (CCC).

The state also has strong regional and local labor and workforce partners such as the Kern County Joint Apprenticeship Training Committee, regional workforce development boards, regional workforce investment boards, and municipal partners like the County of Los Angeles Workforce Development, Aging, and Community Services Department. Through its Clean Transportation Program, the CEC expects to continue investments in EVSE workforce training and development programs to align with EVSE workforce supply and demand. Many existing apprenticeship and pre-apprenticeship programs in AFC-adjacent communities can be leveraged to transform and train a new EVSE workforce. The state's community colleges and universities are also an important partner in worker education and training for the requisite skills needed for project delivery especially in communities with the few opportunities.

Previous CEC solicitations for ZEV and EVSE funding opportunities have required applicants to include EVSE Workforce Plans.[21, 22]The EVSE Workforce Plans were subject to a scoring criterion that included responses to criteria/areas such as job creation and recruitment, training and upward mobility, safe workplace conditions, workforce engagement, workforce accessibility to jobs, pay/prevailing wages, supplier diversity, and benefits. California is considering including similar requirements in the grant funding opportunity for NEVI funding.

[21] https://www.energy.ca.gov/solicitations/2020-11/gfo-20-606-zero-emission-drayage-truck-and-infrastructure-pilot-project;
[22] https://www.energy.ca.gov/solicitations/2022-03/gfo-21-605-zero-emission-transportation-manufacturing

Standards
As described in the section on Challenges and Risks, California law requires EVSE located on the customer side of the electrical meter that is funded or authorized by specified state entities to be installed by a contractor with the appropriate license and who is Electric Vehicle Infrastructure Training Program (EVITP) trained and certified. EVITP is a certification for licensed electricians with a curriculum specifically focused on EVSE installation.[23]

Opportunities for Small Business
The state will engage with rural and small businesses across the EVSE supply chain through existing channels such as through the Rural County Task Force (RCTF), the Rural County Representatives of California (RCRC), the California Association for Local Economic Development (CALED), and through the EVSE industry. Outreach to rural and small businesses will also include communications and targeted meetings across the EVSE supply chains.

Civil Rights

Title VI of the Civil Rights Act of 1964 prohibits discrimination on basis of race, color, national origin, sex, age, and disability in connection with programs or activities receiving federal financial assistance from the United States Department of Transportation, Federal Highway Administration and/or Federal Transit Administration. These prohibitions extend to Caltrans as a direct recipient of financial assistance and to its sub recipients, including the CEC.

California seeks to provide early, meaningful, and inclusive opportunities for involvement by all affected parties: citizens, partner agencies, businesses, industries, Native American tribal governments, organizations, advocates, and disadvantaged and traditionally under-represented communities, including limited-English proficient individuals, people of color, and low-income residents. Engagement for the Deployment Plan includes information sharing, discussions regarding project alternatives, and input and feedback.

In alignment with Title VI, California is dedicated to increasing the participation of Small Business (SB), Disadvantaged Business Enterprise (DBE), and Disabled Veteran Business Enterprise (DVBE) firms. DBEs are for-profit small businesses where socially and economically disadvantaged individuals own at least a 51 percent interest and also control management and daily business operations. African Americans, Hispanics, Native Americans, Asian-Pacific and Subcontinent Asian Americans, and women are presumed to be socially and economically disadvantaged. Other individuals can also qualify as socially and economically disadvantaged on a case-by-case basis. The definition of a small business varies by industry.

[23] https://evitp.org/

The DBE program is designed to remedy ongoing discrimination and the continuing effects of past discrimination in federally assisted transportation. The primary remedial goal and objective of the DBE program is to level the playing field by providing small businesses owned and controlled by socially and economically disadvantaged individuals a fair opportunity to compete for federally funded transportation contracts.

If EV chargers are available for use by the general public, the chargers must be accessible to individuals with disabilities. California's American Disabilities ACT (ADA) Compliance Standards for EV Charging Stations is primarily governed by California Building Code[24]. The building code sets a minimum number of van and standard accessible spaces given the total number of chargers at a facility. The building codes also specify the requirements for an accessible path of travel to and from the charger, configurations for parking spaces, and EV charger requirements. All chargers and charging cords must comply with reach range and operable parts requirements.

Equity Considerations

To address racial equity and the climate crisis, the Justice40 Initiative sets the goal of delivering 40 percent of overall federal investment benefits in climate and clean energy, including sustainable transportation, to disadvantaged communities, including federally recognized Tribal Nations and U.S. Territories.[25] The California Energy Commission's Clean Transportation Program seeks to provide more than 50 percent of program funds towards projects that benefit disadvantaged and low-income communities, including Tribal land.

As described in more detail in the "Upgrades of Corridor Pending Designations to Corridor Ready Designations" subsection of the "EV Charging Infrastructure Deployment" section, Caltrans and the CEC plan to use NEVI Program funding, especially in the initial years, to prioritize corridor charging that is in and/or serves low-income and disadvantaged communities, including Tribes and rural communities. At least 50 percent of the NEVI funding will be utilized for projects within California designated disadvantaged communities and/or low-income communities. California will ensure that in doing so, a minimum of 40 percent of the NEVI funding will be utilized in disadvantaged communities designated under Justice40. This will be done through the ranking of corridor segments. Where feasible, requirements for individual segments will include a minimum amount of funding be spent in designated communities.

Identification and Outreach to Disadvantaged Communities (DACs) in the State

For the purposes of the NEVI program, the Joint Office of Energy and Transportation developed an interim definition of disadvantaged communities in alignment with the Justice40 Interim Guidance. This definition of disadvantaged communities includes communities that experience health, transportation access, and energy burdens, with economies highly dependent on fossil energy sources, and exposure to environmental

[24] https://calevip.org/sites/default/files/docs/calevip/California_EVCS_Regulations_Guide.pdf
[25] https://www.anl.gov/es/electric-vehicle-charging-equity-considerations April 13, 2022

and climate hazards. Federally recognized Tribal Nations and U.S. Territories are also included as disadvantaged communities in the Joint Office definition.[26]

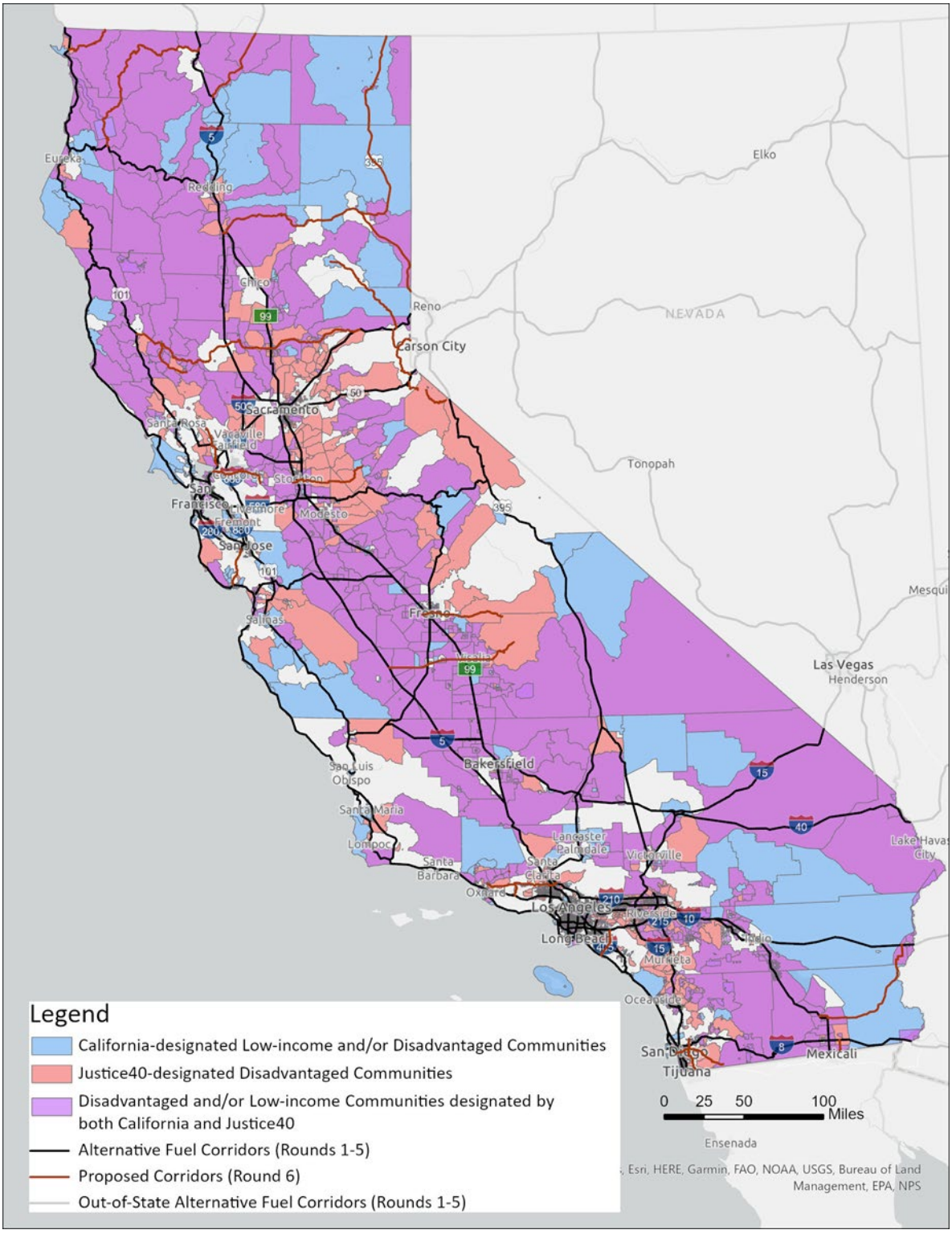
California identifies disadvantaged communities using the California Office of Environmental Health Hazard Assessment's California Environmental Health Screening Tool (CalEnviroScreen). CalEnviroScreen is a mapping tool that identifies California communities that are most affected by many sources of pollution and where people are often especially vulnerable to pollution's effects. CalEnviroScreen uses environmental, health, and socioeconomic information to produce scores for every census tract in the state. Census tracts within the top 25th percentile of CalEnviroScreen scores are considered disadvantaged.

California low-income communities are defined as census tracts with median household incomes at or below 80 percent of the statewide median income or with median household incomes at or below the threshold designated as low income by the Department of Housing and Community Development.[33]

Figure 5 shows communities that are disadvantaged, under the Justice40 Initiative and/or California Environmental Protection Agency (CalEPA) designations, and/or low-income.

[26] https://www.anl.gov/es/electric-vehicle-charging-equity-considerations

Figure 6: Disadvantaged and Low-Income Communities and Federally Recognized Tribal Lands



Sources: CalEnviroScreen 4.0, American Community Survey 2019 5-year income and average household size estimates, California Department of Housing and Community Development 2021 State Income Limits, U.S. Department of Transportation and U.S. Department of Energy Interim Disadvantaged Community Designations

Process to Identify, Quantify, and Measure Benefits to DACs Through this Plan

The CEC contracted with the National Renewable Energy Laboratory (NREL) to develop methods for calculating the benefits of the Clean Transportation Program, including charging infrastructure deployment projects. This quantification includes analyzing two categories of benefits: "expected benefits" (i.e., direct benefits) and "market transformation benefits" (i.e., indirect benefits). Comparable benefits can similarly be assessed for projects funded under the NEVI Program.

As indicated below, the quantifications of expected benefits and market transformation benefits both include key metrics, related to air quality improvement, greenhouse gas emission reductions, and petroleum displacement . Additionally, NREL also calculated the monetary value of air quality improvement benefits associated with the Clean Transportation Program's EVSE infrastructure investments. Finally, independent of NREL's analysis, the CEC tracks the amount of program and match funding invested into each project.

Benefit	Metric
Air Quality Improvement	Particulate matter reductions NO_x reductions
Greenhouse Gas Emission Reductions	Carbon dioxide-equivalent reductions
Petroleum Displacement	Gasoline or Diesel gallons displaced

When focusing on charging infrastructure projects, which have a fixed address, these benefits can be localized and assigned to distinct communities, including those identified as disadvantaged and low-income communities.

Key data inputs for NREL's analysis of charging infrastructure include both literature reviews of average charging usage as well as real world reported data from Clean Transportation Program funding recipients. The CEC continues to explore opportunities to collect more charger usage data directly from EVSPs. For air quality metrics, emission factors are based on CARB's Vision 2.1 model, which incorporates calendar year, vehicle type, fuel type, and location. Greenhouse gas reduction metrics are based on CARB's established carbon intensities for fuels under the Low Carbon Fuel Standard, or, when necessary, CARB's CA-GREET 2.0 model.

In addition to the Clean Transportation Program's Benefits Report, the CEC also identifies improving mobility as an important benefit in the state's shift toward transportation electrification. Access to charging infrastructure by all Californians will give drivers greater confidence that EVs will meet their mobility needs. Since 2019, the CEC has assessed whether public EV charging infrastructure is disproportionately deployed to inform Clean Transportation Program investments in EV charging infrastructure. The initial *Senate Bill 1000 Electric Vehicle Charging Infrastructure Deployment Assessment,* published in December 2020, focused on public Level 2 and DCFC capacity, and found that low-income communities, on average, have fewer public chargers per capita than middle- or high-income communities. The second assessment, which the CEC expects to publish in July 2022, focuses on public DCFC

coverage and finds that rural communities have less access to public DCFCs[27] than their urban counterparts.[28]

The CEC will continue to refine and update the analysis to identify charging network gaps and build out charging infrastructure that serves all Californians. Findings from the SB 1000 assessment, including statewide maps showing DCFC capacity and coverage within disadvantaged, low-income, and/or rural communities, will help guide DCFC deployments funded by NEVI. The findings will also help to identify areas of prioritization throughout the state to meet federal and state equity goals.

The state is also working to quantify benefits in ways that go beyond measuring funding with a given location and will continue to investigate new metrics to ensure investments and DCFC deployments enhance equity within the state.

Labor and Workforce Considerations

California strongly supports investments that expand good paying jobs, increase job access, improve job quality, provide strong labor standards, strengthen local/regional economies, and develop an equitable and diverse workforce in building EVSE infrastructure.

California has taken a strategic approach to promote an inclusive EVSE workforce, implement labor standards, provide safety training, and establish EVSE career pathways starting with the state's high school career training education programs. This is not a static effort, as the transportation electrification sector is dynamic given the growth in new and emerging EVSE technologies, new and revised building and electrical codes that improve worker and consumer safety, and the need to synthesize transportation electrification across the energy systems of the built environment.

The EVSE industry in California is the largest in the country, with nearly 21 percent of all public charging stations installed in California. The "Workforce Projections to Support Battery Electric Vehicle Charging Infrastructure Installation"[29] report shows that California's statewide light-duty EV program goals, and the associated EVSE infrastructure, would generate workforce needs of approximately 38,200 up to 62,400 job-years[30] between 2021 to 2031 in California. Estimates of projected medium and heavy-duty EV growth indicate the associated charging infrastructure would generate

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[28] About 43 percent of rural communities are low-income.
[29] https://caletc.com/assets/files/Workforce-ProjectionstoSupportBatteryElectricVehicleChargingInfrastructureInstallation-Final202106082.pdf
[30] Workforce needs are estimated based on analysis of survey responses, provided in person-days, and converted to job-years assuming a full time equivalent (FTE) of 2080 hours and 8-hour workdays. Note that job-years cannot always be directly translated into a number of jobs created, but instead help to describe the demand for work. One job-year is equivalent to one person performing a job for one year, or two people performing the same job for half a year, etc.

approximately 9,100 job-years from 2021 – 2030 in addition to the light-duty charging infrastructure workforce needs. The combined estimate of workforce needs for charger installations is approximately 47,300 up to 71,500 job-years.

California has established and will engage the appropriate labor and workforce entities and strategies for successful implementation of this plan. Examples include:

1. Strong Workforce Support and Training – California has a history and strong support and partnerships in supporting the workforce required for EVSE installation including:

    - **ETP** - ETP provides funding to employers to assist in upgrading the skills of their workers through training that leads to good paying, high-road jobs and long-term careers. Since 1982, ETP has reimbursed employers, including small and minority owned enterprises, well over $1 billion for training workers. ETP prioritizes construction apprenticeship as well as apprenticeship training in non-traditional/emerging sectors, such as EVSE manufacturing and installations. Applicable training occupations for EVSE installations include inside wireman, construction workers, and electricians.

    - **CEC** – CEC will continue to invest in incumbent and new worker entrants upskilling and new skills development required by communities to place chargers in their areas.

    - **CWDB** - CWDB establishes workforce development policy[31], develops innovative initiatives[32], and implements High Road Training Partnerships with labor and through 49 Local Workforce Development Areas.[33] The Workforce Innovation and Opportunity Act[34] administered by the federal Department of Labor (DOL) provides authority to CWDB to carry out the tasks in furtherance of that state's commitment to a High Road vision for the state's workforce development system that embodies the principles of job quality, worker voice, equity, and environmental sustainability. Implementing this vision through policy, programs such as the High Road Training Partnership (HRTP)[35] and other practices will benefit EVSE workers, jobseekers, and industry. The California Governor's proposed budget of FY 2022-23 includes $239 million to support an Apprenticeship Innovation Program.

    - **Foundation for California Community Colleges** – The Grow Apprenticeship California initiative helps to expand and scale apprenticeship in new and innovative sectors, and pre-apprenticeship programs linked to traditional and new and innovative programs, with the goal of connecting all Californians to good jobs with family-sustaining wages and advancement opportunities.

[31] https://cwdb.ca.gov/policy_briefs/
[32] https://cwdb.ca.gov/initiatives/
[33] https://cwdb.ca.gov/local_boards/local_workforce_investment_associations/
[34] https://cwdb.ca.gov/workforce_innovation_opportunity_act/
[35] https://cwdb.ca.gov/initiatives/high-road-training-partnerships/

2. **On-the-Job Training (OJT) –** The state developed new OJT programs for EVSE installations and service including basic safety training Occupational Safety and Housing Administration (OSHA) 10-hour training classes teaches basic safety and health information to entry-level workers in construction and general industry. These new OJT programs are critical to the state's goals and to the Deployment Plan as the training is provided in low-income communities and disadvantaged communities and in rural areas of the state. These programs provide important early career EVSE pathways to pre-apprenticeships and apprenticeships. New partnerships that will be modeled for the implementation of this Deployment Plan include the Transportation Electrification Training Project with four regional locations of the California Conservation Corps, the Kern Community College District, the County of Los Angeles, and community-based organizations such as the California Mobility Center.

Cybersecurity

In September 2018, California's Governor Jerry Brown signed Senate Bill 327 which put into law the nation's first information privacy law, specifically pertaining to connected devices. Connected devices often contain vulnerabilities and are a target for cyberattacks. The law requires a "manufacturer of a connected device to equip the device with a reasonable security feature or features that are appropriate to the nature and function of the device"[36]. Additionally, any information the device may collect, contain, or transmit must be protected from unauthorized access, destruction, use, modification, or disclosure.

EV chargers provide direct connections to the vehicle's onboard system and the EV charging service provider's network, and indirectly to the driver's smart phone if the charge is paid for with an app, banking information if a credit card is utilized, telecommunications provider, and the electric grid.

In April 2022, the National Renewable Energy Laboratory (NREL) and members of the electric vehicle industry performed testing of SAE International's PKI Design Platform. PKI, or public key infrastructure, is a method for encrypting information exchange and certifying the authenticity of devices to help ensure digital trust between vehicles and charging stations.[37] Although additional testing is needed, the demonstration indicated that PKI could improve security of communications between vehicles and EV charging equipment.

Further guidance from the Joint Office regarding Cybersecurity guidelines is pending. California will comply with the federal guidance upon issuance.

[36] https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB327
[37] https://www.nrel.gov/news/program/2022/ev-manufacturers-mobilize-behind-charging-cybersecurity-at-nrel.html

Program Evaluation

California currently monitors and reports progress of EV charging infrastructure. The CEC will publish the final ZIP in 2022 and update it biennially.[38] The ZIP will include updates on ZEV infrastructure and funding.

The CEC publishes biennial assessments[39] of charging infrastructure need, which include discussions of current charging infrastructure. The Clean Transportation Program requires an annual Investment Plan, which includes updates on progress towards the state's goals. The CEC also publishes a count of EV chargers in California and updates it quarterly.[40] All of these mechanisms include public workshops, drafts, or opportunities to comment, and all will assist the state in monitoring and reporting progress on the EV AFC network.

The required annual updates to the Deployment Plan will be used as further opportunities to evaluate and report progress. In preparing each year's Plan, California will include updates on the status of charging infrastructure in general, and the projects funded with NEVI funding in particular. Finally, CEC agreement managers will track progress through monthly calls, quarterly reports, invoice reviews, critical project reviews, and other tools.

Both successful and unsuccessful applications will be reviewed, and lessons learned will be incorporated into future solicitations and agreements in an effort to continually look for opportunities for improvement in California's Deployment Plan.

Discretionary Exceptions

As California works to identify gaps in the current DCFC infrastructure and prepare for the initial solicitation, there may be segments where exceptions are needed. While the process for requesting exceptions is still under development, California requests that the process allow for exceptions to be requested at any time throughout the NEVI program. The need to request an exception could occur at any point in a project. Flexibility in requesting exceptions will be especially important in the rural areas of the state.

Appendix A: Supporting Materials

Intentionally blank, reserved for future content.

[38] https://www.energy.ca.gov/event/workshop/2022-04/draft-zero-emission-vehicle-infrastructure-plan
[39] https://www.energy.ca.gov/programs-and-topics/programs/electric-vehicle-charging-infrastructure-assessment-ab-2127
[40] https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics/electric-vehicle