CENTRAL COAST ZERO EMISSION VEHICLE STRATEGY

JULY 2023

PREPARED FOR:

SBCAG SANTA BARBARA COUNTY ASSOCIATION OF GOVERNMENTS

SLOCOG SAN LUIS OBISPO COUNCIL OF GOVERNMENTS

AMBAG PLANNING EXCELLENCE Association of Monterey Bay Area Governments

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TABLE OF CONTENTS

CONTENTS

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

The Santa Barbara County Association of Governments (SBCAG), San Luis Obispo Council of Governments (SLOCOG), and Association of Monterey Bay Area Governments (AMBAG) have partnered to develop the Central Coast Zero-Emission Vehicle Strategy (CCZEVS). The CCZEVS identifies Zero emissions Vehicle (ZEV) charging infrastructure needs, challenges, and opportunities on California's Central Coast, including the Counties of Santa Barbara, San Luis Obispo, Monterey, Santa Cruz, San Benito, and Ventura. The objectives of the Central Coast Zero Emissions Vehicle Strategy are to:

- Assess existing EV infrastructure environment in the Central Coast – with a specific focus on unincorporated rural areas between cities that experience significant interregional travel.
- Identify key challenges, gaps, and barriers to EV travel for interregional travelers including long-distance commuters; regional transit providers, freight and other users as determined through input solicited from key stakeholders.
- Identify where equity issues currently exist with access to EV charging and ensure infrastructure improvements and investments are equitable and accessible to all users including traditionally underserved populations.
- Recommend infrastructure improvements and related investments, policies and implementation strategies to promote ZEV adoption through charging infrastructure investments based on analysis, and stakeholder input. This strategy will be meant as a guide to the Central Coast region and does not make any commitments to further financing and is not legally binding.

To meet these goals, the project team first conducted an analysis of existing ZEV infrastructure and a deep engagement process, to better understand the needs of communities in the study areas. The team then conducted a future infrastructure needs analysis and identified gaps and barriers to EV adoption. Based on this information, the project team identified recommendations to fill these gaps and drive equitable ZEV adoption.

FUNDING

Funding opportunities to support the implementation of the Central Coast ZEV strategy continue to grow rapidly. Covered expenses include the purchase or lease of EVs, the purchase and installation of charging infrastructure, and expenses for hydrogen fuel cell electric vehicles (FCEVs) and their refueling infrastructure. Several dozen funding opportunities exist federally as well as in each state, with eligible applicants ranging from private customers, state and local government agencies, tribal governments, school districts, transit agencies, utilities, fleet owners and operators, to vehicle dealers and charging infrastructure vendors. Funding programs typically have a fixed term and a limited allocation of funds. However, the range of funding options has vastly expanded over the past couple of years and especially in the past few months. Information on specific programs can change quickly and we encourage interested parties to monitor and identify funding sources timely and carefully. Examples of funding categories include the following:

- Federal Programs
- CALeVIP
- LCFS

- CEC Grants
- CARB Clean Mobility Options
- Local and Regional Funds

Appendix VIII of this report provides an overview of the most relevant programs with substantial funding resources. Numerous other funding opportunities related to electric vehicles and their charging infrastructure exist in addition to those mentioned in this report.

In addition to this, the resources listed below include information on funding opportunities which we recommend monitoring:

- Alternative Fuels Data Center Overview of Federal and State Laws and Incentives: https://afdc.energy.gov/laws
- California Governor's Office of Business and Economic Development (GO-Biz) ZEV Funding Resources library: https://business.ca.gov/industries/zero-emission-vehicles/zev-funding-resources/
- PlugStar searchable database by ZIP code: https://plugstar.com/tools/incentives
- DSIRE (database of clean energy programs): https://programs.dsireusa.org/system/program

CHARGING AND FUELING INFRASTRUCTURE CORRIDOR GRANT APPLICATION

During the finalization of the CCZEV Strategy in a proactive move to advance infrastructure development, SBCAG, AMBAG and SLOCOG submitted a joint application for a Charging and Fueling Infrastructure Corridor Grant (part of the NEVI discretionary fund) in June of 2023. SBCAG, AMBAG and SLOCOG requested $20 million for 20 different locations. At the time of this writing, the outcome of this grant submittal has not been announced.

EXISTING INFRASTRUCTURE IN THE CENTRAL COAST REGION

The project team first conducted an existing conditions assessment of EV charging infrastructure and hydrogen refueling in the 6-county region to better understand the current state of ZEV infrastructure in the region. A total of 2,095 EV chargers were accessible to the public in the six-county study area, of which 279 are located within one mile of unincorporated highway interchanges and highway access points. The majority of these, especially DC Fast chargers, are located along the main travel corridors including US-1 and US-101. Very few of the other interregional travel routes (SR 23; SR 33; SR 41; SR 46; SR 68; SR 126; SR 152; SR 156, and SR 166) have more than a few chargers, if any.

Geographically, most chargers are concentrated within the region's cities which is why the focus of this project is on the underserved portions of unincorporated areas where the vast majority of interregional travel miles are driven. Unincorporated Monterey County has the most DCFCs of any county in the study area with 20, while San Luis Obispo County has the most Level 2 chargers with 121. **Table 1** summarizes existing public EV chargers by county.

TABLE 1: STUDY AREA EXISTING PUBLIC EV CHARGERS BY COUNTY – UNINCORPORATED AND WITHIN CITIES

COUNTY	LEVEL 2	DCFC	TESLA DESTINATION	TESLA SUPERCHARGER	TOTAL
Ventura	46 (337)	- (37)	4 (21)	- (88)	50 (483)
Santa Barbara	73 (202)	2 (23)	17 (31)	8 (38)	100 (294)
San Luis Obispo	121 (165)	3 (14)	89 (33)	- (110)	213 (322)
Monterey	71 (140)	20 (25)	40 (18)	8 (62)	139 (245)
Santa Cruz	36 (113)	6 (14)	9 (8)	- (46)	51 (181)
San Benito	4 (8)	- (5)	- (-)	- (-)	4 (13)
Total Study Area	**351 (965)**	**31 (118)**	**159 (111)**	**16 (344)**	**557 (1,538)**

Sources: AFDC, PlugShare
Note: Unincorporated (Within Cities)
Charger type descriptions can be found in Appendix III

COMMUNITY ENGAGEMENT

Engaging the community is a vital activity to any planning effort and ZEV infrastructure planning is no exception. To add to the quantitative data collected in the existing conditions analysis performed for this project, the team sought qualitative data through thorough stakeholder and community engagement to better understand the needs of communities in the study areas. The project team used the stakeholder and public input received to inform study recommendations regarding the future location and allocation of electric charging infrastructure in the Central Coast region. The input also helped identify the constraints and opportunities for future deployment of electric charging infrastructure needed to meet future demand.

Community engagement efforts began in April 2022 and were completed in November 2022. Initially, the community engagement was scheduled to end by October 2022, but was extended to November 2022 to allow more time for public input and feedback. The project team conducted the following community engagement efforts to obtain public input and feedback:

- Stakeholder Meetings
- Focus Groups
- Social Pinpoint

The community engagement conducted, and input received for each of these efforts are detailed in **Chapter 1** and **Appendix I**.

FUTURE INFRASTRUCTURE NEEDS

Using the existing conditions analysis, deep stakeholder engagement, and the technical transit needs assessment as a starting point, the project team analyzed projections prepared by the California Energy Commission to perform an analysis of future infrastructure needs.

By 2030, to meet future EV demand, it is estimated that an additional 25,481 public Level 2 EV charging stations will be required, as well as an additional 1,223 public DCFC charging stations. Of these charging stations, an estimated 2,031 stations will need to be located in unincorporated areas along key state highway corridors in the Central Coast.

TABLE 2: CALIFORNIA ENERGY COMMISSION (CEC) CHARGER NEED FORECASTS

COUNTY	MFH	WORK	PUBLIC	DCFC	TOTAL
	(ASSUMED L2)			(L3)	
2030					
MONTEREY	2,997	3,396	**5,196**	**311**	11,902
SAN BENITO	313	188	**502**	**37**	1,040
SAN LUIS OBISPO	1,675	2,167	**4,263**	**246**	8,350
SANTA BARBARA	3,716	3,109	**5,271**	**322**	12,418
SANTA CRUZ	1,689	1,219	**2,907**	**189**	6,005
VENTURA	5,107	5,185	**8,927**	**627**	19,847
STUDY AREA	15,497	15,265	**27,067**	**1,732**	59,561

Note: MFH= Multifamily Housing, DCFC=Direct Current Fast Charger

BARRIERS AND GAPS TO ZEV ADOPTION

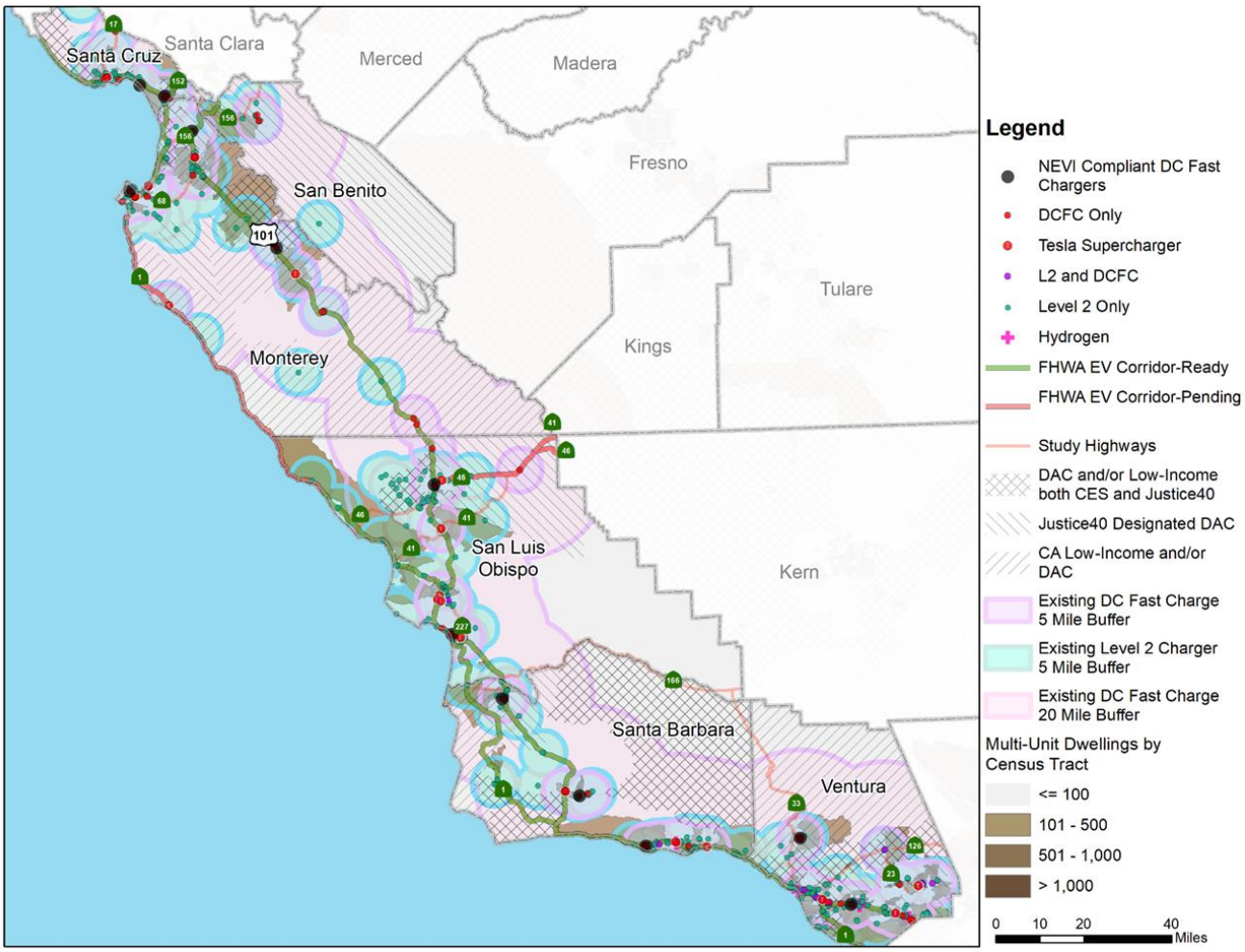
Based on the existing conditions assessment, community outreach, and the future infrastructure needs assessment, the project identified the following gaps and barriers to ZEV adoption that must be resolved for the Central Coast Region to transition to a decarbonized transportation future:

- Lack of charging infrastructure in key areas of the region
- Lack of awareness about ZEVs and available incentives
- Electrical Grid Capacity
- Climate change impacts on resiliency and EV charging
- Deep inequities in the adoption of ZEV technologies
- Challenges in the permitting process
- Different payment systems for using EV chargers

LACK OF ZEV INFRASTRUCTURE

Inadequate infrastructure a key barrier to ZEV adoption, and a key focus of this study. Based on the existing conditions analysis, the future needs analysis, and deep community engagement, the project team performed a gap analysis of EV infrastructure for interregional travel, shown in **Figure 1**. Gaps in EV infrastructure around corridors are critical to address since they impact interregional travel, and significantly slow ZEV adoption. A second infrastructure gap revealed by the future needs analysis relates to the level of infrastructure needed to support projected EV adoption rates. As shown in **Table 1** and **Table 2**, the Central Coast needs to undergo a major buildout of ZEV infrastructure to support the level of ZEV adoption needed to decarbonize the transportation sector. If the installation of new infrastructure does not happen at a quick enough pace, lack of ZEV infrastructure will become a major barrier to ZEV adoption.

FIGURE 1: GAP ANALYSIS MAP



LACK OF AWARENESS ABOUT ZEV TECHNOLOGIES

Another frequent challenge with ZEV adoption is limited awareness about zero emission vehicles themselves, the incentives available to purchase them, the infrastructure necessary to refuel or charge them, and phone-based technologies used for payments. This barrier does not affect every community in the same way and can be compounded by traditional communication barriers such as literacy, access to technology, and language barriers.

ELECTRICAL GRID CAPACITY

The capacity of the electric grid to support increased levels of ZEV infrastructure is one of the key barriers to ZEV adoption that urgently needs to be addressed and planned for. This barrier is one of the main topics that was mentioned across every outreach focus group and is an especially important concern for rural communities. This is such an important barrier because ZEV infrastructure projects that require upgrades to the local grid infrastructure can run into significant costs and lengthy time delays. Projects relating ZEV infrastructure for heavy duty vehicle ZEV infrastructure such as for transit buses, are especially vulnerable to this barrier.

ZEV INFRASTRUCTURE CLIMATE VULNERABILITY AND RISKS

A key barrier to ZEV adoption is that the climate vulnerability and risks associated with the transition to a ZEV transportation system have not yet been fully studied. As highlighted by the recent winter storms, the Central Coast is vulnerable to a number of climate change risks such as sea level rise, extreme weather, and wildfires. Many of these events disrupt the electric grid, place deep risk on transportation infrastructure, and impact vulnerable communities the most. Unfortunately, ZEV charging infrastructure in the Central Coast is currently exposed to unknown climate risk. Exposure to climate risk also has the potential to significantly slow the buildout of ZEV infrastructure.

DEEP INEQUITIES IN THE ADOPTION OF ZEV TECHNOLOGIES

While the focus of this study is meeting the needs of interregional travelers along major travel corridors in unincorporated areas, both the existing conditions report and the community engagement have revealed deep equity considerations, especially relating to serving underserved communities and residents of multi-family housing. The lack of access to charging for these populations is a substantial barrier to EV adoption and needs to be addressed so that ZEV charging infrastructure can be equitably distributed throughout the Central Coast.

PERMITTING

Even after identifying the need and locations for charging infrastructure, permitting can be yet another barrier to installing equipment and electrical infrastructure. For this reason, streamlining the permitting process to make it as easy as possible can be a simple and cost-effective solution to support the installation of EV charging infrastructure. In recognition of this, AB 1236 and AB 970 require that local jurisdictions implement streamlined permitting for EV charging stations.

The existing conditions analysis of this report (**Appendix III**) expands further on permit streamlining. **Table 3** identifies the streamlining status of each county in the Central Coast study area at the time of this writing. Some jurisdictions within these counties have not started the permit

streamlining processes or are in progress. With streamlined permitting, residents, businesses, and EV installers can more accurately predict the time and cost of installing a charging station. It also decreases the likelihood that chargers will be installed without obtaining a permit.

TABLE 3: EVCS PERMIT STREAMLINING STATUS IN THE CENTRAL COAST COUNTIES

COUNTY	PERMIT STREAMLINING STATUS
SANTA BARBARA	Complete
SAN LUIS OBISPO	Complete
MONTEREY	In progress
SANTA CRUZ	Complete
SAN BENITO	Complete
VENTURA	Complete

Updated April 11th 2023
Source: https://california.maps.arcgis.com/apps/webappviewer/index.html?id=5b34002aaffa4ac08b84d24016bf04ce

EV CHARGER PAYMENT SYSTEMS

Different payment systems to use EV chargers can cause confusion and unintended barriers. At a minimum, this process must process the transaction while not creating a barrier for drivers to use the charging equipment. EV charging payment systems may involve the following elements in terms of how customers pay for EV charging:

- Different fee structures
- Different ways to pay e.g., using cash/debit, credit card, plan/program
- Different technologies to pay e.g., contact vs contactless

The payment options can generally fit into the following categories and again, some may or may not be required by state or federal regulation:

- Card-based: Credit card, pre-paid / debit card
- Radio-frequency identification (RFID)
- QR code scan: Scanning a QR code at the charger brings drivers to the payment portal
- Mobile app: Payment through a mobile application.
- *E-currency:* Apple Pay, Google Wallet, PayPal, Venmo, integrated charger, etc. serves as an ID and payment channel. Users, once configurated in the back end, can simply plug in at compatible chargers and automatically be billed for the charger use.[1]

[1] Plug and Charge. https://www-caranddriver-com.cdn.ampproject.org/c/s/www.caranddriver.com/news/amp35044132/plug-and-charge-ev-charging-mustang-mach-e/

CENTRAL COAST ZERO EMISSIONS VEHICLE STRATEGY RECOMMENDATIONS

Through research, stakeholder and public engagement and technical analysis of current and needed infrastructure, the project team has compiled the following recommendations for the Central Coast Zero Emissions Vehicle Strategy recommendations:

- Coordinate cooperative ZEV planning
- Prioritize ZEV infrastructure installation at identified locations
- Providing effective education and outreach
- Provide education on, and choose simple EV charger payment systems
- Addressing Grid and Transformer Constraints
- Serving DAC, MFH and drivers without home charging
- Addressing climate change impacts on resiliency and EV charging
- Engage and collaborate in ongoing ZEV initiatives
- Conduct Further collaborative planning studies
- Leverage local jurisdiction planning processes
- Track funding opportunities and prepare for applications

CREATE A COOPERATIVE ZEV PLANNING CENTRAL COAST COMMITTEE

Due to the nature of transportation, planning for the ZEV transition will need coordination across borders and boundaries of counties, cities, utility service territories, transit agencies and more. For this reason, ZEV planning must be collaborative. It is recommended that a Mega-Region Central Coast Committee for Advancing ZEVs be established. The committee would coordinate planning and funding opportunities and efforts for expanding ZEV technology adoption moving forward. The Mega Region Committee should meet quarterly. Semi-annually the meeting should include stakeholders. Some of the goals and activities of the committee could include:

- Providing important data that helps member counties, cities, and communities be more competitive for ZEV-related grants and programs and collaborating on grant and funding opportunities where appropriate
- Measuring progress toward increasing the number of charging stations in desired areas
- Measuring and recording equity impacts
- Measuring progress toward ZEV adoption by vehicle class and type
- County or corridor specific goals
- Estimating GHG reduction

PRIORITIZE EV CHARGING INFRASTRUCTURE DEPLOYMENT AT SPECIFIC LOCATIONS

The results from the existing conditions analysis, future ZEV Infrastructure needs analysis, and gap analysis were coupled with big data purchased from Streetlight Data, business data obtained via ESRI Business Analyst, the outreach data obtained via public meetings, stakeholder meetings

workshops, focus groups, and the Social Pinpoint site, to create a siting analysis seeking to identify were DCFC EV infrastructure is most needed to support interregional travel.

Because this study is focused on interregional travel and the unincorporated portions of the study area counties, site prioritization was limited to locations adjacent to (within one mile) highway (US highway and California state route) interchanges outside of incorporated cities.

Based on this siting analysis the recommended locations for additional charging infrastructure are summarized in **Table 4.** This list includes the top 20 ranked locations based on the analysis, plus 12 additional locations to ensure that each county in the study area is represented by at least five potential locations. This list does not represent a prescriptive list of locations for additional infrastructure, rather it represents potential locations distributed over all counties participating in this study.

TABLE 4: RECOMMENDED CHARGING LOCATIONS

#	LOCATION	COUNTY	STUDY AREA RANK	COUNTY RANK	DAILY TRAFFIC VOLUME
1	US 101 AT SR 154 (SAN MARCOS PASS ROAD)	Santa Barbara	1	1	47,342
2	STATE ROUTE 1 AT HIGHLAND DRIVE	San Luis Obispo	2	1	41,913
3	STATE ROUTE 1 AT SOQUEL DRIVE	Santa Cruz	3	1	44,497
4	US 101 AT WEST TEFFT STREET	San Luis Obispo	4	2	39,280
5	US 101 AT TURNPIKE ROAD	Santa Barbara	5	2	38,641
6	STATE ROUTE 1 AT STATE PARK DRIVE	Santa Cruz	6	2	33,248
7	US 101 AT STATE ROUTE 146	Monterey	7	1	22,033
8	US 101 AT SANTA ROSA ROAD	Santa Barbara	8	3	21,061
9	US 101 AT ESPINOSA ROAD	Monterey	9	2	20,383
10	STATE ROUTE 156 AT CASTROVILLE ROAD	Monterey	10	3	17,486
11	STATE ROUTE 156 AT STATE ROUTE 183	Monterey	11	4	15,164
12	STATE ROUTE 1 AT 22ND STREET	San Luis Obispo	12	3	29,716
13	STATE ROUTE 1 AT RIO DEL MAR BOULEVARD	Santa Cruz	13	3	28,251
14	US 101 AT LAS TABLAS ROAD	San Luis Obispo	14	4	31,205
15	US 101 AT STATE ROUTE 156	Monterey	15	5	16,035
16	US 101 AT COAST VILLAGE ROAD	Santa Barbara	16	4	20,312
17	US 101 AT SANTA MARIA WAY	Santa Barbara	17	5	25,319

#	LOCATION	COUNTY	STUDY AREA RANK	COUNTY RANK	DAILY TRAFFIC VOLUME
18	US 101 AT SAN MIGUEL CANYON ROAD	Monterey	18	6	15,283
19	STATE ROUTE 1 AT STATE ROUTE 68	Monterey	19	7	18,914
20	US 101 AT VINEYARD DRIVE	San Luis Obispo	20	5	25,418
21	STATE ROUTE 152 AT HOLOHAN ROAD	Santa Cruz	24	4	14,139
22	STATE ROUTE 9 AND BIG TREES PARK ROAD	Santa Cruz	26	5	15,025
23	STATE ROUTE 33 AND MEINERS ROAD	Ventura	30	1	16,965
24	STATE ROUTE 33 AT VILLANUEVA ROAD	Ventura	34	2	16,680
25	STATE ROUTE 33 AT STATE ROUTE 150	Ventura	35	3	16,435
26	STATE ROUTE 33 AT OAK VIEW AVENUE	Ventura	38	4	13,341
27	STATE ROUTE 33 AT VALLEY MEADOW DRIVE	Ventura	44	5	14,673
28	US 101 AT CHITTENDEN ROAD (SR 129)	San Benito	104	1	2,001
29	US 101 AT ANZAR ROAD	San Benito	106	2	1,892
30	STATE ROUTE 156 AT UNION ROAD	San Benito	149	3	1,681
31	STATE ROUTE 156 AT SAN JUAN ROAD	San Benito	151	4	1,582
32	US 101 AT BETABEL ROAD	San Benito	156	5	765

CCZEVS Added Site Locations

Given that the CCZEV siting analysis oriented towards NEVI criteria and factor weightings, the siting outcomes tended to cluster locations near more developed unincorporated areas (i.e., areas adjacent to incorporated cities). Consequently, geographic gaps in the US and State Highway system in the study area remained. To remedy this, an additional set of locations were identified to augment the primary analysis. Locations were selected based on potential to serve interregional travel, geographic gap (i.e., range anxiety potential), potential for a desirable and safe charging location, including but not limited to existing amenities (restaurants, bathrooms, and parking) and nearby attractions such as state or national parks. The added locations are summarized by county below.

- Santa Cruz County
  - State Route 1 at Davenport Avenue
    - Location in the town of Davenport
    - Multiple food and retail establishments in local proximity
- Monterey County
  - State Route 1 and Coast Ridge Road
    - Location in Big Sur

        - Multiple lodging opportunities including hotels and campgrounds
        - Existing Tesla Superchargers - appropriate for non-Tesla chargers
    - State Route 1 at Gorda
        - Fills large gap between San Luis Obispo County line and Big Sur
        - Location of existing resort
    - State Route 1 at Carmel Valley Rd. (Carmel-By-The-Sea)
        - Location of the city of Carmel-by-the-Sea
        - Tourist destination and shopping
        - South of the State Route 1 and State Route 68 interchange
    - US 101 at Main Street
        - Location in town of Chualar
        - Serves underserved communities in inland Monterey County
        - No existing EV charging stations - mid-way between Gonzales/Salinas stations
- San Benito County
    - State Route 25 and State Route 146
        - Adjacent to Pinnacles National Park entrance
        - No existing charging infrastructure nearby
        - Serves rural San Benito County
- San Luis Obispo County
    - State Route 1 at Hearst Castle Road
        - Large tourist destination
        - Current charging near this location is Tesla Destination chargers (Level 2)
    - US 101 at Tenth Street
        - Location in town of San Miguel
        - Fills gap on US 101 between Paso Robles and King City (in Monterey County)
        - Location of Mission San Miguel and multiple other amenities
    - US 101 at State Route 58
        - Location in town of Santa Margarita
        - Charging access for vehicles to/from eastern county and Central Valley
        - Multiple amenities in Santa Margarita
- Santa Barbara County
    - US 101 at El Capitan State Beach Road
        - Access to popular El Capitan State Beach
        - Multiple campsites and recreational opportunities
        - Fills charging gap west of metro Santa Barbara and Goleta
    - US 101 at Padaro Lane
        - Location near town of Carpinteria
        - Fills charging gap between Carpinteria and Santa Barbara
        - Near multiple tourist destinations and attractions

    - US 101 at Gaviota Rest Stop[2]
        - Potential for Level 2 charger at Caltrans rest stop
        - Fills gap between Goleta and Buellton
- Ventura County
    - US 101 at Bates Road
        - Adjacent to Rincon Point Park
        - Adjacent amenities and attractions

PROVIDE EFFECTIVE EDUCATION AND OUTREACH

Media channels already used by these organizations can be utilized to spread the word via social media, the web and in-person events. DKS developed a ZEV FAQ that can be used in person, on the web and can be linked in social media. This can be found in **Appendix VI**.

ZEV focused events can also be a great way to spread the word and give the public a chance to experience ZEVs firsthand. A few events already occur annually and can provide an easy way to get started either on new events or supporting events being planned by others. National Drive Electric Week[3] occurs in late September-early October and consistently holds events across the country. They provide media packages, logos, and limited event promotion. Drive Electric Earth Day is another similar national campaign occurring on Earth Day[4] in April. Both events may consist of Ride and Drives where individuals can test drive or take a ride in a ZEV or other gatherings such as ZEV "tailgates". Either are opportunities to educate the public as well as bring in the expertise and enthusiasm of current ZEV drivers.

The level of outreach and education performed can be tailored to each organization. Some may have the bandwidth to do regular ride and drive events and spread the word at community events and others may only be able to share information online and through social media posts. Any level of engagement will support ZEV adoption to some extent. **Chapter 3** provides more details on providing effective outreach under the recommendations section.

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[2] Federally funded highways do not allow commercial activities at highway rest stops due to regulatory policy. Since most EV chargers are privately owned and charge a fee for use (much like gas stations), they are considered "commercial activity" and therefore prohibited. As a result, any chargers installed at the Gaviota Rest Stop would need to provide free charging. Due to this, the original site recommendations did not include rest stops like Gaviota to avoid implying responsibility on behalf of CalTrans. However, CalTrans has shown its support for chargers at rest stops in recent discussions. They have stated that due to the restrictions on commercial activities, many of these chargers utilize solar to provide power. It should be noted, however, that solar does not provide charging speeds that meet NEVI standards. In addition, as mentioned previously, the scope of this study adhered to NEVI criteria, which focus on highway interchanges and identified 1-mile buffer areas rather than specific sites to allow for flexibility.

[3] National Drive Electric Week: https://driveelectricweek.org/

[4] Drive Electric Earth Day: https://driveelectricearthday.org/

PROVIDE EDUCATION ON, AND CHOOSE SIMPLE EV CHARGER PAYMENT SYSTEMS

Ideally, the payment process should be convenient, inclusive, reliable, secure, and cost-efficient for both the site hosts and/or charging equipment owners as well as the drivers using the chargers. When selecting EV charger payment systems, regulations will need to be followed but they should also be as simple as possible to use. Part of the education and outreach efforts around transportation decarbonization should also include education around these payment systems to allow people to feel comfortable and confident in their use.

CREATE A MID-RANGE PLANNING PROCESS FOR ZEV INFRASTRUCTURE IN PARTNERSHIP WITH UTILITIES

Electric grid capacity is not an issue unique to the Central Coast Region, or even to California. Utilities across the country are engaged in planning to manage both transportation and building electrification. The balance for electric utilities will be to determine areas most in need of infrastructure upgrades and when they will need to be upgraded to ensure the most cost-effective transition minimizing rate-pressure. Counties and municipalities can assist in this transition as well as gain information they need for their planning by working with utilities early in the process and through the site evaluation. **Chapter 3** provides details on how to work with utilities when selecting sites to install EV charging stations.

SERVING DAC, MFH & DRIVERS WITHOUT HOME CHARGING

While the focus of this study is meeting the needs of interregional travelers along major travel corridors in unincorporated areas, serving disadvantaged communities (DAC), multifamily housing (MFH) and drivers without home charging remains a substantial barrier to EV adoption. In some cases, these needs may overlap. To identify opportunities to serve all these needs, DKS has identified DACs and MFHs in the gap analysis performed for this study.

Counties and municipalities in the study area may choose to prioritize the installation of charging infrastructure in these locations. However, serving DACs, MFHs and others without home charging will take a multi-pronged approach. In some cases, the solution may not be charging infrastructure at all but zero-emission public transit, shuttle services, micro-mobility, bike lanes, and grants or financial incentives to make obtaining an electric vehicle purchase more accessible to households with limited income. It's important to note as well that not all individuals can or choose to drive. Those with physical disabilities may not be able to drive or take advantage of bike lanes or micro-mobility and increasingly, younger generations choose to forgo driving altogether[5]. Therefore, to ensure an equitable transition to zero-emission transportation, multiple modes travel will need to be decarbonized, which is beyond the scope of the Central Cost Zero Emission Vehicle Strategy at this time.

[5] Ming Zhang, Yang Li, Generational travel patterns in the United States: New insights from eight national travel surveys, https://www.sciencedirect.com/science/article/pii/S0965856421003165

ADDRESSING CLIMATE CHANGE IMPACTS ON RESILIENCY AND EV CHARGING

With the ever-increasing impacts of climate change, grid resiliency is becoming an urgent topic. Fortunately, the very technologies used to reduce carbon emissions, ZEVs and renewable energy, can also be used together to provide resiliency. Solar and wind energy provide clean electricity; however, these are intermittent resources meaning they only produce electricity when the sun is shining, or the wind is blowing. This is where battery storage, either in the form of back up batteries or by utilizing the batteries in electric vehicles with bi-directional charging can provide balance to these resources by storing energy when it's being produced by solar or wind and releasing it back to the grid when these resources are not generating electricity, but power is needed.

On a smaller scale, solar paired with battery storage or EVs with bi-directional charging and the ability to "island" or disconnect from the grid in times of power outages can provide a powerful resiliency solution. It's important to have the ability to disconnect from the grid to allow utility workers to safely work on utility equipment. For this reason, solar installations typically have an automatic cut-off during outages to keep utility workers safe, unless the system is set up to "island". There now exists many back-up battery systems that can be paired with solar. Together, these technologies could provide power to critical buildings during extended outages as well as residential homes with these systems in place.

The Central Coast member agencies, COGS and previously discussed Mega-Region Central Coast Committee can work to implement policies to encourage or even require technologies to enable islanding and back-up power. These policies could simultaneously address climate change in the reduction of carbon emissions while also preparing the region for resiliency.

CONDUCT FURTHER COLLABORATIVE ZEV PLANNING STUDIES

The CCZEVS identified a number of planning areas relating to ZEVs where further planning is needed. The project team recommends pursuing opportunities to create collaborative planning efforts that address the following topics:

- ZEV workplace infrastructure Planning
- ZEV multifamily housing infrastructure planning
- ZEV infrastructure climate adaptation and resiliency planning
- ZEV Infrastructure equity planning

ENGAGE AND COLLABORATE IN ONGOING ZEV INITIATIVES

It is recommended that jurisdictions participate in regulatory proceedings like the ones discussed in this report as much as possible to ensure their needs will be met and their unique challenges will be heard. Vehicles cross boundaries of cities, counties, states, transit authorities, utilities and more. For this reason, the decarbonization of transportation will need to be a collaborative effort with participation from all impacted parties to create a thorough picture of needs, challenges, and robust plans.

Throughout this study several ongoing initiatives have been identified relating to ZEV implementation including:

- Transit agency ZEB procurement planning
- CCCCE MHD/HD blueprint
- Central Coast Freight Study

Trade Port California is another similar planning initiative lead by Fresno COG that will be starting in the coming months.

LEVERAGE LOCAL JURISDICTION PLANNING PROCESSES

The project team recommends that partners work with local jurisdictions to leverage their planning processes to accelerate EV adoption.

Utilize Code to Increase Infrastructure

Firstly, local jurisdictions can leverage their planning authority to ensure new construction includes increased levels of EV Charging Infrastructure. The California building code requires that new buildings to include a certain percentage of parking spaces to be equipped with EV Chargers, as well as for some parking spaces to be either EV ready, or EV Capable, with different requirements depending on the number of parking spaces. There are multiple ways for local jurisdictions to require new buildings to exceed the minimum percentages set by the current building code through the adoption oof reach codes. This process allows jurisdictions to tailor how many parking stations should have EV chargers, be EV ready, or be EV capable, based on their projected EV needs.

Codes have mandatory compliance that all California jurisdictions must enforce, and some codes have voluntary compliance levels that jurisdictions can enforce or use as an incentive. The EVSE requirements have two voluntary levels called Tier 1 and Tier 2:

- Tier 1 requires that 10% of spaces are EV Capable for a property with 19 or fewer units; for properties with 20 or more units, 25% of the dwelling unit spaces must be EV Capable.
- Tear 2 applies only to properties with 20 or more units and requires the 5% of total parking spaces be EV Installed and at least one EVSE must be in a common area.

By adopting Tier 1 or Tier 2 as mandatory, or applying for a reach code, counties in the Central Coast region could increase the number of charging stations without incentives. It will reduce the costs of adding charging later. Adopting Tier 1 or Tier 2 does not require a regulatory filing.

Permit Streamlining

As discussed in the **Chapter 2.** Barriers and Gaps to ZEV Adoption, not all jurisdictions in the Central Coast Region have met permit streamlining requirements.

Ensuring that every local jurisdiction streamlines EV permitting to the fullest extent possible is critical to ensuring EV adoption in the Central Coast Region. The project team recommends The Mega-region Central Coast Committee prioritize compliance with permit streamlining in the jurisdictions that have yet to fully meet compliance. As this document once finalized will be static, the team recommends

the Mega-Region Central Coast Committee review the California Electric Vehicle Charging Station Permit Streamlining Map to review the status of each jurisdiction as it is updated.[6] The California State Building Officials (Calbo) published a set of resources for small jurisdictions that include sample forms and model ordinances for reference.

PREPARING FOR GRANT AND FUNDING OPPORTUNITIES

To prepare for grant and other funding opportunities consider the following:

- Identify sites and project stakeholders/partners ahead of time. Ensure the owner of a potential installation site is on board and an active participant in the process and make this known in the application for funding.
- Complete site evaluations as suggested previously in this chapter and complete as much of the design as possible to show you have done your due diligence and will be prepared to utilize the funding without delay. Projects should be as close to "shovel ready" as possible.
- Plan for staff to manage grant funding and complete reporting requirements and outline your plan in your funding application.
- Carefully review funding applications and requirements to ensure nothing is missed. Particularly with competitive grant applications at the federal and state level.

EXPLORE REVENUE OPPORTUNITIES

Public EV chargers can generate revenue for their owners directly through the sale of electrons to motorists charging their vehicles to cover the cost of the electricity consumed. As with any commodity, revenues from charging are a factor of supply and demand for charging as well as the costs of installed chargers and the price of electricity.

Revenues can also be generated indirectly through the sale of Low Carbon Fuel Standard credits. The Low Carbon Fuel Standard (LCFS) is a market-based approach to incentivizing clean energy administered by the California Air Resources Board[7]. The LCFS creates a marketplace where air polluters may acquire credits to continue to operate, while clean energy users sell credits to generate revenue.

[6] https://california.maps.arcgis.com/apps/webappviewer/index.html?id=5b34002aaffa4ac08b84d24016bf04ce

[7] About Low Carbon Fuel Standard. https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/about

STUDY OVERVIEW

PURPOSE AND NEED

The Santa Barbara County Association of Governments (SBCAG), San Luis Obispo Council of Governments (SLOCOG), and Association of Monterey Bay Area Governments (AMBAG) have partnered to develop the Central Coast Zero-Emission Vehicle Strategy (CCZEVS). The CCZEVS will identify electric vehicle (EV) charging infrastructure needs in the Central Coast Counties, including Santa Barbara, San Luis Obispo, Monterey, Santa Cruz, and San Benito counties as well as Ventura County. The goal of the CCZEVS is to identify future charging infrastructure siting and technology needs to accommodate future travel demand specifically for interregional motorists, regional transit services, and freight.

STUDY OBJECTIVES

Objectives of the Central Coast Zero Emission Vehicle Strategy (CCZEVS) are summarized below:

- Assess existing EV infrastructure environment in the Central Coast – with a specific focus on unincorporated rural areas between cities that experience significant interregional travel.
- Identify key challenges, gaps, and barriers to EV travel for interregional travelers including long-distance commuters; regional transit providers, freight and other users as determined through input solicited from key stakeholders.
- Identify where equity issues currently exist with access to EV charging and ensure infrastructure improvements and investments are equitable and accessible to all users including traditionally underserved populations.
- Recommend infrastructure improvements and related investments, policies and implementation strategies to promote ZEV adoption through charging infrastructure investments based on analysis, and stakeholder input. This strategy will be meant as a guide to the Central Coast region and does not make any commitments to further financing and is not legally binding.

CHAPTER 1: COMMUNITY ENGAGEMENT

This chapter summarizes the activities, results, and outcomes of the community engagement efforts related to the CCZEVS. The feedback and input from stakeholders and the public has been used to shape recommendations for the future location and allocation of electric charging infrastructure in the Central Coast, and to identify opportunities and constraints for future deployment to meet demand. The community engagement efforts began in April 2022 and were extended until November 2022 to allow for additional public input and feedback. The report provides a summary of the community engagement efforts, including stakeholder meetings, focus groups, and Social Pinpoint, along with a summary of the input received.

Please see **Appendix I** for a full report of the community engagement efforts undertaken as part of the CCZEVS.

STAKEHOLDER MEETING – APRIL 26TH 2022

In April 2022, stakeholders from multiple counties and organizations attended a virtual kick-off meeting for the CCZEVS. There were 61 attendees, and the meeting aimed to discuss the stakeholders' initial ideas about the CCZEV Strategy approach. Stakeholders suggested ways to address data gaps and barriers in the CCZEV strategy, such as including utility providers and investing in charging infrastructure in areas with fewer chargers. They also discussed equitable charging locations, permitting processes, and the potential for hydrogen fuel-cell technology and infrastructure. Recommendations included incorporating chargers in workplace locations, prioritizing shared level 2 chargers at multi-family housing (MFH), and incentivizing charger installations for property owners while streamlining the permitting process. Participants also provided feedback on the study's approach to rapidly developing technology and recommended creating a subcommittee to address hydrogen technology and infrastructure within the stakeholder group. Key themes discussed during the stakeholder kickoff meeting are provided below:

- **Data Gaps and Barriers**: Participants provided suggestions to address data gaps and barriers in the CCZEV Strategy, such as including utility providers in the engagement process, accounting for population, geographical areas, and tourism when planning for new charging stations, identifying gaps in hydrogen fueling data, identifying corridors with higher concentrations of multifamily units, referring to other studies on hotspots for multifamily dwelling units, and accounting for constraints of the existing electric grid.
- **Equitable Charging Locations:** Discussions regarding charging stations in high-density residential areas were primarily focused on incorporated areas that are outside the scope of the CCZEVS. However, factors such as land ownership and site control, and availability of electricity that affect charging coverage of regional corridors were noted. Recommendations included incorporating chargers in workplace locations, looking into more medium and heavy-duty vehicle opportunities, ensuring charging is available for low-income commuters, considering chargers in incorporated areas as travel corridors, and prioritizing shared level 2 chargers at multi-unit housing to avoid electrical service upgrade costs and demand charges.

- **Local, State and Regional Permitting:** During the meeting, several participants raised concerns about the impact of the permitting process on EV infrastructure. Important topics discussed included using the CCZEVS as a tool to help jurisdictions apply for state and federal funds, exploring ways to meet new federal funding requirements, and incentivizing charger installations for property owners while streamlining the permitting process.
- **Hydrogen Fuel-Cell Technology and Infrastructure:** During the meeting, participants inquired about hydrogen fueling infrastructure. They also discussed the study's approach to anticipating changes in rapidly developing technology and provided recommendations such as incorporating hydrogen fueling infrastructure into the study, prioritizing certain areas for stations, and creating a subcommittee to address hydrogen technology and infrastructure within the stakeholder group. Notably, hydrogen fueling stations were seen as the future for medium and heavy-duty zero-emission vehicles, including transit vehicles.

FOCUS GROUPS

To ensure stakeholder comments and feedback were captured for the entire study area, a series of virtual focus groups were held for county representatives, utility companies, and CalVans. At the beginning of each meeting, an overview of the project objective and goals was presented, and five questions related to charging infrastructure investments, incentives and disincentives for EV adoption, and advice for more EV travel were discussed. The feedback and comments from these focus groups, which took place on October 17 and October 21, 2022, are summarized in the following section.

The organizations represented at the focus groups were primarily government agencies and non-profit organizations working in California's Central Coast region, focused on transportation and environmental initiatives. They include regional transportation planning as well as local governments and transit agencies. Other organizations include clean energy and air quality agencies, advocacy groups, and utility providers.

A full list of participants is found in the full community engagement summary report in **Appendix I**. A summary of focus group discussion surrounding the five questions is summarized below.

Planned Electric Vehicle Supply Equipment (EVSE) and EV Projects

- Several cities and counties have plans to install new EV chargers to increase public access to Level-2 and DCFC charging. Monterey Bay Air Resources District has already invested a significant amount in charging infrastructure, with additional projects under development in the region.
- There is a focus on providing EV charging infrastructure in low-income areas and mixed-use developments, with some projects being funded by public-private partnerships.
- Transit agencies, including Monterey Salinas Transit District and Gold Coast Transit District, are investing in clean transit initiatives, such as purchasing electric and hydrogen fuel cell buses.
- County and regional organizations, such as Monterey County and Ventura County Transportation Commission, are exploring options for electrifying their fleets and installing EV charging infrastructure at their facilities.

- Several cities, including Santa Barbara and Santa Maria, are planning to install EVSE at public libraries, worksites, and other locations to provide access to charging for city fleet vehicles, residents, and visitors.

Incentive for EVSE and EV adoption

- The Monterey Bay Air Resources District is offering an EV incentive program to encourage the purchase of new EVs by providing a cash incentive of up to $4000 for qualifying low-income applicants, and $2000 for other residents of the county.
- The importance of placing DC fast chargers near local businesses that support the community and local economy is emphasized by some participants.
- Providing EVSE at MFHs is seen as more effective than on-route public charging stations since many county residents have long commutes for participants from some counties.
- The importance of expanding EVSE at MFH, focusing EV infrastructure investments in underserved areas, and using existing infrastructure such as gas stations for EVSE were suggested by participants.
- Cash incentives or grants would be helpful for those who live and work in San Benito County, as there is a large income gap in the county.
- Public agencies can serve as site hosts for charging stations and offer a zero-cost lease for companies to set up charging infrastructure.
- Greater community engagement and education is needed to encourage workplaces and employers to provide at-work charging facilities.
- Workplace charging infrastructure is not keeping up with demand, and incentives that encourage employers to provide on-site charging facilities would be beneficial.
- Providing more public charging infrastructure is seen as a significant incentive for those who own or are interested in owning an EV.
- Offering a site-host bonus or benefit for local agencies or employers that provide EVSE is seen as a strong incentive.

Existing Disincentives for EVSE and EV Adoption

- Lack of awareness of available incentives, high up-front cost of EVs, and limited charging infrastructure are barriers to EV adoption.
- The limited range of zero-emissions transit vehicles is a challenge for many regions, and sharing hydrogen storage infrastructure with nearby districts is one possible solution.
- Concerns about the power grid and backup power supply are a disincentive for San Benito LTA to transition to EV transit, especially in the event of a natural disaster.
- The lack of awareness of available incentives and the up-front cost of buying an EV are barriers to EV adoption, along with the lack of at-home charging infrastructure and the high cost of ongoing operation and maintenance of public charging facilities.
- The need for backup power supply, safe public charging locations, and concerns about the impact of additional EVSE on the power grid are disincentives for some transit authorities to transition to EVs.
- Long commutes and concerns about the safety of public charging locations are additional barriers.

- The lack of charging infrastructure in multi-family housing developments and designated commercial truck parking spaces is another challenge that needs to be addressed.

Additional Notes

- Hydrogen-fuel for transit is seen as a potential alternative to electric vehicles by some participants.
- Any proposed charging locations outside city limits would require coordination with the county due to Wildlife Corridor Protection and SOR.
- Locations along highway corridors, such as Piru, Oak View, and Casitas Springs, are suggested as potential charging locations for interregional travel.

UTILITY PROVIDER FOCUS GROUP

A focus group involving Utility Providers was held on October 20, 2022. The meeting was held online using Zoom. A full list of participants and a comprehensive discussion summary is found in the report in **Appendix I**, with discussion summarized below.

What EV or EVSE incentive programs are in place or planned?

- Central Coast Community Energy provides programs and technical assistance to support EV and EVSE adoption, including incentives for EVs, charging infrastructure, and DCFC installation. They are also working on a tool to assist member agencies in transitioning to all-electric fleets and implementing MD/HD EV fleets.
- Pacific Gas and Electric (PG&E) has various programs to support EV and EVSE adoption, including covering infrastructure build-out costs for qualifying individuals, providing EVSE education for schools, and launching a pre-owned EVSE rebate in 2023. They are also planning to provide level 1 and level 2 charging for underserved communities and looking at a program to install over 15,000 level-2 and DCFC chargers over 4 years to serve DAC and rural communities.

What roadblocks to EVSE installations need to be addressed?

- The City of Lompoc is facing a roadblock in upgrading or increasing transformer capacity due to a shortage of steel production. The San Luis Obispo Climate Coalition has observed that programs often ask property owners to do more than they are willing to do, except for Tesla, which only requires land and manages everything else including operation.

Additional Notes

- PG&E offers several tools to help customers plan their EV fleets and charging infrastructure. Their fleet calculator tool has received positive feedback and helps customers build out their fleet while informing them about available manufacturers. PG&E recently launched an integrated capacity analysis map that allows customers to look up transformer loads and where capacity is available. They also aim to support regional planning for new EV demand and are working on developing a system for mapping infrastructure needs on a larger scale.

CALVANS FOCUS GROUP

CalVans, a public transit agency, operates a fleet of 702 15-passenger vans that transport mainly farm workers to agricultural worksites in rural areas of Central coast counties. The vans are driven by commuters and parked at volunteer drivers' homes or worksites. In 2024, CalVans plans to acquire 283 battery-electric vans to replace or supplement its current internal combustion-powered vans, as long as 120-mile battery range-capable vehicles are commercially available by then. However, most drivers do not have access to charging facilities at home or work, so CalVans plans to use mobile charging, on-route public high-power chargers, or residential charging, such as Level 2 charging at new farmworker housing like Harvest Moon in Salinas. Workplace charging with portable solar chargers is also a possible option.

SOCIAL PINPOINT SURVEY

Social Pinpoint is an interactive digital platform that facilitates communication and collaboration through engagement tools such as online surveys and maps. It was used in the CCZEVS project to gather feedback from stakeholders and the public. The website for the project was launched in February 2022 and was open for comments until November of the same year. Users were able to provide location-specific comments and could "like" or "dislike" the comments of others. There were four types of comments that users could submit: Project Suggestions, Something I like, Request DC Fast Charger, and Request Level 2 Charger. The full report in **Appendix I** contains a list of all the stakeholder organizations that were contacted during the outreach effort for Social Pinpoint, and a comprehensive overview of comments received within each county.

The Social Pinpoint webpage was visited over 7,292 times by 3,086 unique users, and more than 1,400 comments were submitted by 346 stakeholders during the open survey period. On average, each unique user submitted 3-4 comments. The feedback received on the Social Pinpoint webpage has been sorted by county due to the large number of comments, with Santa Cruz County receiving the most (476), followed by Santa Barbara County (425), San Luis Obispo County (223), Monterey County (167), Ventura County (9), and San Benito County (17). Most comments were requests for DC Fast Chargers (667), followed by requests for Level 2 Chargers (495), and 233 miscellaneous project suggestions. A summary of comments by county as well as a full list of comments received can be found in **Appendix II**.

EQUITY THEMES FROM COMMUNITY ENGAGEMENT EFFORTS

Many comments made through Social Pinpoint regarding suggestions for electric vehicle infrastructure were centered around incorporated areas or locations that already have existing infrastructure (such as downtowns and many shopping centers). However, key themes emerged from some Social Pinpoint comments as well as the focus group discussions and are summarized below.

1. **Focus on underserved areas for EV infrastructure investments, such as low-income areas and MFH, where private companies are less likely to invest.**

Focus group participants highlighted the need for comprehensive initiatives that consider a range of stakeholders, including employees, residents, and visitors, to ensure equitable access to charging infrastructure. By targeting locations that are accessible to a diverse population, including those with

lower incomes, these initiatives could help reduce the gap in access to EV infrastructure between affluent and disadvantaged communities. Social pinpoint comments also highlighted that there is a lack of EVSE in low-income communities in many counties, as well as lack of charging options in areas with high-density housing. Other comments noted the potential for charging infrastructure to serve as an incentive for travelers to stop in low-income communities, which could help boost the local economy.

2. Providing accessible public charging infrastructure in multi-family housing developments.

Focus group participants noted that a lack of at-home charging infrastructure and reliable public charging locations near high-density housing as significant barriers to EV adoption. Some cities are exploring options to improve public charging in higher density neighborhoods, and some organizations such as CCCE plan to provide significant incentives for DCFC and mixed-use development charging infrastructure provision. This theme was also echoed by some comments in the Social Pinpoint survey, where some respondents noted a lack of charging options in areas with high-density housing and highlighting inequity in access to charging infrastructure for renters and those who don't have driveways or private parking. The suggestions for DCFC and Level 2 charging that would support neighborhoods, particularly renters and those in multifamily developments, as well as the focus on urban recreation locations that serve both visitors and residents, such as soccer fields, museums, and schools, would support equity by providing access to EV infrastructure to communities that may not have it readily available.

3. Providing financial incentives for low-income applicants to purchase new EVs and making them available for the purchase of used EVs as well.

Focus groups highlighted the upfront cost of EVs as a major barrier to many and recommended financial incentives to help offset that upfront cost as being a great incentive to improve EV adoption. Some financial incentives are already in place or under development. For instance, MBARD provides EV incentives of up to $4,000 for low-income residents to purchase new EVs. PG&E will launch a pre-owned EVSE rebate program in 2023 for customers.

4. Ensuring that public charging locations are safe and secure, particularly for those who cannot charge at home.

Concerns about safety at public EVSE is an existing disincentive according to some Focus Group participants, with one noting that those who can't charge at home or rely on public charging facilities need them to be in safe locations. Some Social Pinpoint comments highlighted concerns about security and safety when leaving an EV parked far from home due to lack of charging options, and the need for charging infrastructure in busy public spaces, such as parks and libraries, to support residents who don't have access to home charging. The suggestions for DCFC in places near neighborhoods, or in places that serve multi-purposes, would make charging more accessible to a wider range of individuals, including low-income residents and renters who may not have the option to install charging equipment at their homes.

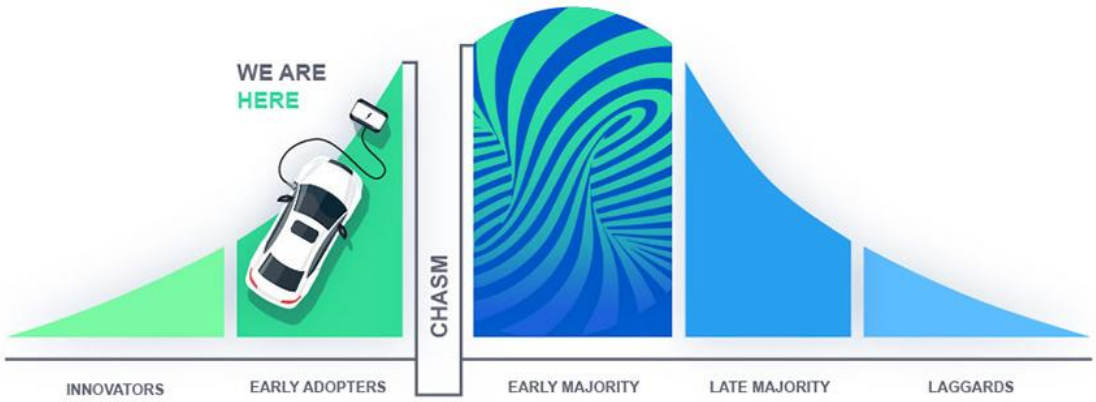
5. Providing DCFC charging infrastructure in fleet worksites and for customers in the agriculture industry, where there is currently a lack of EV supportive infrastructure.

The need for fleet and infrastructure supporting EV adoption for fleet vehicles as well as the agriculture industry was highlighted in focus group discussions with transit operators, county, and city representatives and CalVans. Some participants in the focus group noted initiatives in development that will support agriculture and fleet electrification. For example, San Luis Obispo APCD is working on a plan to fully fund chargers at public libraries and work sites throughout the county and is developing an EV car share program for agriculture, but it is still in the early community engagement stages of planning. CCCE is planning to provide significant incentives for DCFC, incentives for mixed-use development charging infrastructure provision, and DCFC infrastructure funding for customers in the agriculture industry. CalVans operates a large pool of passenger vans that transport workers from home to their worksites. Most commuters using this public service are farm workers who utilize the vanpool network to commute to farms and other agricultural worksites, throughout the Central Coast counties and many do not have charging infrastructure at home.

CHAPTER 2. BARRIERS AND GAPS TO ZEV ADOPTION

While federal and state legislation and regulations like those discussed in the existing conditions analysis of this report support the ZEV transition, they still face a steep ramp up in adoption. In the technology adoption curve, shown in **Figure 2** the "chasm" represents the jump from the "early adopter" phase to the "early majority" phase when a technology becomes more mainstream. To cross this chasm certain barriers will need to be overcome.

FIGURE 2: EV ADOPTION CURVE



Certain actions can be taken by local government to support the early adopters and implement rules that nudge others forward toward EV adoption. Based on the existing conditions assessment, community outreach, and the future infrastructure needs assessment, the project team identified the following gaps and barriers to ZEV adoption that must be resolved in order for the Central Coast Region to transition to a decarbonized transportation future:

- Lack of charging infrastructure in key areas of the region
- Lack of awareness about ZEVs and available incentives
- Electrical Grid Capacity
- Climate change impacts on resiliency and EV charging
- Deep inequities in the adoption of ZEV technologies
- Challenges in the permitting process
- Different payment systems for using EV chargers

LACK OF ZEV INFRASTRUCTURE

Inadequate infrastructure is a significant barrier to ZEV adoption, and a key focus of this study. Infrastructure gaps take shape in two different forms: First, relating to interregional travel, when gaps in infrastructure around major corridors can hinder travel and significantly slow ZEV adoption. Second, relating to the level of infrastructure needed to support growth. As shown in the in **Chapter 3**: Future EV Infrastructure Needs, the Central Coast needs to undergo a major buildout of ZEV infrastructure to support the level of ZEV adoption needed to decarbonize the transportation sector.

If the installation of new infrastructure does not occur at a quick enough pace, lack of ZEV infrastructure will become the major barrier to ZEV adoption in the Central Coast Region.

Using the existing conditions analysis, deep stakeholder engagement, and the technical transit needs assessment as a starting point, the project team analyzed projections prepared by the California Energy Commission (CEC) to perform an analysis of future infrastructure needs.

By 2030, to meet future EV demand, the CEC estimates in the member counties of the Central Coast Region a total of 27,067 public Level 2 Charging Stations will be required, as well as 1,732 public DCFC charging stations (**Table 5**). Of these charging stations, an estimated 346 DC Fast Chargers will need to be located in unincorporated areas along key state highway corridors in the Central Coast, an increase of 299 DC Fast Chargers (**Table 6**). A full analysis as well as methodology can be found in Chapter 3 as well as **Appendix V**.

TABLE 5: CALIFORNIA ENERGY COMMISSION (CEC) CHARGER NEED FORECASTS

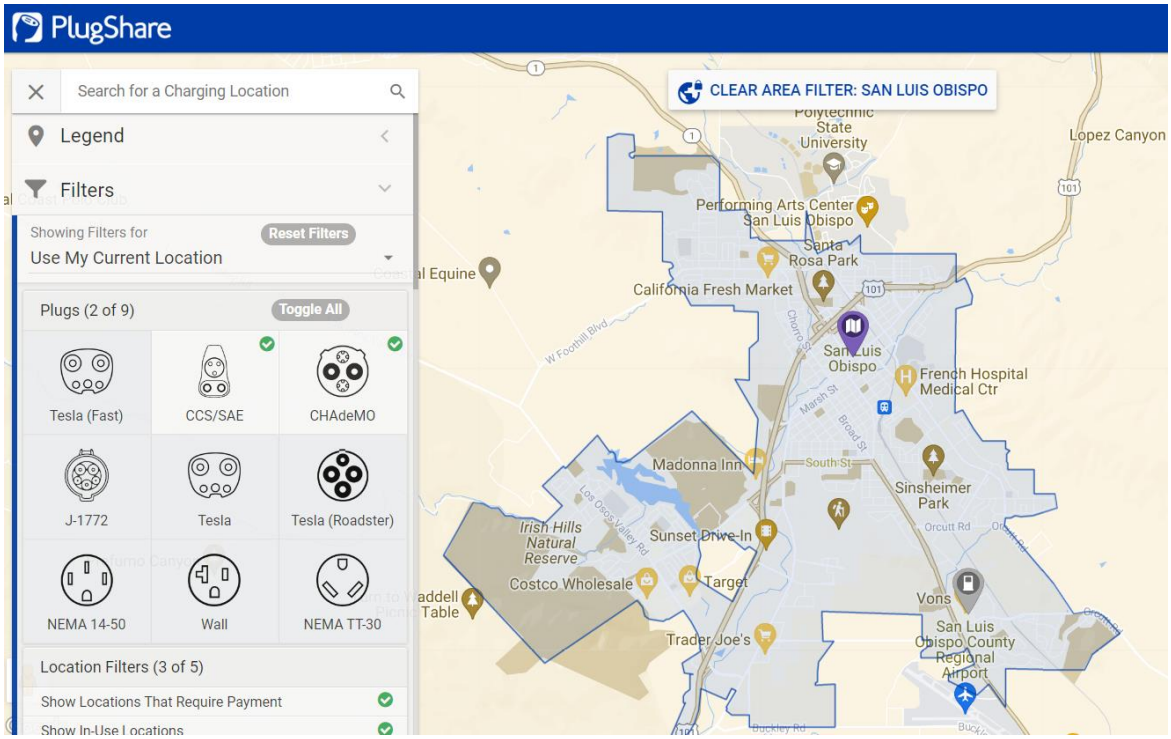
COUNTY	MFH	WORK	PUBLIC	DCFC	TOTAL
	(ASSUMED L2)			(L3)	
2030					
MONTEREY	2,997	3,396	5,196	311	11,902
SAN BENITO	313	188	502	37	1,040
SAN LUIS OBISPO	1,675	2,167	4,263	246	8,350
SANTA BARBARA	3,716	3,109	5,271	322	12,418
SANTA CRUZ	1,689	1,219	2,907	189	6,005
VENTURA	5,107	5,185	8,927	627	19,847
STUDY AREA	15,497	15,265	**27,067**	**1,732**	59,561

TABLE 6: PROJECTED DCFC BY 2030 – UNINCOPRORATED AREAS

COUNTY	COUNTYWIDE		UNINCORPORATED		
	EXISTING DCFC (AFDC 2022)	PROJECTED DCFC (CEC 2030)	EXISTING DCFC (AFDC 2022)	PROJECTED DCFC (DKS 2030)	GROWTH (DKS 2022-2030)
MONTEREY	115	311	28	62	+34
SAN BENITO	0	37	0	7	+7
SAN LUIS OBISPO	127	246	3	49	+46
SANTA BARBARA	72	322	10	64	+54
SANTA CRUZ	71	189	6	38	+32
VENTURA	128	627	0	125	+125
STUDY AREA	513	1,732	47	346	+299

While this study is focused on interregional travel and identifying gaps to focus installation along major traffic corridors, key cities also face a lack of DC fast charging infrastructure. For example, as stated in this report, San Louis Obispo has only one location with CCS and CHAdeMO. As seen in **Figure 3** this location is also a fair distance from US 101, the major highway running through San Luis Obispo. PlugShare reports only two CCS and two CHAdeMO ports are available at this location meaning only four non-Tesla fast chargers exist in San Luis Obispo.

FIGURE 3: CCS AND CHADEMO CHARGERS IN SAN LUIS OBISPO



Source: PlugShare

Conversely, San Luis Obispo has three locations with a total of 54 Tesla Superchargers meaning Tesla drivers will be far better served with fast charging than non-Tesla drivers. Due to new requirements to access the $7.5 billion in National Electric Vehicle Infrastructure (NEVI) funding imposed by the Biden administration, Tesla has announced they will be adding CCS connectors to a number of their chargers[8], it is unknown where these will be located at this time.

[8] Reuters, *New Biden EV charger rules stress Made In America, force Tesla changes*

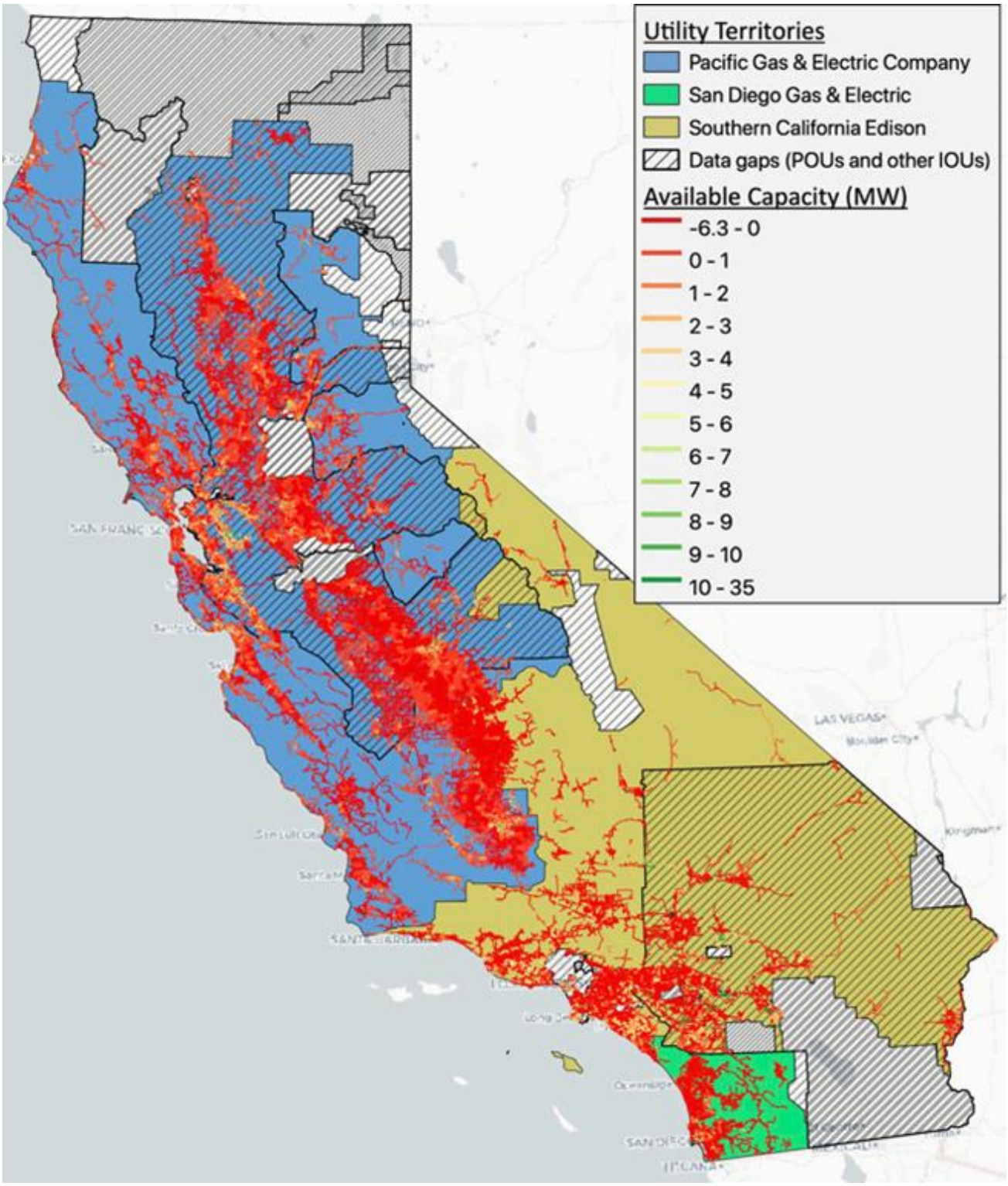
LACK OF AWARENESS ABOUT ZEV TECHNOLOGIES

Another frequent challenge with ZEV adoption is limited awareness about zero emission vehicles themselves. This includes knowledge about the vehicles and how they work, the distance they can drive and where and how they can be fueled. Many are also unaware of available incentives to purchase ZEVs. This includes both for personal use and for fleets that are mandated to transition to ZEVs. This barrier does not affect every community in the same way and can be compounded by traditional communication barriers such as literacy, access to technology, and language barriers. To build out the needed infrastructure to support ZEVs, significant workforce development also needs to occur, which is another area where awareness will need to be increased.

ELECTRICAL GRID CAPACITY

The capacity of the electric grid to support increased levels of ZEV infrastructure is one of the key barriers to ZEV adoption that urgently needs to be addressed and planned for. This barrier is one of the main topics that was mentioned across every outreach focus group and is an especially important concern for rural communities. This is such an important barrier because ZEV infrastructure projects that require upgrades to the local grid infrastructure can run into significant costs and lengthy time delays. Projects relating ZEV infrastructure for heavy duty vehicle ZEV infrastructure such as for transit buses, are especially vulnerable to this barrier. As illustrated below in **Figure 4**, the capacity of California's electrical grid varies widely by electrical utility service territory and geography. This is especially true during peak demand periods in the evening hours when power demand spikes and solar power production has waned for the day.

FIGURE 4: CALIFORNIA ELECTRICAL CAPACITY (SOURCE: NREL)



CLIMATE CHANGE IMPACTS ON RESILENCY OF ZEV INFRASTRUCTURE

A key barrier to ZEV adoption is that the climate vulnerability and risks associated with the transition to ZEV transportation system have not yet been studied. As highlighted by the recent winter storms, the Central Coast is vulnerable to multiple climate change risks such as sea level rise, extreme weather, and wildfires. Many of these events disrupt the electric grid, place deep risk on transportation infrastructure, and impact vulnerable communities the most. Unfortunately, ZEV charging infrastructure in the Central Coast is currently exposed to unknown climate risk. Exposure to climate risk also has the potential to significantly slow the buildout of ZEV infrastructure.

DEEP INEQUITIES IN THE ADOPTON OF ZEV TECHNOLOGIES

While the focus of this study is meeting the needs of interregional travelers along major travel corridors in unincorporated areas, both the existing conditions report and the community engagement have revealed deep equity considerations, especially relating to serving underserved communities and residents of multi-family housing. The lack of access to charging for these populations is a substantial barrier to EV adoption and needs to be addressed so that ZEV charging infrastructure can be equitably distributed throughout the Central Coast.

PERMITTING

Even after identifying the need and locations for charging infrastructure, permitting can be yet another barrier to installing the equipment and electrical infrastructure. For this reason, streamlining the permitting process to make it as easy as possible can be a simple and cost-effective solution to support the installation of EV charging infrastructure.

In recognition of this, AB 1236 and AB 970 require that local jurisdictions implement streamlined permitting for EV charging stations by implementing at least six of seven criteria:

1) Add a city ordinance to codify this regulation.
2) Make a checklist available from a website for expedited EV charger installations.
3) Administrative approval of permits
4) Permits can only be disapproved for Health and Safety reasons.
5) Permit applications can be requested electronically, and electronic signatures are accepted.
6) Permits cannot be issued conditionally upon approval by an association.
7) If any deficiencies are found, all deficiencies will be noted in a single deficiency notice.

The existing conditions analysis of this report (**Appendix III**) expands further on permit streamlining. **Table 7** identifies the streamlining status of each county in the Central Coast study area at the time of this writing. Some jurisdictions within these counties have not started the permit streamlining processes or are in progress. With streamlined permitting, residents, businesses, and EV installers can more accurately predict the time and cost of installing a charging station. It also decreases the likelihood that chargers will be installed without obtaining a permit.

TABLE 7: EVCS PERMIT STREAMLINING STATUS IN THE CENTRAL COAST COUNTIES

COUNTY	PERMIT STREAMLINING STATUS
SANTA BARBARA	Complete
SAN LUIS OBISPO	Complete
MONTEREY	In progress
SANTA CRUZ	Complete
SAN BENITO	Complete
VENTURA	Complete

Updated April 11th 2023

Source: https://california.maps.arcgis.com/apps/webappviewer/index.html?id=5b34002aaffa4ac08b84d24016bf04ce

EV CHARGER PAYMENT SYSTEMS

Different payment systems to use EV chargers can cause confusion and unintended barriers. At a minimum, this process must process the transaction while not creating a barrier for drivers to use the charging equipment. EV charging payment systems may involve the following elements in terms of how customers pay for EV charging:

- *Fee structure*: Do drivers expect no fee, included fee (with parking, admission, etc.), a fixed fee (per month, per day, etc.), or a variable fee (per hour, charging session, time-of-day, etc.)?
- *Ways to pay*: How drivers may pay for EV charging, e.g., using cash/debit, credit card, plan/program (including points, subscription, payroll deduction), etc.?
- *Technology*: What technologies exist that may differentiate how drivers pay for EV charging, e.g., contact vs contactless?

The payment options can generally fit into the following categories and again, some may or may not be required by state or federal regulation:

- *Card-based:* credit card, pre-paid / debit card, charging network card using magnetic strips or smart chips. Similar to being at a gas station, drivers swipe or insert the card to access the charging services. While this can mimic the "gas station experience" drivers may be accustomed to, card readers can break more easily than other systems rendering them unusable.
- *Radio-frequency identification (RFID):* The RFID technology can be integrated with a card, mobile phone or similar device, etc. to allow contactless payment. The host requires a back-end network that links the actual payment method (credit card, bank account, etc.).
- *QR code scan:* scanning a QR code at the charger brings drivers to the payment portal on their mobile phone. This payment method can also be integrated by a mobile app that streamlines the payment process after drivers scan the QR code.

- *Mobile app:* pairing with other technology (RFID, QR code, or simply entering charger ID) to identify where drivers need EV charging services and streamline the payment process through a mobile application.
- *E-currency:* Apple Pay, Google Wallet, PayPal, Venmo, integrated charger (Tesla, Plug and Charge), etc. The e-currencies create a convenient and alternative way to pay, while at the back end of their systems they are still linked to credit cards, bank accounts, etc. E-currencies may be compatible with multiple payment channels, e.g., smartphone sensors, smartphone apps, QR code, etc., acting similar to a card-based system. In the case of the integrated charger (Tesla, Plug and Charge), the charger or EV itself serves as an ID and payment channel. Users, once configurated in the back end, can simply plug in at compatible chargers and automatically be billed for the charger use.[9]

[9] Plug and Charge. https://www-caranddriver-com.cdn.ampproject.org/c/s/www.caranddriver.com/news/amp35044132/plug-and-charge-ev-charging-mustang-mach-e/

CHAPTER 3: FUTURE EV INFRASTRUCTURE NEEDS AND RECOMMENDATIONS

Through analysis of existing charging infrastructure, identifying gaps, barriers to EV adoption, and conducting community and stakeholder engagement the DKS team has identified the following priorities for the Central Coast Zero Emission Vehicle strategy:

- Bolstering charging infrastructure in the areas where gaps exist to support interregional travel as identified in the following sections of this report.
- Balance ZEV infrastructure investment to serve historically disadvantaged communities.
- Addressing barriers to EV adoption in the region within the control of local governments.
- Identify and prepare for the optimal funding opportunities to support the installation of the charging infrastructure needed to fill the gaps in the Central Coast region.

The following chapter will identify charging infrastructure gaps, discuss ways to support disadvantaged communities in the clean transportation transition and address barriers to ZEV adoption.

INFRASTRUCTURE NEEDS ASSESSMENT

Pursuant to Governor Newsom's 2020 Executive Order (N79-20) setting targets that 100% of new cars sold in California by 2035 be ZEVs, Assembly Bill 2127 required the California Energy Commission (CEC) to prepare a statewide assessment of the charging infrastructure needed to achieve the goal of 5 million ZEVs on the road by 2030 and reduce emissions of greenhouse gases to 40 percent below 1990 levels by 2030. Executive Order N-79-20 directed the CEC to expand this assessment to support the levels of electric vehicle adoption required by the executive order. The CEC prepared a report entitled *Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment (Analyzing Charging Needs to Support Zero-Emission Vehicles in 2030)*[10] in July of 2021 to document adoption assumptions and need for charging infrastructure through 2030.

It is important to note that the CEC is updating their analysis which, at the time of this writing, should be available in the coming months. DKS met with the CEC to discuss the changes in their analysis and the CEC noted that they now have better data regarding the behavior of EV drivers which will result in more accurate numbers. For example, their previous model assumed plug in hybrid drivers would plug in as much as possible to keep their driving on battery power. However, they have discovered reality more closely matches their "lazy plug-in hybrid" scenario, where they only plug in at home. As a result, the new analysis will only include about 10% of plug-in hybrids as opposed to the 30% previously assumed. Overall, the CEC expects projected level 2 public charging numbers to be less than their previous report, DCFC to increase and for workplace and MFH numbers to slightly increase. That being said, the 2021 CEC report represents the best available data at the time of this writing. The projections produced for this report, however, should be updated when the CEC's new analysis is released.

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

Analysis from the California Air Resources Board (CARB) estimates that 8 million light-duty ZEVs and 180,000 medium- and heavy-duty ZEVs will be needed in 2030 to meet the new goal. For passenger vehicles, the CEC's report projects that over 700,000 chargers are needed to support 5 million ZEVs and nearly 1.2 million public and shared private chargers are needed to support almost 8 million ZEVs in 2030. For medium and heavy-duty charging in 2030, modeling analysis suggests that 157,000 chargers are needed to support 180,000 ZEVs.

While the CEC report focuses on charger needs statewide, the data[11] used to feed that report also includes data at a county level, so data from that report can be utilized for the CCZEVS to assist in needs analysis for the six counties included in this report. **Table 8** below summarizes the 2022 and 2030 charger estimates from CEC's forecasts. The CEC divides its forecast into four categories (Multi-family Housings (MFH), Workplace Charging (Work), Public Charging, and DC Fast Charging (DCFC)). These numbers represent forecasts countywide for each county and show that study area wide growth in charger need is estimated to increase by about 233% for Multi-family Housings, 615% for Workplace Charging, 447% for Public Charging, 405% for DC Fast Chargers, and 393% for total chargers. It should be noted that both the 2022 and 2030 numbers are forecasts. Neither of these numbers represent "on the ground" numbers of chargers.

[11] https://efiling.energy.ca.gov/getdocument.aspx?tn=238851

TABLE 8: CALIFORNIA ENERGY COMMISSION (CEC) CHARGER NEED FORECASTS

COUNTY	MFH	WORK	PUBLIC	DCFC	TOTAL
	(ASSUMED L2)			(L3)	
2022					
MONTEREY	899	471	964	60	2,394
SAN BENITO	94	37	95	12	238
SAN LUIS OBISPO	502	307	823	45	1,678
SANTA BARBARA	1,115	399	949	69	2,533
SANTA CRUZ	506	178	525	42	1,251
VENTURA	1,532	744	1,594	114	3,984
STUDY AREA	4,648	2,136	4,950	343	12,078
2030					
MONTEREY	2,997	3,396	5,196	311	11,902
SAN BENITO	313	188	502	37	1,040
SAN LUIS OBISPO	1,675	2,167	4,263	246	8,350
SANTA BARBARA	3,716	3,109	5,271	322	12,418
SANTA CRUZ	1,689	1,219	2,907	189	6,005
VENTURA	5,107	5,185	8,927	627	19,847
STUDY AREA	15,497	15,265	27,067	1,732	59,561
GROWTH (%) 2022 TO 2030					
MONTEREY	233%	621%	439%	415%	397%
SAN BENITO	234%	409%	429%	201%	337%
SAN LUIS OBISPO	233%	606%	418%	441%	398%
SANTA BARBARA	233%	678%	455%	363%	390%
SANTA CRUZ	233%	585%	454%	354%	380%
VENTURA	233%	597%	460%	450%	398%
STUDY AREA	233%	615%	447%	405%	393%

Given that this study was prepared to predominantly aid in provision of charging infrastructure for regional travel within and through the six-county study area (with a focus on the unincorporated areas of the six study area counties), the tables that follow focus on DC Fast Charging (Level 3) infrastructure to support longer distance travel. Where the CEC report and its associated data lacks detail is in infrastructure needs in unincorporated county areas vs incorporated cities. Given that the CCZEVS project study area is specifically limited to unincorporated areas and the highways that travel through them, the tables that follow estimate needs in unincorporated areas compared to the counties as a whole.

Table 9 estimates the percentage of chargers in each county that fall within the unincorporated areas of each county. Additionally, the table shows the percentage of gas stations (as identified by ESRI Business Analyst) located within unincorporated portions of each county. This data will help to estimate future needs in unincorporated portions of each county. The data shows that about 20% of gas stations are within unincorporated areas and approximately 26% of Level 2 chargers are within unincorporated areas. The table shows very different numbers for DCFC, with 20% of non-Tesla DCFC and only 4% of Tesla DCFC located in unincorporated areas. Similar to traditional gas stations, total EVSE located in unincorporated areas hovers around 20%. Based on these trends, the projections contained in this section assume that approximately 20% of future EVSE per county could be prioritized in unincorporated areas.

TABLE 9: PERCENT OF EXISTING FUELING STATIONS IN UNINCORPORATED COUNTIES

COUNTY	EXISTING FUELING STATIONS – PERCENT IN UNINCORPORATED COUNTY				
	GAS STATIONS	LEVEL 2 EVSE	NON-TESLA DCFC EVSE	TESLA DCFC EVSE	TOTAL EVSE
MONTEREY	27%	31%	44%	11%	29%
SAN BENITO	0%	0%	0%	0%	13%
SAN LUIS OBISPO	21%	41%	18%	0%	30%
SANTA BARBARA	23%	24%	8%	17%	22%
SANTA CRUZ	36%	25%	24%	0%	20%
VENTURA	4%	16%	0%	0%	12%
STUDY AREA	18%	26%	20%	4%	22%

Table 10 shows the total growth in DC Fast Chargers estimated in the CEC data, as well as the projected growth in chargers in unincorporated areas using the proportion (20%) discussed above. The table shows that, based on CEC estimates, DC Fast Chargers would total 1,732 over the entire study area by 2030, compared to 513 on the ground today. Similarly, DC Fast Chargers within unincorporated areas of the study area would total 347 by 2030, compared to 47 on the ground today. It should be noted that the CEC dataset includes estimates for 2035 in addition to 2030, and that the DCFC estimates for 2035 are significantly higher (by an order of magnitude) than those for 2030, but the CEC report is focused on a 2030 horizon and a future version of that report (under development currently with revised predictions using EVI-Pro) will document 2035 using updated projections. Therefore, it would be premature to include 2035 projections in this report.

TABLE 10: PROJECTED DCFC BY 2030 – UNINCOPRORATED AREAS

COUNTY	COUNTYWIDE		UNINCORPORATED		
	EXISTING DCFC (AFDC 2022)	PROJECTED DCFC (CEC 2030)	EXISTING DCFC (AFDC 2022)	PROJECTED DCFC (DKS 2030)	GROWTH (DKS 2022-2030)
MONTEREY	115	311	28	62	+34
SAN BENITO	0	37	0	7	+7
SAN LUIS OBISPO	127	246	3	49	+46
SANTA BARBARA	72	322	10	64	+54
SANTA CRUZ	71	189	6	38	+32
VENTURA	128	627	0	125	+125
STUDY AREA	513	1,732	47	346	+299

CCZEV STRATEGY RECOMMENDATIONS

Through research, stakeholder and public engagement and technical analysis of current and needed infrastructure, the project team has compiled the following recommendations for the Central Coast Zero Emissions Vehicle Strategy recommendations:

- Coordinate cooperative ZEV planning
- Prioritize ZEV infrastructure installation at identified locations
- Providing effective education and outreach
- Provide education on, and choose simple EV charger payment systems
- Addressing Grid and Transformer Constraints
- Serving DAC, MFH and drivers without home charging
- Addressing climate change impacts on resiliency and EV charging
- Engage and collaborate in ongoing ZEV initiatives
- Conduct Further collaborative planning studies
- Leverage local jurisdiction planning processes
- Track funding opportunities and prepare for applications

COORDINATE COOPERATIVE ZEV PLANNING

Due to the very nature of transportation, planning for the ZEV transition will take coordination across borders and boundaries of counties, cities, utility service territories, transit agencies and more. For this reason, ZEV planning must be collaborative. Beyond the development of the CCZEV Strategy, SBCAG will need to establish and lead a Mega-Region Central Coast Committee for Advancing Electromobility. The committee will need to jointly coordinate planning and funding opportunities and

efforts for expanding electric charging infrastructure moving forward. The Mega Region Committee should meet quarterly. Semi-annually the meeting should include stakeholders. Some of the goals and activities of the committee could include:

- Providing important data that helps member counties, cities, and communities be more competitive for ZEV-related grants and programs and collaborating on grant and funding opportunities where appropriate
- Measuring progress toward increasing the number of charging stations in desired areas
- Measuring and recording equity impacts
- Measuring progress toward ZEV adoption by vehicle class and type
- County or corridor specific goals
- Estimating GHG reduction

California has a number of funding programs for zero emission vehicles and infrastructure, most of which have requirements for data reporting and ensuring that data is regularly updated. Each of these information sources also provides insight into the progress of the ZEV transition. An online dashboard including this information could help paint the picture and blend in region-wide information about transit ridership, active transportation efforts, and other initiatives.

Potential sources of information include:

- CALSTART and the Center for Sustainable Energy (CSE), the two organizations that administer most rebate programs, have dashboards that show rebates and incentives by county, zip code, and vehicle type.
- The California Energy Commission's (CEC) ZEV dashboard shows ZEV vehicle registrations, charging stations, hydrogen stations, and medium-and-heavy duty deployment by county and sometimes by zip code.
- The Air Resources Board requires annual reporting about transit bus deployments with a spreadsheet of each agency bus by fuel type.
- The Governor's Office of Business Development's Permit Streamlining Map.
- The American Community Survey (ACS) from the U.S. Census Bureau gives an annual snapshot of the population statistics, including employment, housing, and modes of transportation.

CSE and CEC both use Tableau, an online platform that connects to external databases and creates visualizations. All the sources identified have spreadsheets that can be downloaded and used in other applications. Some of the sources also offer data integration so that information is automatically updated.

PRIORITIZATION OF EV CHARGING INFRASTRUCTURE DEPLOYMENT AT SPECIFIC LOCATIONS

Using the methodology described in **Appendix VII** points have been calculated for each interchange or intersection in the study area based on the weighting factors identified and locations have been ranked based on those point totals.

Of the top 20 locations within the study area, seven (7) are in Monterey County, five (5) are in San Luis Obispo County, five (5) are in Santa Barbara County, and three (3) are in Santa Cruz County. None of the top 20 study are locations are in San Benito or Ventura Counties. Additionally, of the top 20 locations within the study area, twelve (12) are located along US 101, 6 are located along State Route 1, and 2 are located along SR 156. **Figure 5** summarizes the number of "Top 20" locations along each highway and in each county. **Figure 6** summarizes the top 5-10 locations in each county of the Central Coast region.

It is important to note that these locations represent general areas that have been identified through the analysis of over 200 data points, community input and as having gaps in charging infrastructure. Actual installation sites will need to be identified based on a number of factors which will be outlined in the following section. The areas identified are a 1-mile radius and may include both incorporated and unincorporated areas, though unincorporated areas important to interregional travel have been the focus of this study. Full details on and results of the gap and siting analysis completed for this report as well as ranking tables can be found in **Appendix VII**.

FIGURE 5: TOP 20 LOCATIONS – WHOLE STUDY AREA

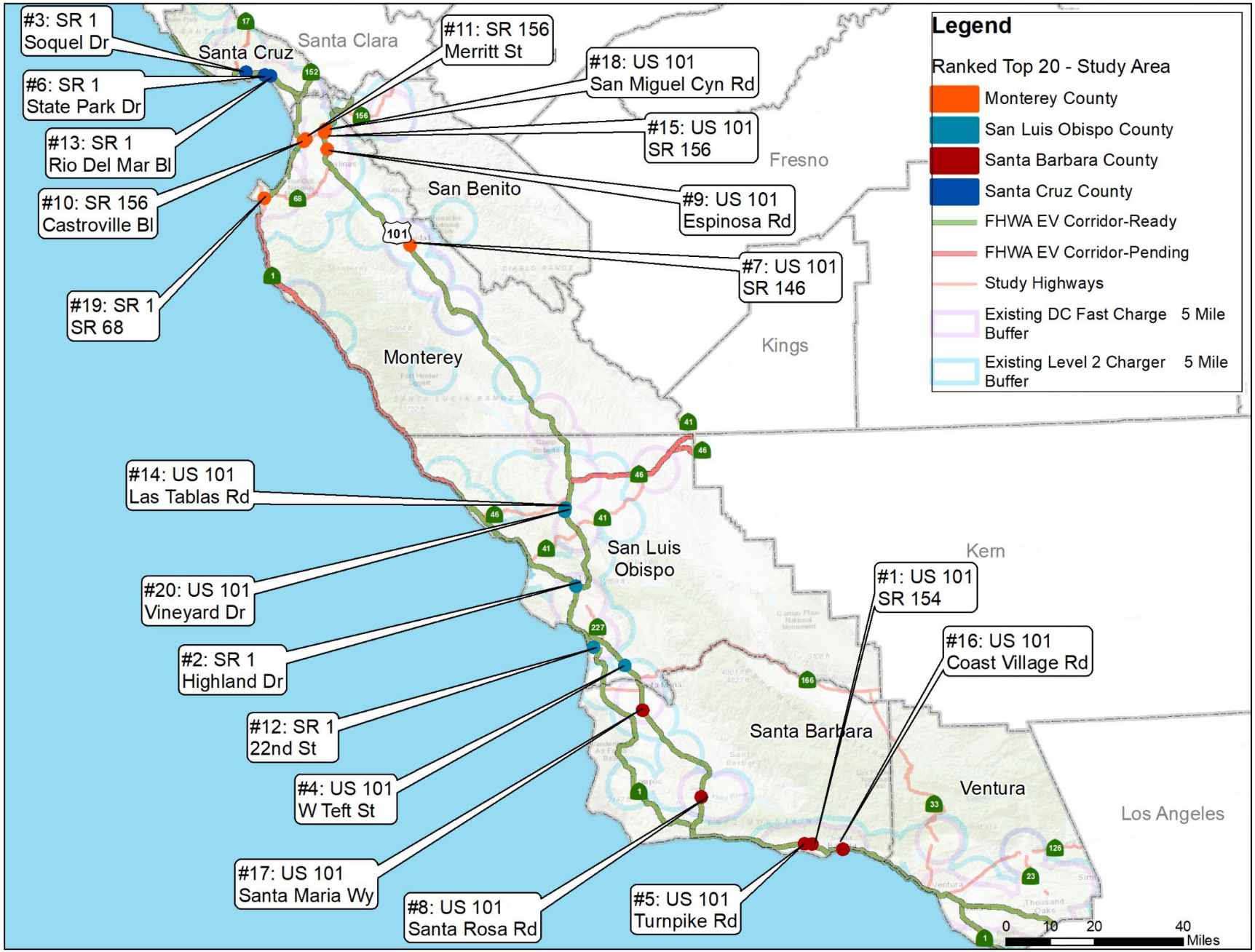
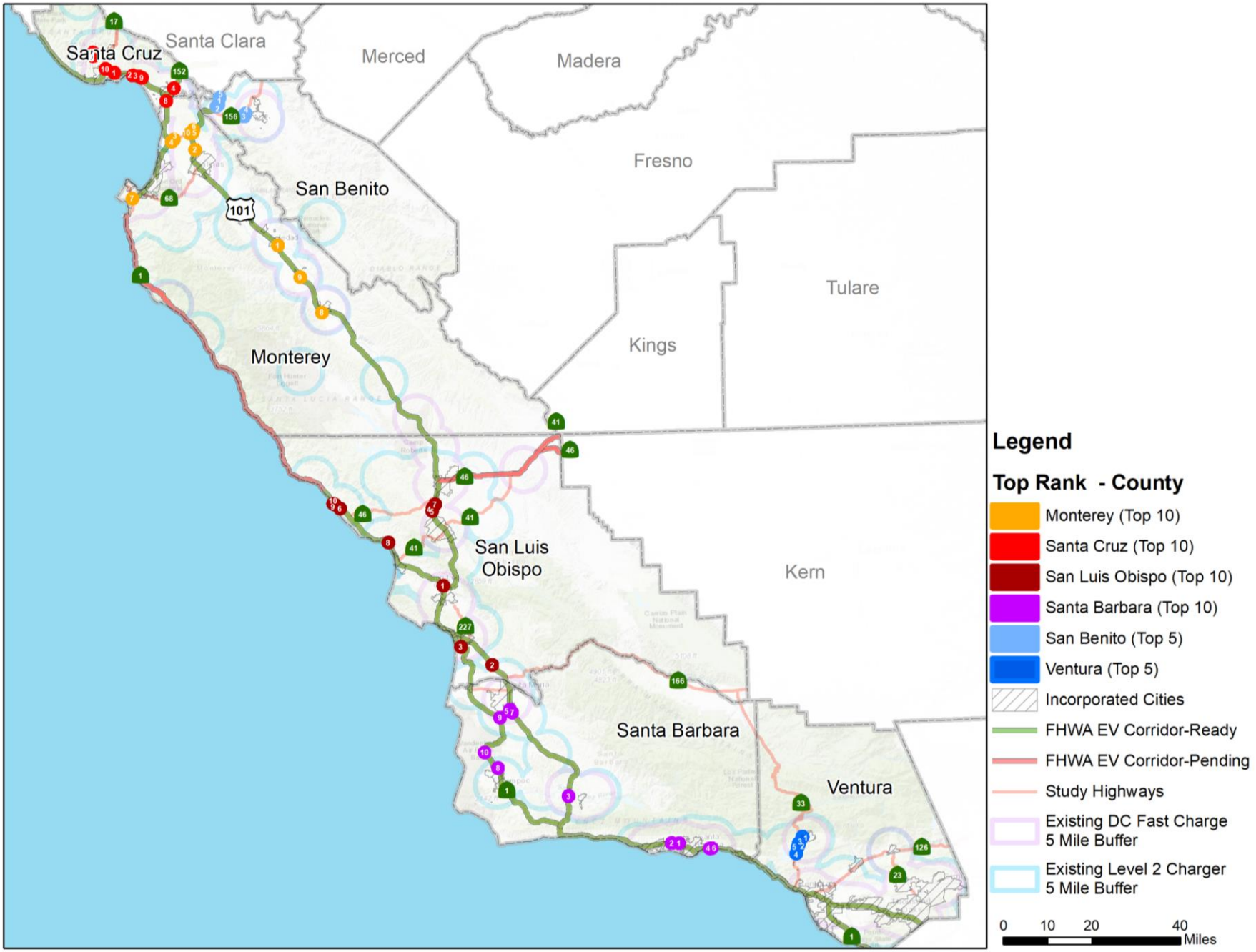


FIGURE 6: TOP LOCATIONS – BY COUNTY



CCZEVS NON-NEVI BASED SITING AUGMENT

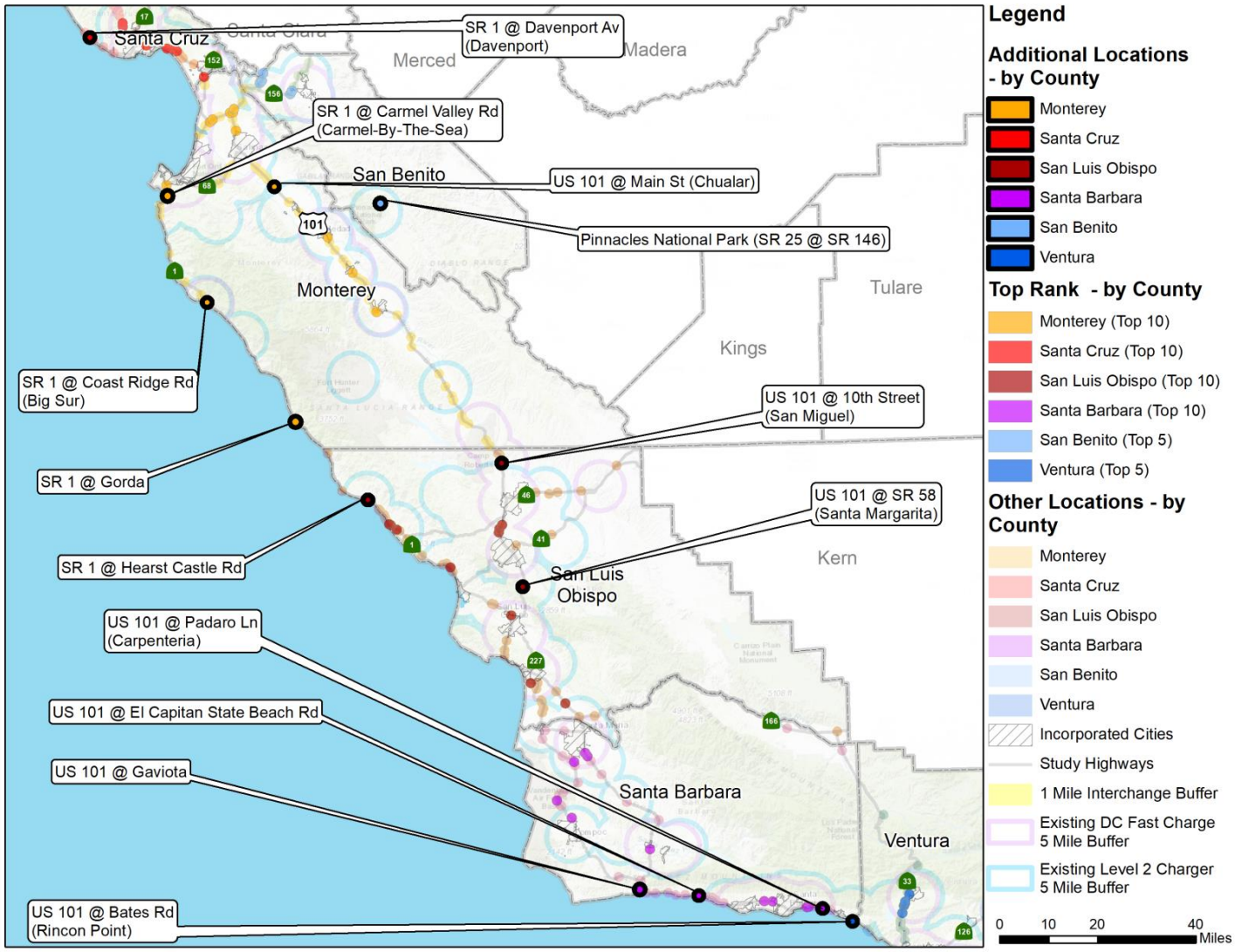
Given that the CCZEV siting analysis oriented towards NEVI criteria and factor weightings, the siting outcomes tended to cluster locations near more developed unincorporated areas (i.e., areas adjacent to incorporated cities). Consequently, geographic gaps in the US and State Highway system in the study area remained. To remedy, an additional set of locations were identified. In total, twelve additional locations were identified with locations in each study area county. Locations were selected based on potential to serve interregional travel, geographic gap (i.e., range anxiety potential), potential for a desirable and safe charging location, including but not limited to existing amenities (restaurants, bathrooms, and parking) and nearby attractions such as state or national parks. NEVI related criteria such as vehicular traffic (i.e., utilization), one-mile buffer of an interchange, presence of disadvantage communities, etc., were not considered for this separate analysis. The added locations are shown on **Figure 7** and summarized by county below.

- Santa Cruz County
  - State Route 1 at Davenport Avenue
    - Location in the town of Davenport
    - Multiple food and retail establishments in local proximity
- Monterey County
  - State Route 1 and Coast Ridge Road
    - Location in Big Sur
    - Multiple lodging opportunities including hotels and campgrounds
    - Existing Tesla Superchargers - appropriate for non-Tesla chargers
  - State Route 1 at Gorda
    - Fills large gap between San Luis Obispo County line and Big Sur
    - Location of existing resort
  - State Route 1 at Carmel Valley Rd. (Carmel-By-The-Sea)
    - Location of the city of Carmel-by-the-Sea
    - Tourist destination and shopping
    - South of the State Route 1 and State Route 68 interchange
  - US 101 at Main Street
    - Location in town of Chualar
    - Serves underserved communities in inland Monterey County
    - No existing EV charging stations - mid-way between Gonzales/Salinas stations
- San Benito County
  - State Route 25 and State Route 146
    - Adjacent to Pinnacles National Park entrance
    - No existing charging infrastructure nearby
    - Serves rural San Benito County
- San Luis Obispo County
  - State Route 1 at Hearst Castle Road
    - Large tourist destination
    - Current charging near this location is Tesla Destination chargers (Level 2)
  - US 101 at Tenth Street
    - Location in town of San Miguel

        - Fills gap on US 101 between Paso Robles and King City (in Monterey County)
        - Location of Mission San Miguel and multiple other amenities
    - US 101 at State Route 58
        - Location in town of Santa Margarita
        - Charging access for vehicles to/from eastern county and Central Valley
        - Multiple amenities in Santa Margarita
- Santa Barbara County
    - US 101 at El Capitan State Beach Road
        - Access to popular El Capitan State Beach
        - Multiple campsites and recreational opportunities
        - Fills charging gap west of metro Santa Barbara and Goleta
    - US 101 at Padaro Lane
        - Location near town of Carpinteria
        - Fills charging gap between Carpinteria and Santa Barbara
        - Near multiple tourist destinations and attractions
    - US 101 at Gaviota Rest Stop[12]
        - Potential for Level 2 charger at Caltrans rest stop
        - Fills gap between Goleta and Buellton
- Ventura County
    - US 101 at Bates Road
        - Adjacent to Rincon Point Park
        - Adjacent amenities and attractions

[12] Federally funded highways do not allow commercial activities at highway rest stops due to regulatory policy. Since most EV chargers are privately owned and charge a fee for use (much like gas stations), they are considered "commercial activity" and therefore prohibited. As a result, any chargers installed at the Gaviota Rest Stop would need to provide free charging. Due to this, the original site recommendations did not include rest stops like Gaviota to avoid implying responsibility on behalf of CalTrans. However, CalTrans has shown its support for chargers at rest stops in recent discussions. They have stated that due to the restrictions on commercial activities, many of these chargers utilize solar to provide power. It should be noted, however, that solar does not provide charging speeds that meet NEVI standards. In addition, as mentioned previously, the scope of this study adhered to NEVI criteria, which focus on highway interchanges and identified 1-mile buffer areas rather than specific sites to allow for flexibility.

FIGURE 7: CCZEVS ADDED SITE LOCATIONS



CHARGING INFRASTRUCTURE PLACEMENT (SITING) AND INSTALLATION GUIDELINES

A core activity of the Mega-Region Central Coast Committee should include planning for cost-effective investment in ZEV infrastructure. Earlier in this chapter area recommendations were identified based on a number of factors discussed in the methodology in **Appendix VII**. The committee will also need to determine factors for prioritization such as serving disadvantaged communities, residents living in multi-unit dwellings or serving high-traffic areas, factors which have also been identified and mapped as a part of this report.

To optimize operational efficiency and reduce installation costs, when planning to place or install EV chargers, consider the following factors:

Siting Chargers:

- Ease of access along key corridors, especially near intersections that have amenities for EV drivers to visit while charging. Examples of popular amenities include restrooms, popular retail venues, restaurants, libraries, community centers, tourist attractions, beaches, and parks, etc.
- Proximity to areas of concentrated high-density housing as multi-unit housing typically lacks EV charging.
- Availability of parking, preferably near a power source to minimize costs to bring power to the site such as trenching.
- Visibility of the chargers themselves which includes location in a parking lot, lighting and proximity to nearby streets or storefronts; it is not recommended they be installed in difficult to find or see areas.
- Safety of the location and of the installation including being well lit at night and ensuring charging cables will not need to run across sidewalks to be used or overlap on to sidewalks when not in use.
- Other considerations may also need to be considered such as tree roots or branches that may be disturbed and put the installation at odds with urban tree-canopy goals.

Electrical service:

- Evaluate capacity of electrical infrastructure (utility service and electrical panel) to support immediate and long-term vehicle charging needs. Identify costs for necessary electrical service upgrades in collaboration with local utilities and/or a qualified electrician.
- To help minimize costs, choose charging locations that are as close as possible to existing or proposed electrical service infrastructure and other EV charging stalls.
- Plan electrical raceway or conduit runs for electrical wiring and data cables from the electrical panel serving the chargers and consider a layout that minimizes linear conduit distances to all proposed EV charger-equipped parking spaces.
- If possible, install chargers during construction, remodels, or other facility upgrades planned to reduce costs and minimize construction impacts.
- Charger hosts should consider different strategies to separate meters for building and electric vehicle charging uses to manage peak load impact on the grid and minimize demand charges for electric vehicles.

Charger location and layout:

- If possible, surface-mount conduit along wall surfaces to avoid more costly trenching under paved surfaces. If wall mounting is not feasible, trench beneath planting strips to reduce cutting and re-paving costs and to minimize disruptions during construction.
- Identify suitable locations with smooth, plumb surfaces for wall mounted charging stations if possible or suitable floor surfaces for pedestal mount stations. If possible, use wall-mounted chargers to avoid the need for pedestals which are more costly and complex to install.
- To maximize charging capacity, consider installing dual-port pedestal mount stations with long charge cords (up to 25’). Many chargers include optional cord management systems such as retracting reels to minimize trip hazards. Depending on parking configuration, a single charger or dual head charger pair can serve up to eight parking stalls.

- To comply with the Americans with Disabilities Act (ADA), charging station configuration must meet current CA Title 24 Building Code requirements, charging stations must not block ramps or pathways, and cables should not extend across ramps, pathways or sidewalks when connected to a vehicle, sometimes called "path of travel".
- Where feasible, avoid locating chargers under trees where sap, pollen, or leaves would fall on the charging station.
- To better accommodate the varied charge port locations on different EVs, use perpendicular (90 degree) parking stalls that allow a vehicle to enter either front-first or rear-first instead of parallel or diagonal stall parking.
- Plan locations for easy and cost-effective future charger installation, typically adjacent to other EV charging stalls.

Operational considerations:

- Provide adequate lighting activated by motion sensors for safe night-time access and consider weather protection.
- Consider sighting chargers in areas with good visibility and securely affixed to the ground or wall.
- Closed-circuit television (CCTV) surveillance is an additional option, especially in low visibility public areas, to prevent theft and vandalism.
- Ensure chargers are easily identified and install signage or wayfinding as needed.
- Provide protective bollards and wheel blocks where appropriate, especially on sloped sites.

Data connectivity:

- Measure cellular signal levels to ensure adequate coverage where smart chargers will be installed. Underground or enclosed parking structures may require cellular repeaters to ensure adequate signal strength to chargers.

Once specific sites have been selected and optimal charger locations within the site have been identified the installation of chargers require a multi-step process summarized in **Table 11** below.

TABLE 11: MILESTONES TO INSTALLATION

MILESTONE TITLE	DESCRIPTION OF ACTIVITY
PLANNING & BUDGETING	• Identify charger quantities, locations, types and priorities and identify project costs.
ELECTRICAL SERVICE UPGRADE REQUEST	• Electrical infrastructure upgrades by utility (If needed)
PROJECT FUNDING	• Seek capital funding through City/County budgets or 3rd party funding sources.
CHARGER INSTALLATION DESIGN	• Prepare designs for permit approval and bid package.
PROJECT PERMITTING	• Permits submitted for review and approval.
BIDDING	• Project bids and awarded to contractor.
EV ACQUISITION	• Purchase and installation of EV chargers by selected contractor(s).
CHARGER COMMISSIONING	• Test and commission EV chargers to ensure operation.

PROVIDE EFFECTIVE EDUCATION AND OUTREACH

Media channels already used by these organizations can be utilized to spread the word via social media, the web and in-person events. DKS developed a ZEV FAQ that can be used in person, on the web and can be linked in social media. This can be found in **Appendix VI**.

ZEV focused events can also be a great way to spread the word and give the public a chance to experience ZEVs firsthand. A few events already occur annually and can provide an easy way to get started either on new events or supporting events being planned by others. National Drive Electric Week[13] occurs in late September-early October and consistently holds events across the country. They provide media packages, logos, and limited event promotion. Drive Electric Earth Day is another similar national campaign occurring on Earth Day[14] in April. Both events may consist of Ride and Drives where individuals can test drive or take a ride in a ZEV or other gatherings such as ZEV "tailgates". Either are opportunities to educate the public as well as bring in the expertise and enthusiasm of current ZEV drivers.

Organizations can also use the same media channels to bring attention to ZEV incentives to reduce the cost of purchasing the vehicles themselves or home charging stations. While some of these funding opportunities will be discussed in the next chapter of this report, a few websites can be on-going resources. These include:

[13] National Drive Electric Week: https://driveelectricweek.org/

[14] Drive Electric Earth Day: https://driveelectricearthday.org/

- Alternative Fuels Data Center Overview of Federal and State Laws and Incentives: https://afdc.energy.gov/laws
- California Governor's Office of Business and Economic Development (GO-Biz) ZEV Funding Resources library: https://business.ca.gov/industries/zero-emission-vehicles/zev-funding-resources/
- PlugStar searchable database by ZIP code: https://plugstar.com/tools/incentives
- DSIRE (database of clean energy programs): https://programs.dsireusa.org/system/program

The level of outreach and education performed can be tailored to each organization. Some may have the bandwidth to do regular ride and drive events and spread the word at community events and others may only be able to share information online and through social media posts. Any level of engagement will support ZEV adoption to some extent.

The following recommendations can support effective ZEV outreach and education as well as workforce development in the Central Coast region. At a high-level, these recommendations include using less technical language, providing materials and media in a variety of languages, training and utilizing ambassadors.

Community Engagement

Avoid Technical Language: As a first step, reducing the use of technical verbiage can be a simple change for in-person engagement, collateral, and media. Even when assumed to be simple, technical language may not be easy for people to understand, particularly with audiences where English is a second language or individuals may have limited reading skills. The use of storytelling and associations can help people understand basic concepts. For example, language like "electric vehicle like a Tesla," helps people draw the link between technology and a consumer product. Avoid acronyms, like ZEV and EVSE in outreach, which are meaningless for most people.

Avoid Heavy Use of Text: Many people in disadvantaged communities struggle with reading. Outreach, incentive, and training materials tend to be heavy with text, either in print or online. Additionally, some training programs require that applicants pass a written test or submit applications and reports in English and sometimes in Spanish. Collateral and course materials should use more images and incorporate video. Short video clips that are quick to watch have a major impact on comprehension. Use members of the community to translate materials into other languages, like Russian, Farsi, and Hindi, and ensure that the materials are culturally appropriate for the target audiences.

Benefits and challenges of ZEVs: Potential ZEV owners need to see the trade-off between today's investment and a savings that takes months or years. Materials should clearly articulate the cost of a ZEV, the comparison between the cost to fill the tank and charge a battery as well as the risks such as the need for a more robust public charging network and the challenges that may impose if one does not have access to charging at home. Online tools like the Department of Energy's Vehicle cost calculator [15]which helps individuals determine the cost benefits of switching to an EV can also be helpful to share as an educational resource.

[15] US Department of Energy Vehicle Cost Calculator https://afdc.energy.gov/calc/

Interactive events: Offering physical and interactive activities such as ride and drives, or ZEV tailgates give people firsthand experiences with ZEVs and an opportunity to talk with ZEV owners to learn about their experiences, both positive and negative. Interactive activities can also help reduce the stigma that ZEVs are inaccessible and complicated.

Workforce Development

Transparency: Workforce development participants need to see the timeline to achieve the higher incomes projected by programs. Materials also need to clearly articulate the duration of a training program, and the risks such as the starting wage and potential wage cap for a job. It can also be more effective to offer physical and interactive activities or experiences so that people can imagine themselves in a ZEV career.

Ambassadors: Ambassadors can be an effective method to recruit people into a new or unfamiliar industry, however people in the ZEV industry often do not look like the people in disadvantaged communities. For this reason, it's important that Ambassadors reflect the target community. Ambassadors, also called "Promoters," may be employed in a ZEV job, or a job related to the industry, an early ZEV adopter, and/or actively participated in a training or employment program. Ambassadors can share their experiences or even play a more direct role as a mentor or guide.

Variety in Career Options*:* Establish an ecosystem so that activities, education, and outreach provided to the community will first be validated by the network of community partners. Program managers, coaches, social workers, counselors, and educators can participate in a series of workshops designed to educate about the scope of the ZEV industry and the many career options that exist. The workshops should be combined with site visits to further illustrate how the job functions apply. An optimal site visit will be one that has an ambassador working there. This requires strong relationships to be established with business and division executive leaders.

Community Engagement Events: Community engagement events can be a hard sell for recruitment or for participating in a career development program. People may be asked to commit on the spot, which can set them up for failure if unexpected hardships or issues arise and the participant doesn't have a support system to help them through it. For this reason, career fairs, focus groups, info sessions, and workshops should be focused on education rather than recruitment. Once a participant shows interest, the role of community partners, training providers, and employers should be to fuel that interest until it becomes a passion. It also helps to establish a strong support system within the community, the program, and a potential employer to help the participant weather life's storms.

PROVIDE EDUCATION ON, AND CHOOSE SIMPLE EV CHARGER PAYMENT SYSTEMS

Ideally, the payment process should be convenient, inclusive, reliable, secure, and cost-efficient for both the site hosts and/or charging equipment owners as well as the drivers using the chargers. When selecting EV charger payment systems, regulations will need to be followed but they should also be as simple as possible to use. Part of the education and outreach efforts around transportation decarbonization should also include education around these payment systems to allow people to feel comfortable and confident in their use.

When comparing and selecting payment systems, the following considerations should be addressed[16]:

- *Open Access:* Can any driver charge (yes) or is a service subscription required (no)? Open access means everyone has a way to use the charging services, while a service subscription means users are required to pay an initial and recurring fee for charger access. In California, all publicly available charging stations must have the open access option.
- *Customer payment method:* Possible payment options include using credit cards, pre-paid / debit card, or a charging network card (using a magnetic stripe or smart chip-based card) RFID, or code scan, using a mobile phone app, or e-currency such as Apple Pay and Google Wallet, and possibly PayPal, and Venmo.
- *Price Setting Option:* Potential fee structures the owner can set, as well as the different price schemes a charger can support. For example, EV charging can be paid with a fixed or variable fee, where the variation can depend on time-of-day, day-of-week, location, triggering events, charging demand, etc. Idle fees can also be added to encourage users to move their vehicle when they finish charging, thus freeing up the charger for another user.
- *Owner payment:* Expected network and maintenance fees paid by the owner. This option means driver payments are not expected. The capital investment repayment, operating and maintenance costs that are covered by the owner may vary by charger types, especially among Level 2 or DC fast chargers.
- *Funding Conditions:* Certain sources funding and rebate sources such as CALeVIP include certain mandates such as chargers must be open to the public and payable "at the pump", etc. Obviously, compliance with these provisions is required.

ADDRESSING GRID AND TRANSFORMER CONSTRAINTS

Electric grid capacity, transformer load and other concerns related to utility infrastructure became a common theme among stakeholder focus groups. For example, the City of Lompoc reported facing a roadblock in upgrading or increasing transformer capacity due to a shortage of steel production. The San Luis Obispo Climate Coalition also observed that programs often ask property owners to do more than they are willing to do but did not provide specifics. Grid and transformer constraints continued to be a repeating theme among all focus groups conducted during this study.

To somewhat mitigate this issue, PG&E, which services most of the Central Coast region, recently launched an integrated capacity analysis map that allows customers to look up transformer loads to identify where capacity is available. They also aim to support regional planning for new EV demand and are working on developing a system for mapping infrastructure needs on a larger scale.

This is not an issue unique to the Central Coast Region, or even to California. Utilities across the country are engaged in planning to manage both transportation and building electrification. The balance for electric utilities will be to determine areas most in need of infrastructure upgrades and when they will need to be upgraded to ensure the most cost-effective transition minimizing rate-pressure. Counties and municipalities can assist in this transition as well as gain information they

[16] Source: Multiple California Government and Nonprofit Agencies, Electric Vehicle Charger Selection Guide, January 2018

need for their planning by working with utilities early in the process and through the site evaluation. Ideally, the process should look as follows:

1. Even before sites have been identified, developing a relationship with a utility representative can be a vital step.

2. Informing the local utility of the general plans for how much charging infrastructure and when they may be added will allow them to include this additional load in their long-term planning.

3. Next, potential sites for charger installation should be identified. This report has provided area recommendations based on a number of factors discussed in the methodology of this chapter. Potential sites will also need to be evaluated for:

    a. Ease of access along key corridors, especially near intersections that have amenities for EV drivers to visit while charging. Examples of popular amenities include restrooms, popular retail venues, restaurants, libraries, community centers, tourist attractions, beaches, and parks, etc.

    b. Another important consideration for locating public charging is convenient proximity to areas of concentrated high-density housing as multi-unit housing typically lacks EV charging.

    c. Availability of parking, preferably near a power source to minimize costs to bring power to the site such as trenching.

    d. Visibility of the chargers themselves which includes location in a parking lot, lighting and proximity to nearby streets or storefronts; it is not recommended they be installed in difficult to find or see areas.

    e. Safety of the location and of the installation including being well lit at night and ensuring charging cables will not need to run across sidewalks to be used or overlap on to sidewalks when not in use.

    f. Other considerations may also need to be considered such as tree roots or branches that may be disturbed and put the installation at odds with urban tree-canopy goals.

4. Select a contractor to facilitate the installation of the charging equipment and have them do an initial evaluation of the sites. This may be an electrician that works with contractors to complete civil work such as trenching, or vice versa. They will need to work with the electric utility in the next step.

5. Once potential installation sites have been identified, a contractor and the number and type of chargers to be installed is known, the work with the utility's electrical engineers should begin immediately to determine transformer capacity and location of power available to the site. This step may take time, in some cases months.

a. Note: If only a small number of level 2 chargers will be installed, it may be possible to run electricity from an existing electrical panel if capacity is available. Always check with an electrician first if this may be the case. If enough capacity exists in a customer owned electrical panel and the existing service, the utility may not need to be involved as the electrical upgrades would only occur on "customer owned equipment" rather than "utility owned equipment".

6. There will likely be some back-and-forth communication with the utility engineer(s) as a design for the site is developed. The number of chargers may need to be reduced, transformers or electrical services may need to be upgraded or it may be determined that bringing the needed amount of power to the site would be cost prohibitive at that time.

7. This process helps the prioritization of sites based on the electrical infrastructure needed and the associated costs. Simpler installations may be done first as the "low hanging fruit" while more complicated or expensive installations may need to wait for appropriate grant funding or other factors.

SERVING DAC, MFH & DRIVERS WITHOUT HOME CHARGING

While the focus of this study is meeting the needs of interregional travelers along major travel corridors in unincorporated areas, serving disadvantaged communities (DAC), multifamily housing (MFH) and drivers without home charging remains a substantial barrier to EV adoption. In some cases, these needs may overlap. To identify opportunities to serve these needs, the EV infrastructure gap analysis considered and identified DACs and MFHs.

Counties and municipalities in the study area may choose to prioritize the installation of charging infrastructure in these locations. However, serving DACs, MFHs and others without home charging will take a multi-pronged approach. In some cases, the solution may not be charging infrastructure at all but zero-emission public transit, shuttle services, micro-mobility, bike facilities, and grants or financial incentives to make obtaining an electric vehicle purchase more accessible to households with limited income. It's important to note as well that not all individuals can or choose to drive. Those with physical disabilities may not be able to drive or take advantage of bike lanes or micro-mobility and increasingly, younger generations choose to forgo driving altogether[17]. Therefore, to ensure an equitable transition to zero-emission transportation, multiple modes travel will need to be decarbonized, which is beyond the scope of the Central Cost Zero Emission Vehicle Strategy at this time.

However, to support those living in DAC and MFH communities, the analysis of existing conditions, and charging infrastructure gaps explicitly addressed the presence of DAC and MFH locations. This will ostensibly provide the counties and municipalities in the region the opportunity to concentrate or prioritize resources to aid in the zero-emission vehicle transition in these areas.

[17] Ming Zhang, Yang Li, Generational travel patterns in the United States: New insights from eight national travel surveys, https://www.sciencedirect.com/science/article/pii/S0965856421003165

ADDRESSING CLIMATE CHANGE IMPACTS ON RESILIENCY AND EV CHARGING

With the ever-increasing impacts of climate change, grid resiliency is becoming an urgent topic. Fortunately, the very technologies used to reduce carbon emissions, ZEVs and renewable energy, can also be used together to provide resiliency. Solar and wind energy provide clean electricity; however, these are intermittent resources meaning they only produce electricity when the sun is shining, or the wind is blowing. This is where battery storage, either in the form of back up batteries or by utilizing the batteries in electric vehicles with bi-directional charging can provide balance to these resources by storing energy when it's being produced by solar or wind and releasing it back to the grid when these resources are not generating electricity, but power is needed.

One example of this is a transportable turnkey vehicle charging station called EV ARC powered by a tracking solar canopy and lithium-ion battery storage developed by Beam, formerly Envision Solar International. This modular solar charging platform is designed to be operated independently from the grid or it can be grid-buffered. They require no construction nor ground disturbance and therefore can be installed and set-up quickly at a charging site without permitting and essentially no operating cost. The company's High Powered EV ARC, which can be equipped with 38-51 kWh of battery storage, 40 Amp power supply, and 8.4 kWh level-2 charge or a 12.5 kW three-phase 208 for DC fast charging. The charger can split or dynamically among one or by as many as six J1772 charging plugs. The High-Powered EV ARC is able to be daisy chained or stacked with surface cabling to support 50kwh DC Fast Charge, which is able to produce 1,000 miles per day on average, depending site location and amount of sunlight.

On a smaller scale, residential solar paired with battery storage or EVs with bi-directional charging and the ability to "island" or disconnect from the grid in times of power outages can provide a powerful resiliency solution. It's important to have the ability to disconnect from the grid to allow utility workers to safely work on utility equipment. For this reason, solar installations typically have an automatic cut-off during outages to keep utility workers safe, unless the system is set up to "island". There now exists many back-up battery systems that can be paired with solar, and the Ford F-150 Lighting has the ability to provide back-up power for a home as a standard feature (when paired with Ford's charging station).[18] This is one of the first consumer level EV based resiliency products on the market. Together, these technologies could provide power to critical buildings during extended outages as well as residential homes with these systems in place.

The Central Coast member agencies, COGS and previously discussed Mega-Region Central Coast Committee can work to implement policies to encourage or even require technologies to enable islanding and back-up power. These policies could simultaneously address climate change in the reduction of carbon emissions while also preparing the region for resiliency.

[18] https://www.ford.com/trucks/f150/f150-lightning/2022/features/ev-charging/ford-charge-station-pro/

ENGAGE AND COLLABORATE IN ONGOING ZEV INITIATIVES

It is recommended that jurisdictions participate in regulatory proceedings like the ones discussed in this report as much as possible to ensure their needs will be met and their unique challenges will be heard. Vehicles cross boundaries of cities, counties, states, transit authorities, utilities and more. For this reason, the decarbonization of transportation will need to be a collaborative effort with participation from all impacted parties to create a thorough picture of needs, challenges, and robust plans.

Throughout this study several ongoing these initiatives have been identified relating to ZEV implementation including:

- Transit agency ZEB procurement planning
- CCCCE MHD/HD blueprint
- Central Coast Freight Study

Trade Port California is another similar planning initiative lead by Fresno COG that will be starting in the coming months.

CONDUCT FURTHER COLLABORATIVE PLANNING STUDIES

The CCZEVS identified several planning areas relating to ZEVs where further planning is needed. The project team recommends pursuing opportunities to create collaborative planning efforts that address the following topics:

ZEV workplace infrastructure planning

Workplaces are the second most convenient place for EV drivers to charge after home charging, since most commuters who drive EVs to work typically park their EVs at their place of employment all day, allowing ample time for charging. However, not all employers provide charging for their employees. Barriers to workplace charging and potential solutions for expanding workplace charging would be an important topic for further research. Topics to address include commute patterns, Leased worksites, charger sharing, worksite parking and charging policies, payment for charging, workplace charging incentive programs for property owners and employers, load & charging management systems.

ZEV multifamily housing infrastructure planning

Since most EV drivers charge their EVs at home but most apartment and other multifamily housing properties lack EV chargers, lack of access to residential charging for multifamily housing residents is a major challenge for EV adoption. This is especially critical for disadvantaged populations, raising an important social equity issue. Addressing potential solutions to this critical challenge should be a priority for further research. Topics to address include addressing electrical power constraints, Residential parking and charging policies, payment for charging, residential charging incentive programs for property owners and tenants, addressing electrical load management, & charging management systems.

ZEV infrastructure climate adaptation and resiliency planning

As natural disasters become more frequent and more severe due to climate change, longer blackouts are becoming an increasing challenge to reliable power for EV charging. As Time Magazine reported in late 2022, the average electricity customer experienced seven hours and 20 minutes without power that year,[19] with more than five of those hours (72%) stemming from major weather events like hurricanes, wildfires, and snowstorms, according to the U.S. Energy Information Administration's 2022 annual power industry report.[20] The rapidly changing transportation electrification industry is responding with a variety of new electromobility technologies including microgrids composed of battery energy storage systems powered by onsite distributed energy sources including solar and micro wind. How these technologies and potentially other approaches to resilience from power outages would be appropriate topics for further research.

ZEV Infrastructure equity planning

Most existing public EV chargers are located to meet the needs of current EV drivers who as a group, have traditionally been relatively affluent and urban. As mobility transitions to electric propulsion and EVs become more economical in comparison to ICE vehicles, the EV charging needs of underserved populations needs further attention. This is especially important for economically disadvantaged populations, multifamily residents and residents of rural areas where EV charging is far less available. Therefore, the specific needs of the Central Coast region's underserved populations including super commuters, farm workers, and others should be studied in greater detail.

LEVERAGE LOCAL JURISDICTION PLANNING PROCESSES

The project team recommends that partners work with local jurisdictions to leverage their planning processes to accelerate EV adoption.

Utilize Code to Increase Infrastructure

Firstly, local jurisdictions can leverage their planning authority to ensure new construction includes increased levels of EV Charging Infrastructure. The California building code requires that new buildings to include a certain percentage of parking spaces to be equipped with EV Chargers, as well as for some parking spaces to be either EV ready, or EV Capable, with different requirements depending on the number of parking spaces. There are multiple ways for local jurisdictions to require new buildings to exceed the minimum percentages set by the current building code through the adoption oof reach codes. This process allows jurisdictions to tailor how many parking stations should have EV chargers, be EV ready, or be EV capable, based on their projected EV needs.

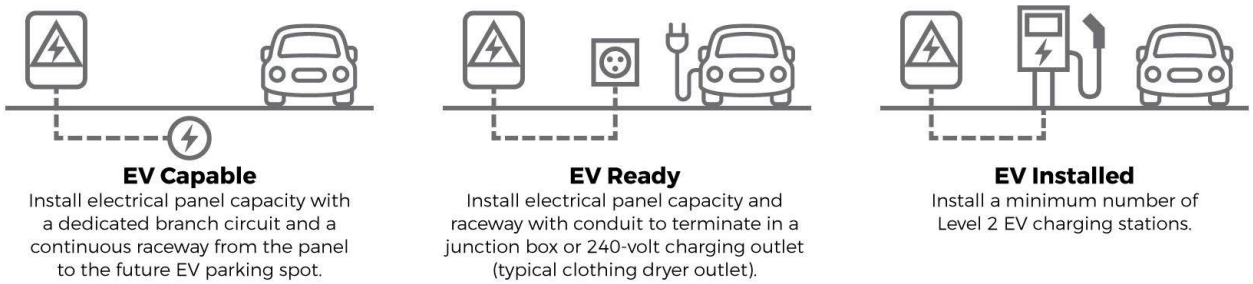
California Green Building Standards (CALGreen) require EV Capable parking spaces, meaning that the building has capacity in the electrical panel and spacing for wiring for a building inhabitant to

[19] https://time.com/6235156/extreme-weather-us-power-outages/

[20] https://www.eia.gov/electricity/annual/

install wires, circuits, and plugs for EV charging later. **Figure 8** explains the different levels of EVSE support.

FIGURE 8: DEGREES OF EVSE SUPPORT BUILDING CODE



Codes have mandatory compliance that all California jurisdictions must enforce, and some codes have voluntary compliance levels that jurisdictions can enforce or use as an incentive. The EVSE requirements have two voluntary levels called Tier 1 and Tier 2.

The 2022 CALGreen codes mandatory requirements include:

- Single-family residences, including townhomes and duplexes, be EV Capable
- Non-residential new construction and major alterations ($200,000 or 1,000 sq feet) to have up to 10% of parking spaces be EV Capable.
- New multifamily dwellings and new hotels/motels with 20 units or more must have 10% of all parking spaces EV Ready. (This includes parking spaces that are designated for guests or shared with ancillary business, like a banquet hall or a casino.)
- Tier 1 requires that 10% of spaces are EV Capable for a property with 19 or fewer units; for properties with 20 or more units, 25% of the dwelling unit spaces must be EV Capable.
- Tear 2 applies only to properties with 20 or more units and requires the 5% of total parking spaces be EV Installed and at least one EVSE must be in a common area.

By adopting Tier 1 or Tier 2 as mandatory, or applying for a reach code, counties in the Central Coast region could increase the number of charging stations without incentives. It will reduce the costs of adding charging later. Adopting Tier 1 or Tier 2 does not require a regulatory filing.

Permit Streamlining

As discussed in the **Chapter 2.** Barriers and Gaps to ZEV Adoption, not all jurisdictions in the Central Coast Region have met permit streamlining requirements.

Ensuring that every local jurisdiction streamlines EV permitting to the fullest extent possible is critical to ensuring EV adoption in the Central Coast Region. The project team recommends The Mega-region Central Coast Committee prioritize compliance with permit streamlining in the jurisdictions that have yet to fully meet compliance. As this document once finalized will be static, the team recommends the Mega-Region Central Coast Committee review the California Electric Vehicle Charging Station Permit Streamlining Map to review the status of each jurisdiction as it is

updated.[21] The California State Building Officials (Calbo) published a set of resources for small jurisdictions that include sample forms and model ordinances for reference.

Complying with the regulations that require streamlined permitting for charging stations will:

- Enable more residential, public, workplace, and multifamily charging stations because the process for getting an EVSE permit will be standardized and faster, which can result in lower costs.
- Prepare the region for NEVI funding as streamlined permitting is a requirement for this funding.
- Make entities more competitive for grants.
- Enable charging stations throughout the county.
- Decreases the likelihood of bad actors installing EV infrastructure without the proper permits, which causes significant safety hazards.
- The California State Building Officials (Calbo) published a set of resources for small jurisdictions that include sample forms and model ordinances for reference.[22]

FUNDING OPPORTUNITIES TO IMPLEMENT THE CCZEVS RECOMENDATIONS

Funding opportunities to support the implementation of the Central Coast ZEV strategy recommendations continue to grow rapidly. Covered expenses include the purchase or lease of EVs, the purchase and installation of charging infrastructure, and expenses for hydrogen fuel cell electric vehicles (FCEVs) and their refueling infrastructure. Several dozen funding opportunities exist federally as well as in each state, with eligible applicants ranging from private customers, state and local government agencies, tribal governments, school districts, transit agencies, utilities, fleet owners and operators, to vehicle dealers and charging infrastructure vendors. Funding programs typically have a fixed term and a limited allocation of funds. However, the range of funding options has vastly expanded over the past couple of years and especially in the past few months. Examples of funding opportunities can be found in **Appendix VIII** as well as summary tables for Federal, State, and local funding opportunities. Funding opportunities should be selected based on the project itself as grants often specify the type of project they will fund.

As funding opportunities frequently change, the project team also recommends regularly monitoring the resources listed below:

- Alternative Fuels Data Center Overview of Federal and State Laws and Incentives: https://afdc.energy.gov/laws
- California Governor's Office of Business and Economic Development (GO-Biz) ZEV Funding Resources library: https://business.ca.gov/industries/zero-emission-vehicles/zev-funding-resources/
- PlugStar searchable database by ZIP code: https://plugstar.com/tools/incentives
- DSIRE (database of clean energy programs): https://programs.dsireusa.org/system/program

[21] https://california.maps.arcgis.com/apps/webappviewer/index.html?id=5b34002aaffa4ac08b84d24016bf04ce

[22] https://www.calbo.org/sites/main/files/file-attachments/ab1236toolkitsmalljurisdiction.pdf?1524861090

Preparing for Grant and Funding Opportunities

To prepare for grant and other funding opportunities consider the following:

- Identify sites and project stakeholders/partners ahead of time. Ensure the owner of a potential installation site is on board and an active participant in the process and make this known in the application for funding.
- Complete site evaluations as suggested previously in this chapter and complete as much of the design as possible to show you have done your due diligence and will be prepared to utilize the funding without delay. Projects should be as close to "shovel ready" as possible.
- Plan for staff to manage grant funding and completing reporting requirements and outline your plan in your funding application.
- Carefully review funding applications and requirements to ensure nothing is missed. Particularly with competitive grant applications at the federal and state level.

SBCAG and San Luis Obispo County Charging and Fueling Infrastructure Corridor Grant application

During the finalization of the CCZEV Strategy in a proactive move to advance infrastructure development, SBCAG, AMBAG and SLOCOG submitted a joint application for a Charging and Fueling Infrastructure Corridor Grant (part of the NEVI discretionary fund) in June of 2023. SBCAG, AMBAG and SLOCOG requested $20 million for 20 different locations. At the time of this writing, the outcome of this grant submittal has not been announced.

Explore Revenue Opportunities

Public EV chargers can generate revenue for their owners directly through the sale of electrons to motorists charging their vehicles to cover the cost of the electricity consumed. As with any commodity, revenues from charging are a factor of supply and demand for charging as well as the costs of installed chargers and the price of electricity.

Revenues can also be generated indirectly through the sale of Low Carbon Fuel Standard credits. The Low Carbon Fuel Standard (LCFS) is a market-based approach to incentivizing clean energy administered by the California Air Resources Board[23]. The LCFS creates a marketplace where air polluters may acquire credits to continue to operate, while clean energy users sell credits to generate revenue.

Owners of EV chargers, utility distributors, and EV owners may be eligible for California LCFS credits, as long as the EV charging is metered, outlined in the funding section of this report (**Appendix VIII**). Since EV charging must be metered to qualify for LCFS credits, Level 1 chargers are usually not eligible unless they are individually metered like a Level 2 or DC Fast charger. The owner of a public charger can claim LCFS credits as long as the charger is publicly available. While in the case of residential charging, the base LCFS credit (like the LCFS credit from a public charger) may be claimed by the utility distributor while an incremental credit may be claimed by the EV owner as long as charging is metered.

[23] About Low Carbon Fuel Standard. https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/about

CHAPTER 4: MEDIUM AND HEAVY-DUTY VEHICLE ELECTRIFICATION

The transition of heavy-duty vehicles away from internal combustion engines primarily powered by diesel fuel to zero emissions propulsion systems primarily including battery and hydrogen fuel cell electric drivetrains is currently in the early stages. This transition is being facilitated by increasing models of zero-emissions vans, trucks, and buses, funding incentives, and regulatory mandates.

REGULATORY FRAMEWORK

The principal three regulations affecting the electrification of medium and heavy-duty vehicles in California include the Advanced Clean Trucks (ACT) regulation, Advanced Clean Fleets (ACF) regulation, and the Innovative Clean Transit (ICT) regulation. All three of these are relevant to the Central Coast ZEV Strategy as they mandate the electrification of trucks, vans, and buses operating in California. While the specific vehicle electrification mandates may not be directly relevant, the timeframe for electrification will be because it provides clarification on the deployment schedule for EV charging and hydrogen fueling infrastructure which will determine the demand for EV chargers and hydrogen fueling stations.

ADVANCED CLEAN TRUCKS REGULATION

The Advanced Clean Trucks (ACT) regulation is a manufacturer's Zero-Emission Vehicle (ZEV) sales requirement and a one-time reporting requirement for large entities and fleets. The ACT requires manufacturers who sell medium and heavy-duty vehicles to sell zero-emissions vehicles as an increasing percentage of their annual sales from 2024 to 2035. In addition, the ACT includes a reporting requirement for large fleets. The ACT regulation covers vehicles of weight Classes 2b through 8. This essentially impacts all trucks heavier than 8,500 pounds. By 2035, the ACT requirements will include:

- 55% of Class 2b – 3 truck sales must be zero emissions.
- 75% of Class 4 – 8 straight truck sales are zero emissions.
- 40% of truck tractor sales are zero-emissions.

Figure 9 shows the increasing percentages of ZEV sales required under the Advanced Clean Trucks regulation.

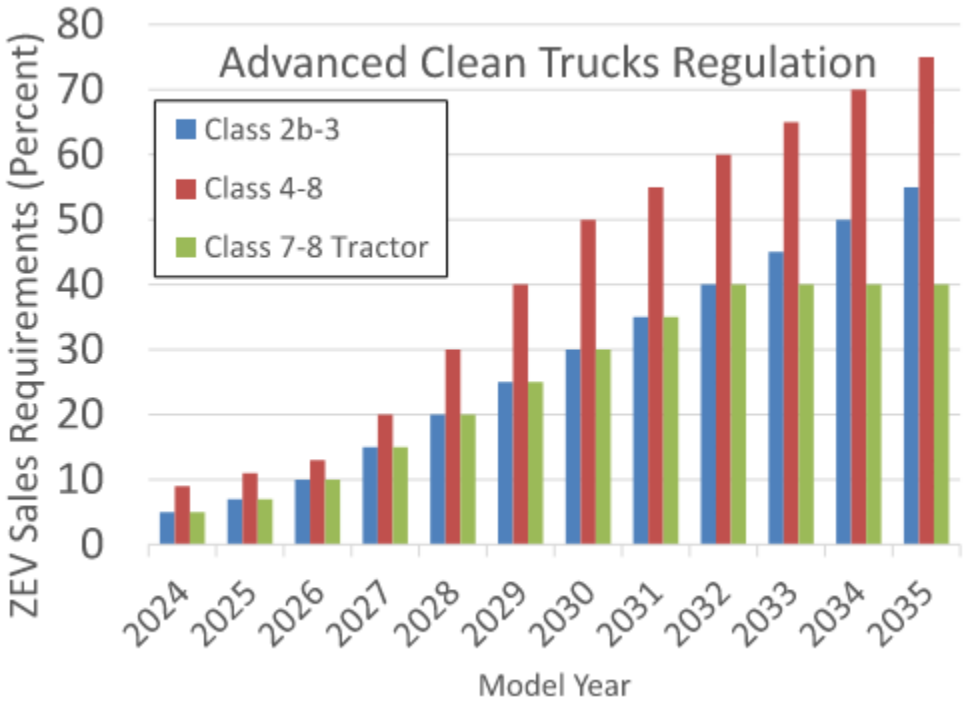


FIGURE 9: ADVANCED CLEAN TRUCKS ZEV SALES REQUIRMENTS

ADVANCED CLEAN FLEETS REGULATION

The most significant regulation impacting the transition to zero emissions medium and heavy-duty vehicle operations is California's Advanced Clean Fleets (ACF) Regulation, approved in April 2023. ACF applies to all but the smallest operators of medium and heavy-duty vehicle fleets operating on California's roads including both private companies and public agencies. Beginning in 2024, ACF mandates the transition away from internal combustion propulsion to zero emissions propulsion—either battery electric or fuel cell electric for vehicles exceeding a Gross Vehicle Weight Rating (GVWR) of 8,501 lbs. by 2042. This also includes on-road and off-road yard tractors and light-duty package delivery vehicles. The timeframe for implementation will depend on the fleet type and selected compliance pathway as explained in the following section.

High Priority and Federal Fleets

ACF prioritizes any entity with $50 million or more in annual revenue or that owns or controls 50 or more vehicles with at least one vehicle in California. ACF also applies to any federal agency that operates at least one vehicle in California. Such low thresholds mean that even many relatively small companies or agencies will need to comply, many of which may not even be large enough to operate their own charging infrastructure.

Compliance Pathway Alternatives

ACF offers two alternative pathways for high-priority and federal fleets to comply with the regulation: a Model Year Schedule and a ZEV Milestones Option, both of which seek to achieve 100% zero-emission fleet by specific deadlines for different classes of medium and heavy-duty vehicles.

Model Year Schedule: Under this pathway alternative, all medium and heavy-duty vehicles beyond their useful life must be removed from the fleet and all new vehicles must be BEV or FCEV beginning January 1, 2024.

ZEV Milestones Option: Under this pathway alternative, ZEV replacement schedules will be determined by specific vehicle groups, beginning with vans, box trucks, two-axle buses, and yard tractors which must be fully electrified by 2035 beginning in 2025 with 10% fleet electrification. Electrification of the next vehicle group consisting of work trucks, day cab tractors, and three-axle buses begins in 2027 with full electrification mandated by 2039. Finally, sleeper cabs tractors, and specialty vehicles begin electrification in 2030 with full electrification mandated by 2042.

Drayage Fleets

The ACF's requirements for drayage fleet electrification apply to all Class 7 & Class 8 trucks operating at California intermodal seaports and railyards. Beginning on January 1, 2024, all *new* drayage trucks registered in the CARB Online System must be zero-emission, and *all* drayage trucks must be full zero-emissions by 2035. This is the same year vans, box trucks, two-axle buses, and yard tractors must be fully electrified meaning the provisioning of charging and fueling infrastructure for these vehicles should be a priority for impacted jurisdictions in the Central Coast. Particularly as it often takes months or years to upgrade onsite electrical infrastructure to power large quantities of high-amperage DC Fast Chargers used by Class 7 & Class 8 electric drayage trucks.

Public Fleets

ACF also applies to medium and heavy-duty vehicles operated by cities, counties, special districts, and state agencies (i.e., entities with exempt plates from the DMV). Under the Model Year Schedule pathway alternative, 50% of medium and heavy-duty vehicle purchases from 2024 – 2026 must be ZEVs, and 100% of medium and heavy-duty vehicle purchases from 2027 and beyond must be ZEVs. Public agencies may instead opt for the ZEV Milestone Option until January 1, 2030, which may provide greater flexibility for compliance.

TRANSIT ELECTRIFICATION REGULATIONS

The California Air Resources Board (CARB) adopted the Innovative Clean Transit (ICT) regulation in December 2018. This regulation requires all public bus transit agencies in the state to gradually transition to a complete ZEB (Zero Emission Bus) fleet by 2040. This regulation is in accordance with preceding state policies SB375 and SB350. SB375, the Sustainable Communities, and Climate Protection Program, creates initiatives for increased development of transit-oriented communities, better-connected transportation, and active transportation. Relatedly, SB350 supports widespread transportation electrification through collaboration between CARB and the California Public Utilities Commission (CPUC).

ICT also states that all transit agencies are required to produce ZEB rollout plans that describe how each agency is planning to achieve a full transition to ZE fleets by 2040 as well as outlining reporting and record-keeping requirements. Specific elements required in the rollout plan include:

- A full explanation of how each transit agency will transition to ZEBs by 2040 without early retirement of conventional internal combustion engine buses;
- Identification of the ZEB technology each transit agency intends to deploy;
- How each transit agency will deploy ZEBs in disadvantaged communities;
- Identification of potential funding sources;
- A training plan and schedule for ZEB operators and maintenance staff;
- Schedules for bus purchase and lease options (including fuel type, number of buses, and bus type);
- Construction of associated facilities and infrastructure (including location, type of infrastructure, and timeline)

CARB defines large transit agencies as operating in "an urbanized area with a population of at least 200,000 as last published by the Bureau of Census before December 31, 2017, and has at least 100 buses in annual maximum service." Agencies that do not meet this definition are categorized as small transit agencies.

The ICT regulation outlines different ZEB purchase schedules that large and small agencies must adhere to. Beginning in 2021 and continuing annually through 2050, each transit agency will be required to provide a compliance report[24]. The initial report outlined the number of and information on active buses in the agency's fleet as of December 31, 2017. Subsequent reports must include transit agency information, information on each bus purchased, owned, operated, leased, or rented (including make, model, curb weight, engine and propulsion system, bus purchases, and any information on converted buses), ZEB mobility options information (if applicable), and information on renewable fuel usage (including date purchased, fuel contract number, and effective date, if applicable).

Table 12 below outlines the ZEB purchase schedule for small transit agencies for heavy-duty transit vehicles—that is, traditional 40-ft buses. Specific vehicle types, such as motor coaches, cutaways, double-decker, and 60-ft. vehicles, are exempt from this purchase schedule until 2026 or later (dependent on Altoona testing being completed). Whereas large agencies are required to start purchasing ZEBs in 2023, small agencies are exempt until 2026, when 25% of new bus purchases must be zero emission.

[24] https://ww2.arb.ca.gov/sites/default/files/2019-10/ictfro-Clean-Final_0.pdf

TABLE 12: ZEB PURCHASE SCHEDULE* FOR STANDARD BUSES**

Year	Percentage
2026	25%
2027	25%
2028	25%
2029 and after	100%

*As a percentage of total new bus purchases for small transit agencies
** Standard buses refer to 35-ft. or 40-ft. unless otherwise stated

INCENTIVES AND FUNDING

HYBRID AND ZERO EMISSION TRUCK AND BUS VOUCHER INCENTIVE PROJECT (HVIP)

The most significant funding opportunity for heavy-duty ZEVs is California's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP), administered by the California Air Resources Board (CARB). HVIP accelerates commercialization by providing point-of-sale vouchers to make the upfront cost of hybrid and zero-emission trucks and buses more affordable. At the time of this writing, funding remains open for all vehicle types. The program features two annual funding rounds and provides a point-of-sale rebate for medium- and heavy-duty vehicles, including buses, school buses, refuse trucks, step vans, straight trucks, and tractors. The program website includes a list of all eligible vehicle models, including most of the market-ready medium- and heavy-duty EVs, and incentive amounts ranging from e.g., $120,000 for many Class 7 or 8 trucks up to $375,000 for some school bus models.[25]

CLEAN TRANSPORTATION PROGRAM

The California Energy Commission (CEC) approved $2.6 billion in funding to support the deployment of thousands of zero-emission trucks, school buses, and transit buses, prioritizing communities most impacted by pollution from medium- and heavy-duty vehicles. This funding includes over $2 billion for zero-emission trucks and buses and off-road equipment including school buses, transit buses, and drayage trucks, $33 million for financing for small truck fleets transitioning to cleaner technologies, and $135 million for demonstration and pilot projects, including commercial harbor craft. ZEV Infrastructure Funding for 2022-2026 includes $1.7 billion for medium- and heavy-duty ZEV infrastructure, $90 million for hydrogen refueling infrastructure, $15 million for zero- and near-zero-carbon fuel production, and $15 million for low-carbon fuels.

[25] California HVIP: https://californiahvip.org/

TRANSIT & SCHOOL BUS ELECTRIFICATION

As the focus of this study is interregional travel, the focus for transit has been on regional service. For the purposes of this study, regional transit is defined as intercounty or intercity service that must traverse over 10 miles or more of relatively unincorporated undeveloped area. This criteria speaks to the issue of range anxiety (a common concern) which is more pronounced when traversing undeveloped areas which typically have less amenities and services available including charging infrastructure. The following section details the state of transit decarbonization in the Central Coast region as well as catalog their decarbonization plans to date. Findings regarding challenges to transit fleet electrification, future needs, and charging options have also been included. Further details on transit services in the Central Coast region and the status of their decarbonization plans can be found in **Appendix IV**.

CHALLENGES RELATED TO TRANSIT FLEET ELECTRIFICATION

There are several key challenges and risks to the regional electrification efforts of the CCZEVS transit agencies.

First is the challenge of operating range for long, intercity journeys. BEBs and to a lesser extent, FCEBs, have shorter operating ranges than fossil fuel equivalents. This means it will be harder to convert these routes to ZEBs without significant impacts on bus operations, such as midday charging/fueling, deploying more vehicles to provide the same level of service, and so on. Moreover, the range challenge is compounded by gradients and topographical challenges that worsen fuel economy and thus operating range. For example, the Cuesta Grade in San Luis Obispo is a challenging terrain along the US 101 between San Luis Obispo and Paso Robles, as well as along the US 101 between Santa Maria and Isla Vista, and steep terrain along the SR 1 between Las Cruces and Lompoc.

Second are vehicle-related challenges. While full-size 40-ft ZEBs are beginning to approach the ranges of fossil fuel equivalents, the nature of intercity operations is such that motorcoaches are generally deployed on these routes to provide enhanced customer comfort. ZE motorcoach models are rather limited and have much shorter ranges (100-150 miles) than fossil fuel motorcoaches (300+ miles). In addition, several of the agencies considered in this memo operate cutaway buses or smaller vans that carry small batteries and thus small ranges. Nonetheless, manufacturers continue to improve upon their technologies and the maturation of the market may minimize many of these challenges in the coming years.

A third challenge is charging. While some of the services described above have downtime (known in the industry as 'recovery' or 'layover' time) between runs that can be used for recharging, the agency must consider the trade-offs between operational downtime to charge, ensuring enough vehicles are available for service, and that enough time is available to charge. This last consideration will depend on the power output of the charger, as well as the state of charge of the battery. High-power chargers (150 kW+) are generally more expensive and will more quickly recharge a vehicle, but not all vehicle types may be able to accept high-power charging without specific modifications, particularly smaller cutaway vehicles, limiting the ability to 'fast charge'.

A lack of financial resources is a challenge that many transit agencies face. There are several state and federal funding opportunities available, but a full fleet transition is a costly endeavor to cover

the cost of new buses, potential facility renovations, and charging infrastructure. In addition, the operation of zero-emission regional services also poses several logistical challenges. Agencies will need to develop plans for and agree upon how to handle maintenance, operating, and electricity costs for shared fueling.

Lastly, adopting ZEB technology will require extensive operation and maintenance training. This can pose several challenges due to staffing shortages and lack of training resources, especially for rural agencies with small staff and limited capabilities.

TRANSIT CHARGING

Because transit agencies that operate battery buses depend on the availability of charging stations on a scheduled basis, transit agencies typically operate their own charging facilities. The two dominant modes of transit battery bus charging include depot charging and on-route charging.

Depot Charging: Most battery bus fleets operated by transit agencies are charged at fleet depots while parked overnight. This is when fleets have the longest available (dwell) time to charge while parked at depot facilities operated by the transit agency, typically the same depots where diesel fleets are fueled, washed, and maintained. The relatively long dwell times which occur between the times buses return to the depot from revenue service typically each night and their return to revenue service the next morning typically provide at least 6 hours of charging time, depending on the span of service for the fleet. Longer dwell times facilitate lower charging speeds or shared use of chargers by multiple battery electric buses on a rotating basis and can avoid the additional cost of demand charges by electrical utilities. Transit fleet charging speeds depend on the energy needs of the fleet and available dwell time, and multiple different charging systems are available including AC charging using J1772 connectors, DC Fast Chargers using CCS Combo connectors, overhead gantry mounted chargers, and wireless or inductive charging.

On-Route Charging: Battery bus charging facilities located along transit routes can be used to supplement depot charging, providing added range by charging while away from the depot. On-route chargers are typically located at transit passenger facilities like transit centers or other locations where buses layover between routes. Due to the limited dwell time available to buses during revenue service, on-route chargers need to provide a large amount of power in a limited amount of time, typically requiring high-power chargers. To minimize the time required to connect to chargers and minimize the physical footprint of on-route chargers, many transit agencies deploy overhead gantry-mounted chargers and wireless or inductive charging.

School Bus Electrification

School districts also operate bus fleets subject to the fleet electrification regulations previously discussed. As with transit electrification, school bus fleets typically rely on their own charging infrastructure. School bus fleet charging infrastructure is located within the fleet depot and school buses do not need or use on-route chargers because school buses have all day to layover which they do at the depot where chargers are installed. Because of the long dwell times both day and night, school buses can use lower speed chargers.

FUTURE TRANSIT ELECTRIFICATION NEEDS

The service providers outlined in this chapter are in various stages of their electrification efforts. While some have fully developed ZEB rollout plans that are being implemented, many are just starting to develop their plans and are at the beginning stages of navigating their fleet transitions. **Table 13** summarizes each provider's electrification planning status, the fuel type(s) in consideration, and the preferred method of charging.

TABLE 13: REGIONAL TRANSIT PROVIDER ELECTRIFICATION STATUS AND NEEDS

Provider	ZEB planning status	ZEB Technology	Fueling/Charging
Santa Maria Regional Transit (SMRT)	• Currently operating BEBs • ZEB rollout plan 95% complete	BEB	Charger types and locations are in development
City of Lompoc Transit (COLT)	ZEB rollout plan is in development	In development	In development
San Luis Obispo Regional Transit Authority (RTA)	• ZEB rollout plan is in development • Goal to present draft January 2023	BEB	• Primarily depot charging • Possible on-route charging
Guadalupe Transit	ZEB rollout plan in development	BEB	Depot charging
Monterey-Salinas Transit District (MST)	ZEB rollout plan complete	• BEBs identified as the preferred technology • FCEBs will be used on long-distance routes that cannot be served by BEBs	• Depot charging for BEBs • Hydrogen infrastructure is in development
SBCAG	ZEB rollout plan in development	BEB	Depot
Santa Cruz METRO	ZEB rollout plan in development	BEB	Depot charging
San Benito County	Plan to apply for funding to develop ZEB rollout plan	In development	In development
Santa Barbara MTD	ZEB rollout plan is in development	BEB	Depot
Ventura County Transportation Commission (VCTC)	ZEB rollout plan is in development	• BEB • Hydrogen	• Depot • On-route • Hydrogen fueling

Similarly, each provider has a unique fleet with varying levels of ZEB penetration. A summary of the providers' current fleet status is provided in **Table 14**.

TABLE 14: REGIONAL TRANSIT PROVIDER FLEET STATUS

Provider	Fleet providing regional service	Number of ZEBs in fleet	Number of ZEBs providing regional service
Santa Maria Regional Transit (SMRT)	• 18 diesel buses	2 35-ft. BEBs to be in service soon	None
City of Lompoc Transit (COLT)	• 10 buses rotated • 3 vans rotated	None	None
San Luis Obispo Regional Transit Authority (RTA)	• Vehicles are mixed between the local and regional services • 40-ft. diesel buses, cutaways, minivans	None	None
Guadalupe Transit	• 4 diesel buses • 1 van	None	None
Monterey-Salinas Transit District (MST)	• 4 diesel coaches	• 1 battery electric trolley • 2 30-ft. BEBs • 2 40-ft. BEBs	None
Santa Barbara County Association of Governments (SBCAG)	• 9 diesel coaches • 4 spares	1 BYD C10 2022 will be in service soon	None
Santa Cruz METRO	• 10 40-ft. diesel hybrid buses	None	None
San Benito County Express	• 5 cutaways • 4 specialized transportation	None	None
Santa Barbara MTD*	• 7 diesel buses used for Carpinteria service • 79 40-ft. buses rotated	14 BEBs - 9 additional 40 ft BEBs will be in operation in 2023	None
Ventura County Transportation Commission (VCTC)	• 20 diesel buses	5 BYD BEBs will be in operation in 2023	None

GOODS MOVEMENT

HEAVY DUTY ZEVS

Currently, there are more than 70 different models of zero-emission vans, trucks, and buses commercially available from several manufacturers. Most trucks and vans operate less than 100 miles per day and several zero-emission configurations are available to serve that need. As

technology advances, zero-emission trucks will become suitable for more applications. Major truck manufacturers including Volvo, Daimler, Paccar, and Navistar as well as numerous smaller manufacturers and upfitters have begun electric truck production or have announced plans to introduce market-ready zero-emission trucks in the near future. Both Battery Electric and hydrogen fuel cell-powered vehicles qualify as ZEVs under ACT.

Battery Electric Vehicles: The Battery Electric Vehicle (BEV) is an electric-only vehicle powered by a propulsion battery, meaning that longer ranges require larger, heavier, and more costly batteries. The vehicle batteries are recharged using dedicated, recharging stations. Class 1-6 BEVs can use both AC level 2 and DC Fast Chargers however Class 7 and 8 heavy-duty BEVs lack on-board chargers and require DC chargers. Recharging the propulsion battery requires more time than refueling a Fuel Cell Electric Vehicle (FCEV) or internal combustion engine. One of the major disadvantages posed by BEVs is purchase cost. Due to the cost of large batteries used for electric trucks, their purchase price is currently more than double the price of a comparable diesel-powered truck. Due to the weight, density, and cost of current battery technology, battery electric trucks are best suited for relatively short trips. For this reason, most truck manufacturers have focused on building box trucks for the delivery market, however, this will likely change as battery technology improves and more high-speed DC Fast Chargers for trucks are installed. These vehicles can operate in true zero-emissions mode making it relatively easy for them to obtain regulatory certification. Most major truck manufacturers are now building battery electric trucks up to class 8 including Tesla's semi with an estimated maximum range exceeding 450 miles, Freightliner's e-Cascadia equipped with up to 475 kWh batteries delivering up to 250 miles of range, Volvo's VNR electric Semi with 565 kW battery and 275 miles of range and Daimler's Mercedes-Benz e Actros with up to 310 miles of range.

Fuel Cell Electric Vehicles: Like the BEV, the FCEV is an electric-only vehicle. Instead of electricity stored in a battery, an FCEV is powered by a hydrogen fuel cell. Hydrogen fueling occurs at fueling facilities with dispensers that operate similarly to gasoline, diesel, or compressed gas which is much quicker than EV charging. Along with quicker fueling, hydrogen is a more efficient form of energy storage than electricity, allowing far greater driving range than battery-stored electricity for the same weight and volume. This allows for far fewer hydrogen fueling facilities since FCEVs can travel further between fueling than BEVs can between charging. The main disadvantage, however, is that the hydrogen fueling network is less mature with no equivalent of the existing electrical grid and far fewer existing fueling facilities. In addition, hydrogen fueling infrastructure is more expensive to build and operate than EV charging and hydrogen is currently far more expensive on a per kWh basis than electricity and will likely remain so for a some time. Regardless, the range and fueling speed benefits of hydrogen have driven Volvo, Hyundai, Hyzon, Nikola, Toyota, and many other manufacturers to produce Fuel Cell Electric trucks.

TERMINAL ACCESS ROUTES

FIGURE 10: STAA TERMINAL ACCESS SIGN

The Surface Transportation Assistance Act (STAA) of 1982 permitted motor carrier operation of 48-foot and 53-foot semi-trailers on the national highway network and allowed states to permit these "STAA vehicles" on state and local routes as well. Designation of STAA routes is premised on engineering and safety standards (i.e., adequate footprint to accommodate truck turn radius requirements, gross vehicle weight, vertical clearance height, etc.). In California, Caltrans has been administering these laws and regulations. Noncompliant portions of state highways have been classified as such by Caltrans. Caltrans policy is to upgrade these non-compliant portions of state routes to full STAA design standards when major redesign or refurbishment occurs. For local county and city roadways, an application must be made to designate a specific route as a "terminal access" route before STAA vehicles are allowed. Terminal access routes are off the National Network and provide STAA truck access to businesses (i.e., called terminals) where goods originate, terminate, or are handled in the transportation process.

The overriding goal of the STAA network is to facilitate goods movement and connectivity between the local Terminal Routes network to the National Network (i.e., interstates, freeways, and highways). The designated STAA network (shown in **Figure 11** and **Figure 12**) is located throughout the Central Coast. These include the National Network and Terminal Access Routes. Designated Terminal Access Routes include both state and locally-owned and maintained roadways.

As shown in **Figure 11** and **Figure 12** below, Terminal Access Routes are appropriate locations for EV charging. And/or hydrogen fueling for trucks, especially near their intersections with major regional and interregional freight routes.

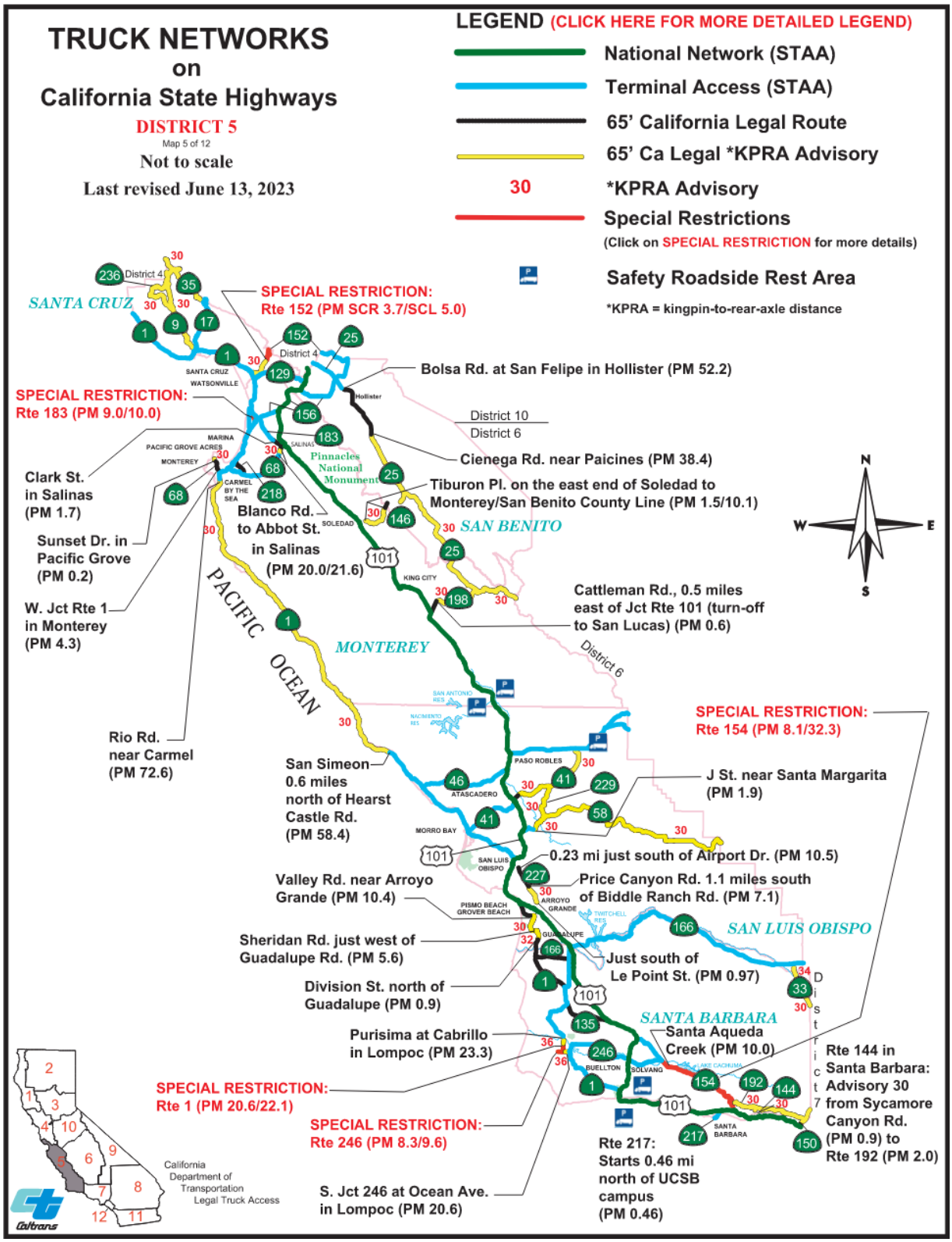


FIGURE 11: STAA TRUCK ROUTES-SANTA CRUZ, SAN BENITO, MONTEREY, SAN LUIS OBISPO & SANTA BARBARA

Source: https://dot.ca.gov/programs/traffic-operations/legal-truck-access/truck-network-map

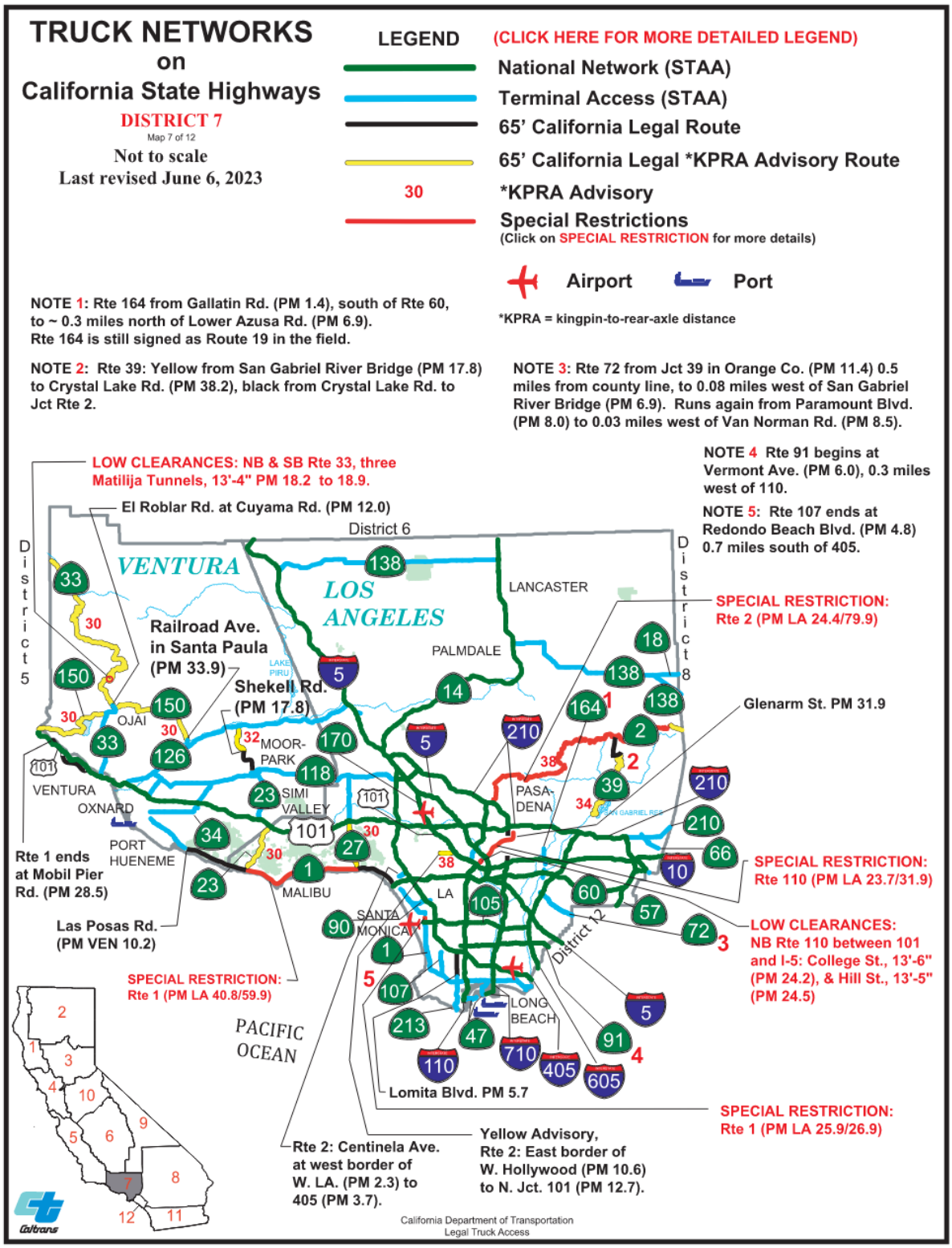


FIGURE 12: STAA TRUCK ROUTES-VENTURA
Source: https://dot.ca.gov/programs/traffic-operations/legal-truck-access/truck-network-map

CHARGING OPTIONS

Fleet Hubs

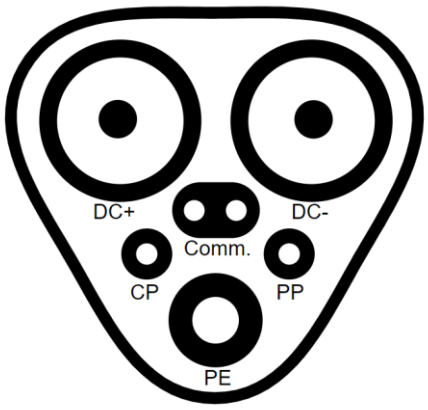
Most trucks are domiciled at depot facilities or fleet hubs where they are stored and maintained when not being driven. As truck fleets electrify over the next decade in compliance with ACF, these facilities will be increasingly important for charging truck batteries, to allow trucks to leave their depots with fully charged batteries. Since the majority of trucks are used for local or regional delivery, most truck charging is expected to occur at depots, typically overnight between shifts.

Another form of fleet hubs includes distribution centers, warehouses, and factories where trucks are loaded and unloaded. The duration of time required for truck charging varies depending on the capacity of the truck or trailer and the nature of the cargo. An excellent opportunity for charging is while the truck is parked for loading/unloading so long as the loading dock is equipped with appropriately sized charging infrastructure.

Public Overnight

Like most vehicles, the majority of trucks are driven during the day and parked overnight which presents a sufficiently long enough duration to charge using relatively low-power chargers to charge overnight. This is the most cost-effective way to charge because lower power chargers are less costly to purchase and install and are less costly to operate by using electricity at periods of lower power demand, avoiding demand charges by utilities. In addition to charging at fleet hubs, many trucks are expected to charge at public overnight charging facilities, especially for truck operators lacking access to private charging facilities.

Megawatt Charging Standard: How Electric Trucks Will Charge



The newly adopted Megawatt Charging Standard (MCS) allows for much faster charging than other standards. MCS focuses on Class 6, 7, & 8 commercial vehicles, but could easily be used for buses, aircraft, or other large battery electric vehicles (BEVs) with huge battery packs and the ability to accept a >1MW charge rate.

Capable of speeds up to nearly 1,000kW, MCS will allow a class 8 truck to charge in about the same amount of time as a light-duty EV. MCS is expected to facilitate goods movement and other heavy-duty EV applications by greatly reducing battery charging times.

MCS has a distinctive charging plug as shown in **Figure 13**.

FIGURE 13: MCS CHARGE PLUG CONFIGURATION.
Source: https://commons.wikimedia.org/wiki/File:Megawatt_Charging_System_Schematic_Plug_Design.svg)

CharIN recommends that MCS should use a minimum voltage of 500 VDC and a maximum voltage of 1250 VDC.

MCS Requirements: [26]

- Single conductive plug
- Max 1.250 volt & 3.000 ampere (DC)
- PLC + ISO/IEC 15118-20
- Touch Safe (UL2251)
- On-handle software-interpreted override switch
- Adheres to OSHA & ADA (& local equivalent) standards
- FCC Class A EMI (& local equivalent)
- Located on left side of the vehicle, roughly hip height
- Capable of being automated
- UL (NRTL) certified
- Cyber-Secure
- V2X (bi-directional)

Public Fast On-Highways

As with light-duty EVs, trucks traveling significant distances need convenient locations to charge their batteries along their routes, just as diesel trucks have always done, typically at commercial truck stops. However, because the travel range of EV batteries is currently significantly less than diesel, and charging takes longer than conventional liquid fueling and will likely remain so until battery technology improves. As a result, charging locations for medium and heavy-duty EVs will need to be more frequently spaced and have the capacity to handle more trucks. Facilities like restrooms, showers, and eateries, are needed for truck drivers while they wait for their batteries to be charged.

Medium-duty EVs can use either AC or DC charging and Class 7 and 8 electric trucks require DC charging. Charging infrastructure can be sized to meet projected power requirements based on battery capacity and expected vehicle dwell time available for charging. Depending on the size of the truck depots and the number of trucks served, power requirements can be significant, potentially exceeding the available capacity of most existing facilities' electrical service and possibly local electrical grid capacity in some locations, at least in the short term as utilities add distribution capacity with larger transformers and substations. Power deficits can in some cases be addressed through a combination of load management and distributed energy resources including battery storage and power production through solar, micro wind, and other sources.

[26] https://www.charin.global/technology/mcs/

HYDROGEN FUEL CELL

FLEET HUBS

Fleets of Hydrogen Fuel Cell-powered trucks can fuel at their depots or at hydrogen fueling stations. Due to the significant financial investments required for hydrogen, the economy of scale will likely continue to limit hydrogen fueling stations to mainly large fleet facilities.

PUBLIC FAST ON-HIGHWAYS

The rapid fueling speeds of hydrogen trucks are appropriate for the replacement of diesel fueling with virtually no behavioral change by drivers. Therefore, existing truck fueling facilities can be retrofitted with hydrogen fueling infrastructure as demand for this fuel expands over time.

RELEVANT MEDIUM AND HEAVY-DUTY VEHICLE STUDIES, PLANS, AND PROJECTS

While the electrification of light-duty passenger vehicles has been ongoing for over a decade, electrification of medium and heavy-duty vehicles used for goods movement is the current frontier of transportation decarbonization efforts up and down the west coast and especially in California. The Central Coast Region will benefit from the following studies, plans, and projects either directly or tangentially with transferable findings and tools.

CENTRAL COAST FREIGHT STUDY

The Central Coast Coalition, comprised of the Regional Transportation Planning Agencies (RTPAs) and Metropolitan Planning Organizations in Santa Cruz, San Benito, Monterey, San Luis Obispo, and Santa Barbara counties are working to complete a California Central Coast Sustainable Freight Study. This study comes in response to the California Freight Mobility Plan, the California Sustainable Freight Action Plan, the California Transportation Plan 2050, and the California State Transportation Agency's (CalSTA's) Climate Action Plan for Transportation Infrastructure (CAPTI). The California Central Coast Sustainable Freight Study will be led by AMBAG and supported by consultants. The Study will assess opportunities for improved operations, safety, sustainability, and efficiency of the freight network, and identify funds for recommended improvements. It will result in strategies to address increased freight congestion, safety concerns, inadequate freight infrastructure, inefficiencies in freight movement, zero-emission freight infrastructure needs, and the long-term viability of the Freight Network as a key economic resource for California. Through the Sustainable Freight Study, California's Central Coast Region will be able to assess the equity impacts of freight projects in the region, accelerate the ability to achieve a sustainable freight network and strengthen interagency partnerships to achieve the vision of a sustainable freight network. AMAG has also applied for CalTrans funding to specifically address hydrogen infrastructure in the context of freight movement, however, at the time of this writing the outcome of this application is unknown.

CENTRAL COAST MEDIUM AND HEAVY-DUTY BLUEPRINT

Planning for the decarbonization of medium and heavy-duty ZEV vehicle operations is challenging at this stage of the adoption curve as the technology is further behind meeting the needs of this sector than that of light-duty. For this reason, Momentum is currently developing an in-depth medium and

heavy-duty ZEV Blueprint for the Central Coast region. Momentum provided the following test and summary of goals about the project: "The goal of this [project] is to develop a comprehensive and replicable strategic vision to accelerate deployment of MD/HD ZEVs in California's Central Coast region, which includes a Blueprint report addressing infrastructure needs, technology, finance, and education, and ensuring that this Blueprint is available to, and benefits, the public. The goals of this project include:

- Identifying actions and milestones needed for implementation of MD/HD ZEVs and ZEV charging and refueling infrastructure in the Central Coast region.
- Making the blueprint available to the public.
- Minimizing the risks and uncertainties surrounding the design, permitting, planning, and financing of the ZEV infrastructure network through engagement.
- Analyzing the combination of technologies and systems that offer the best mix of economic, environmental, and technical performance specific to the Central Coast region.
- Documenting actions or steps already adopted by the local jurisdictions and the impact of those actions or steps on the development of MD/HD ZEV infrastructure.
- Identifying analytical tools, software applications, and data needed to improve future MD/HD ZEV infrastructure planning activities.
- Identify each task or area of responsibility required of the project partners and stakeholder groups to develop a replicable approach for fleets transitioning to zero-emission.
- Developing an outreach strategy tailored to the local community, supported by education and outreach materials appropriate for potentially affected residents, in the languages needed for the community, to educate on the planning efforts and potential future impacts.
- Working with community colleges, regional community-based organizations (CBOs), and community leaders to develop workforce strategies that will enable training, education, and readiness for the local workforce to obtain the knowledge, skills, and ability to develop, support, and maintain the MD/HD ZEV fleets.
- Summarizing the types of jobs that will be created for the local community.
- Identifying goals to reduce GHG emissions, criteria air pollutants, and toxic air contaminants for the region, and local emitters that would need to be targeted.
- Identifying the benefits that would accrue to disadvantaged communities (DACs), low-income communities, priority populations, and tribal lands to the maximum extent possible.

A final draft of the CCCE MHD Blueprint is anticipated by late August 2023."[27]

WEST COAST CLEAN TRANSIT CORRIDOR INITIATIVE

The West Coast Clean Transit Corridor Initiative is one of the earliest efforts to study the feasibility of charging medium and heavy-duty electric trucks for long-distance goods movement from a utility grid perspective. This collaborative effort by 16 utilities analytically explored charging facilities for heavy- and medium-duty freight haulers and delivery trucks along I-5, from San Diego to British Columbia. This initiative published an initial report in June 2020 outlining conceptual charging sites.

[27] John Friedrich, email received on Feb. 9th, 2023.

The West Coast utilities involved are now conducting grid readiness assessments in preparation for infrastructure installations and upgrades that will support vehicle charging capacities of at least 3.5 megawatts with the potential for further upgrades to create even higher-power sites upwards of 23.5MW.

The West Coast Clean Transit Corridor Initiative envisions a network of 27 conceptual charging sites located about 50 miles apart along the entire length of Interstate 5. These 27 sites would be built mainly to serve medium-duty trucks through 2025, after which, every other site would be upgraded to include additional charging for heavy-duty trucks. Over this period, 41 additional sites will be located at similar intervals and expanded in the same manner along multiple arterial highways in California.

California's most Important north-south freight corridors including both Interstate 5 and State Route 99 intersect with critical east-west connectors. The West Coast Clean Transportation Corridor Initiative's 2020 report[28] identifies major zero-emission truck charging plazas needed to support the region.

Prospective locations had already been identified and input from the electric utilities supported these locations. The MD-HD charging plazas will utilize high-power DC fast chargers and may have chargers installed over time as demand increases. It is recommended that grid capacity be future-proofed so that increased demand and/or improved technology can be accommodated. To meet the needs of the trucking industry, projects will include the co-location of travel plaza amenities and potentially L-D EV charging, renewable energy supply, and battery storage. Plazas are likely to require 25 MW of electricity with hydrogen infrastructure to meet refueling demands. Site identification, location assessment, and selection along with fuel connectivity and availability remain necessary for project advancement. A number of commercial entities including WattEV, Terawatt, Forum Mobility, Greenlane and bp pulse (which has acquired Travel Centers of America) are exploring different business models for public charging hubs for MHD vehicles.

Notably, since the first WCCTC study began several years ago, the collaborative has moved from "analytical planning" to "implementation support". Given regulatory policy, charging facility development and site location is primarily in the hands of private industry which relegates utilities into a support role. Private industry is responsible for deciding on specific sites for development and then working with the local utility to get electrical service delivered through normal utility service application processes. Current regulatory policies do not allow or encourage utilities to pre-build grid capacity without service applications in place from private developers which is hampering market advancement. If a private developer is not careful in selecting a site near enough to the existing available capacity, it can lead to lengthy multi-year grid infrastructure development on the utility side to provide the electrical service. California energy-related agencies (primarily the California Public Utilities Commission, and the California Energy Commission) have started new policy initiatives to begin addressing this problem through more robust advanced planning initiatives and new policy development that hopes to address the needs for pre-deployment / investment in distribution grid expansion. Other factors that can also lead to project delays include local, regional, and state agency

[28] https://westcoastcleantransit.com/

permitting processes, negotiation of legal easements with property owners, supply chain delays for both charging and grid equipment and sometimes poor communication between all the involved parties that are necessary to execute a project. These projects are very complex and have many players involved, all of whom must be aligned to efficiently execute a project.

CALIFORNIA STATEWIDE TRUCK PARKING STUDY

Caltrans published its statewide truck parking study in February of 2022.[29] Though focused on truck parking, the study includes findings and recommendations directly relevant to The Central Coast ZEV strategy because using current technology, trucks must be parked to charge or fuel to support interregional goods movement.

The study recommends providing zero-emission fuels at truck parking facilities since overnight charging is the most cost-effective way to charge electric trucks, and doing so could address two statewide priorities: Increasing truck parking supply and transitioning to zero-emission trucking with shared infrastructure. The report notes that "while hydrogen fuel cell presents opportunities, the intersection of EV and truck parking presents the most opportunities due to the extended length of time required for EV charging." The report also recommends that Caltrans consider partnering to expand zero-emission fuels at private facilities since revenue generation from the sale of fuels is prohibited at public highway rest areas[30]. Alternatively, Caltrans could consider providing zero-emissions fuels on state property where the private sector cannot fulfill the need, and it is allowed within federal regulations, such as facilities that are not designated rest areas and not located within Interstate ROW. The report also identified curbside charging as another opportunity to install charging in areas where trucks already routinely park but noted the need to provide significant electrical capacity and plan for upgrades, as well as sufficient space.

TRADEPORT CALIFORNIA

A collaborative consortium of California partners led by the Fresno Council of Governments is currently in the process of analyzing the feasibility of developing a new, intermodal rail spine to connect seaports to key markets via the Central Valley. As the area borders the Central Coast region, it will be important to monitor the study results and recommendations to understand how it may support or otherwise impact interregional travel between the Central Valley and the Central Coast. Previously called the California Inland Port System, the California TradePort System[31] is envisioned to be a multi-modal network of integrated clean and efficient truck, rail, air, and cargo facilities that will boost the economic competitiveness of California's economy.

The objectives of the project include:

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[29] https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/freight-planning/plan-accordion/catrkpkgstdy-finalreport-a11y.pdf

[30] Section 111, of Title 23, United States Code, and 23 CFR 752.5

[31] https://www.tradeportcal.com/about

1. Significantly reduce vehicle miles traveled (VMT), congestion, air pollution, and greenhouse gas (GHG) emissions by reducing the number of truck trips from the seaports complex in the Los Angeles region to the San Joaquin Valley, the Sacramento region, and the Bay Area.
2. Create tangible new supply chain efficiencies and reduce shipping costs for shippers that manage global supply chains through direct intermodal rail service to/from the San Pedro seaports.
3. Catalyze significant private sector investment and new job creation by fundamentally repositioning the economic competitiveness of the San Joaquin Valley region.
4. Create a more robust and efficient intra-state distribution system with a specific focus on supporting the agriculture sector while spurring new high-value manufacturing and e-commerce investments.
5. Reduce highway road congestion, with a parallel reduction in the requirement for road maintenance; accident-avoidance savings; all of this reducing cost.

Figure 14 identifies traffic centers in the study area and **Figure 15** identifies proposed port locations and satellites.

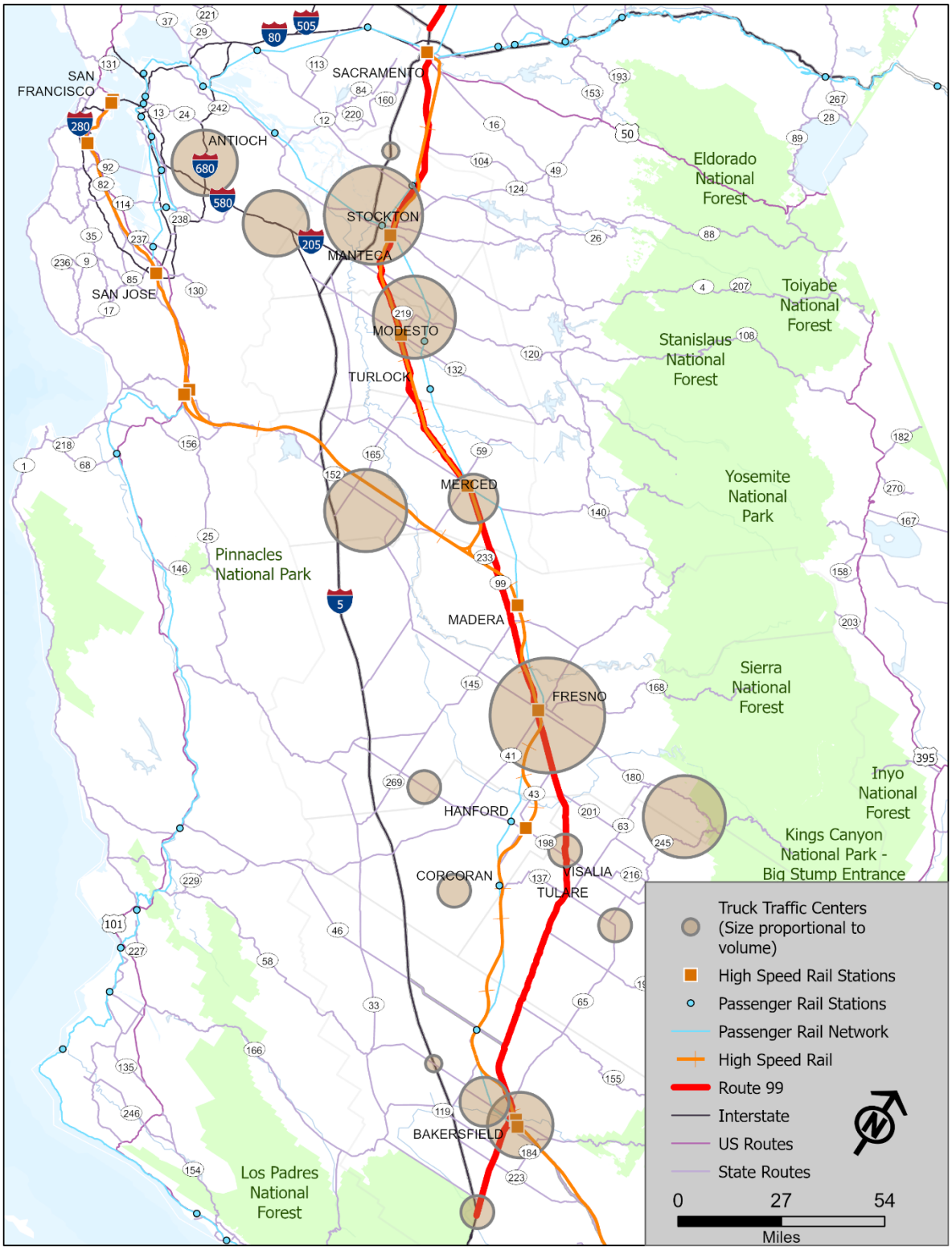

FIGURE 14: TRUCK TRAFFIC CENTERS IDENTIFIED BY TRADEPORT CALIFORNIA PROJECT

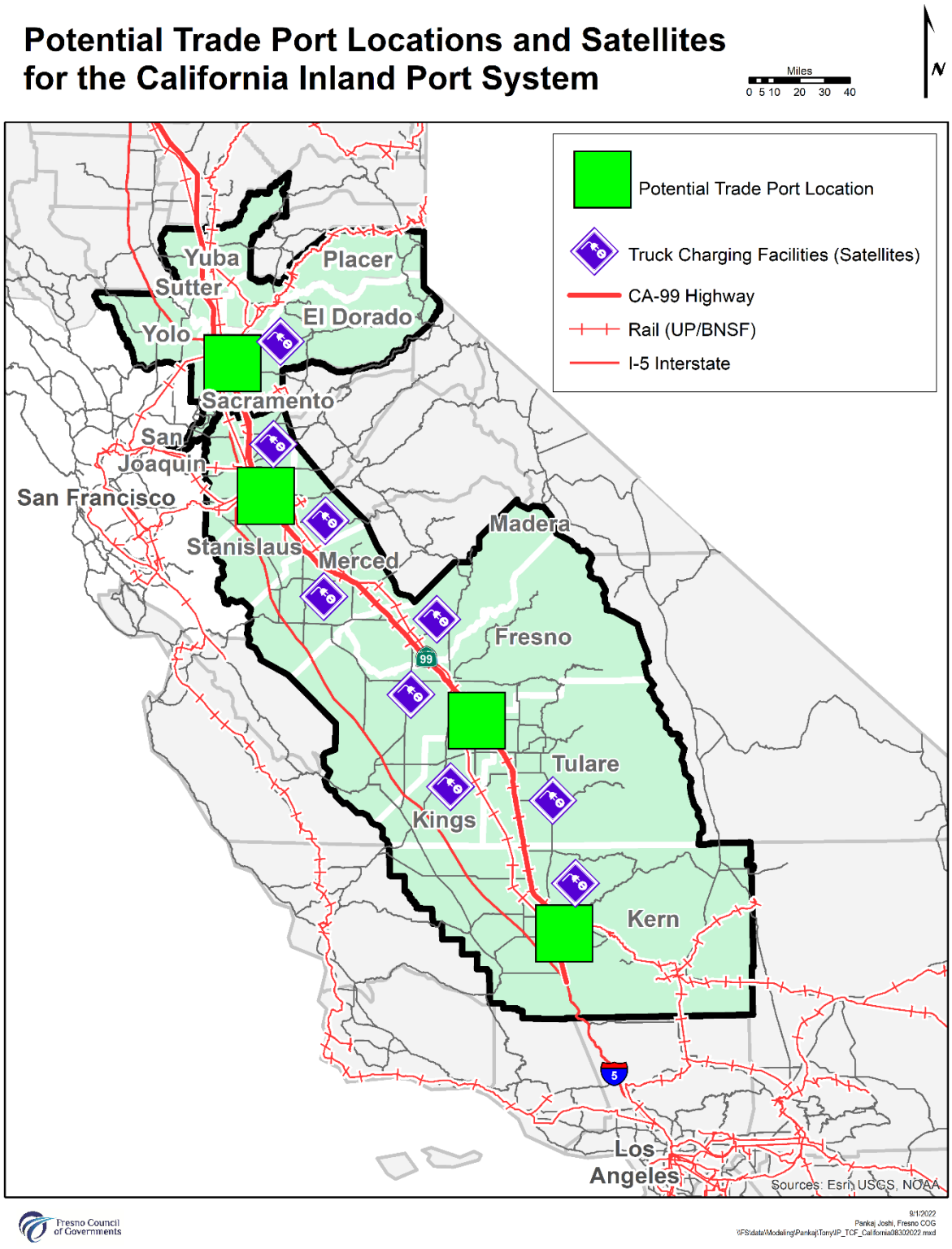

FIGURE 15: POTENTIAL TRADEPORT SITES IDENTIFIED BY TRADEPORT CALIFORNIA PROJEC

The first phase of the Trade Port California project analyzes the size of the market; reviews the underlying truck versus rail transportation costs; and analyzes the reduction in criteria pollutants, fuel use, and GHG emissions. The second phase of the project involves developing market readiness and acceptance, estimating costs, developing a partnership with one or both Class One railroads, reviewing the economic competitiveness impact on the region, and understanding the environmental process to move forward. The third phase details a Project Financial Performance Model, a Business Plan for Green, High-Efficiency Logistics/Investment Hubs Around Intermodal Facilities, plans for an Intermodal Facility Site Selection, develops Detailed Capital Cost Programs, delivers a Railroad Agreement to Collaborate, and develops Public-Private Delivery Options.

This project is relevant as it will decarbonize the carbon emissions from goods movement by transitioning more freight from truck to rail which will reduce the future need for charging and fueling for ZEV trucks. This transition will concentrate trucks at intermodal facilities, making these facilities increasingly appropriate locations for the installation of truck charging and hydrogen fueling facilities. The plan for an Intermodal Facility Site Selection in particular will identify charging and fueling sites currently being planned and designed.

CLEAN FREIGHT CORRIDOR EFFICIENCY ASSESSMENT (SB 671)

The SB 671 Clean Freight Corridor Efficiency Assessment[32] is an initial zero-emission freight infrastructure assessment that identifies freight corridors, or segments of corridors, and the infrastructure needed to support the deployment of zero-emission medium and heavy-duty vehicles. This Assessment will be used to identify challenges related to timing, costs, and economic impacts to the Legislature. SB 671 requires the CEC and CARB to incorporate, to the extent feasible and applicable, the Assessment's findings and recommendations into their programs and guidelines documents related to freight infrastructure and technology. This Assessment will not directly result in electric grid infrastructure authorizations or cost recovery because that is within the CPUC's jurisdiction.

As part of the project, the California Transportation Commission is evaluating six proposed priority freight corridors and three potential scenarios for zero-emission truck demand and resulting estimated infrastructure needs. This study is evaluating the emissions benefits of BEV and FCEV trucking, the two propulsion systems allowable under ACF. Key assumptions of the study are that BEVs, typically Class 4-6 medium-duty box trucks are most suitable for urban trips while long haul and regional trips will be predominantly performed by heavy-duty (Class 7-8) big rigs. The study also anticipates that BEV trucks will be charged at a combination of fleet hubs for trucks, public overnight charging sites, and public fast charging facilities close to highways and heavy-duty FCEVs will fuel at public fast charging facilities close to highways shared with other EVs as well as at truck fleet hubs. The study determined that the Minimum Viable Network would require 1 BEV charging station in each 50-mile span (Comparable to NEVI) and a hydrogen fueling station in each 270-mile span.

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[32] https://catc.ca.gov/programs/sb671#:~:text=SB%20671%20requires%20that%20the,is%20due%20December%201%2C%202023.

ELECTRIFIED CHARGING CORRIDOR PROJECT

The California Energy Commission (CEC) provided $2 million in funding to address barriers to long-range MHD EV deployments and encourage widespread adoption by deploying high-powered chargers at several existing Volvo Trucks dealership locations in Central and Northern California including the Western Truck Center in Stockton. The project began in 2022, with all five stations expected to be online by the end of 2023. While the route does not run through the Central Coast region, the adjacent areas should be considered when determining locations of MHD charging to support interregional travel. The Electrified Charging Corridor Project has the goal of enabling convenient charging for small business fleets that want to avoid making major financial investments in large-scale charging infrastructure at their site, fleets looking to pilot an electric vehicle through rental and short-term lease opportunities as well as fleets that need an OEM-neutral location to "opportunity charge" along their route.

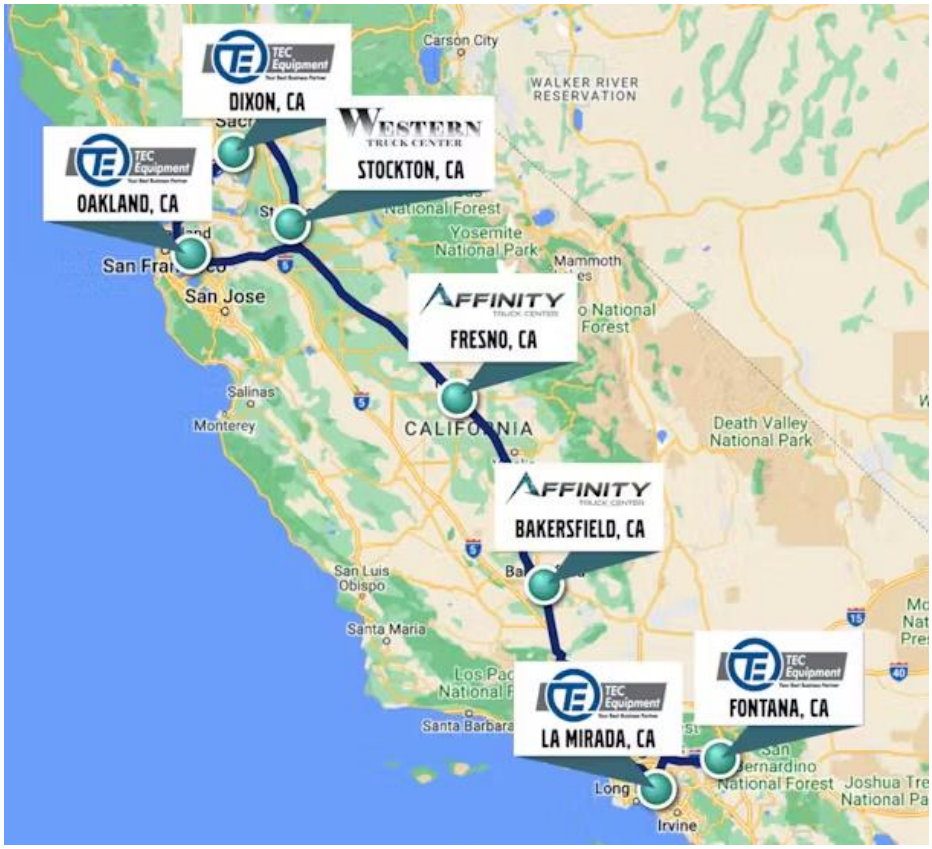

FIGURE 16: ELECTRIFIED CHARGING CORRIDOR PROJECT LOCATIONS

Source:https://www.fleetowner.com/emissions-efficiency/article/21246660/volvo-trucks-california-electrified-charging-corridor-project-electric-vehicle-infrastructure

NORTHERN CA MEGAREGION ZEV MEDIUM/HEAVY DUTY VEHICLE BLUEPRINT

The Sacramento Area Council of Governments (SACOG) is leading the development of the Northern CA Megaregion ZEV Medium/Heavy Duty Vehicle Study funded by Caltrans. This study intends to create a plan for at least 11 major zero-emission truck charging plazas to support the Northern CA megaregion along Interstate 5, Interstate 80, and State Route 99, while also providing

recommendations for Highway 50 from the corridor analysis. The partners supporting the project include the San Joaquin Council of Governments (SJCOG), Metropolitan Transportation Commission (MTC), Caltrans districts 3, 4, and 10, utilities (SMUD and PG&E), and local communities to identify actions and milestones to implement the electric charging and hydrogen refueling infrastructure needed to support the deployment of zero-emission MD-HD vehicles. Much of the findings and tools developed as a result of this study will likely prove transferrable and extremely beneficial to future MHD infrastructure planning efforts in the Central Coast.

Potentially relevant outcomes include:

- Context about challenges, opportunities, and impacts related to ZEV fueling compiled from interviews and focus groups with stakeholders.
- List of potential locations for medium and heavy-duty BEV charging/FCEV fueling stations and context for selecting locations for ZEV stations. When planning for locations in the central coast region, the locations identified in the MegaRegion study should be considered to better distribute locations between the two regions. Siting criteria developed as a part of the MegaRegion study may also be applicable to the Central Coast.
- A ZEV Station Prioritization Tool, Station Suitability Checklist, prioritization criteria, including data compiling methodology, much of which will likely be applicable to the Central Coast.
- Summary of potential route improvements at each potential ZEV station site. It should be noted if any of these route improvements will impact travel between the MegaRegion and Central Coast region.
- Conceptual drawings for top priority ZEV stations and station area improvements. Concepts and area improvements could provide valuable insight for MD-HD station design and improvements in the Central Coast region.
- Recommendations for priority locations that includes operational models, technical specifications, and community benefits/impacts. This information could provide inspiration for developing criteria when siting MD-HD stations in the Central Coast region.

Figure 17 outlines the Megaregion study area.

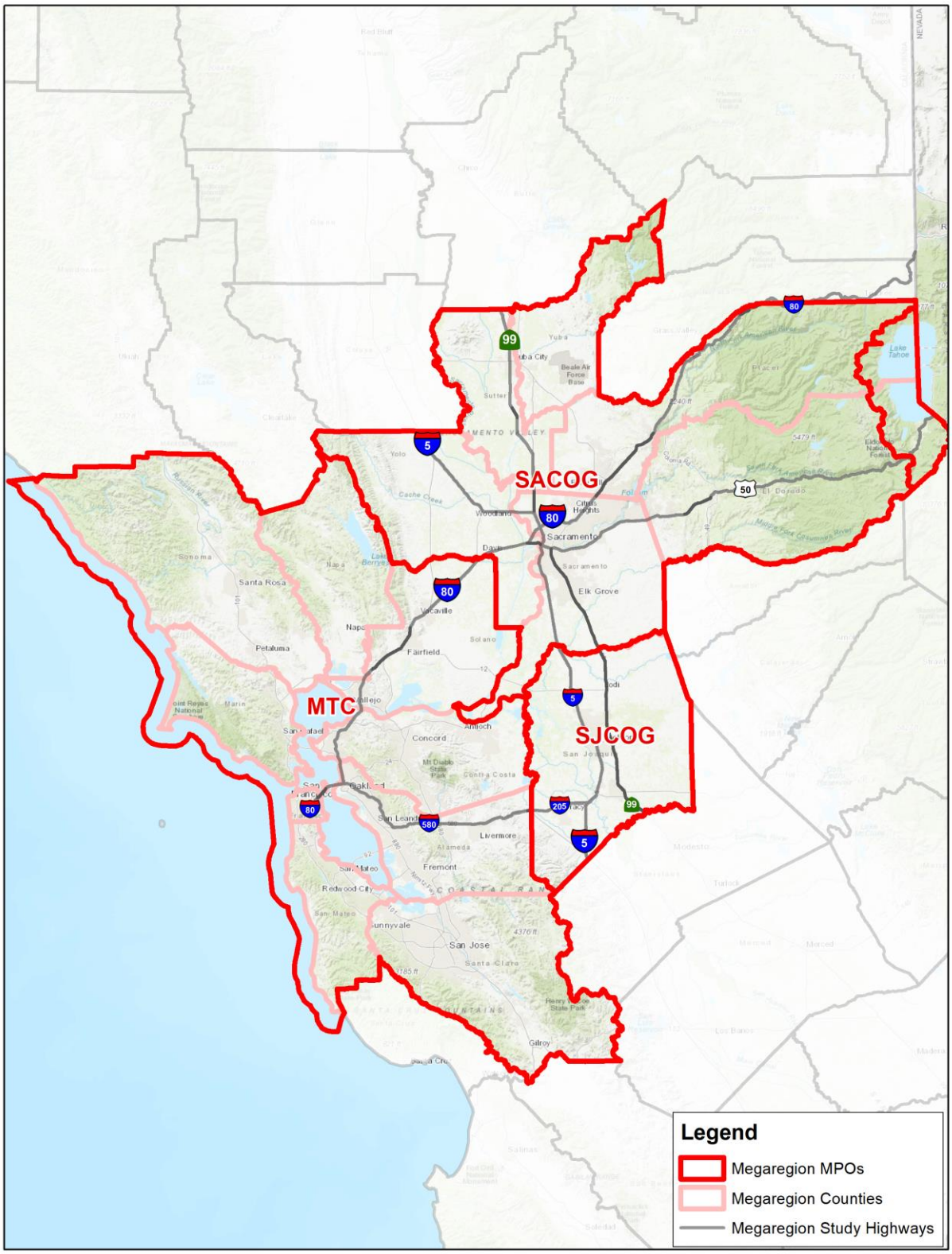

FIGURE 17: MEGAREGION STUDY AREA

MEDIUM AND HEAVY-DUTY ELECTRIC VEHICLE INFRASTRUCTURE - LOAD OPERATIONS AND DEPLOYMENT (HEVI-LOAD)

Lawrence Berkeley National Lab is developing Medium and Heavy-Duty Electric Vehicle Infrastructure - Load Operations and Deployment (HEVI-LOAD)[33] in collaboration with the CEC, funded by applied research funds from California's Clean Transportation Program. This project will project electrical state-wide infrastructure needs for decarbonizing medium and heavy-duty vehicles (GVWR > 10,000 lbs.). The goal of this project is to predict the charging infrastructure needs by future medium- and heavy-duty electric vehicles and to assess the optimal deployment of the needed infrastructure in California and provide a grid impacts analysis. The MHDV projections will also consider transportation system and electric system interaction with light-duty vehicles. The project consists of 2 approaches in general: A top-down approach that takes aggregated MHDV adoptions as the inputs and provides county-level projections of charging load profile and infrastructure need, and a bottom-up approach that incorporates more granular (temporal, spatial, and duty-cycle-specific) behaviors of a variety of MHDVs into activity simulations/optimizations for further analysis.

ZERO-EMISSION FREIGHT INFRASTRUCTURE PLANNING (FIP) FRAMEWORK

The FIP Framework is a CPUC staff proposal for how to develop "investment grade" inputs/assumptions and MDHD charging scenarios to be used in long-term grid planning to identify EV charging infrastructure needs specific to medium and heavy-duty freight vehicles. The proposed FIP Framework[34] facilitates the identification of electrical infrastructure needed for transportation electrification over the medium and long terms. Key provisions of FIP include:

- FIP plans for to-the-meter (utility-side) infrastructure (distribution, substation and
- transmission), not behind-the-meter infrastructure for chargers.
- FIP is focusing on medium and heavy-duty freight in the implementation assessment because it will have significant and localized impacts on the electric infrastructure.
- Proactive identification of TE electrical infrastructure necessary to accommodate future loads will reduce the likelihood that long-lead upgrades are not online when necessary.
- CPUC staff will work with stakeholders during FIP implementation to identify other vehicle classes/types that are dependent on long lead time infrastructure.

THE INTERREGIONAL TRANSPORTATION STRATEGIC PLAN (ITSP)

The Interregional Transportation Strategic Plan[35] is a Statewide plan that guides investment along California's 11 strategic interregional corridors and intercity rail corridors. The ITSP provides a policy framework to guide Caltrans and partner agencies in developing comprehensive, multimodal corridor plans and projects, providing direction to programs, districts, and partner agencies on the policies

[33] https://sites.google.com/lbl.gov/2020-157/landing-page

[34] https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/transportation-electrification/fip-draft-staff-proposal_5_22_23-webinar-final_ver2.pdf

[35] https://dot.ca.gov/programs/transportation-planning/multi-modal-system-planning/interregional-transportation-strategic-plan

and strategies that should be considered when assessing the interregional transportation system and identifying improvements.

THE CALIFORNIA FREIGHT MOBILITY PLAN (CFMP)

The 2020 California Freight Mobility Plan [36] is California's state freight plan. The CFMP is a comprehensive plan that governs the immediate and long-range planning activities and capital investments by the state with respect to freight movement. It identifies freight corridors, includes a fiscally constrained infrastructure funding plan, includes investment priorities, and discusses the condition of freight infrastructure in the state. Appendix G of the CFMP identified five different types of zero and near-zero emissions truck technology, however, ZEV technology and regulations have advanced significantly since the plan was published in 2020, so only the description of Battery Electric Vehicles remains relevant to the Central Coast ZEV Strategy and there is no mention of Hydrogen Fuel Cell vehicles as a stand-alone propulsion system.

[36] https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/strategic-freight-planning/cfmp-2020

APPENDICES

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CONTENTS

APPENDIX I. COMMUNITY ENGAGMENT REPORT

This report provides information on the goals and objectives of the community engagement efforts and strategy and provides a summary of the activities, results, and outcomes of these community engagement efforts. The stakeholder and public input received will be used to inform study recommendations regarding the future location and allocation of electric charging infrastructure in the Central Coast. The input will also help identify the constraints and opportunities for future deployment of electric charging infrastructure needed to meet future demand.

Community engagement efforts began in April 2022 and were completed in November 2022. Initially, the community engagement was scheduled to end by October 2022, but was extended to November 2022 to allow more time for public input and feedback. The following community engagement efforts have been conducted to obtain public input and feedback:

- Stakeholder Meetings
- Focus Groups
- Social Pinpoint

The community engagement conducted, and input received for each of these efforts are summarized in the following sections.

STAKEHOLDER MEETINGS

The project team created a stakeholder list of 156 contacts that had potential interest in the CCZEVS. The list included representatives from various agencies such as grant partners, local jurisdictions, state government tribal liaisons, air districts, transit districts, military partners, tribes, and non-governmental organizations. One stakeholder meeting took place on April 26, 2022 for this study.

Community engagement efforts for the stakeholder meeting was conducted prior to the meeting, as well as after. The purpose of this community engagement prior to the meeting was to invite identified stakeholders to attend the kick-off stakeholder meeting to learn more about the goal of the CCZEVS, ask questions and provide feedback on the strategy. Community engagement efforts for each meeting consisted of emails and phone calls to invite interested stakeholders to each meeting. A total of 180 contacts were contacted and invited to participate.

The purpose of the post meeting community engagement efforts was to provide attendees and those that did not attend with the resources, tools and information needed to continue to stay involved and engaged during the development of the CCZEVS. The following subsections summarize the outcomes of the stakeholder meeting.

Stakeholder Meeting #1 – April 26th, 2022

On April 26, 2022, stakeholders from the counties of Santa Cruz, San Benito, Monterey, San Luis Obispo, Santa Barbara, and Ventura came together for a stakeholder kick-off meeting to learn more about the CCZEVS. A total of 61 participants attended the virtual meeting including representatives from non-governmental organizations, local, state and regional government agencies, air districts, military partners, transit districts, the consultant team and others.

Participants who attended the meeting were led through a seven-part presentation that further elaborated on the efforts of the CCZEVS. The objective of the presentation was to inform stakeholders on the following:

- Project Overview
- Key Stakeholders
- Existing Conditions
- Funding Sources
- Community Engagement
- Project Schedule
- Next Steps

A key objective was to have a discussion with stakeholders on their initial thoughts and ideas on the CCZEV Strategy approach. The following subsections discuss the community engagement efforts conducted to invite stakeholders and major themes and takeaways from the meeting.

Stakeholder Community Engagement Efforts

Stakeholders for the meeting were obtained through a contact list developed in conjunction with the SBCAG, SLOCOG, and the AMBAG. Initially the stakeholder list identified 156 contacts that represented a variety of agencies such as air districts, transit districts, military partners, non-governmental organizations, grant partners, Tribes, tribal liaisons, as well as local, regional and state jurisdictions. Of the total 156 contacts, only 143 had contact information, while 13 contacts had no emails or phone numbers listed.

Targeted Email Outreach

Emails sent prior to the meeting included an initial email to stakeholders inviting them to the meeting, a follow up email was sent to those whom no response was received from, and an email reminder was sent to those that confirmed attendance. Of the 143 contacts with information, a total of 135 contacts had email addresses provided:

- 8 contacts had an automatic response stating that they no longer worked with that organization or that the email was incorrect.
- 5 contacts were duplicate contacts.
- 1 contact form for a Tribe was unsuccessfully submitted due to technical issues from their site.

During the community engagement process, some stakeholders that were contacted forwarded their emails to a different contact or responded with the preferred contact person for their organization. Through this engagement process, a total of 24 contacts were added to the stakeholder list, making the total number of contacts 180.

After the meeting, emails containing the meeting summary, presentation slides, a link to the meeting recording, the project website, social pinpoint, as well as a social media blurb to encourage social pinpoint use were sent to attendees. Another email containing the same materials was sent to those who were unable to attend.

Phone Calls

Of the initial 156 contacts listed, only 8 contacts had a phone number listed. These 8 contacts were contacted and left voicemails the same day that the emails went out.

Additionally, the following week, calls were made to stakeholders whose agency types were low on representation at the stakeholder based on the number of RSVPs. The agency types included:

- Additional Regional and State Government
- Federally & Non-Recognized Tribes
- Non-Governmental Organizations
- State Government Tribal Liaisons
- Transit Districts

A total of 36 calls were made, which resulted in five stakeholders confirming attendance and one asking us to redirect the information to the best point of contact. Additionally:

- 27 calls resulted in voicemails.
- 3 calls resulted in incorrect numbers.
- 3 calls had voicemails unavailable.

Major Themes

The stakeholder group represented a wide range of organizations. Major themes discussed by participants included: data gaps and barriers, equitable charging locations, local, state, and regional permitting, and hydrogen fuel-cell fueling infrastructure. Some of the themes and discussions overlapped, however the information was sustained in each of the themes identified.

A key theme that has continued throughout the study was the overall objective of the CCZEVS. The goal and scope of the CCZEV was identifying electric charging needs that facilitate interregional and inter-city travel – including regional transit and goods movement. Hence, the study area was primarily focused on unincorporated areas of the participating counties. Charging infrastructure and needs within incorporated cities of the Central Coast although recognized, was purposely not addressed. The unincorporated vs. incorporated area emphasis was repeatedly conveyed to stakeholder participants and the public throughout the study.

The following section provides more detail on comments and questions by theme.

Data Gaps and Barriers

There were suggestions to address gaps and barriers identified by participants:

- Including utility providers, such as Southern California Edison.
- Investing in installing EV charging infrastructure in areas with fewer chargers, such as Monterey.
- Accounting for population, geographical areas, and tourism when planning for new Electric Vehicle Charging Stations.
- Tesla chargers will soon open up their charger networks to be accessible to the public for all charging types and for this reason, Tesla chargers should not be placed next to additional stations.
- Addressing or identifying gaps in data for hydrogen fueling to ensure connectivity along known major goods movement corridors.

- Identify corridors with higher concentrations of multifamily units to plan infrastructure accordingly.
- Refer to other studies in the region that have identified hotspots for multifamily dwelling units.
- Account for constraints of the existing electric grid.

Equitable Charging Locations

While there were some discussions regarding charging stations in high-density residential areas, these concerns were primarily focused within incorporated areas which are outside the scope of the CCZEVS. However, some factors/constraints such as land ownership/site control and availability of electricity germane to incorporated areas that affect charging coverage of regional corridors was noted. There were some discussions and recommendations on this topic, including:

- Incorporating chargers in workplace locations to help solve issues such as renters and low-income residents who do not have access to charging at home, as well as avoiding peak electrical demand times after work.
- Looking into more medium and heavy-duty vehicle opportunities is critical.
- Ensuring that charging is available for low-income commuters, as well as short trips.
- Considering chargers located in incorporated areas due to their locations as a travel corridor to get travelers from Northern California to Southern California.
- To make on-site charging at multi-unit housing as cost-effective as possible, those deployments will prioritize shared level 2 chargers with loans management to avoid electrical service upgrade costs and demand charges.

Local, State and Regional Permitting

Several participants mentioned the permitting process in local and state codes, and the impact this process has on EV infrastructure implementation. This is directly related to one of the goals of this study, "to see if local, state or regional governments are developing and incorporating plans, ordinances, etc., to incorporate more EVCS in their jurisdictions." There was some important topics of discussion, including:

- The plan itself will be a tool to help jurisdictions to apply for state and federal funds.
- The Project Team will see how this study can meet requirements of and apply for new federal funding.
- Incentivizing charger installations for property owners and streamline the permitting process.

Hydrogen Fuel-Cell Technology and Infrastructure

Several participants asked about hydrogen fueling infrastructure and provided links with information on current technology trends, as well as feedback to include with the development of this strategy. There was also some discussion about how the study would handle rapidly developing technology, especially related to hydrogen fuel cells. Although the CCZEVS focused on the current capabilities of EV technology, the CCZEVS will include recommendations for information to be reexamined and updated to keep up with fast-changing technology. The following notable items and recommendations from the participants were noted:

- Incorporating hydrogen fueling infrastructure into the study, as these may be the future for medium and heavy-duty zero emission vehicles including transit vehicles.

- Increasing the scope to include hydrogen fueling stations, noting that there is an existing station in Thousand Oaks
- Prioritizing San Luis Obispo and Santa Cruz with stations as it would open the Highway 1 corridor for more travel.
- Recommendation and interest to create a subcommittee to address hydrogen technology and infrastructure within the stakeholder group.

FOCUS GROUPS

Due to the large nature of the study area, focus groups for each county within the study area were held to ensure comments and feedback were captured for the entire area. The following focus groups were performed:

- Santa Barbara County
- Monterey County and Santa Cruz County
- San Benito County
- San Luis Obispo County
- Ventura County
- Utility Companies
- CalVans

At the start of each meeting, focus groups were presented with an overview of the project objective and goals, provided with links to the project website and Social Pinpoint. These five questions were the focus of the discussion:

- What charging infrastructure investments are planned in your region?
- What incentives are needed to support EV adoption?
- What disincentives could be removed?
- Other than funding support, what other incentives would be effective?
- Advice regarding more EV travel?

Focus groups were held during the week of October 17, 2022. The feedback and comments received from these focus groups are summarized in the following section.

Monterey and Santa Cruz County

Focus groups were hosted with Monterey County and Santa Cruz County on October 17, 2022. Representatives from the following agencies participated in the focus group sessions:

- City of Watsonville
- Santa Cruz County Regional Transportation Commission (SCCRTC)
- County of Monterey
- Monterey Bay Air Resources District (MBARD)
- *Monterey-Salinas Transit District (MST)*
- Ecology Action
- SBCAG

Discussion surrounding the five questions are summarized below. Questions that had no discussion or feedback have been omitted.

Planned Electric Vehicle Supply Equipment (EVSE) and EV projects in Monterey and Santa Cruz County

Focus group participants noted the following planned or upcoming infrastructure investments are planned in Monterey and Santa Cruz County:

- In the City of Watsonville, staff are exploring the possibility of conducting a pilot which would leverage excess capacity of streetlights to provide dispersed public Level-2 charging across the city, bringing much-needed public charging to low-income areas. The pilot would emulate one that was recently conducted in the City of Los Angeles, and would require coordination with Caltrans and PG&E.
- SCCRTC is planning to install EV chargers near Wilder Ranch and Davenport as part of their upcoming North Coast Rail Trail Project, a 7.5-mile multi-use bicycle and pedestrian trail proposed to extend along the railroad corridor from Wilder Ranch State Park in the south to Davenport in the north. They have not confirmed what infrastructure they will be using at these locations.
- MBARD has recently installed new chargers along the Highway 101 corridor, including 200 kW chargers at the Prunedale Shopping Center (8065 San Miguel Canyon Rd, Salinas), Soledad Shopping Center (18336 Soledad Canyon Rd, Canyon Country) and the Camp Roberts Rest Areas on Highway 101. The FHWA prohibits rest area commerce, so the MBARD used Beam solar charging at the Camp Roberts rest areas. The rest areas have a 50-kilowatt system with a battery backup. Currently, all the Target stores in the region are equipped with chargers, and in total MBARD has invested about 4-5 million dollars into charging infrastructure in the region, and they are prioritizing finding locations for EV charging infrastructure in mixed-use (MFH) developments.
- In terms of upcoming projects, MBARD has new EV charger projects in development in Castroville near Highway 156, and in Salinas at 1463 North Davis Road.
- Monterey County recently passed a clean fleet policy and is looking to deploy EV charging infrastructure on county land, including three fast charging stations at public libraries throughout the county.
- MST is focused on innovative clean transit initiatives through their Innovative Clean Transit Plan (EV bus plan). The district is planning to begin purchasing electric buses by 2026, with 25% of all busses needing to be zero emissions by 2026, and 100% by 2029.

Incentive for EVSE and EV adoption

Focus group participants noted the following incentives (existing or desired) would support additional EV infrastructure or higher EV uptake in the county:

- MBARD is running an EV incentive program that provides two-thousand dollars for residents of the county to purchase a new EV, or four-thousand dollars if it is a qualifying low-income applicant purchasing a new vehicle. An incentive is only half of the new vehicle incentive if the person is buying a used vehicle.
- One participant said that there should be emphasis on putting DCFC near local businesses that support the community and local economy.

Existing disincentives for EVSE and EV adoption

Focus group participants noted the following disincentives (or challenges) with EV infrastructure and EV uptake in the county:

- MST has five zero-emissions buses but have found these to have limited range and they are currently looking at strategies to develop better connectivity between regions. MST feels the biggest challenge right now is range, as some routes in the district are up to 500 miles per day. They hope to explore opportunities to share hydrogen storage infrastructure with nearby districts, such as Santa Cruz.
- The County of Monterey gets many questions about EVSE in Big Sur, but there are also concerns about capacity (how will additional EVSE impact the power grid?).

Additional notes

The following points were also noted during the discussion:

- In the City of Watsonville, most residents charge their vehicles at home or work, and DCFC is not necessarily a priority in the region.
- One participant noted that the report should have additional clarification on the focus of the study (interregional travel) and wanted to see additional emphasis on solutions for disadvantaged communities.
- Multiple participants noted the importance of expanding EVSE at MFH throughout the counties.

San Benito County

Focus groups were hosted for San Benito stakeholders on October 21, 2022. Representatives from the following agencies participated in the focus group sessions:

- AMBAG
- San Benito County Local Transportation Authority (LTA)
- Council of San Benito County Governments (SBCOG)
- SBCAG

Planned EVSE and EV projects in San Benito County

Focus group participants noted the following planned or upcoming infrastructure investments are planned in San Benito County:

- SBCOG is not aware of upcoming EVSE projects in the county. The county does have some existing EVSE at county facilities, but they are for county fleet vehicles and not for public use.
- San Benito LTA is exploring options for electrifying their fleet as part of an upcoming zero emissions plan that they are required to provide to the California Air Resources board by 2023, this will be a full infrastructure plan.
- San Benito COG has some charging facilities, but at present these are all for county fleet vehicles and not the public.

Incentive for EVSE and EV adoption

Focus group participants noted the following incentives (existing or desired) would support additional EV infrastructure or higher EV uptake in the county:

- Participants noted that because so many county residents live outside the county and have 90+ minute commutes, incentives that target the provision of EVSE at multifamily and MFH would likely be more effective than on-route public charging stations.
- Cash incentives or grants would be helpful for those residents that live and work in San Benito County, as there is a huge income gap in the county, many people who live and work in the county have much lower incomes than commuters.

Existing disincentives for EVSE and EV adoption

Focus group participants noted the following disincentives (or challenges) with EV infrastructure and EV uptake in the county:

- A challenge for San Benito LTA is that most commuters are traveling outside of the county for work, therefore it is hard for them to support EV charging at or near workplaces, because those workplaces are in another county. Many residents of San Benito County travel to San Jose or Santa Barbara for work.
- Concerns about safety at public EVSE is an existing disincentive according to one participant. Those who can't charge at home or rely on public charging facilities need them to be in safe locations.
- An existing disincentive for San Benito LTA is they need to have more confidence in the power grid, or backup power supply, as they transition to EV transit. They have to evacuate people in the event of a natural disaster because they are the transit authority. They feel that whatever transition is made to alternative fuel transit vehicles, they will need to have a backup plan in the event of a natural disaster that affects the power grid.
- For AMBAG, one existing barrier is that it is challenging for individuals to apply for incentives, and that there is a general lack of awareness of what incentives are out there.
- The up-front cost of buying an EV is a deterrent for many people in the county.
- Multiple participants noted that the lack of at-home charging infrastructure for many people is a significant barrier for transitioning to EVs, and that there may not be enough conveniently available public charging locations for those without at-home charging capabilities to feel that they can reliably charge, and when they can, many people won't feel comfortable waiting at a charger for 30+ minutes.
- SBCOG and San Benito LTA participants both noted that many people have 90+ minute commutes, would be challenging to convince these people who are already commuting for over 2 hours per day to stop at public charging facilities on the way.

San Luis Obispo County

Focus groups were hosted for San Luis Obispo (SLO) County stakeholders on October 21, 2022. Representatives from the following agencies participated in the focus group sessions:

- San Luis Obispo Climate Coalition
- San Luis Obispo County Air Pollution Control District (APCD)
- City of San Luis Obispo
- County of San Luis Obispo
- SBCAG
- SLOCOG

Planned EVSE and EV projects in San Luis Obispo County

Focus group participants noted the following planned or upcoming infrastructure investments are planned in San Luis Obispo County:

- City of San Luis Obispo staff are currently in contract with ChargePoint to have DCFC chargers installed in three locations in the city, but the locations are still to be determined. San Luis Obispo staff expect these chargers will be operational by the end of 2023 and they should define locations by the end of 2022. In this model, the city will be the site host and the vendor will generate

revenue based on whatever they can sell electricity for. Their focus right now is increasing DCFC access for residents and developing an equity plan that will include the best locations to serve MFH.

- In San Luis Obispo, San Luis Obispo APCD staff are currently working on installing new Level-2 chargers near the Grocery Outlet (1314 Madonna Rd.) as well as at public libraries and worksites in San Luis Obispo.
- In Los Osos, San Luis Obispo APCD is planning to fund some new ZESE in a MFH in low-income neighborhoods, as there are currently no chargers in Los Osos.
- San Luis Obispo APCD is also working on a plan to fully fund chargers at public libraries and work sites throughout the county and is developing an EV car share program for agriculture, but it is still in the early community engagement stages of planning.
- The City of Moro Bay is installing EVSE along the boardwalk, as well as some chargers at MFH in the City of Atascadero.

Incentive for EVSE and EV adoption

Focus group participants noted the following incentives (existing or desired) would support additional EVSE or higher EV uptake in the county:

- San Luis Obispo APCD believes are already great financial incentives in the county right now, including the Communities in Charge grant, the Clean Cars for All grant, the CCCE EV grant, which provides interest free financing for low-income communities.
- One way that public agencies can support EVs is by serving as site hosts for charging stations. For example, right now San Luis Obispo is serving as a site-host and offering a zero-cost lease for companies to set up charging infrastructure.
- San Luis Obispo Climate Coalition mentioned greater community engagement directed towards encouraging workplaces and employers to provide at-work charging facilities is needed. San Luis Obispo Climate Coalition is partnering with a college fellow to provide community engagement and educate people in the county about the available incentives.

Existing disincentives for EVSE and EV adoption

Focus group participants noted the following disincentives (or challenges) with EV infrastructure and EV uptake in the county:

- One participant noted that while there are many grants available, some of these are challenging to apply for or people may not necessarily know they are available, especially households. For instance, many grants require that the applicant's contractors complete the Electric Vehicle Infrastructure Training Program (EVITP), which is a requirement to qualify for many of the grants. There are only 5 EVITP-certified contractors certified in the county right now. Participants noted that this is a barrier that can slow down the application process considerably.

Santa Barbara County

A focus group involving Santa Barbara County Stakeholders was held on October 17, 2022. Representatives from the following agencies participated in the focus group sessions:

- City of Santa Barbara
- Santa Barbara Metropolitan Transit District (MTD)
- City of Santa Maria
- Caltrans District 5

- Santa Barbara County APCD
- Central Coast Clean Cities Coalition (C5)
- SBCAG

Planned EVSE and EV projects in Santa Barbara County

Focus group participants noted the following planned or upcoming infrastructure investments are planned in Santa Barbara County:

- In the City of Santa Barbara, staff recently signed an agreement with a private vendor to provide 150 new EVSE in low-income neighborhoods in the city, as well as at city fleet worksites. For worksites, staff are focusing on DCFC because many fleet vehicles are frequently in use for long periods and need to charge quickly, such as police cars.
- In the City of Santa Barbara, staff are also planning to install a "resiliency hub", that will include EVSE, at a public library. There are also plans to install a new DCFC near the airport.
- In the City of Santa Maria, staff are in the conceptual planning stages of installing EVSE at a planned park-and-ride station near the Highway 101 at Broadway on/off ramp. The intention is for this location to serve as a rest area for transit vehicles, so EV buses could top up their charge during layover time.
- Santa Barbara County APCD recently received 4 million dollars in funding from the Air Resources Board to direct transportation electrification throughout the county, totaling 18 projects.

Incentive for EVSE and EV adoption

Focus group participants noted the following incentives (existing or desired) would support additional EVSE or higher EV uptake in the county:

- Multiple participants noted that workplace charging infrastructure is not keeping up with demand and feel any incentive that encourages workplaces and employers to provide on-site charging facilities would be beneficial. Because the largest employers in Santa Barbara County are large institutions (hospitals, universities), they could leverage relationships with these institutions to develop a program that motivates EVSE at these locations.
- One participant noted that while workplace EVSE is ideal, a good alternative is providing more public charging infrastructure is a huge incentive for those who own or are interested in owning an EV, especially for those who do not have EV charging infrastructure at home already.
- A form of site-host bonus or benefit for local agencies or employers that provide EVSE would be a strong incentive according to one participant.

Existing disincentives for EVSE and EV adoption

Focus group participants noted the following disincentives (or challenges) with EV infrastructure and EV uptake in the county:

- Santa Barbara County APCD said that one of the biggest barriers right now is the lack of charging infrastructure in multi-family housing developments.
- City of Santa Barbara and Central Coast Clean Cities Coalition participants mentioned that while there are grants available for installing EVSE, the ongoing operation and maintenance of these facilities can be very expensive as they break often. The operations and maintenance costs are a disincentive for many local agencies, and this funding is often overlooked in grants.

Additional notes

The following points were also noted during the discussion:

- The City of Santa Barbara is currently focusing EV infrastructure investments in underserved areas (such as low-income areas and MFH) because private companies are already installing infrastructure in the high value areas.
- One participant suggested using existing infrastructure, such as gas stations, as sites to provide EVSE, as these sorts of sites are already conveniently located along highway corridors. Alternatively, DCFC or other public charging should be in a place where they will support local businesses, such as in downtown cores.

Ventura County

A focus group involving Ventura County stakeholders was held on October 21, 2022. The meeting was held online using Zoom. Representatives from the following agencies participated in the focus group sessions:

- Ventura County Transportation Commission (VCTC)
- Caltrans District 7

Planned EVSE and EV projects in Ventura County

Focus group participants noted the following infrastructure investments are planned in Ventura County:

- Ventura County Transportation Commission (VCTC) is working on EVSE as part of a much larger suite of projects in the County, the Solutions for Congested Corridors Plan, that they will be partnering with Caltrans on.
- In East Ventura, VCTC is planning to install EVSE at three train stations, East Ventura Station (6175 Ventura Boulevard, Oxnard), Oxnard Station (Transportation Center, 201 E 4th St, Oxnard) and Camarillo Station (30 S Lewis Rd, Camarillo, CA).
- Gold Coast Transit District is planning to purchase five hydrogen fuel cell busses and upgrade its current facility to incorporate hydrogen fueling through the Federal Transit Administration's (FTA) Low or No Emission and Bus Program for Buses and Bus Facilities Program.

Incentive for EVSE and EV adoption

There were no comments on this question.

Existing disincentives for EVSE and EV adoption

- VCTC said that the most common questions they receive about EVSE are related to the perceived lack of electric capacity available on the grid. They note that this is not necessarily an issue in Ventura County, but many people believe it is.
- There are only 9 designated commercial truck parking spaces in the entire county, which VCTC noted presents a challenge for trucks to park legally, let alone find a place to charge if they wish to transition to an EV commercial truck. Any scenario where they can make progress with both trucks and light duty would be a win. Would likely require involving private entities as it wouldn't be all county owned land.

Additional notes

The following points were also noted during the discussion:

- There is currently more appetite and interested in hydrogen-fuel for transit than for electric vehicles.
- Any potential charging locations outside of city limits would be subject to Wildlife Corridor Protection and SOR, and so coordination with the county would be required for any proposed locations.
- VCTC suggested locations for interregional-travel targeted SEVSE would be existing communities that are located along highway corridors: Piru (126), Oak View (33), Casitas Springs (33).

Utility Providers

A focus group involving Utility Providers was held on October 20, 2022. The meeting was held online using Zoom. Representatives from the following agencies participated in the focus group sessions:

- San Luis Obispo Climate Coalition
- Pacific Gas and Electric Company (PG&E)
- Central Coast Community Energy (CCCE)
- Central Coast Community Energy (CCCE)
- Caltrans *D5* Planning
- City of Lompoc
- SBCAG
- SLOCOG

What EV or EVSE Incentive programs are in place or planned?

- CCCE provides an "electrify your ride program", which provides incentives for EVs and EVSE, including equipment and the electrical work to install the charging infrastructure. This program is available for residential or commercial sites. They are also providing technical help for commercial customers who are interested in installing DCFC infrastructure for their customers, or customer facing properties.
- CCCE is planning to provide significant incentives for DCFC, and incentives for mixed-use development charging infrastructure provision, and DCFC infrastructure funding for customers in the agriculture industry. They plan to make these resources available in November of 2022.
- CCCE is also working with Build Momentum on a "Blueprints for Medium- and Heavy-Duty Zero-Emission Vehicle Infrastructure" that will identify actions and milestones needed for implementation of medium- and heavy-duty (MD/HD) EV fleets and the related electric charging and/or hydrogen refueling infrastructure. Eligible vehicle types include Class 3-8 plug-in electric vehicles (PEVs) and fuel cell electric vehicles.
- CCCE is also working on a "plan your fleet" tool, which will provide EVSE and fleet transition support to member agencies including: planning, design, and engineering technical help to best serve member agencies where they are in their transition to an all-electric fleet.
- PG&E has many programs in place to support EV and EVSE. For example, PG&E will cover about 80% of project costs for infrastructure build-out for EV fleets for qualifying individuals, and will often provide some funding for the EVSE. They have an EV bus electrification program which will be in place until 2024 and provide EVSE education for schools. PG&E covers the costs of meter work for commercial customers. In 2023, they plan to launch a pre-owned EVSE rebate of about $1,000 base or $3,000 for income-qualifying customers.

- PG&E is also planning to provide an EVSE pilot targeted at multi-family housing developments and small businesses in underserved communities. The pilot will provide level 1 and level 2 charging in businesses in underserved communities, totaling about 450 sites. The program will be open to everyone and first come, first served.
- PG&E is also looking at an upcoming program in 2024 to install over 15,000 level-2 and DCFC chargers over 4 years. The program is currently with the commission and waiting for approval and will focus on serving DAC and rural communities.

What roadblocks to EVSE installations need to be addressed?

- The city of Lompoc says that one roadblock they are running into is upgrading or increasing transformer capacity, which is partially due to a shortage of steel production.
- San Luis Obispo Climate Coalition says the biggest roadblock they have observed is that programs generally ask property owners to do more than the owner is willing to do, except for Tesla, which just requires land and then they manage everything else including the operation.

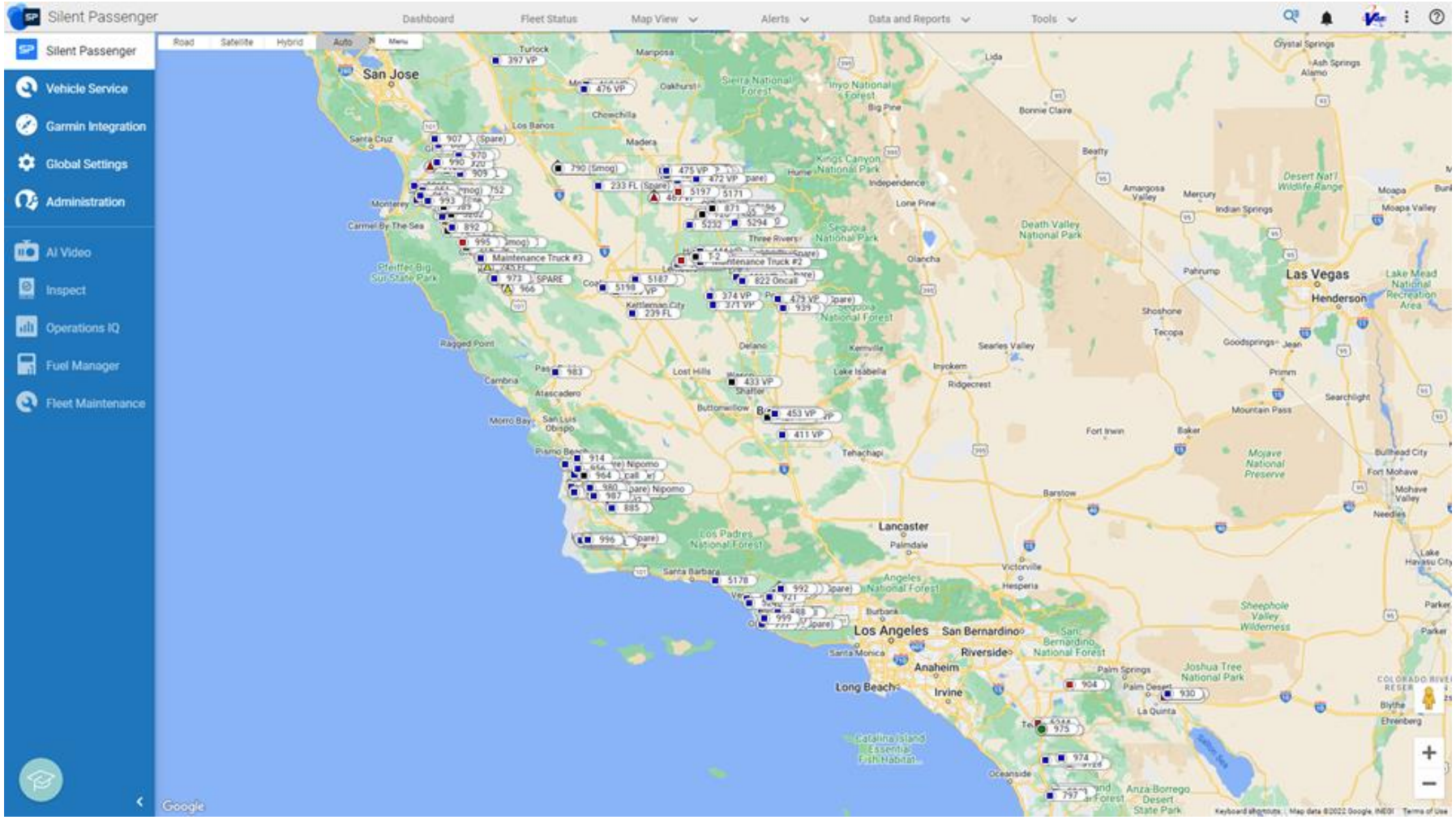
Additional Notes

- PG&E receives positive feedback on their fleet calculator tool provided online, which allows customers to build out their own fleet and informs them of what manufacturers are available. The tool also includes a residential calculator that helps customers understand the cost shift.
- PG&E recently launched an integrated capacity analysis interactive map that will allow customers to look up transformer loads at each building, and it will tell you where capacity is available. If a customer is looking to install any EVSE over 2 mega-watts, customers can submit an application and a representative from PG&E will go through the analysis with you.
- PG&E is working to support planning on a larger regional scale, they need to develop a system for figuring out which plans are out there and what infrastructure will be needed to support new demand. PG&E currently has the ability to look at specific sites, but it is difficult for them to provide maps that show transformer capacity at a regional scale.

CalVans

The California Vanpool Authority commonly known as CalVans is a public transit agency operating a large pool of 702 15-passenger vans that transport workers from home to their worksites. The majority of commuters using this public service are farm workers who utilize the vanpool network to commute to farms and other agricultural worksites, throughout the Central coast counties. Operating primarily on rural routes serving farm workers, CalVans picks up passengers at multi-unit housing or hotels on a daily basis. The vans are driven by commuters and park at the volunteer drivers' homes overnight and at worksites during the day. Beginning in 2024, CalVans plans to acquire 283 battery-electric vans to replace or augment current internal combustion powered vans if such vehicles capable of 120-mile battery range are commercially available by then. Since most drivers currently lack access to charging facilities at home or work, CalVans expects to use mobile charging to charge the fleet. Alternatively, or in addition to mobile charging, CalVans could potentially charge at on-route public high-power chargers, preferably at freeway interchanges along the route, close to where passengers live or work. Other charging options would be residential charging most likely at new farmworker housing such as Harvest Moon in Salinas where Level 2 charging could be cost-effectively installed as well as the use of workplace charging, potentially using portable solar chargers.

FIGURE 18: SCREEN CAPTURE OF CALVANS DEPLOYMENT



SOCIAL PINPOINT

Social Pinpoint is a digital engagement platform that helps organizations to communicate and collaborate through interactive maps, online surveys, and other engagement tools. Social Pinpoint was used to gather feedback from stakeholders and the public on the CCZEVS project. The website (https://dks.mysocialpinpoint.com/central-coast-zev-strategy-plan#/) for the project was launched on February 07, 2022 and remained open for comment through to November, 2022.

On the Social Pinpoint CCZEV page, participants could provide location-specific comments as well as "like" or "dislike" the comments of others, allowing comments to be sorted by popularity. Users were allowed to submit four types of comments: *Project Suggestions, Something I like, Request DC Fast Charger,* and *Request Level 2 Charger*.

See **Figure 19** for a snapshot of the Social Pinpoint project landing page.

The following organizations listed in **Table 15** were contacted via email regarding the CCZEV Social Pinpoint tool.

Public Response

Overall, the Social Pinpoint webpage received over 7,292 total visits from 3,086 unique users. During the duration the survey was open, the webpage received over 1,400 comments from 346 unique stakeholders. The average number of comments per unique user was 3-4. The following sections provide an overview of the public comment received on the Social Pinpoint webpage.

Due to the high number of Social Pinpoint comments, results have been organized by County. The County of Santa Cruz received the most comments (476), followed by Santa Barbara County (425), San Lois Obispo County (223), Monterey County (167), Ventura County (9) and finally San Benito County (17). A heatmap that shows the distribution and relative number of responses is shown in **Figure 20**. The most comments received were DC fast Charger requests (667) followed by Level 2 charger requests (495) and 233 miscellaneous project suggestions. A breakdown of comments by category

The most comments received were DC Fast Charger Requests (667), followed by Level 2 Charger requests (495) and 233 miscellaneous project suggestions. A breakdown of comments by category Level 2 Charger requests (495) and 233 miscellaneous project suggestions. A breakdown of comments by category is shown in **Figure 21.**

FIGURE 19: SOCIAL PINPOINT LANDING PAGE

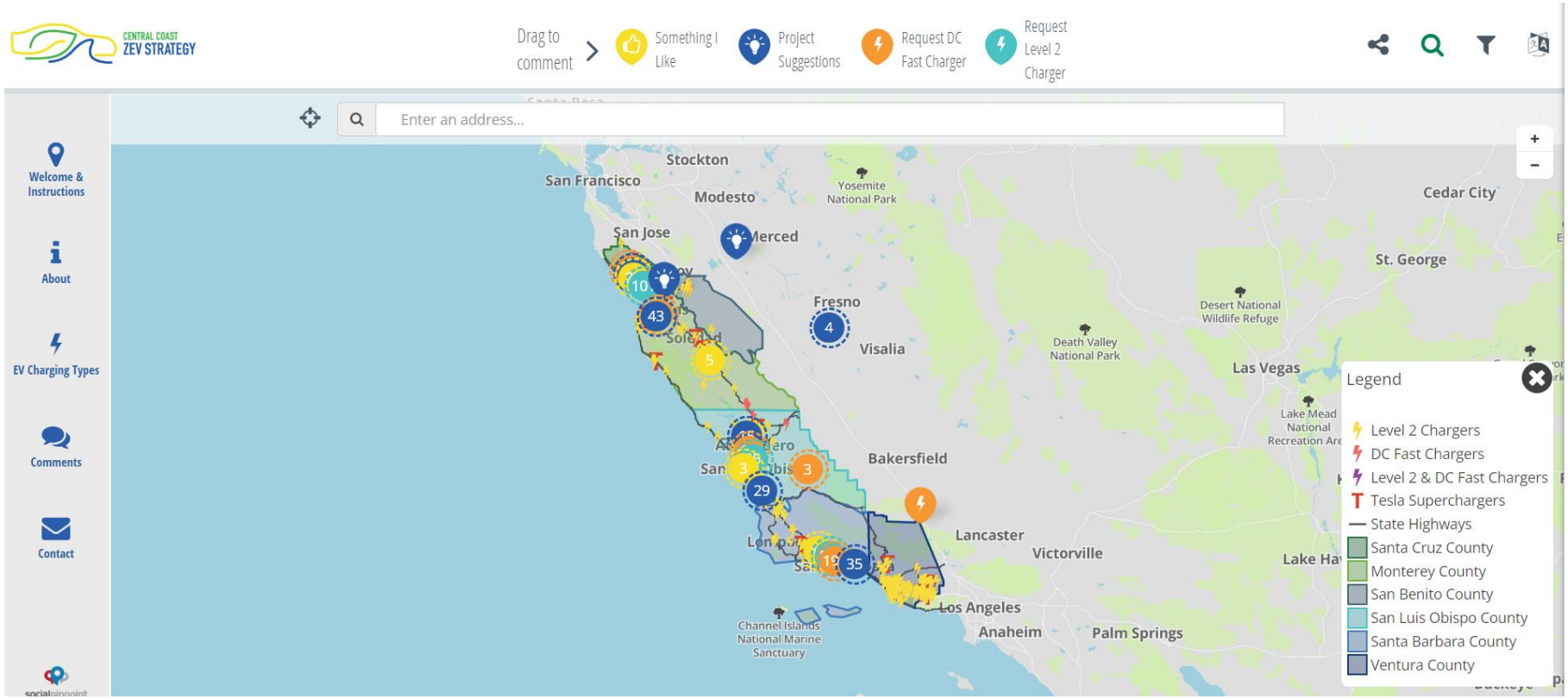
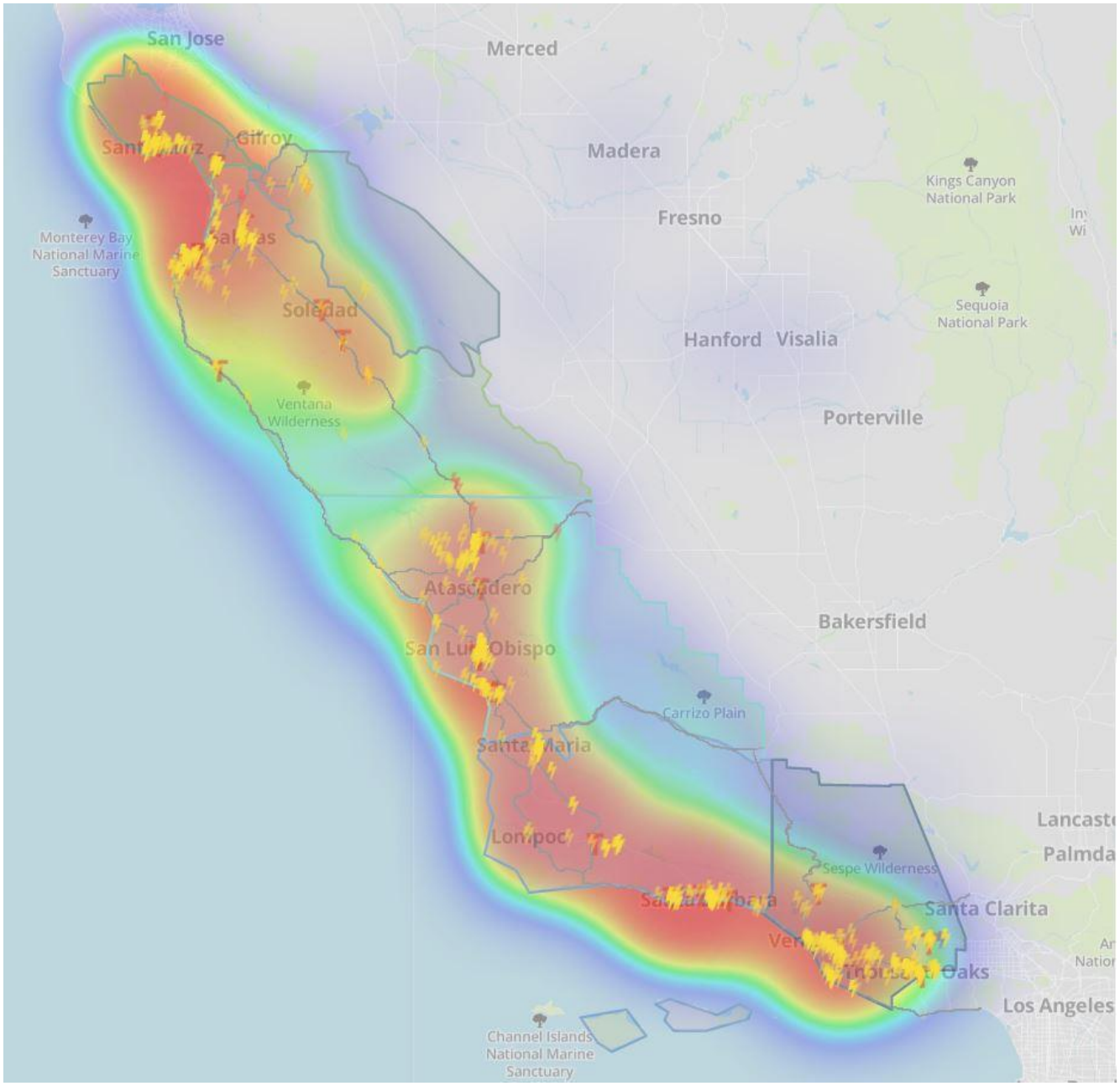


TABLE 15: STAKEHOLDERS AND ORGANIZATIONS CONTACTED REGARDING THE SOCIAL PINPOINT SURVEY

SECTOR	ORGANIZATION
REGIONAL AND STATE GOVERNMENT - GRANT PARTNERS	Association of Monterey Bay Area Governments (AMBAG) Transportation Agency for Monterey County (TAMC) San Benito Council of Governments (SBCOG) San Luis Obispo Council of Governments (SLOCOG) California Department of Transportation Santa Barbara County Association of Governments Southern CA Association of Governments
LOCAL JURISDICTIONS CLIMATE/EV PLANNING	City of Santa Cruz City of Watsonville Monterey County San Benito County Santa Barbara County County of Santa Barbara Sustainability Division San Luis Obispo County City of Scotts Valley City of Capitola City of Hollister City of San Juan Bautista City of San Luis Obispo City of Santa Barbara, Sustainability and Resilience City of Lompoc
ADDITIONAL REGIONAL AND STATE GOVERNMENT	Monterey Bay Regional Climate Action Compact (MBRCAC) (Not a government agency, part of 4C) CARB CalSTA Ventura County Regional Energy Alliance The Port of Hueneme, Oxnard Harbor District
STATE GOVERNMENT TRIBAL LIAISONS	Transportation Commission (CTC) Department of Transportation (CalTrans)
AIR DISTRICTS	Bay Area AQMD Monterey Bay Air Resource District San Luis Obispo APCD Santa Barbara APCD Ventura County APCD
TRANSIT DISTRICTS	Monterey Salinas Transit Santa Cruz County Regional Transportation Commission (SCCRTC) Ventura County Transportation Commission Clean Air Express- Lompoc Growers Shippers Associates Farm Bureau- Santa Barbara Santa Cruz METRO San Benito County Local Transportation Authority Lift Line/Community Bridges CTSA (SC) SLO Regional Transit Authority (SLORTA) City of San Luis Obispo Transit (SLO Transit) Santa Barbara Metropolitan Transit District (SBMTD) Santa Maria Area Transit (SMAT) Santa Ynez Valley Transit (SYVT) City of Lompoc Transit (COLT) Easy Lift Transportation SMOOTH

SECTOR	ORGANIZATION
	Gold Coast Transit District
MILITARY PARTNERS	Port of Hueneme Oxnard Harbor District / Port of Hueneme Naval Support Activity Monterey Vandenberg Space Force Base Fort Hunter Liggett Camp San Luis
NON-GOVERNMENTAL ORGANIZATIONS	Community Environmental Council Central Coast Community Energy (3CE) (this is a local government agency) Central Coast Clean Cities Coalition Ecology Action Monterey Bay EV Alliance Central Coast Climate Collective (4C) Carbon Free SLO International Brotherhood of Electrical Workers Local 234 - San Benito, Santa Cruz, MoCO Central Coast Alliance United for Sustainable Economy Central Coast Labor Council Lyft
FEDERALLY & NON-RECOGNIZED TRIBES	Esselen Tribe of Monterey County Ohlone/ Costanoan-Esselen Nation (historically known as "Monterey Band of Monterey County") Salinan Tribe of Monterey, San Luis Obispo Counties Santa Ynez Band of Chumash Indians - Chumash Indians of Kalawashaq Santa Ynez Band of Chumash Indians Northern Chumash, San Luis Obispo Barbareno/ Ventureno Band of Mission Indians - Chumash-affiliated Tribe Mixteco Indigena Community Organizing Project Coastal Band of the Chumash Nation yak tityu tityu - Northern Chumash Tribe
OTHER	Pacific Gas and Electric Caltrans Headquarters Caltrans District 5 SoCal Gas Company Visit SB CalPine Energy Solutions

FIGURE 20: SOCIAL PINPOINT RESPONSE HEATMAP



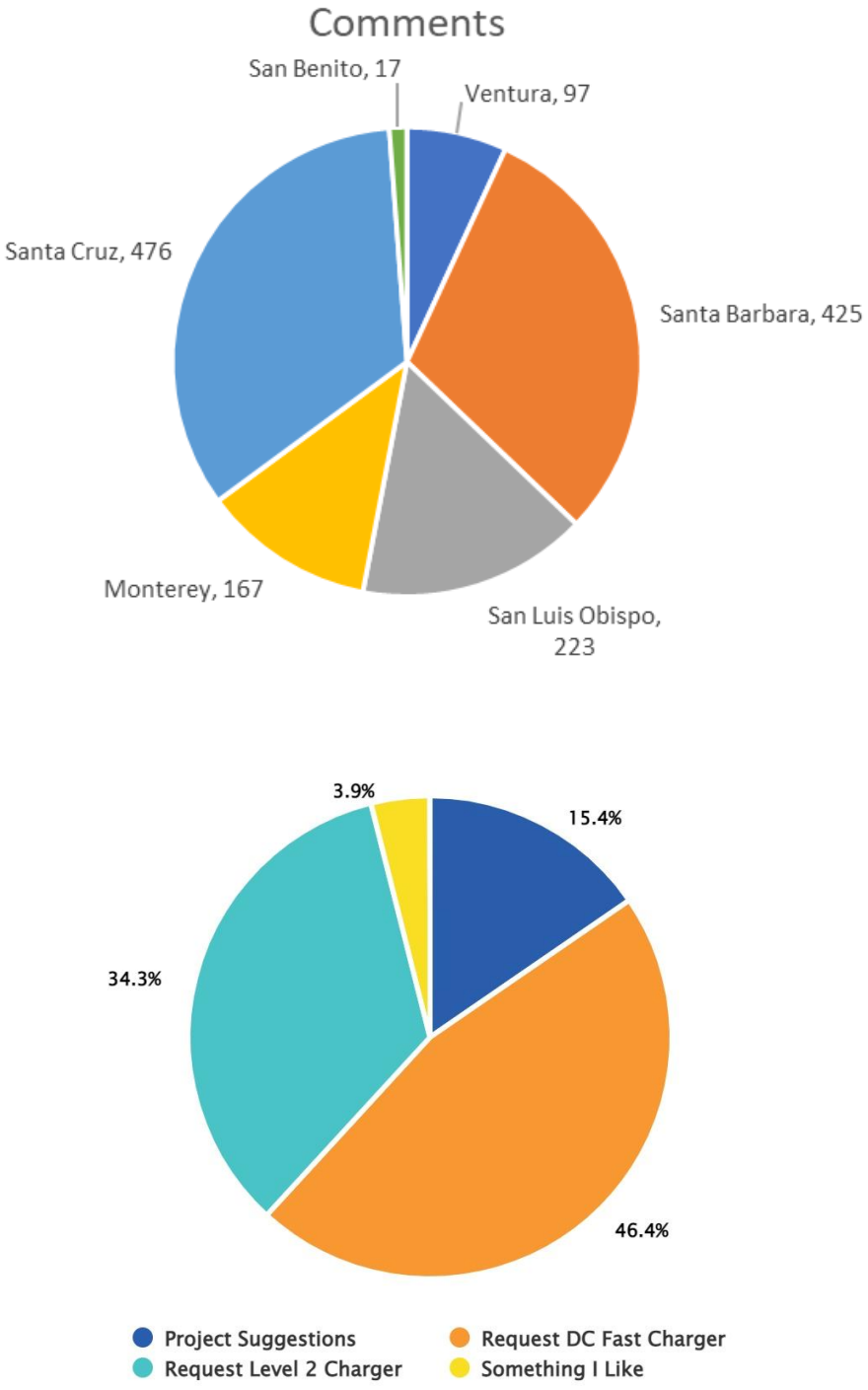


FIGURE 21: SOCIAL PINPOINT COMMENT BREAKDOWN

Comment Highlights by County

The comments and suggestions from Social Pinpoint have been organized by County due to the high volume of participation. The full Social Pinpoint data can be found in **Appendix II**.

Santa Cruz County

Santa Cruz County received 476 Social Pinpoint comments from 63 unique users. Most comments were related to requests for DCFC infrastructure rather than Level 2 infrastructure, and the most popular locations were large shopping centers and outdoor recreation sites. **Table 16** summarizes comments by type and popularity for the County.

The highest number of comments were for infrastructure in the City of Santa Cruz (205) followed by Scotts Valley (44), Capitola (42), Soquel (37) and Aptos (34). 46% of Social Pinpoint responses came from participants outside of Santa Cruz County, primarily Santa Clara County. The spatial distribution of DCFC and Level 2 charging infrastructure suggestions for Santa Cruz County is illustrated in **Figure 22** and **Figure 23**, respectively.

Key themes from the public comments in Santa Cruz County were requests for charging infrastructure in shopping center parking lots and providing charging near popular recreation opportunities. There were also many responses highlighting the need for charging infrastructure to support inter-regional mobility, to provide charging locations for EV owners without home-based charging, and at large institutions and employment centers. The following sections describe the key themes for responses in Santa Cruz County.

TABLE 16: SUMMARY OF SANTA CRUZ COUNTY SOCIAL PINPOINT COMMENTS

COMMENT TYPE	COUNT	MOST POPULAR LOCATIONS[1]
PROJECT SUGGESTIONS	66	Chargers at Deluxe Foods Shopping Center, Rio Del Mar (6 likes) Chargers at Cabrillo College Area, Aptos (5 likes)
DC FAST CHARGER REQUESTS	216	Capitola Mall (12 likes) Soquel Ave Whole Foods Market, Santa Cruz (6 likes) Wild Roots Market, Felton (6 likes) Safeway, Felton (6 likes) Rio Del Mar Beach Parking Lot, Aptos (6 likes) Aptos Station Parking Lot (6 likes) Lighthouse Point Parking Lot, Santa Cruz (5 likes) 41st Ave Whole Foods, Santa Cruz (5 likes) Freedom Centre Shopping Mall, Freedom (5 likes)
LEVEL 2 CHARGER REQUESTS	170	Downtown Boulder Creek (9 likes) Highlands Park Parking Lot, Ben Lemons (5 likes) Safeway, Felton (5 likes) Wild Roots Market, Felton (4 likes)

COMMENT TYPE	COUNT	MOST POPULAR LOCATIONS[1]
		Brookdale Lodge, Brookdale (4 likes) Near Aptos Station Parking Lot (4 likes) Aptos Village County Park (4 likes)
"SOMETHING I LIKE"	24	Request for E-Bike Lockers at Santa Cruz Small Craft Harbor (4 likes)

[1]Most popular locations are the 20 projects in each County with the most "likes" submitted on Social Pinpoint.

TABLE 17: SANTA CRUZ COUNTY SOCIAL PINPOINT COMMENTS – SHOPPING CENTERS

SOCIAL PINPOINT COMMENTS
The Deluxe Foods Shopping Center has a large parking lot just off the freeway with lots of amenities and is potentially an ideal DC fast charging station location and is certainly worth considering. - San Jose resident
The Nobhill/CVS shopping center [Watsonville] would make sense as a possible DC fast charging location given its proximity to Highway 1 and plentiful space. For those on longer drives through Santa Cruz, this would be an ideal place to stop and quickly charge while having some amenities nearby. - San Jose resident
Please consider adding fast DC chargers at Aptos Village. There is easy access from Soquel Drive, and the local businesses provide convenient opportunities to eat, shop, or get a coffee while my car is charging. - Santa Cruz resident
Parks and shopping centers are ideal places to put chargers. We need more CCS L3 chargers in the Scotts Valley area. - Santa Cruz resident
Fast chargers in the Safeway Shopping Center [Santa Cruz] would be very convenient and there is plenty of room. – Watsonville resident
Parks and shopping centers are ideal places to put chargers. We need more CCS L3 chargers in the Scotts Valley area. – Santa Cruz resident
With Target [in Scotts Valley] being open soon, great place to charge while shopping and walking distance from a park and food – Scotts Valley Resident

Theme #2: Popular Recreation Sites

Approximately 120 Social Pinpoint submissions in Santa Cruz suggested charging facilities at recreational sites that were important for both locals and tourists. The most referenced locations were various outdoor recreation opportunities, both urban and rural. Popular urban parks suggested were Highland Park in Ben Lomond, Lighthouse Point in Santa Cruz, and Aptos Village County Park. There were also many suggestions for more rural recreation sites such as Davenport, Wilder Ranch State Park, Roaring Camp, and Greyhound Rock Park. At these more rural locations, submissions described these locations as also being good for supporting regional travel and nearby businesses. Many users also highlighted recreation sites that draw tourists from out of town such as the Harbor and the beach boardwalk as good locations for charging facilities.

Some popular ("liked") Social Pinpoint comments related to charging infrastructure at recreation sites are highlighted in **Table 18**, with full results in **Appendix II**.

TABLE 18: SANTA CRUZ COUNTY SOCIAL PINPOINT COMMENTS – RECREATION

SOCIAL PINPOINT COMMENTS
Davenport would be an ideal location for a potentially more significant charging station. While these could be level 2, DC fast charging would be preferable. There is ample space in which a charging station could be located and, in doing so, could benefit businesses nearby as well. Being this is also a popular road trip, commuter and vacation route, chargers would undoubtedly be well used. - San Jose resident
NOAA exploration center is a great spot to serve commercial biz/tourists. There is simply not enough charging now in this area - Santa Cruz resident.
Manresa SB parking lot would be ideal for state parks to add level 2 chargers to being that it is a large parking lot at a popular and busy beach that many people spend significant time at, so chargers would be appreciated and well used. - San Jose resident
Public libraries are the perfect place to install charges. People can avail themselves of the myriad of services libraries offer while charging your vehicle. - Aptos resident
This [Seacliff State Beach] is a heavily used State Park by the beach, with ample parking in the upper lot. Locals and tourists would benefit from having Level 2 charging here, in addition to the existing slower versions already installed by the parks. - Santa Cruz resident
This [Aptos Village County Park] is a county park that would benefit from having a level 2 charger given its size and location. – San Jose resident
L2 chargers in Wilders Ranch SP car park would be very helpful. – Santa Cruz Resident
[Big Basin] Level 2 chargers make sense for parks like this where people go hiking for hours. – Santa Cruz resident
A fast charger at Castle Rock would allow visitors to recharge the miles driven to and returning from the park. The current DC chargers only allow about 10 miles/hour, better than nothing but just an EV parking spot. – Los Gatos resident

Theme #3: Supporting Inter-Regional Mobility

There were 30 responses suggesting charging infrastructure locations that would improve regional and commuter travel. Most of these comments were about providing DCFC with convenient highway access, or specific corridors that could use more charging infrastructure, including Highway 1, Highway 9, and Highway 17. Some participants noted that chargers along these highways, especially DCFC, could be strategically placed to support tourism in smaller towns, such as Davenport.

A few of the popular (most "liked") Social Pinpoint comments submitted related to charging infrastructure along the highways to support regional travel are highlighted in **Table 19**, with full comments found in **Appendix II**.

TABLE 19: SANTA CRUZ COUNTY SANTA CRUZ COUNTY SOCIAL PINPOINT COMMENTS – INTER-REGIONAL MOBILITY

SOCIAL PINPOINT COMMENTS
Scotts Valley is the largest town in the Santa Cruz Mountains. With many remote residents, there's little option but to drive. And a few major roads to get in and out. Felton is another good choice as it intersects with many of these major roads in the south. - Boulder Creek resident
Greyhound rock, as mentioned in another pin, absolutely makes sense as a DC fast charging location given the ample parking that is hardly used and ideal location for those entering Santa Cruz from the SF Bay Area or those traveling in the opposite direction. By having these chargers available before entering the busier parts of town, level 2 chargers in town can be saved for those who live in Santa Cruz and need to charge during their daily trips/errands. - San Jose resident
Popular bay area destination [near Wilder Ranch State Park] which means folks exhaust batteries coming over the hills and need to charge. Having it near its destination improves recreational opportunities - anonymous resident.
A charger at the summit store [near Lake Elsman] would be a good idea here. It is one of the few public places in a remote but well-populated area and has other amenities to accompany charging. It is also an ideal gathering spot along a crucial evacuation route in the event of a fire and charging could improve this. - San Jose resident
For those of us living in San Lorenzo Valley, we really need chargers in Felton. Sometimes it is very insecure to head up into the hills to go home if the battery is getting low. Need a boost in Felton to be sure to get home farther up Highway 9. - Santa Cruz resident
Getting to towns in the hills uses a lot of power and there isn't much to charge in town, so having DCFC would enable more EV adoption by those who visit areas like this – anonymous resident.
Davenport would be an ideal location for a potentially more significant charging station. While these could be level 2, DC fast charging would be preferable. There is ample space in which a charging station could be located and, in doing so, could benefit businesses nearby as well. Being this is also a popular road trip, commuter and vacation route, chargers would undoubtedly be well used. - San Jose resident

Theme #4: Residential Neighborhoods

40 Social Pinpoint responses were suggestions for DCFC and Level 2 charging that would support neighborhoods, particularly renters and those in multifamily developments that may not have access to at-home charging. Most comments that mentioned neighborhoods suggested urban recreation locations that would serve both visitors and residents, such as soccer fields, museums, and schools. A few of the popular (most "liked") comments submitted related to charging infrastructure for multifamily developments, renters, and residential neighborhoods are highlighted in **Table 20**, with full comments found in **Appendix II**.

TABLE 20: SANTA CRUZ COUNTY SOCIAL PINPOINT COMMENTS – RESIDENTIAL NEIGHBORHOOD CHARGING

SOCIAL PINPOINT COMMENTS
City Hall complex needs a comprehensive solution for civic center activity participants, library, employee, neighborhood charging. Could be an opportunity to pilot curbside charging. City is currently starting its fleet electrification studying fleet and employee charging. - Santa Cruz resident
Polo Grounds County Park chargers could be used by visitors attending all-day soccer games or other activities as well as nearby residents. - San Jose resident
More level 2 chargers for residents in this area [west side of Santa Cruz] who don't have access to home charging. Many don't have a driveway and others have underpowered electrical boxes. - Menlo Park resident
This [near Garfield Park Library Branch, Santa Cruz] would be a great place for a public charge station. For folks like us who rent houses and don't have driveways, it would allow us to charge up in our neighborhood. - Santa Cruz resident
We need a large project downtown to increase high speed charging capacity to also serve MF [multi-family] housing going in. - Santa Cruz resident

FIGURE 22: DCFC LOCATION SUGGESTIONS – SANTA CRUZ COUNTY

FIGURE 23: LEVEL 2 CHARGING LOCATION SUGGESTIONS – SANTA CRUZ COUNTY

San Benito County Social Pinpoint Comments

There were 17 responses on Social Pinpoint for San Benito County. The majority (60%) of responses came from participants in Santa Clara and Santa Cruz counties, with 40% coming from San Benito County.

Table 21 summarizes the breakdown of Social Pinpoint comments by type as well as the most popular comments within San Benito County. Most comments were requests for DCFC and Level 2 charging infrastructure in San Benito municipalities, including San Juan Bautista and Hollister, as well as some requests for chargers near recreation sites, such as Pinnacles National Park. **Figure 24** and **Figure 25** show the distribution of DCFC and Level 2 charging infrastructure suggestions in San Benito County.

Common themes from San Benito County comments were related to the lack of rural charging infrastructure and requests for charging infrastructure that would better support regional mobility. There were requests for charging infrastructure near shopping opportunities and to promote tourism. The following sections describe the key themes for responses in the county.

TABLE 21: SUMMARY OF SAN BENITO COUNTY SOCIAL PINPOINT COMMENTS

COMMENT TYPE	COUNT	MOST POPULAR LOCATIONS[1]
PROJECT SUGGESTIONS	6	Charging infrastructure near Historic Third Street and Mission San Juan Bautista, San Juan Bautista (6 votes) Windmill Market (2 votes) Downtown Hollister Parking Garage (1 vote) Public lot near 4th Street and East St, Hollister (1 vote) Near Baymont by Wyndham Hollister (1 vote) Pinnacles Campground, Piacines (1 vote)
DC FAST CHARGER REQUESTS	6	Chaparral Trailhead Parking Lot (3 votes) Mission San Juan Bautista (3 votes) Windmill Market, San Juan Bautista (3 votes) Pinnacles Campground (2 votes) Vacant lot at SR25 and 156B, Hollister (1 vote) Target, Hollister (1 vote)
LEVEL 2 CHARGER REQUESTS	5	Pinnacles Campground, Piacines (3 votes) San Juan Bautista (3 votes) Windmill Market (1 vote)
"SOMETHING I LIKE"	0	

[1]Most popular locations are the 20 projects in each County with the most "likes" submitted on Social Pinpoint. In San Benito, there were only 16 comments.

Theme #1: Downtown Tourism

Five Social Pinpoint submissions were requests or suggestions for charging infrastructure in downtown cores that might support tourism in the County. A sample of comments submitted related to charging infrastructure downtown are highlighted in **Table 22**, with full comments found in **Appendix II**.

TABLE 22: SAN BENITO COUNTY SOCIAL PINPOINT COMMENTS – DOWNTOWN TOURISM

SOCIAL PINPOINT COMMENTS
A favorite tourist stop in public parking lot [near downtown San Juan Bautista] - across from Historic Third Street and walking distance to Mission San Juan Bautista - Gilroy resident
San Juan Bautista relays heavily on tourism; however, we currently do not have the infrastructure in place to support travelers with electric vehicles. A couple of fast chargers are desperately needed. - resident
This is the only shopping center in town [Windmill Market, San Juan Bautista]; many people stop here while traveling on the 156. We don't have any fast chargers available, which is unfortunate because we have a lot of tourists traveling from all over to attend our events or visit the mission. - Hollister resident
The City of Hollister has a public parking garage at this location [downtown Hollister]. A charging station would be perfect in this location with its proximity to downtown restaurants and shops. Solar chargers would be perfect on the top floor because of the sun exposure. –Gilroy resident

Theme #2: Popular Recreation Sites

Four Social Pinpoint responses were requests for charging infrastructure at Pinnacles National Park. One response specifically requested chargers at the east parking lot, while one user noted that there is one charger at Pinnacles already, but it is difficult to use and lacks shade. A sample of comments related to charging infrastructure at rural recreation sites are highlighted in **Table 23**, with full comments found in **Appendix II**.

TABLE 23: SAN BENITO COUNTY SOCIAL PINPOINT COMMENTS – RURAL RECREATION SITES

SOCIAL PINPOINT COMMENTS
National Parks should have good charging stations. - Santa Barbara resident
There currently is one charger at Pinnacles East but it is horrendous. In fact, NPS seems to always make the chargers nearly impossible to use rather than the standard ChargePoint, electrify America etc. In some places they install them and don’t even get them hooked up to electricity, so they sit there melting in the sun inoperable. Would love to see functional ones at NP sites and other recreation areas. - Orinda resident

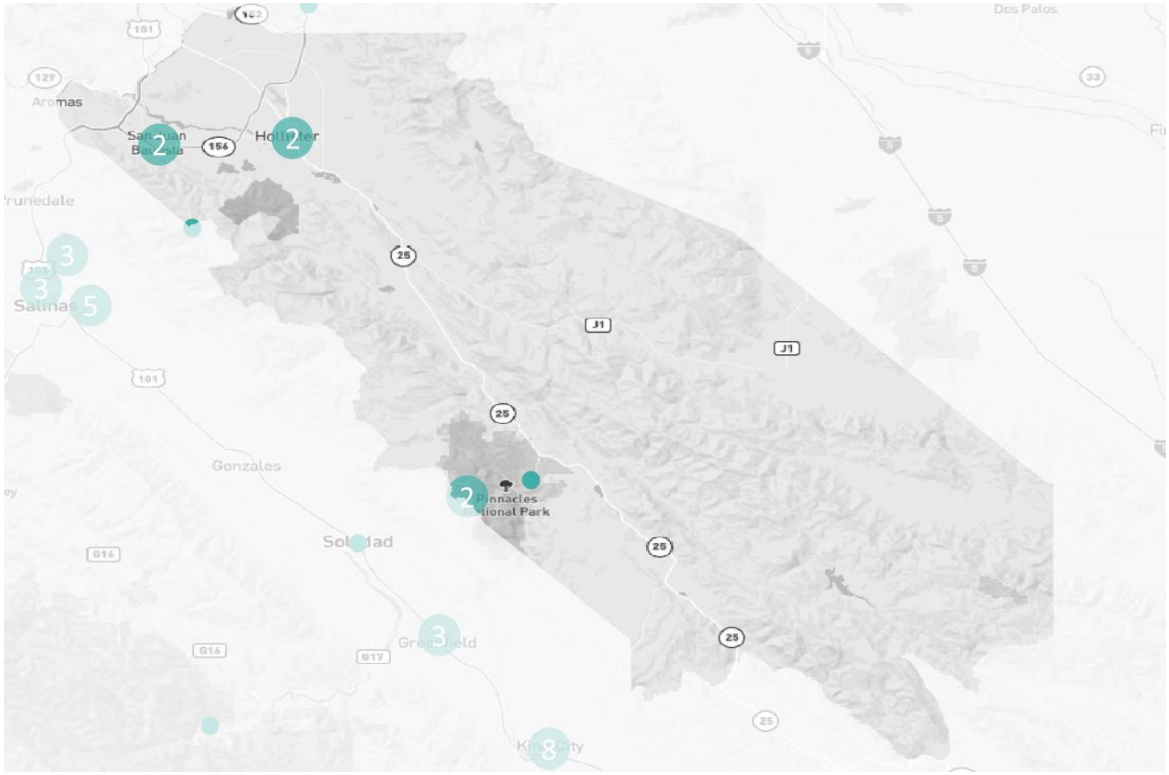


FIGURE 24: DCFC LOCATION SUGGESTIONS – SAN BENITO COUNTY

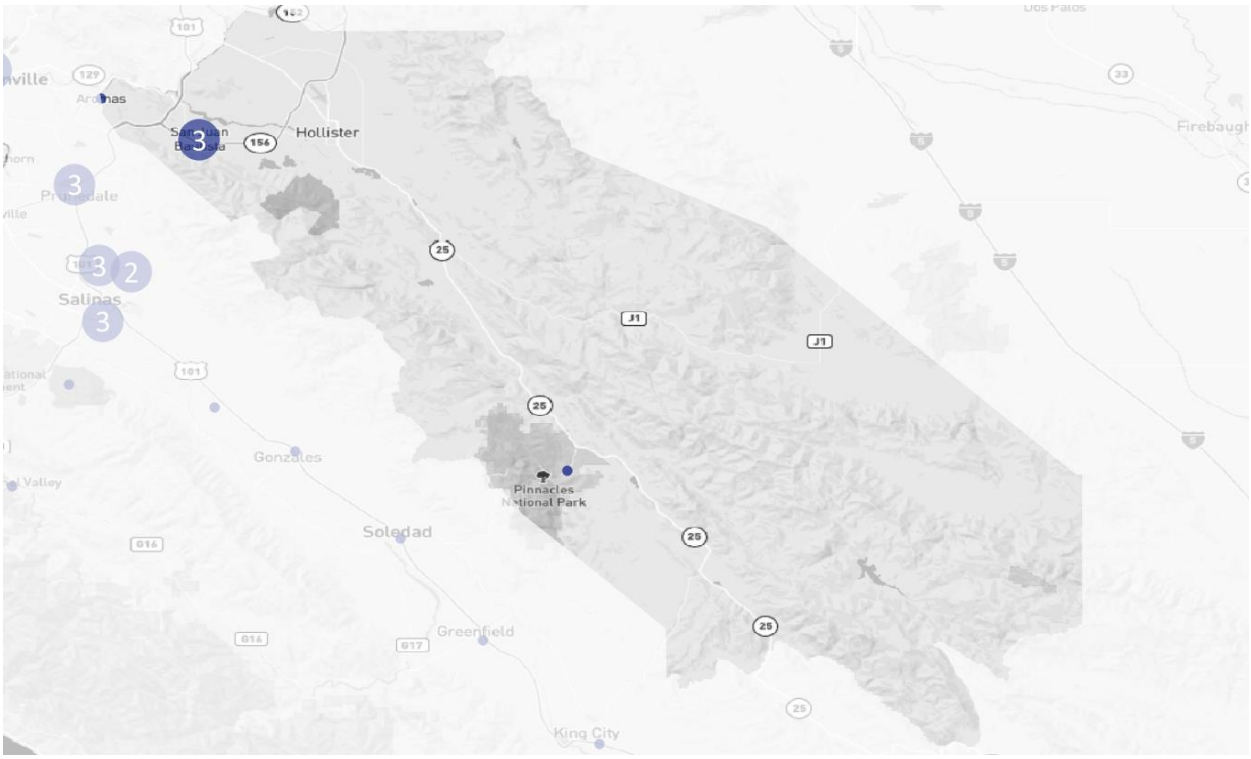


FIGURE 25: LEVEL 2 CHARGING LOCATION SUGGESTIONS – SAN BENITO COUNTY

Monterey County

Monterey County received 167 comments on Social Pinpoint from 75 unique users. Most comments were suggestions and requests for DCFC infrastructure rather than Level 2 charging infrastructure, with the highest number of requests in Salinas, Monterey and Carmel-by-the-Sea. About 50% of Social Pinpoint responses came from participants within Monterey County, with most of the remaining 50% of responses submitted from nearby Santa Barbara County and Santa Cruz County.

Table 24 contains a breakdown of Social Pinpoint comments by type, as well as the most popular comments within Monterey County. The most popular comments (most upvoted) were for DCFC along the coast on Highway 1 near or within Big Sur, as well as requests for DCFC within rest areas and at Shopping Centers. **Figure 26** and **Figure 27** show the distribution of DCFC and Level 2 charging infrastructure requests in Monterey County.

Key themes from the Social Pinpoint submissions in Monterey County were requests for charging infrastructure that will support regional travel, particularly at rural sites. Infrastructure at shopping centers, as well as charging at recreation sites and institutions with regional draw, were popular suggestions. The themes are discussed in the sections below.

TABLE 24: SUMMARY OF MONTEREY COUNTY SOCIAL PINPOINT COMMENTS

COMMENT TYPE	COUNT	MOST POPULAR LOCATIONS[1]
PROJECT SUGGESTIONS	39	Chargers near Big Sur River Inn General Store (8 likes) New/additional chargers near Camp Roberts Rest Area (7 likes) New/additional chargers at Prune Tree Center, Prunedale (7 likes)
DC FAST CHARGER REQUESTS	86	Along Big Sur Coast (39 likes) Big Sur Village (25 likes) Stretch of road between Rocky Point and Rocky Creek Bridge (15 likes) Between Partington Cove and McWay Falls (15 likes) Near Willow Creek Picnic Area and Beach (14 likes) The Crossroads Carmel Shopping Center, Carmel-By-The-Sea (12 likes) Downtown Carmel-By-The-Sea (12 likes) Near San Lucas (10 likes) King City (9 likes) Near Point Lobos State Natural Reserve (9 likes) Del Monte Shopping Center, Monterey (9 likes) Downtown Soledad (8 likes) Camp Roberts Rest Area, Nacimiento (8 likes) Near "The Corkscrew" Raceway, Monterey (7 likes)
LEVEL 2 CHARGER REQUESTS	35	
"SOMETHING I LIKE"	7	Request Camp Roberts Rest Area had more charging capacity/reliability (8 votes)

[1]Most popular locations are the 20 projects with the most "likes" submitted on Social Pinpoint

Theme #1: Supporting Inter-Regional Mobility

There were 56 Social Pinpoint Comments received for Monterey County specifically requesting charging infrastructure that would better support regional mobility, while 30 of those requests were specifically for remote and rural locations. Those requesting charging infrastructure along the Big Sur coastline were the most popular comments. Suggestions for new or upgraded charging infrastructure at Camp Roberts were also popular. Several of the Social Pinpoint requests for charging infrastructure to support regional travel are highlighted in **Table 25**, with full comments found in **Appendix II**.

TABLE 25: MONTEREY COUNTY SOCIAL PINPOINT COMMENTS – REGIONAL TRAVEL

SOCIAL PINPOINT COMMENTS
This corridor is sorely lacking access to chargers. A fast charger (or any chargers) at the carpool parking area at this intersection would help commuters and people who live in this community - Salinas resident
Fast Charger at intersection of Highway 68/Highway 1 makes sense to me given large volume of traffic crossing this area. - Carmel-by-the-Sea Resident
level 2 at Spreckels junction since this is gateway to 101 – Salinas Resident
I drive an electric vehicle and live in town and work in Big Sur. I have a couple of coworkers who also have EVS and more who are thinking about purchasing one. When there are natural disasters or accidents on the road, we might get stuck for hours or days and need to drive home to the peninsula from the south or wait it out. We would all feel more comfortable if there was a DC charging station in Big Sur for such emergencies. – Big Sur resident
Big Sur and Gorda area are ideal for Big Sur coast CCS DCFC infrastructure. Most EVs have a minimum of 80mi range. Morro Bay has a planned Electrify America charger. Monterey already has Electrify America. A Big Sur and Gorda area charger would close the gap. Gorda is nice because it has a restaurant and shop. - Nipomo resident
A DC fast charging facility somewhere in Castroville would likely be beneficial as it would serve two major highways fairly close by and increase visitors to businesses in the area. It could supplement another facility in miss landing and provide robust charging infrastructure for those traveling through northern Monterey County. - San Jose resident

Theme #2: Popular Recreation Sites

40 Social Pinpoint comments submitted for Monterey County were requests for charging infrastructure at popular recreation sites, both urban and rural. 11 submissions were requests for charging infrastructure to improve Big Sur access for electric vehicles, but there were also multiple requests for chargers near downtown Monterey near Del Monte Beach, as well as larger recreation complexes such as Manzanita Park Sports Complex and WeatherTech Raceway. Some popular (most "liked") Social Pinpoint requests for charging infrastructure at recreation sites in Monterey County are highlighted in **Table 26**, with full comments found in **Appendix II**.

TABLE 26: MONTEREY COUNTY SOCIAL PINPOINT COMMENTS – RECREATION SITES

SOCIAL PINPOINT COMMENTS
Cardinale stadium lot - would be helpful to charge while at game, event - Monterey resident.
Salinas City Library Parking lot, great way to bring Social Justice and Opportunity for Electric Cars to neighbors who live in apartments nearby. Partner with the City of Salinas to deploy in Public Parking lots of various parks, libraries, and other city own lots. - Monterey resident
This [WeatherTech Raceway Laguna Seca] is a popular recreational area, and it would be great to have a fast-charging option here, so we don't have to drive to Monterey or Salinas for a charge. This would also reduce traffic along the narrow road between Monterey and Salinas. - Los Alamos resident
Would be nice to have a charger at Arroyo Seco campground. - Santa Cruz resident
Place chargers in main parking areas along the bay. Allows charging while visiting local attractions. - San Luis Obispo resident
For those who partake in athletic events such as practices or games, this [Manzanita Park Sports Complex] can be a great spot to install a charger to help charge while they are running around or coaching! - Watsonville resident
A fast-charging station here near both piers [near Del Monte Beach] would be away from residential areas and close to many tourist sites. The parking lot already exists, so changing some of the spots to charging stations would be very helpful to all. - Pacific Grove resident
Ragged Point Inn would be a great place for a DC charger. There's a hotel, restaurant, cafe and store and it's 78 miles south of Monterey. https://www.raggedpointinn.com/ - Pacific Palisades resident
Garland's parking lot is always busy, and people spend a long time at the park exploring. This would be a great spot to encourage EV use. Since it's a good way out there on Carmel Valley Rd a charger station here would seemingly get plenty of use. - San Leandro resident
Level 2 Destination chargers in Carmel Valley Village would be great to have - Watsonville resident.

Theme #3: Large Institutions and Employers

There were 24 requests for charging infrastructure at institutional facilities in Monterey County, with schools, and hospitals being popular requests for staff, student and patient charging. California State University in Monterey Bay, Moss Landing Marine Labs, and the Community Hospital of the Monterey Peninsula are some of the locations requested. A sample of some of the Social Pinpoint requests for charging infrastructure at institutions in Monterey County are highlighted in **Table 27**, with full comments found in **Appendix II**.

TABLE 27: MONTEREY COUNTY SOCIAL PINPOINT COMMENTS – INSTITUTIONS

SOCIAL PINPOINT COMMENTS
Hospitals tend to have long shifts. Level 1 or Level 2 could be a cost-effective infrastructure option to add for staff. Visitors and out-patients could benefit from DCFCs. Applies to CHOMP and all area hospitals. - Salinas resident
There are no electric chargers for students, faculty, or staff on the MPC campus. This is one of the largest transportation destinations daily in the area with thousands of cars in one area. - Marina resident
Montage Medical is a high-traffic area with patients and staff dropping in and out all day. This could be an excellent spot for people to come charge their cars while they wait for an appointment. - Watsonville resident
This medical center area [near Monterey Regional Airport] would benefit from a fast charger to support people who do business in this area as well as those who travel the corridor between Salinas and Monterey. - Monterey resident

Theme #4: Shopping Centers

32 requests for charging infrastructure in Monterey County specifically mentioned shopping centers as ideal locations. Most requests were for locations at Big Box shopping centers, and participants' comments frequently mentioned that these locations are convenient for charging while shopping but are easy to access from highways. Some shopping centers have charging infrastructure, but only for owners of electric vehicles, according to two submissions. A sample of some of the Social Pinpoint requests for charging infrastructure at shopping centers in Monterey County are highlighted in

Table 28, with full comments found in **Appendix II**.

TABLE 28: MONTEREY COUNTY SOCIAL PINPOINT COMMENTS – SHOPPING CENTERS

SOCIAL PINPOINT COMMENTS
There are a number of Tesla superchargers in the Del Monte Shopping Center parking lot, but no DC fast chargers. Also, the DC fast charger across the street on Munras is not working, for months now. Why not add some DC fast chargers to all Tesla Super Charging stations? - Carmel-by-the-Sea resident
The Del Monte Shopping Center lacks any fast-charging stations, as does the rest of Monterey. With all of the traffic at Whole Foods and surrounding businesses, this would be a logical place for fast chargers. There is ample space in the huge parking lots. - Monterey resident
This [the Crossroads Carmel] is a large shopping center directly adjacent to Highway 1 and would greatly benefit from electric chargers of all levels, both for visitors and locals. - Alamo resident
The Mid Valley shopping center is frequented by Carmel Valley locals, and it is immediately adjacent to the Carmel Valley Ranch. Several fast chargers should be added. - San Francisco resident
This [Safeway Prunedale] is good spot for a charger as well - there is plenty of shopping at this mall, including a supermarket, restaurants etc.. It can be a great spot for people to charge up for an hour or two while they are taking care of errands. - Watsonville resident

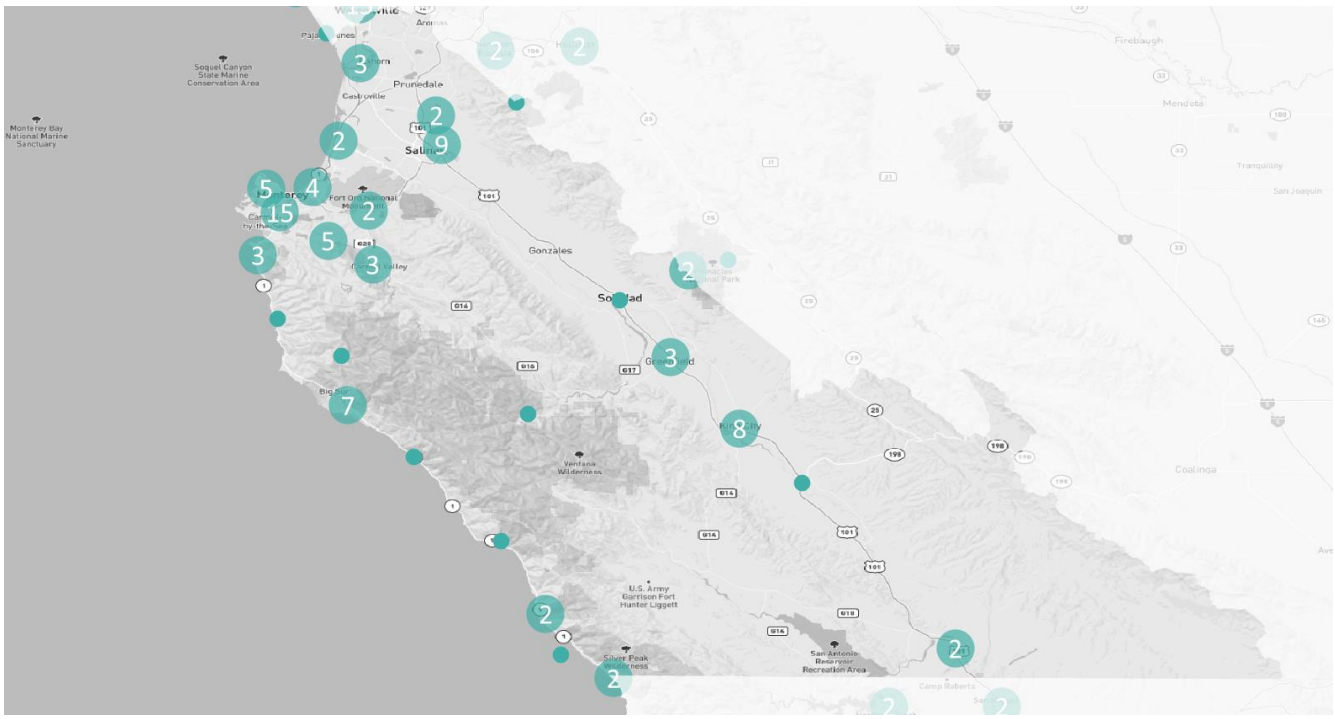


FIGURE 26: DCFC LOCATION SUGGESTIONS – MONTEREY COUNTY

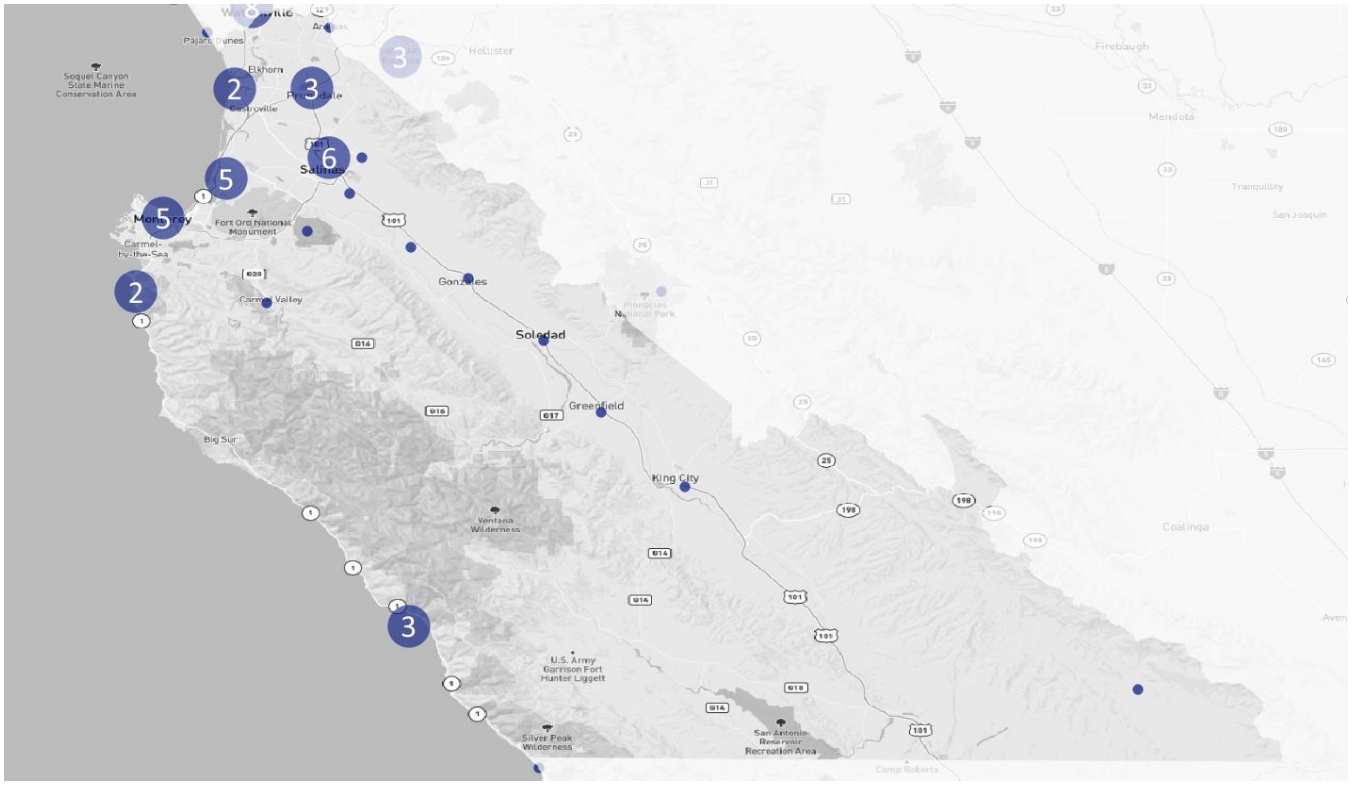


FIGURE 27: LEVEL 2 CHARGING LOCATION SUGGESTIONS – MONTEREY COUNTY

San Luis Obispo County

San Luis Obispo County received 223 comments on Social Pinpoint from 85 unique users. San Luis Obispo was the only county with more requests for Level 2 charging infrastructure than DCFC. The highest number of comments received were for charging infrastructure in San Luis Obispo (61), followed by Paso Robles (38) and Atascadero (18). 40% of Social Pinpoint responses were submitted by users within San Luis Obispo County, while most of the remaining 60% were within nearby Santa Barbara, Ventura, and Monterey counties. **Table 29** summarizes the breakdown of Social Pinpoint comments by type, as well as the most popular comments within San Luis Obispo County. Those who requested DCFC in Downtowns and near large shopping centers were the most popular comments, as well as comments requesting charging infrastructure at recreation sites such as parks and beaches. **Figure 28** and **Figure 29** show the distribution of DCFC and Level 2 charging infrastructure suggestions in Monterey County. Key themes from the Social Pinpoint submissions in San Luis Obispo County were for charging infrastructure at shopping centers, recreation sites, and for charging infrastructure that would better support regional travel. The themes are discussed in the sections below.

TABLE 29: SUMMARY OF SAN LUIS OBISPO COUNTY SOCIAL PINPOINT COMMENTS

COMMENT TYPE	COUNT	MOST POPULAR LOCATIONS[1]
PROJECT SUGGESTIONS	44	DCFC in downtown SLO (12 likes) Chargers near Baywood Park Pier, Baywood-Los Osos (9 likes)
DC FAST CHARGER REQUESTS	76	Costco Wholesale, SLO (15 likes) Target Shopping Center, Paso Robles (12 likes) Hearst Castle, San Simeon (12 likes) Near Grocery Outlet, Los Osos (10 likes) Irish Hills Plaza, SLO (9 likes) Golden Hills Plaza, Paso Robles (9 likes) San Miguel (9 likes) Proposed Garage near Mission San Luis Obispo de Tolosa (8 likes) Park and Ride near Calle Joaquin Rd, SLO (8 likes) Vons, SLO (8 likes) Las Tablas Park and Ride Lot, Templeton (8 likes) Downtown City Park, Paso Robles (8 likes) Near San Simeon (8 likes) Near Boucher Trailhead, Ragged Point (8 likes)
LEVEL 2 CHARGER REQUESTS	98	Costco Wholesale, SLO (9 likes) Avila Beach (8 likes) Cayucos Beach (8 likes) Bayside Café/Marina Parking, Morro Bay (7 likes) Dinosaur Caves Park, Pismo Beach (7 likes)
"SOMETHING I LIKE"	5	

[1]Most popular locations are the top 20 projects with the most "likes" submitted on Social Pinpoint

Theme #1: Shopping Centers

57 requests for charging infrastructure in Monterey County specifically mentioned shopping centers as ideal locations. Big box shopping centers such as Costco Wholesale, Whole Foods, and Target were common suggestions. Comments said that these locations are ideal spots for charging while shopping and are usually conveniently accessed from highways. A sample of some of the Social Pinpoint requests for charging infrastructure at shopping centers in Monterey County are highlighted in **Table 30**, with full comments found in **Appendix II**.

TABLE 30: SAN LUIS OBISPO COUNTY SOCIAL PINPOINT COMMENTS – SHOPPING CENTERS

SOCIAL PINPOINT COMMENTS
[San Luis Obispo] Costco needs a fleet of chargers! – Los Osos resident
People spend a lot of time shopping and eating around here [Pismo Beach Premium Outlets]. There aren't any level 2 chargers, however.
Large Shopping Center just off freeway [Target Center, Paso Robles]. Food options. Would be used by locals shopping and travelers taking a break to charge. – Santa Barbara resident
A DC charger on the south side of SLO, near the Whole Foods Grocery store would be a great location. – Santa Barbara resident
This Park & Ride lot would be a great place for several DC fast chargers. Close to the freeway offramp and a restaurant (Taco Temple) – Los Osos resident
Great location for DC fast charger in the shopping center at the corner of Foothill and Santa Rosa. There is no public charging on foothill. A DC here would also serve tourists heading up Hwy 1 towards MB and Cambria. – Santa Barbara resident
Charging station availability while shopping at the Marigold Center would be helpful and efficient of time. – Paso Robles resident

Theme #2: Popular Recreation Sites

After shopping, the most referenced locations for charging infrastructure submitted for San Luis Obispo County were related to various outdoor recreation opportunities (55 submissions), which many participants noted that would be important charging locations for both tourists and residents. Commonly referenced locations were beaches and coastal parks such as Ragged Point and Sand Dunes Bluff, as well as tourist destinations such as Morro Bay and Hearst Castle. Some of the Social Pinpoint submissions related to recreation sites in San Luis Obispo County are highlighted in **Table 31**, with full comments found in Appendix II.

TABLE 31: SAN LUIS OBISPO COUNTY SOCIAL PINPOINT COMMENTS – RECREATION SITES

SOCIAL PINPOINT COMMENTS
Hearst Castle. Already has lots of parking, solar and a great place to spend time while charging. Could easily add 10 charging stations along the back lot. Not sure if they already have a few stations or not. – San Luis Obispo resident
Could chargers be placed in the [San Simeon Point] beach parking lot? I know there are some at the Hearst Castle Parking lot, but that is not convenient for the beach and the castle is not always open to the public.
I would like to see free charging at the local parks, I want to go on a bike ride and have my car get charged at the same time – Arroyo Grande resident.
Every beach state park should have at least 2 fast chargers to start, IMO. If you have to wait, it's an easy place to take a walk. BUT we have to solve the problem of cars taking up these spaces without charging, or long after charging is completed - much like a "parking meter" system of green flags (actively in use) and red flags (unused) with some enforcement possibilities. – Montclair resident
It would be nice to have public charging stations available in the [Dune Trail] park near the more popular attractions. Would PG&E be willing to install some near the trailhead across their property that borders the end of the Montano de Oro State Park Road? – Thousand Oaks resident
Ragged Point is a very busy and popular tourist destination. DCFC would be appropriate to serve travelers. – Pacific Palisades resident
Level 2 Chargers at the Carrizo Plain National Monument Visitors Center would provide support for tourists, researchers, and employees. – Los Alamos resident
Morro Bay has a lot of shopping, hotels, and is a tourist destination. There are only two level 2 public chargers in the whole area (Morro Bay, Cayucos, Los Osos) – Morro Bay resident

Theme #3: Supporting Inter-Regional Mobility

46 participants submitted requests or suggestions for charging infrastructure in San Luis Obispo to support regional travel. Locations that were mentioned include the Highway 101 corridor near San Miguel, Highway 1 near Cabrillo Highway and Highway 1 towards Big Sur, and Highway 58 near Santa Margarita.

10 submissions specifically requested charging infrastructure integrated with park and ride facilities and bus stops. Park and rides were noted as great places to charge infrastructure because they are public parking lots with easy access to the highway.

Some of the Social Pinpoint submissions related to improving regional travel in San Luis Obispo County are highlighted in **Table 32**, with full comments found in Appendix II.

TABLE 32: SAN LUIS OBISPO COUNTY SOCIAL PINPOINT COMMENTS – INTER-REGIONAL MOBILITY

SOCIAL PINPOINT COMMENTS
It can be dicey getting home from Cambria if my car is fully charged. It would be nice to have a stash of fast chargers here [Fern Canyon Trailhead Parking Lot]. – Philadelphia resident
A fast DC charger that is always publicly accessible is needed near this location [San Miguel]. While there is DC fast charging available at the Camp Roberts Rest Areas, they are not regularly available because these rest areas seem to have a long history of being closed for maintenance or construction. Having location with alternative sites at this point on the 101 corridor that works 23/7 is extremely important or the corridor becomes more like a drawbridge that is open only 50% of the time. – Santa Barbara Resident
Hwy 1 in Big Sur has little charging infrastructure and improving the number of stations in it would make it easier for EV drivers to go into and spend time in Big Sur rather than just driving straight through to get to San Simeon or Carmel. – Chula Vista resident
DCFC in Santa Margarita would serve the local residents as well as pull travelers off the interstate into this "bypassed" community. Additionally, it would allow for charging for those prior to the long trip east on CA-58. – Los Alamos resident
Morro Bay Transit and especially SLO RTA should partner on DC fast chargers to top up batteries during bus layovers. This is especially important for RTA Route 15 buses that travel up/down the North Coast (opportunity chargers should also be installed at the SLO, Paso Robles and Santa Maria transit centers). – San Luis Obispo resident
Halway on Highway 58 needs a DCFC to close the gap between Atascadero and Bakersfield. Navajo Flat Campground in the La Panza area is an option. It is government owned as the Los Padres national forest. Many EVs have an 80 mi range, so this would help this corridor immensely. Also helps 50mi range electric dirt bikes and electric Jeep Wrangler 4x4s. The current Jeeps are L2, but a DCFC Jeep Magneto is expected in the next year or two. Replacing gas 4x4s with electric brings huge emissions reductions – Nipomo resident.
DCFC in the community of Shandon would provide support to travelers along CA-46/41 and bring local access and commerce to this "bypassed" community. – Monterey resident

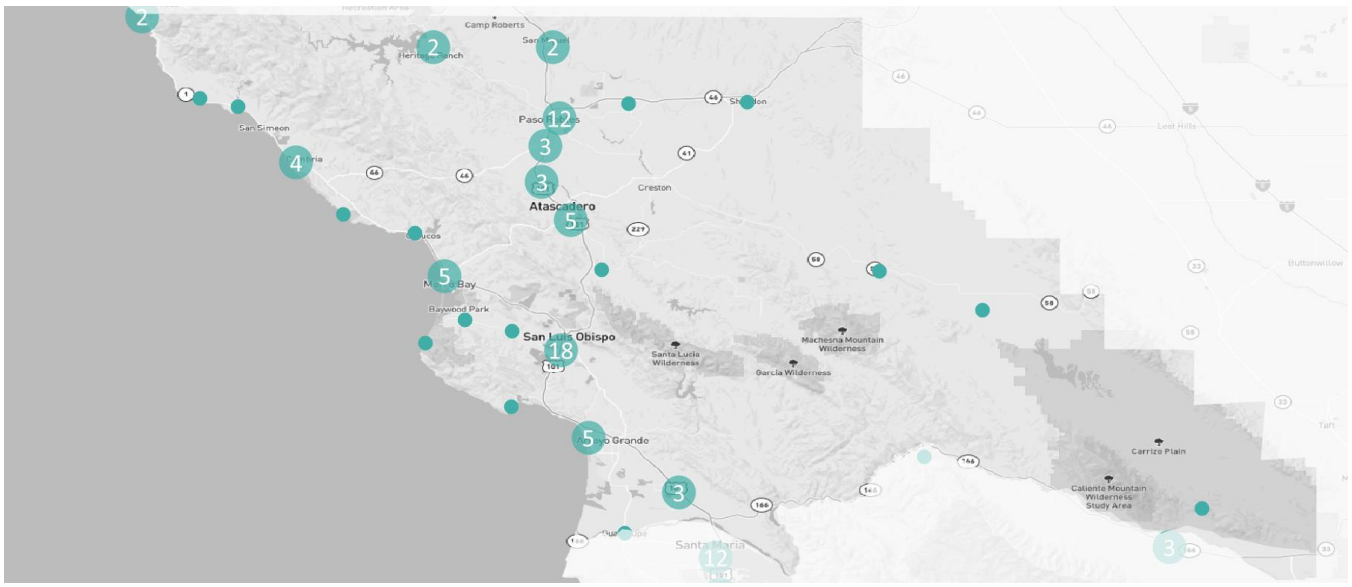


FIGURE 28: DCFC LOCATION SUGGESTIONS – SAN LUIS OBISPO COUNTY

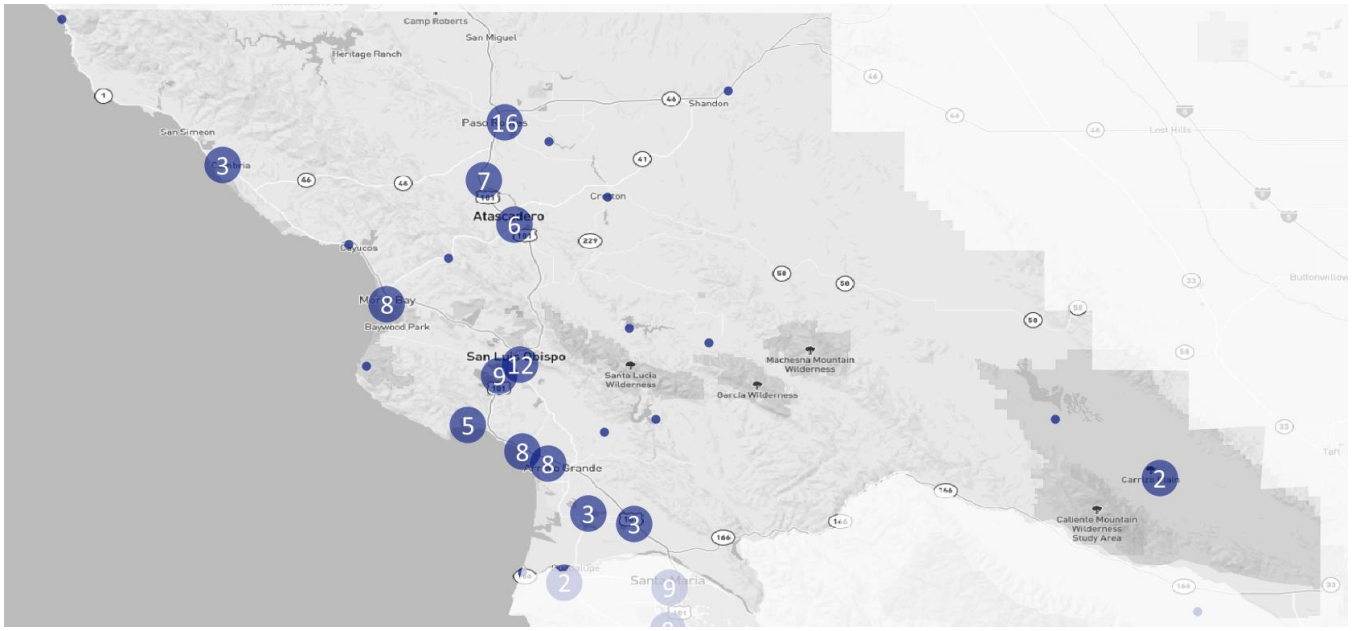


FIGURE 29: LEVEL 2 CHARGING LOCATION SUGGESTIONS – SAN LUIS OBISPO COUNTY

Santa Barbara County

Santa Barbara County received 425 comments on Social Pinpoint from 148 unique users. The most comments were DCFC requests, followed by Level 2 charger requests. The highest number of comments received were for projects in Santa Barbara (156) followed by Goleta (56) and Santa Maria (52). 83% of Social Pinpoint responses were from participants within Santa Barbara County, while the remaining 17% are from nearby Ventura and Los Angeles County. **Figure 30** and **Figure 31** show the distribution of DCFC and Level 2 charging infrastructure suggestions in Santa Barbara County.

Table 33 summarizes the breakdown of Social Pinpoint comments by type, as well as the most popular comments within Santa Barbara County. Requests for charging infrastructure at shopping centers and recreation sites were the most popular submissions. There were many requests to charge infrastructure at rest stops and train stations. These themes are discussed in the sections below.

TABLE 33: SUMMARY OF SANTA BARBARA COUNTY SOCIAL PINPOINT COMMENTS

COMMENT TYPE	COUNT	MOST POPULAR LOCATIONS[1]
PROJECT SUGGESTIONS	45	Chargers at Calle Real Shopping Center, Goleta (17 likes) Chargers at Future Orcutt Key site retail/commercial development at Clark Interchange (9 likes) Chargers at Ortega Garage, Santa Barbara (8 Likes)
DC FAST CHARGER REQUESTS	226	Loreto Plaza, Santa Barbara (21 likes) Costco Wholesale, Goleta (16 likes) Gaviota Southbound Rest Area (15 likes) Five Point Shopping Center, Santa Barbara (14 Likes) Los Olivos (13 likes) Santa Barbara Airport (13 Likes) Santa Barbara Beach (13 likes) Girsh Park, Goleta (12 likes) Buellton Shopping Center (11 likes) Downtown Carpinteria (10 likes) Carpinteria Train Station (10 likes) Carpinteria Shopping Center (10 likes) Near Gaviota Northbound Rest Area (9 likes) Turnpike Shopping Center, Goleta (9 likes) Hollister Village Plaza (9 likes)
LEVEL 2 CHARGER REQUESTS	140	Patterson Place Apartments, Santa Barbara (10 likes) Santa Barbara High School (9 likes)
"SOMETHING I LIKE"	14	

[1]Most popular locations are the top 20 projects with the most "likes" submitted on Social Pinpoint

Theme #1: Popular Recreation Sites

129 Social Pinpoint submissions in Santa Barbara County were requests or suggestions for charging infrastructure at recreation sites. Popular suggestions were beaches and parks such as Goleta Beach Park, East Beach, Elings Park and Arroyo Burro Beach. According to comments, these are important locations for both residents and visitors, and places that visitors often stay for 2 hours or more. Santa Barbara Bowl and the Santa Barbara Zoo were suggested as other locations that have a regional draw. A few of the popular (most "liked") comments received related to charging infrastructure at recreation sites are highlighted in **Table 34**, with full comments found in **Appendix II**.

TABLE 34: SANTA BARBARA COUNTY SOCIAL PINPOINT COMMENTS – RECREATION SITES

SOCIAL PINPOINT COMMENTS
Elings Park would be a great spot for a DC fast charger. It would bring more people to the park and would allow people from out of town to charge while they hiked up to the bluff, walked around Godric Grove, or let their kids play on the playground. – Los Alamos resident
Charging near the skate park [Skater's Point Skatepark], as well as the wharf and bike path here would be greatly appreciated by a lot of people.
Common L2 chargers [at Cachuma Lake Campground] will enable visitors from the region to enjoy Lake Cachuma amenities while charging their EV for the return trip home. Currently only RV sites have power to charger. - Carpinteria resident
A lot of people come from out of town to attend shows at the bowl. Electric vehicle charging would be a welcome option. – Santa Barbara resident
Fast chargers at area parks would be a great addition. Locals and tourists alike could charge while enjoying our area's beautiful natural parks and trails. – Santa Barbara resident
There are a lot of visitors at the Mission. It is a large attraction for locals and tourists. There are no chargers in this part of town. There should be. – Santa Barbara resident
Great parking lot for a few Lv 2 charging stations [near Plaza de California]. Families come here to go to the beach for 2+ hours, so could get a significant charge during that time. Also, it's near the art walk on Sundays. – Los Alamos resident
This area [near Santa Barbara Amtrak] is close to 101, the Funk Zone, and many locals and visitors with EVs. Perhaps DC Fast chargers could be adjacent to restaurants and shops. The busy Funk Zone currently has very few chargers outside of regulated hotel parking. There are many areas here with sufficient space for parking and chargers along Montecito St. – Los Angeles resident

Theme #2: Shopping Centers

93 Social Pinpoint submissions in Santa Barbara County were suggestions for charging infrastructure at shopping centers. 25 comments were specific to supporting small businesses, but the majority of them were suggestions for Big Box stores. Commonly requested locations included Calle Real Shopping Center in Goleta, Costco Wholesale in Goleta, Loreto Plaza in Santa Barbara, and Buellton Albertsons Shopping Center. Some participants noted that many shopping destinations only had Tesla chargers (such as Camino Real Marketplace in Goleta), or Level 2, where DCFC is preferred for shopping trips. Some of the comments received about charging infrastructure in shopping centers are highlighted in **Table 35**, with full comments found in **Appendix II**.

TABLE 35: SANTA BARBARA COUNTY SOCIAL PINPOINT COMMENTS – SHOPPING CENTERS

SOCIAL PINPOINT COMMENTS
Would love to see chargers--any kind of chargers--in the Casitas Pass Plaza or thereabouts. Anything to make it easier for more people to be willing to drive electric cars!!! - Santa Barbara resident
Busy shopping areas where a quick charge would be a major convenience for the whole Westside [Santa Barbara] – Santa Barbara resident
Buellton Albertsons shopping center. Since the Raddison DC chargers are always broken and cannot be depended on. For locals and tourists traveling in the area. - Santa Barbara resident
Level 2 charging would be excellent for the shoppers, especially for watching a movie which can take up to 2.5 hours. A variety of different charges is awesome! - Santa Maria resident
With proximity to UCSB and airport, would be great to have some charging units in this [Calle Real] shopping center to help people coming and going through the community and stimulate the local businesses located in this area – Goleta Resident
There should be DC fast chargers in more locations [near Loreto Plaza, Santa Barbara], where people can charge quickly while shopping, or near dense housing where people might not be able to have a Level 2 charger at their homes. – Santa Barbara resident
Need multiple non-Tesla chargers at this mall [La Cumbre Plaza] – Santa Barbara resident
The new and large shopping center of Enos Ranch or by Walmart needs a DC fast charger as it's right off the freeway and is busiest roads in the area. – Santa Maria resident

Theme #3: Supporting Interregional Mobility

73 participants submitted requests or suggestions for charging infrastructure in Santa Barbara County that would support better inter-regional travel. There were many requests for charging infrastructure near the Carpinteria Amtrak Station, at existing gas stations and rest areas, and park and rides. There are five comments that there isn't enough charging infrastructure in Summerland. Some participants noted that there is a lack of charging infrastructure along Highway 101 southbound, and that Highway 166 is a heavily travelled corridor that is only possible in a long-range EV.

Some of the Social Pinpoint submissions related to improving regional travel in Santa Barbara County are highlighted in **Table 36**, with full comments found in **Appendix II**.

TABLE 36: SANTA BARBARA COUNTY SOCIAL PINPOINT COMMENTS – INTER-REGIONAL MOBILITY

SOCIAL PINPOINT COMMENTS
Carpinteria needs a fast charger. The Amtrak station would be a good place. - Santa Barbara resident
The Park & Ride Lot adjacent to the SMRT Transit Center would be an ideal location for electric vehicle chargers. - Santa Maria resident
Carpinteria needs a DC fast charger close to Hwy 101. There is a long stretch from Camarillo/Ventura with no DC charging to Goleta. - Santa Barbara resident
Future US 101/SR 135 interchange could accommodate park and ride infrastructure for interregional travel between Santa Barbara County and San Luis Obispo County. E-bike infrastructure (lockers with chargers, repair station) could be included to improve convenience for nearby residents as well as Santa Maria Levee Trail users. - Santa Maria resident
Lower State does not have a lot of charging, but it does have a lot of electric cars passing through. - Santa Barbara resident
A charger in the rest areas on this route [Highway 101 north of Las Cruces] would be helpful. When driving in the North/East direction (from Gaviota to Buellton), it is up hill and that drains car batteries fastest. - Santa Barbara resident
I drive up to Santa Barbara for visits with family and work. I often have to stop at El Encanto Rosewood resort to charge. If I drive into SB on state, I cannot locate a charger to save my life. At least mark them clearly. Maybe one near the marketplace. - Valencia resident
166 is only doable with long range EV. Putting a DC charger (CHAdeMO/CCS) mid-way (like the Pine Canyon Ranger Station or where Utility power is conveniently near) - Santa Maria resident.

Theme #4: Large Institutions and Employers

61 of the Social Pinpoint suggestions for Santa Barbara County were for charging infrastructure at large institutions. Santa Barbara's Cottage Hospital and High Schools were frequently requested. One suggestion was to use the High School parking lot on weekends and in the summer when school is not in session. Some respondents mentioned that Hospitals are great locations for Level 2 charging for staff and visitors. Some of the Social Pinpoint submissions related to charging infrastructure at large institutions in Santa Barbara County are highlighted in **Table 37**, with full comments found in **Appendix II**.

TABLE 37: SANTA BARBARA COUNTY SOCIAL PINPOINT COMMENTS - INSTITUTIONS

SOCIAL PINPOINT COMMENTS
This [Santa Barbara County Mental Health] is a Health Care Center for the community. Would be nice to have some where to charge while at work. There isn't much options in the area. - Oakland resident
Cottage Hospital is one of the biggest employers in the City, coupled with Sansum, and there are no electric vehicle chargers in either parking lot. It is a shame! - Santa Barbara resident
Righetti High School - for school employees, students, and surrounding area users. - Santa Barbara resident
Lompoc High school for employees, students, and also locals after school ends. - Santa Barbara resident
Santa Barbara County Buildings. Near local retail, existing solar panel project, County fleet could utilize. - Santa Maria resident
UCSB students and staff should have access to fast charging on camps so if they rent in IV they can charge on campus while in classes. - Los Altos resident

Theme #5: Mixed-Use and Higher Density Housing

22 Social Pinpoint suggestions were for charging infrastructure to support EV users who do not have charging at home. While some of these were for specific apartment buildings, most comments were generally suggesting that DCFC be provided in places near neighborhoods, or in places that they would serve multi-purposes. Some of the Social Pinpoint submissions relating to household charging in Santa Barbara County are highlighted in **Table 38**, with full comments found in **Appendix II**.

TABLE 38: SANTA BARBARA COUNTY SOCIAL PINPOINT COMMENTS – HOUSING

SOCIAL PINPOINT COMMENTS
I live at 56 (Bldg #) S Patterson Ave unit #207. I have been waiting for years to lease an EV but cannot, because there is no way to charge one at this huge 180-unit apartment complex. I am retired (as are many living here) so I do not have a place of work at which to charge an EV. Many others here are in the same frustrating position. I cannot leave the vehicle parked at some distant location for hours at a time or overnight (no security) and then walk all the way to and from to pick it up. - Santa Barbara resident
There is dense housing in this neighborhood [800 block of Cacique Street, Santa Barbara], low income, and enormous costs to install charging stations at condominiums--where there are few private garages for private charging. Fast charging stations along lower Milpas could really serve the community. - Goleta resident
We need condo complexes to be encouraged to install charging infrastructure. HOA boards often lack vision and do everything to maintain the status quo. Perhaps we can offer incentives to HOAs to get with the program. What better investment than solar panels on all these garage roofs and charging infrastructure? - Santa Barbara resident
There should be DC fast chargers in more locations, where people can charge quickly while shopping, or near dense housing where people might not be able to have a Level 2 charger at their homes. - Santa Barbara resident
This community would benefit from an EV charger. Many of the units have outdoor parking spaces and are unable to charge their EV vehicle since they can't run an extension cord to an outdoor parking space. - resident

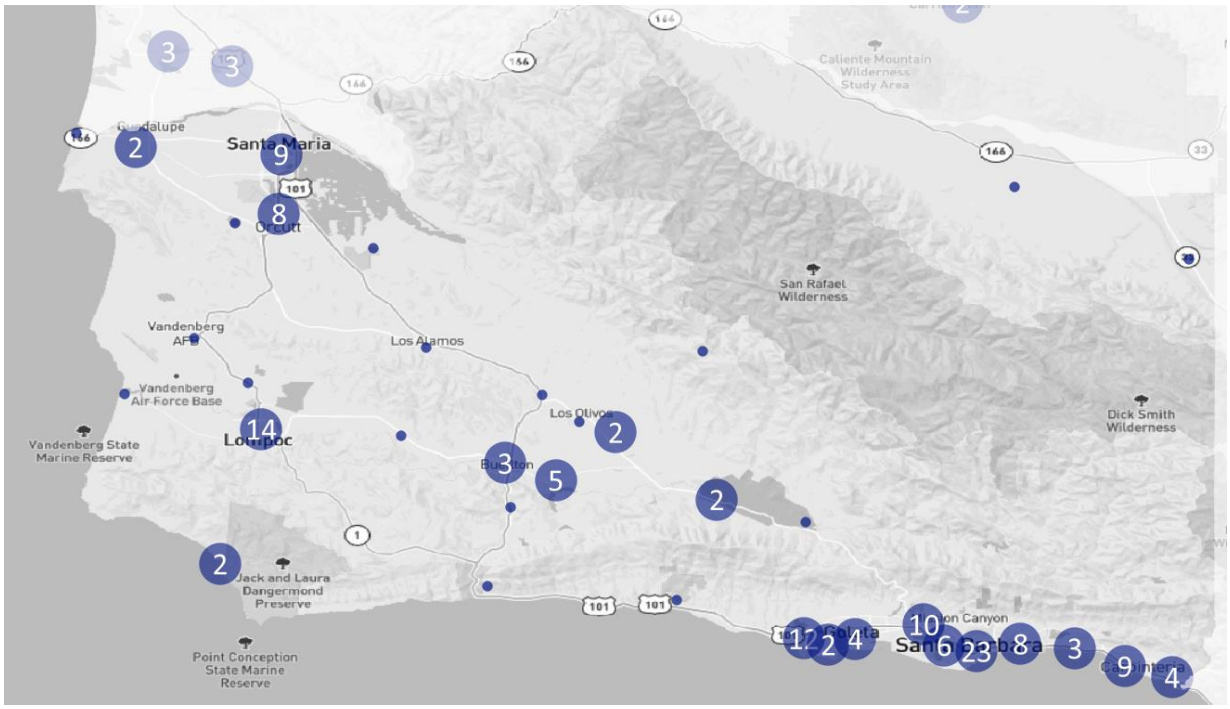


FIGURE 30: LEVEL 2 CHARGING LOCATION SUGGESTIONS – SANTA BARBARA

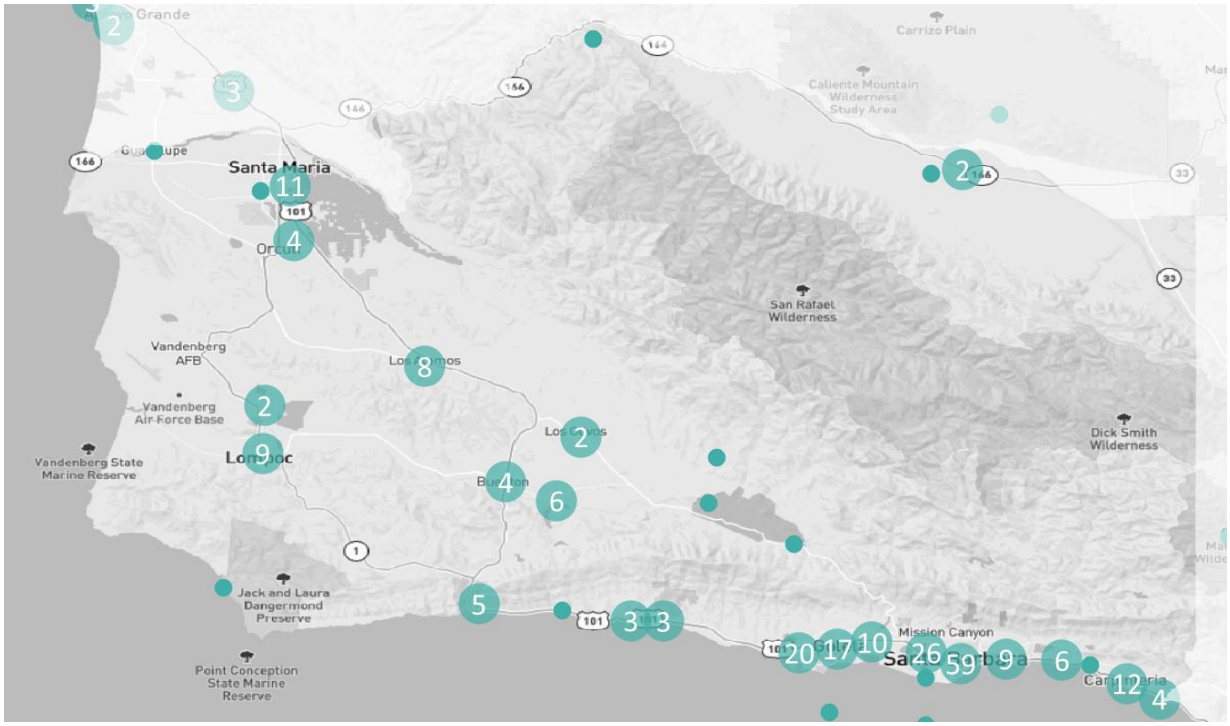


FIGURE 31: DCFC LOCATION SUGGESTIONS – SANTA BARBARA COUNTY

Ventura County

Ventura County received 97 Social Pinpoint comments from 26 unique users. About 40% of responses came from users within Ventura County, with the remaining 60% submitted from users within nearby Santa Barbara and Los Angeles counties. Most comments were related to requests for DCFC infrastructure and Level-2 infrastructure in Ventura (41) followed by Oxnard (13). The spatial distribution of DCFC and Level 2 charging infrastructure are illustrated in **Figure 32** and **Figure 33**, respectively.

A breakdown of comments by type, as well as the most popular (most "liked") suggestions in Ventura County in **Table 39**. The most popular comments were requests for DCFC and Level 2 charging infrastructure at recreation sites, such as beaches, parks, and skate parks along the coast of Ventura County. There were also several comments requesting charging infrastructure in low-income communities that currently do not have chargers, such as Santa Paula and Fillmore.

Key themes from the Social Pinpoint comments in Ventura County were providing charging infrastructure at recreation sites, at locations that will facilitate inter-regional travel, and in low-income communities. These themes are discussed in the sections below.

TABLE 39: SUMMARY OF VENTURA COUNTY SOCIAL PINPOINT COMMENTS

COMMENT TYPE	COUNT	MOST POPULAR LOCATIONS[1]
PROJECT SUGGESTIONS	14	
DC FAST CHARGER REQUESTS	46	Surfers Point, Ventura (7 likes) Near Isbell Middle School, Ventura (5 likes) Ventura Pier (5 likes) San Buenaventura State Beach (4 likes) Near Plaza Park, Ventura (7 likes) Fillmore (6 likes) Santa Paula (3 likes) Marina Park, Ventura (3 likes) Harbor Cove Beach, Ventura (3 likes) West Park, Ventura (3 likes) Near Bear Canyon and Snail Canyon, Scheideck (3 likes) Near Downtown / Beach Amtrak Station, Ventura (3 likes)
LEVEL 2 CHARGER REQUESTS	35	Rincon Beach (4 likes) San Buenaventura State Beach, Ventura (4 likes) Santa Paula (4 likes) Faria Beach Park (2 likes) Oxnard College, Oxnard (2 likes) Harbor Cove Beach (2 likes)
"SOMETHING I LIKE"	2	

[1]Most popular locations are the top 20 projects with the most "likes" submitted on Social Pinpoint

Theme #1: Popular Recreation Sites

52 Social Pinpoint comments were suggestions for charging infrastructure at recreation sites. Fair grounds, skatepark, beaches were among the most popular location suggestions for new DCFC and Level 2 charging. Some participants noted that these were good locations for chargers because they are often easily accessible from highways but are also destinations with both regional and local draw. Some of the most popular places requested were Surfers Point and the Ventura Raceway, the Ventura Pier, Rincon Beach County Park, and San Buenaventura State Beach. Some of the Social Pinpoint submissions relating to charging at recreation sites in Ventura County are highlighted in **Table 40**, with full comments found in **Appendix II**.

TABLE 40: VENTURA COUNTY SOCIAL PINPOINT COMMENTS - RECREATION

COMMENTS
EV charging at new westside skatepark please. If we are going to modernize the skatepark, lets modernize the parking lot also? – Camarillo resident
The fair grounds parking lot should have a full suite of EV charging options. Its proximity to downtown, the beach, easy highway and train station access make it an ideal hub for EV charging – Ventura resident
Visitors to the Ronald Regan Library should have access to EV charging as they spend several hours on site. – Ventura resident
Parking lot under the 101. Close highway access, good local access, and good beach access while charging. – Ventura resident
Beach charging--what better combo? – Santa Barbara resident
DCFC availability for visitors to the National Forest is essential.
Not just Tesla owners, all electric cars need charging here.

Theme #2: Low-Income Communities

12 submissions were specific requests for higher charging infrastructure provision in low-income or rental communities. One user submitted multiple requests for chargers in low-income communities, noting that these do not currently have public infrastructure and are also ideal locations due to their easy access from Highway 126 and Highway 101. While these requests were submitted by one user, they were among the most popular submissions in Ventura County based on "Likes" by other users. Low-income communities noted were Santa Paula and Fillmore. Some of the Social Pinpoint submissions relating to charging for low-income communities in Ventura County are highlighted in **Table 41**, with full comments found in **Appendix II**.

TABLE 41: VENTURA COUNTY SOCIAL PINPOINT COMMENTS – LOW-INCOME COMMUNITIES

SOCIAL PINPOINT COMMENTS
Santa Paula is a community of 30,600 located on the highway 126 corridor between interstate 5 and highway 101. The community is a census designated low-income area. Currently there are no public access EV chargers in the community. Providing a public access charger will allow residents to consider adopting the use of an electric vehicle and provide travelers on highway 126 with an incentive to stop, charge and mingle in the town. – Ventura resident
Fillmore is a community of 15,600 located on the highway 126 corridor midway between interstate 5 and highway 101. The community is a census designated low-income area. Currently there is only one public access Level 2 EV charger and a restricted access charger at an automotive dealer. Providing public access DCFC will allow residents to consider adopting the use of an electric vehicle and provide travelers on highway 126 with an incentive to stop, charge and mingle in the town. - Ventura resident
Santa Paula is the only city in Ventura County with no public charging stations, despite being a city of 30,000 located on a highly traveled state highway connecting I-5 and US 101. Only two plugs are available in the entire Santa Clara Valley. – Santa Paula resident
Disadvantaged communities need chargers too. Place some near De Anza Middle School – Los Angeles resident
This community [Franciscan Village] would benefit from an EV charger. Many of the units have outdoor parking spaces and are unable to charge their EV vehicle since they can't run an extension cord to an outdoor parking space.
There is dense housing in this neighborhood, low income, and enormous costs to install charging stations at condominiums--where there are few private garages for private charging. Fast charging stations along lower Milpas could really serve the community. The 3 locations are Oxnard College, CenterPoint Mall, and Moorpark Metrolink/Amtrak Station. - Oxnard resident

Theme #3: Supporting Inter-Regional Mobility

22 Social Pinpoint submissions were for charging infrastructure that would support inter-regional travel. Some of these locations were large institutions with a regional draw, such as colleges, while others were rural areas with gaps in existing infrastructure networks. Some of the Social Pinpoint submissions relating to inter-regional mobility in Ventura County are highlighted in **Table 42**, with full comments found in **Appendix II**.

TABLE 42: VENTURA COUNTY SOCIAL PINPOINT COMMENTS – INTER-REGIONAL MOBILITY

SOCIAL PINPOINT COMMENTS
chargers at top of Serra cross needed. an ideal location to top off and charge while passing through for view of Ventura. – Camarillo resident
Rincon beach... clean restrooms, safe environment that has a Ranger on duty. Picnic tables and a fabulously relaxing place to stop for a charge on the way too or from SoCal areas. – Santa Maria resident
We need many, many more charging stations of all types for this campus [California State University Channel Islands] which is a final point for thousands of commuters (students, faculty, staff), many of which travel a significant distance to campus (from LA or Santa Barbara). – Malibu resident
There should be level two chargers for park and ride users at the rail stations. And fast chargers for transit and rideshare as well. – Santa Barbara resident
More chargers adjacent to rail and park and ride locations. Integrated with transit and rideshare services. – Santa Barbara resident
EV charging needed at Libbey Park for families traveling to Ojai – Camarillo resident
Charging infrastructure needed at the Oxnard Transit Center. Park and ride + taxi, transit and rail. One of the largest multimodal facilities in the project area needs investment in ZEV technology. Multiple LI housing going in nearby can also take advantage.
Putting some charging resources on Casitas Pass would be a good idea. This route is used as an alternative to the Hwy 101. – Santa Barbara resident
[DCFC in Summerland] I drive up to Santa Barbara for visits with family and work. I often have to stop at El Encanto Rosewood resort to charge. If I drive into SB on state I cannot locate a charger to save my life. At least mark them clearly. Maybe one near the marketplace.
This area [Hot Springs Rd at Old Coast Highway], near the freeway and a major Montecito junction would be a great place to have charging.

FIGURE 32: DCFC LOCATION SUGGESTIONS - VENTURA COUNTY

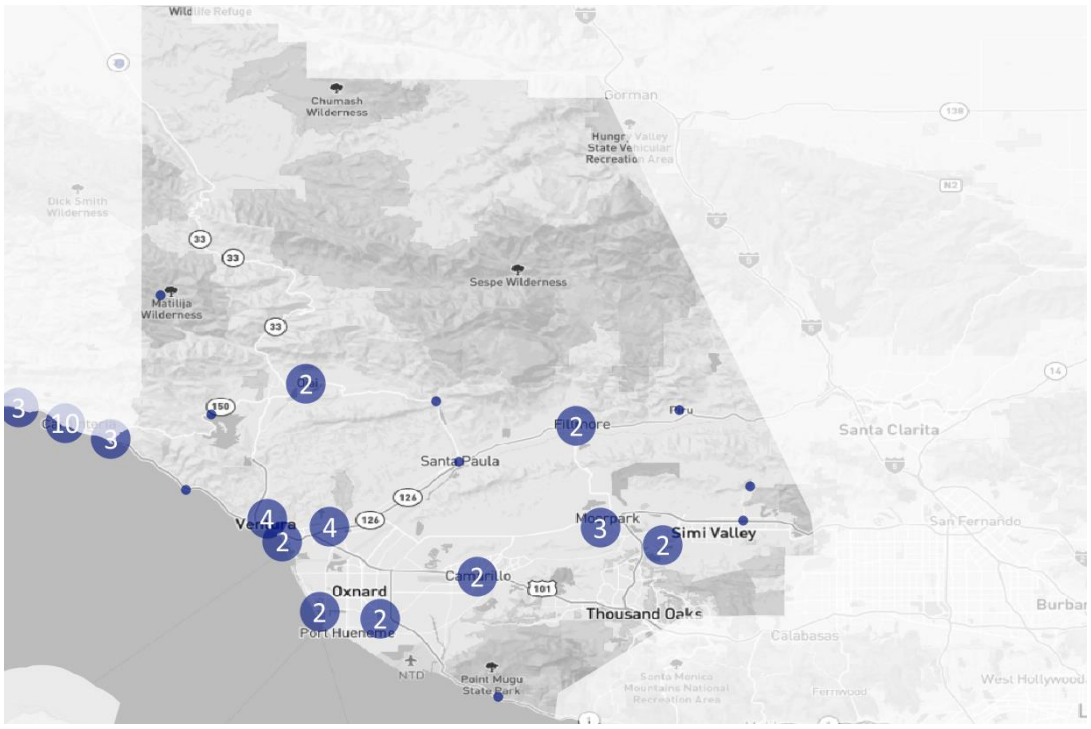


FIGURE 33: LEVEL 2 CHARGING LOCATION SUGGESTIONS - VENTURA COUNTY

EQUITY THEMES FROM COMMUNITY ENGAGEMENT EFFORTS

Many comments made through Social Pinpoint regarding suggestions for electric vehicle infrastructure were centered around incorporated areas or locations that already have existing infrastructure (such as downtowns and many shopping centers). However, key themes emerged from some Social Pinpoint comments as well as the focus group discussions and are summarized below.

Focus on underserved areas for EV infrastructure investments, such as low-income areas and MFH, where private companies are less likely to invest.

Focus group participants highlighted the need for comprehensive initiatives that consider a range of stakeholders, including employees, residents, and visitors, to ensure equitable access to charging infrastructure. By targeting locations that are accessible to a diverse population, including those with lower incomes, these initiatives could help reduce the gap in access to EV infrastructure between affluent and disadvantaged communities. Social pinpoint comments also highlighted that there is a lack of EVSE in low-income communities in many counties, as well as lack of charging options in areas with high-density housing. Other comments noted the potential for charging infrastructure to serve as an incentive for travelers to stop in low-income communities, which could help boost the local economy.

Providing accessible public charging infrastructure in multi-family housing developments.

Focus group participants noted that a lack of at-home charging infrastructure and reliable public charging locations near high-density housing as significant barriers to EV adoption. Some cities are exploring options to improve public charging in higher density neighborhoods, and some organizations such as CCCE plan to provide significant incentives for DCFC and mixed-use development charging infrastructure provision. This theme was also echoed by some comments in the Social Pinpoint survey, where some respondents noted a lack of charging options in areas with high-density housing, and highlighting inequity in access to charging infrastructure for renters and those who don't have driveways or private parking. The suggestions for DCFC and Level 2 charging that would support neighborhoods, particularly renters and those in multifamily developments, as well as the focus on urban recreation locations that serve both visitors and residents, such as soccer fields, museums, and schools, would support equity by providing access to EV infrastructure to communities that may not have it readily available.

Providing financial incentives for low-income applicants to purchase new EVs and making them available for the purchase of used EVs as well.

Focus groups highlighted the upfront cost of EVs as a major barrier to many and recommended financial incentives to help offset that upfront cost as being a great incentive to improve EV adoption. Some financial incentives are already in place or under development. For instance, MBARD provides EV incentives of up to $4,000 for low-income residents to purchase new EVs. PG&E will launch a pre-owned EVSE rebate program in 2023 for customers.

Ensuring that public charging locations are safe and secure, particularly for those who cannot charge at home.

Concerns about safety at public EVSE is an existing disincentive according to some Focus Group participants, with one noting that those who can't charge at home or rely on public charging facilities need them to be in safe locations. Some Social Pinpoint comments highlighted concerns about security and safety when leaving an EV parked far from home due to lack of charging options, and the need for charging infrastructure in busy public spaces, such as parks and libraries, to support residents who don't have access to home charging. The suggestions for DCFC in places near neighborhoods, or in places that serve multi-purposes, would make charging more accessible to a wider range of individuals, including low-income residents and renters who may not have the option to install charging equipment at their homes.

Providing DCFC charging infrastructure in fleet worksites and for customers in the agriculture industry, where there is currently a lack of EV supportive infrastructure.

The need for fleet and infrastructure supporting EV adoption for fleet vehicles as well as the agriculture industry was highlighted in focus group discussions with transit operators, county, and city representatives and CalVans. Some participants in the focus group noted initiatives in development that will support agriculture and fleet electrification. For example, San Luis Obispo APCD is working on a plan to fully fund chargers at public libraries and work sites throughout the county and is developing an EV car share program for agriculture, but it is still in the early community engagement stages of planning. CCCE is planning to provide significant incentives for DCFC, and incentives for mixed-use development charging infrastructure provision, and DCFC infrastructure funding for customers in the agriculture industry. CalVans operates a large pool of passenger vans that transport workers from home to their worksites. Most commuters using this public service are farm workers who utilize the vanpool network to commute to farms and other agricultural worksites, throughout the Central Coast counties and many do not have charging infrastructure at home.

APPENDIX II. SOCIAL PINPOINT RESPONSES

COMMENT HIGHLIGHTS BY COUNTY

The comments and suggestions from Social Pinpoint have been organized by County due to the high volume of participation. The full Social Pinpoint data can be found in the compainion PDF.

Santa Cruz County

The Social Pinpoint survey gathered 476 comments for Santa Cruz County from 63 unique users. The highest number of comments (205) came from the City of Santa Cruz, and 46% of responses were from individuals outside of Santa Cruz County. The main themes that emerged from the comments were the requirement for charging infrastructure to support inter-regional mobility, at large institutions, and employment centers, and for EV owners without access to at-home charging. Participants in Santa Cruz County identified shopping centers, particularly those with grocery stores, as the most requested locations for charging infrastructure, along with outdoor recreation sites, which were important for both locals and tourists. There were also suggestions for charging infrastructure to support neighborhoods, especially those where renters and individuals in multifamily developments may not have access to at-home charging.

San Benito County

The majority of the 17 responses on Social Pinpoint for San Benito County came from participants in Santa Clara and Santa Cruz counties. Requests for both DCFC and Level 2 charging infrastructure in San Benito municipalities were common, as well as requests for chargers near outdoor recreation sites.

The Social Pinpoint comments for the County mainly focused on two themes. One was the need for charging infrastructure in downtown cores to support tourism and residents in the area. The other theme centered on requests for charging infrastructure at popular recreation sites, with specific emphasis on Pinnacles National Park. Participants requested chargers at the east parking lot and more accessible and shaded chargers.

Monterey County

In Monterey County, 167 comments were received on Social Pinpoint from 75 unique users, with most of the suggestions and requests being for DCFC infrastructure. Salinas, Monterey, and Carmel-by-the-Sea had the highest number of infrastructure requests. Half of the responses came from within Monterey County, and the remaining responses were from participants in neighboring Santa Barbara and Santa Cruz counties. Key themes included requests for charging infrastructure to support inter-regional mobility, particularly in rural areas, at shopping centers, recreation sites, and institutions. The most popular requests were for DCFC along the coast on Highway 1 near Big Sur and for infrastructure at rest areas and shopping centers. Additionally, requests were made for infrastructure at large institutions and employers like California State University in Monterey Bay and the Community Hospital of the Monterey Peninsula.

San Luis Obispo County

San Luis Obispo County received 223 comments from 85 unique users on Social Pinpoint, with Level 2 charging infrastructure being the most requested rather than DCFC. San Luis Obispo, Paso Robles, and Atascadero were the most frequently requested locations for infrastructure, with the majority of

responses coming from nearby counties, including 40% from within San Luis Obispo County. The most popular requests were for charging infrastructure at shopping centers, recreation sites, and to support inter-regional mobility. The most common themes were charging infrastructure at shopping centers like Costco, Whole Foods, and Target, popular recreation sites such as beaches and coastal parks, and infrastructure to support regional travel.

Santa Barbara County

Social Pinpoint received 425 comments from 148 unique users regarding charging infrastructure in Santa Barbara County. Most comments requested DCFC, followed by Level 2 chargers, with the highest number of requests for projects in Santa Barbara, Goleta, and Santa Maria. 83% of the responses came from participants within Santa Barbara County, while 17% were from Ventura and Los Angeles counties. Common themes across Santa Barbara Social Pinpoint comments were requests for charging infrastructure at popular recreation sites, followed by requests for charging infrastructure at shopping centers like Calle Real Shopping Center and Costco Wholesale. Another common theme was suggestions for projects supporting inter-regional mobility, including near the Carpinteria Amtrak Station, gas stations, rest areas, and park and rides. The fourth theme was charging infrastructure at large institutions and employers such as Cottage Hospital and high schools. Many comments were also related to charging infrastructure in mixed-use and higher density housing areas.

Ventura County

Ventura County received 97 comments on Social Pinpoint from 26 unique users, with most comments being requests for DCFC and Level-2 infrastructure in Ventura (41) and Oxnard (13). Approximately 40% of the responses were from users within Ventura County, while the remaining 60% were submitted by users from nearby Santa Barbara and Los Angeles counties. The most popular requests were for charging infrastructure at recreation sites and in low-income communities that do not currently have chargers.

Common themes from Ventura County Social Pinpoint comments were requests for chargers at popular recreation sites, such as fairgrounds, beaches, and skateparks. Many comments also highlighted the need for chargers in low-income communities, with 12 submissions requesting higher charging infrastructure provision in areas such as Santa Paula and Fillmore. Many suggestions were also highlighting the need for chargers supporting inter-regional mobility and providing chargers at large institutions and rural areas.

APPENDIX III. EXISTING CONDITIONS MEMORANDUM

The purpose of this memo is to summarize existing EVSE within the 6-county CCZEVS study area. The first step in planning for charging infrastructure as electric vehicle (EV) adoption increases is to identify the EV charging infrastructure already implemented within the 6-county study area comprising Ventura; Santa Barbara; San Luis Obispo; Monterey; Santa Cruz; and San Benito counties. This memo summarizes existing electric vehicle supply equipment (EVSE) within the unincorporated portions of these counties. Consistent with the National Electric Vehicle Infrastructure (NEVI) Formula Program[37] methodology, the specific focus is EVSE within one mile of freeway interchanges. The selected freeways include the region's major interregional travel corridors including US 101 and State Routes 1, 23, 33, 41, 46, 68, 126, 152, 156, and 166.

The primary source of this data is the Alternative Fuels Data Center[38] (AFDC) and has been supplemented by review using other online sources such as PlugShare[39], Tesla, Google Maps and the California Energy Commission's data files. The Alternative Fuels Data Center is an online database of fueling stations hosted and maintained by the US Department of Energy (DoE) and includes stations for battery electric, hydrogen, natural gas, ethanol, and other non-petroleum vehicles. PlugShare is a crowd-sourced online mapping tool that allows plug-in EV drivers to provide up-to-date details on public chargers in the field.

According to these online sources, there are currently 149 non-Tesla DCFC of which 31 are located in unincorporated areas as well as 1,361 Level 2 EVSE of which 351 are located in unincorporated areas. Tesla operates an additional 360 Superchargers of which 16 are located in unincorporated areas as well as 270 Level 2 EVSE of which 159 are located in unincorporated areas.

TYPES OF ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE)

This section describes different types of EV chargers currently available for public use.

FIGURE 34: LEVEL 2 CONNECTORS

Level 2 EVSE

The most common type of EVSE is commonly known as Level 2 chargers, though, technically speaking, the charger is on board the EV to convert AC power to DC for storage in the EV's battery. In that sense, Level 2 EVSE is simply the electrical supply that powers an EV's on-board charger. In general terms, Level 2 EVSE supplies 220-240 Volts of alternating current

[37] Since NEVI is the largest source of funding for EVSE, this analysis needs to consider the NEVI project criteria: At least 4 150 kW DCFC every 50 miles within 1 mile of designated Alternative Fuel Corridors. For more information, see here: https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/nominations/90d_nevi_formula_program_guidance.pdf

[38] https://afdc.energy.gov/fuels/electricity_locations.html

[39] https://www.plugshare.com/

(AC) and is usually capable of outputting 6-12 kW of power, though some Level 2 charging models can output up

to 19.2 kW when supplied by 100 A circuits. Level 2 EVSE can typically add between 15 and 40 miles of range to an electric vehicle per hour of charge, depending on the amperage of the circuit and the charging capabilities of the vehicle. As illustrated in **Figure 34**, there are two main connector types for Level 2 EVSE. The most typical connection is the J1772 connector; the North American Standard and compatible with nearly all recent and current plug-in vehicles in North America (Tesla vehicles require an adapter previously supplied by the manufacturer and now available for purchase). The less typical, but often faster, connector is the Tesla connector. This connector is only compatible with Tesla vehicles, and there is currently no approved adapter to connect a Tesla charger to a non-Tesla vehicle. It should be noted that, while most Tesla Destination chargers (the kind currently deployed locally) have Tesla connectors, the Company has recently started producing and selling destination chargers with J1772 connectors.

Given that several hours to overnight are required to recharge a depleted EV's battery, Level 2 chargers are typically used for the two most common charging applications—residential and workplace charging. Residential charging typically takes place overnight while the EV is parked at its driver's home. The residential charger either belongs to the homeowner or landlord. Workplace charging occurs at the EV driver's place of employment with the charger provided by the employer or property owner/manager. The relatively long nightly parking (dwell) time for residential charging or daily dwell time for workplace charging makes this practical and convenient, and Level 2 charging can be provided at relatively low costs for many applications.

FIGURE 35: LEVEL 2 EVSE IN DOWNTOWN GUADALUPE (PHOTO: PLUGSHARE)

Level 2 chargers are also provided for public use operated by commercial charging networks at hotels, restaurants, and other local destinations typically as a customer amenity, often providing free or low-cost charging for patrons such as the one shown in **Figure 35.** Many models of networked or smart Level 2 chargers are available that can be managed to provide scheduled or reserved charging, automated load management or demand response functionality to avoid charging during peak power demand periods reducing the cost of electricity.

DC Fast (level 3) Chargers

As previously discussed, EVs have on-board chargers that are capable of slowly converting AC power to DC for storage. A faster way to charge an EV is directly though DC using powerful chargers sometimes referred to as Level 3 or simply DC Fast Chargers. These operate on 400+ volts and are capable of between 25- and 350-kW power output. These chargers can add anywhere between 60 miles and 500+ miles of range per hour of charge depending on the power supply, charger rating and EV's acceptance rate.

As illustrated by **Figure 36**, There are three main types of connectors associated with DC Fast chargers. The first, and oldest type of charging connector is the CHAdeMO connector. This connector was developed in Japan and is typically compatible with vehicles manufactured in Japan and some older European and North American EVs. Typically, CHAdeMO chargers operate at a maximum of 50 kW power. The second, and newest type of DC Fast Charging connector is the CCS COMBO (or more commonly known as just "CCS") connector consisting of AC connectors in the same pattern as the J1772 connector above two DC connectors. This connector was developed more recently in Europe and is compatible with most EVs produced during the past few years. (Newer Nissan models use CCS chargers, so CHAdeMO is expected to be replaced by CCS going forward.) CCS COMBO chargers range between 50 and 350 kW power output, making them capable of the fastest maximum charging speeds currently available to light duty EVs, depending on the vehicle being charged. It should be noted that these two DC Fast Charge connectors are not typically compatible with lower capacity plug-in hybrid (PHEV) vehicles.

FIGURE 36: DCFC CONNECTORS

DC Fast Charging is the preferred charging technology for opportunity charging facilities serving travelers along freeway corridors and the general public needing a quick charge while performing short errands like shopping as illustrated in **Figure 37** and dining out. On a per-unit basis, DC Fast Chargers are far more expensive to purchase and install (including required electrical service upgrades) than Level 2 chargers though they can charge far more EVs within the same amount of time. They are also more likely to incur demand charges from utilities and require more maintenance. The higher capital and operations costs are passed onto users in terms of higher per-kWh charging costs in exchange for the convenience of much quicker charging speeds.

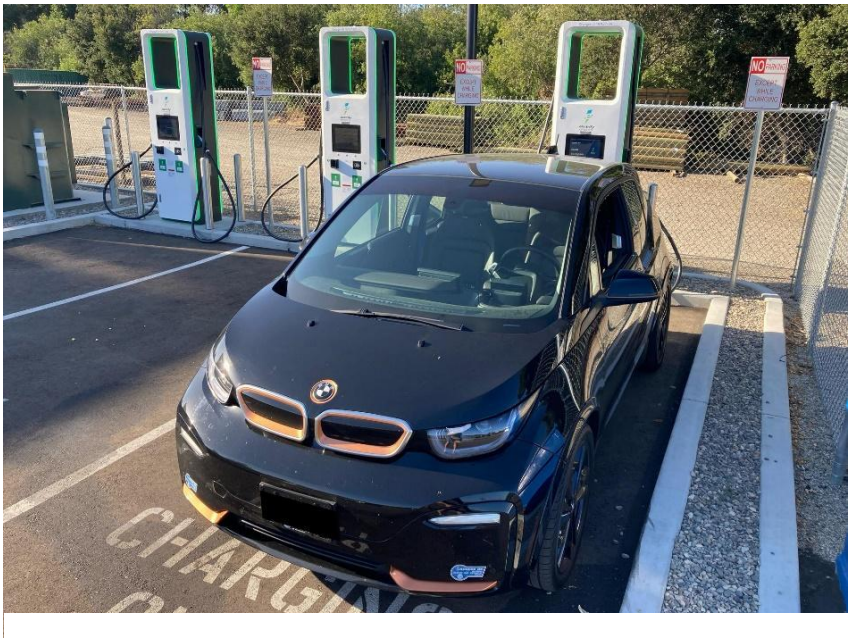


FIGURE 37: DCFC FAST CHARGING

High Power Chargers

DC Fast Chargers above 150 kW are considered "high power" chargers due to their ability to charge EVs at much faster rates than typical 50kW chargers commonly used for public EV charging. High power chargers have charging speeds ranging from 150 – 350 kW, which allows a typical light-duty EV to charge to 80% in 35 minutes or less, depending on the EV's acceptance rate and charger's capability. With such rapid charging speeds, high power chargers are especially suitable for interregional travelers

in need of a quick charge as well as for trucks and other heavy-duty EVs needing to charge large capacity batteries. For this reason, the National Electric Vehicle Infrastructure (NEVI) Formula Program requires that new chargers funded by the program will operate at 150 kW. Since California's share from the NEVI Formula Program is estimated at $384 million over 5 years and significant additional discretionary Charging and Fueling Infrastructure (CFI) grant program funding will also be available, a major focus of this project will be planning for future high power charger deployment. Because of their much higher purchase and installation costs and power demands, it is generally more cost-effective to cluster high power chargers convenient to major transportation corridors.

TESLA DCFC/High Power Chargers

As with Level 2 chargers, Tesla has its own DCFC for exclusive use by Tesla EVs. These use the same Tesla connector as on its Level 2 chargers shown above. Tesla DCFC include 72 kW "urban DC Fast chargers" as well as first- and second-generation high-power chargers branded as "Superchargers" that have charging speeds up to 150 kW and 250 kW respectively. The vast majority of Tesla Superchargers are located within incorporated areas.

EXISTING CHARGING INFRASTRUCTURE

This section summarizes EV charging infrastructure available for public EV charging installed within the study area along study highway segments and how the location of these chargers relates to disadvantaged populations.

Figure 38 below shows the general locations of existing chargers within the study area which are summarized on **Table 43.** The totals in the table include all chargers, whether or not they are within 1 mile of an unincorporated study highway interchange or intersection.

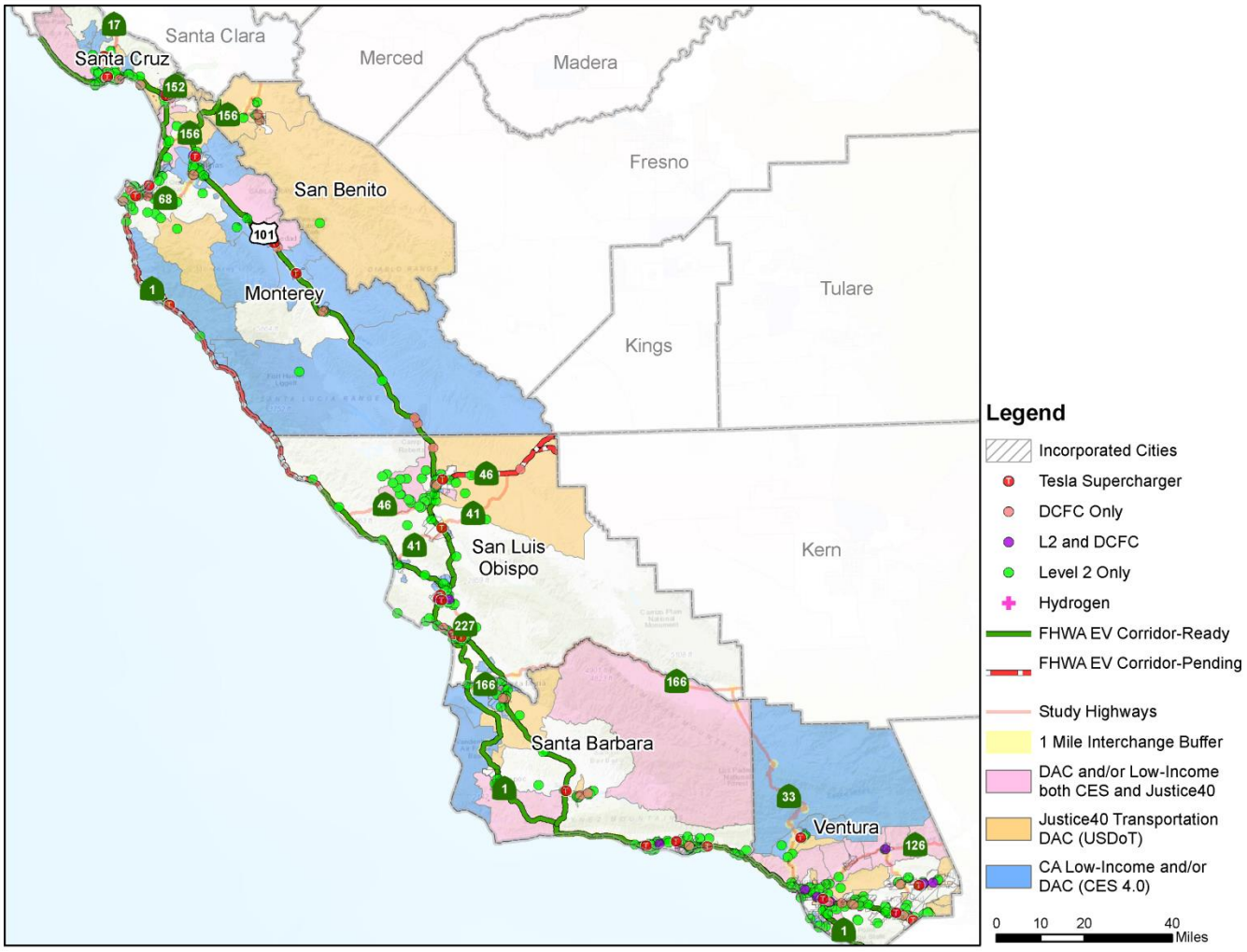


FIGURE 38: EXISTING EV CHARGERS THROUGHOUT PROJECT STUDY AREA

TABLE 43: SUMMARY OF STUDY AREA EXISTING PUBLIC EV CHARGERS BY COUNTY – UNINCORPORATED AND WITHIN CITIES

County	Level 2	DCFC	Tesla Destination	Tesla Supercharger	Total
Ventura	46 (337)	- (37)	4 (21)	- (88)	50 (483)
Santa Barbara	73 (202)	2 (23)	17 (31)	8 (38)	100 (294)
San Luis Obispo	121 (165)	3 (14)	89 (33)	- (110)	213 (322)
Monterey	71 (140)	20 (25)	40 (18)	8 (62)	139 (245)
Santa Cruz	36 (113)	6 (14)	9 (8)	- (46)	51 (181)
San Benito	4 (8)	- (5)	- (-)	- (-)	4 (13)
Total Study Area	**351 (965)**	**31 (118)**	**159 (111)**	**16 (344)**	**557 (1,538)**

Sources: AFDC, PlugShare
Note: Unincorporated (Within Cities)

Locations

Geographically, most chargers are concentrated within the region's cities which is why the focus of this project is on the underserved portions of unincorporated areas. Unincorporated Monterey County has the most DCFC of any county in the study area with 20, while San Luis Obispo County has the most Level 2 chargers with 121. San Benito has the fewest of both categories with no DCFC and no Tesla chargers.

According to the Alternative Fuels Data Center, there are currently a total of 2,095 publicly accessible EV chargers in the six-county study area and 279 within one mile of freeway interchanges and highway access points within the study area. The majority of these existing public EV chargers, especially DC Fast chargers, are primarily clustered in commercial areas within the boundaries of incorporated cities. Public DC Fast chargers used by interregional travelers are generally located in publicly accessible parking lots close to retail and other amenities of potential interest to EV drivers. Most public Level 2 chargers are considered destination chargers (non-residential, non-workplace). These are typically located at public destinations such as retail centers, hotels, parks, or are co-located with DC Fast Chargers for use by drivers with more available time for charging.

Charger Types

The majority of existing chargers are Level 2 ports and nearly half are Tesla chargers. Excluding Tesla chargers, there are currently a total of 351 publicly accessible Level 2 EVSE in unincorporated, approximately ten times the number of total DCFCs including high power chargers. The numbers of publicly accessible chargers located in incorporated urban areas are approximately three times this many, including 965 Level 2 and 118 DCFCs. Tesla operates 151 Level 2 chargers and 16 Superchargers in unincorporated areas but operates the majority of its Superchargers (344) and a large number Level 2 (111) EVSE within the boundaries of incorporated cities. In addition to publicly accessible chargers, an additional 135 private Level 2 and 4 private DC Fast Chargers are distributed throughout the study area.

Routes

Public EV chargers outside of urban areas are located along the main travel corridors including those selected as study highways, especially State Route 1 which has a total of 107 chargers plus an additional 16 chargers in cities and US 101 with 63 chargers and an additional 76 chargers in cities. An additional 16 chargers are located along State Routes 33, 46 and 56. Very few of the other State Routes (23; 33; 41; 46; 68; 126; 152; 156, and 166) have more than a few chargers, if any. These are summarized in **Table 44** below. The data consists of chargers located within 1 mile of unincorporated interchanges along one of the study area highways. **Figure 39** shows the locations of unincorporated interchanges and the 1-mile buffers used in the data tables that follow.

TABLE 44: EV CHARGERS BY ROUTE: BY CHARGER TYPE (UNINCORPORATED VS IN CITIES)

Route	L2 Plugs	DCFC Plugs	Tesla L2	Tesla SC	Total
SR 1	73 (14)	0 (1)	26 (1)	8 (0)	107 (16)
US 101	23 (14)	14 (11)	18 (5)	8 (46)	63 (76)
SR 33	4 (0)	- (-)	3 (-)	- (-)	7 (-)
SR 46	1 (0)	- (-)	2 (-)	- (-)	3 (-)
SR 156	6 (1)	- (-)	- (-)	- (-)	6 (1)
Total	**107 (29)**	**14 (12)**	**49 (6)**	**16 (46)**	**186 (93)**

Sources: AFDC, PlugShare

Note: Unincorporated (City)

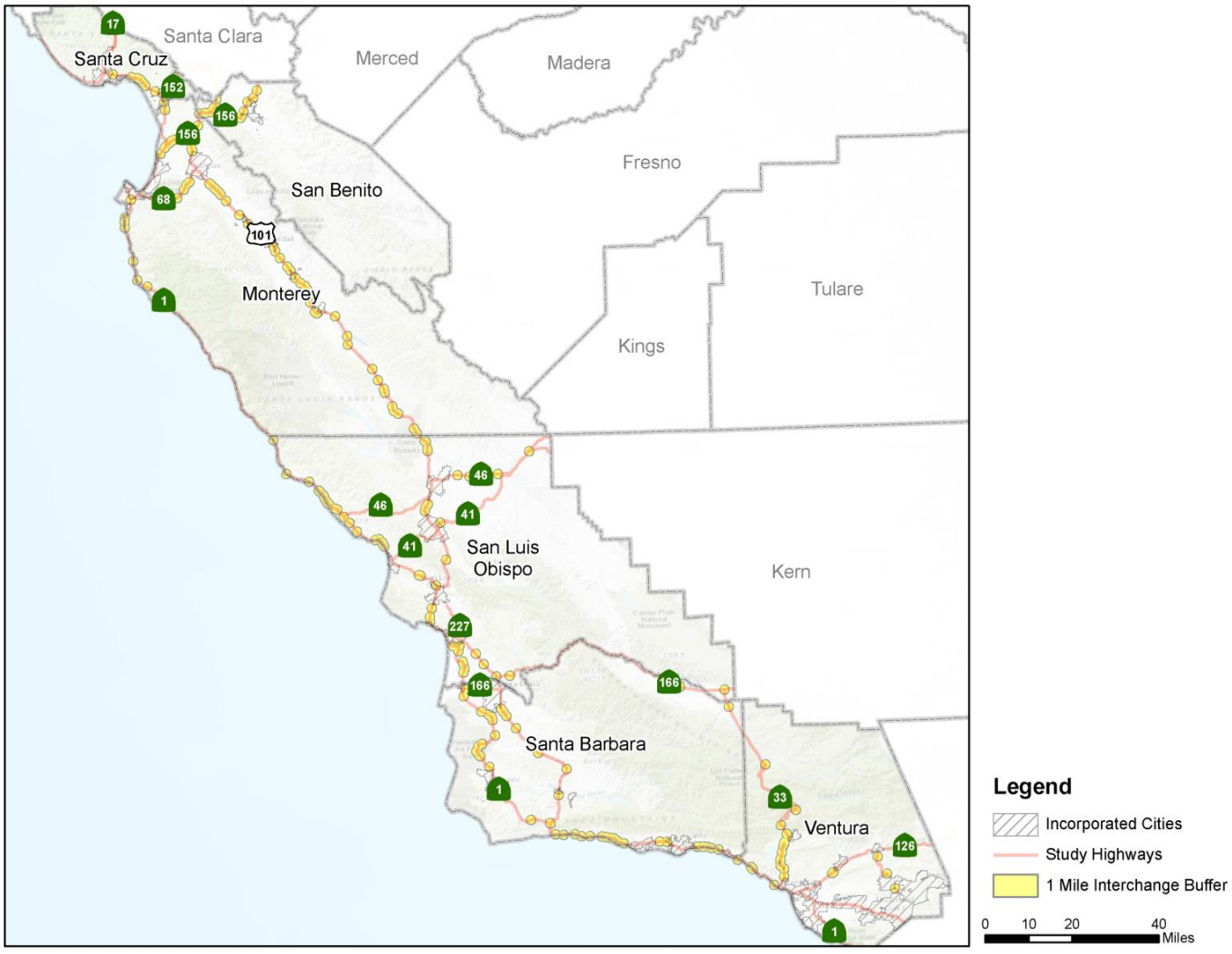


FIGURE 39: STUDY AREA HIGHWAYS AND LOCATIONS OF UNINCORPORATED HIGHWAY INTERCHANGES

Charging Networks

Within the unincorporated portion of the study area, existing chargers are operated by 8 charging networks: ChargePoint; Tesla (including Tesla Destination); Electrify America; EVgo Network; Blink; EV Connect; EvGateway; SemaConnect; as well as significant numbers of non-networked chargers. Additionally, Volta and Powerflex operate chargers within cities. All of these chargers other than Tesla's are available to all EVs except Tesla models.

TABLE 45: EV CHARGERS BY COUNTY BY NETWORK PROVIDER (UNINCORPORATED VS IN CITIES)

County	Tesla Destination	ChargePoint	Sema-Connect	Tesla Supercharger	EVgo	Electrify America	Non-Networked
Ventura	8 (39)	30 (186)	0 (11)	0 (88)	0 (17)	0 (14)	41 (105)
Santa Barbara	34 (61)	36 (124)	0 (0)	8 (38)	2 (3)	0 (14)	15 (26)
San Luis Obispo	166 (64)	17 (81)	24 (20)	0 (110)	0 (3)	0 (8)	4 (39)
Monterey	77 (34)	34 (97)	4 (23)	8 (62)	6 (4)	0 (12)	9 (16)
Santa Cruz	18 (16)	24 (82)	0 (3)	0 (46)	2 (9)	4 (4)	1 (15)
San Benito	0 (0)	2 (9)	0 (1)	0 (0)	0 (2)	0 (0)	2 (0)
Total	**303 (214)**	**143 (579)**	**28 (58)**	**16 (344)**	**10 (38)**	**4 (52)**	**72 (201)**

Sources: AFDC, PlugShare
Note: Unincorporated (City)
Note: In addition, Blink, EV Connect, and EV Gateway operate a total of 12 chargers in unincorporated areas and 103 chargers in cities. Volta and Powerflex operate 57 chargers in cities but none in unincorporated areas.

Relationship to Disadvantaged Populations

Social equity is a critical consideration for this study which aims to provide chargers not just to meet the needs of geographically underserved areas but of socioeconomically underserved populations as well. Traditionally the majority of publicly accessible EV charging infrastructure has been installed by commercial charging networks like Tesla, the region's dominant network to boost Tesla EV sales, or ChargePoint, the second most common network to attract EV drivers to retail and other commercial activities. Commercial chargers are typically located in areas with maximum demand for charging by EV drivers, often irrespective of the needs of disadvantaged populations who, due to the relatively high cost of most available EV models, generally don't drive EVs.

To pave the road for a future where EVs are more common, more affordable, and increasingly accessible to drivers at different income levels, chargers need to be more equitably located to meet the needs of all drivers.

One way to evaluate baseline conditions is to compare existing charger locations with the geographic distribution of disadvantaged communities (DACs). Low-income communities are defined as census tracts in California 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. **Figures 29-33** show three categories of disadvantaged communities.

1. CalEnviroScreen (CES): A tool developed and maintained by California's Office of Environmental Health Hazard Assessment (OEHHA) on behalf of the California Environmental Protection Agency (CalEPA), providing the public with a transparent assessment of pollution burdens and environmental and health vulnerabilities across California. It provides a relative (not absolute) quantification of pollution exposure and its impacts, as well as data on health and socioeconomic status, at a census-tract level. The tool is now (since October 2021) available in Version 4.0.

2. Justice40: The Justice40 Initiative was created by the Biden Administration to help deliver benefits of federal investments in climate and clean energy to disadvantaged communities. As part of the initiative, the Climate and Economic Justice Screening Tool (CEJST) was released, which aims to identify DACs who are underserved and overburdened by pollution. Like CES, the tool uses census tracts as geographic granularity. The Justice40 framework provides a state-independent look at the spatial distribution of marginalized and disadvantaged communities.

3. Overlay of CalEnviroScreen and Justice40: The overlay of areas identified by the two utilized tools as disadvantaged communities allows for a more comprehensive understanding of the spatial distribution of DACs. In doing so, we can minimize the likelihood of dismissing an area identified as disadvantaged by either of the two tools and can thus capture the study area's DACs to a better extent.

As shown in **Figure 40-Figure 44**, much of the study area is located in one or more of these DACs. However, just because a study highway is located within a DAC, doesn't mean that adding charging infrastructure within the DAC boundaries shown on these maps addresses the changing needs of disadvantaged drivers. While mapping DACs and existing charger locations provides important context for planning, charging recommendations will need to identify locations for charging infrastructure placement that meet the needs of disadvantaged drivers by providing public chargers at locations frequented by these populations.

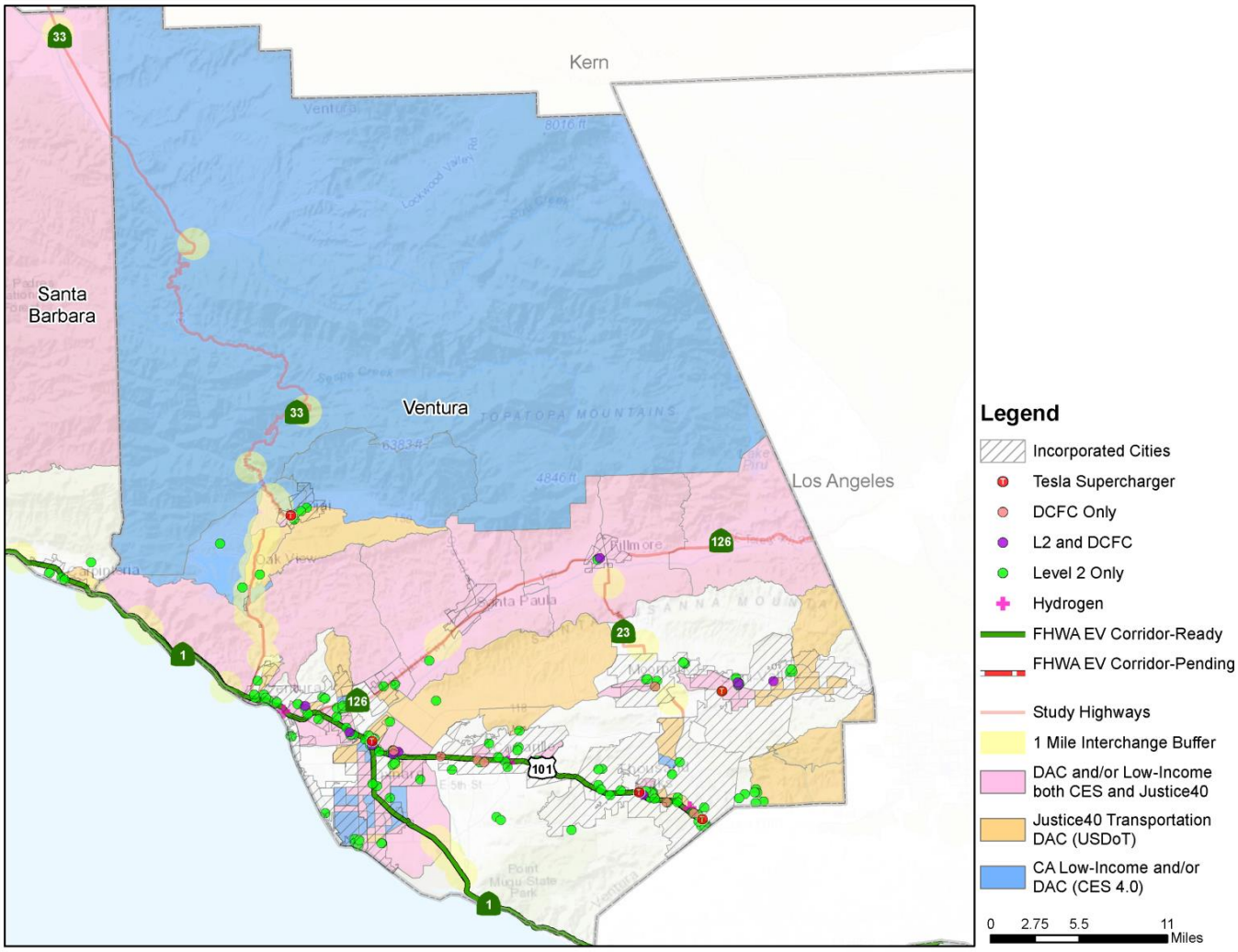


FIGURE 40: LOCATION OF EXISTING EV CHARGERS IN VENTURA COUNTY

TABLE 46: SUMMARY OF EXISTING EV CHARGERS IN VENTURA COUNTY

Location	Level 2 (Including Tesla)	DCFC	Tesla Supercharger	Total
Total Public	423	37	88	533
Unincorporated	50	0	0	50
Within Cities	358	37	88	483
Routes	101, 1, 23, 33, 126	101	101	

Sources: AFDC, PlugShare

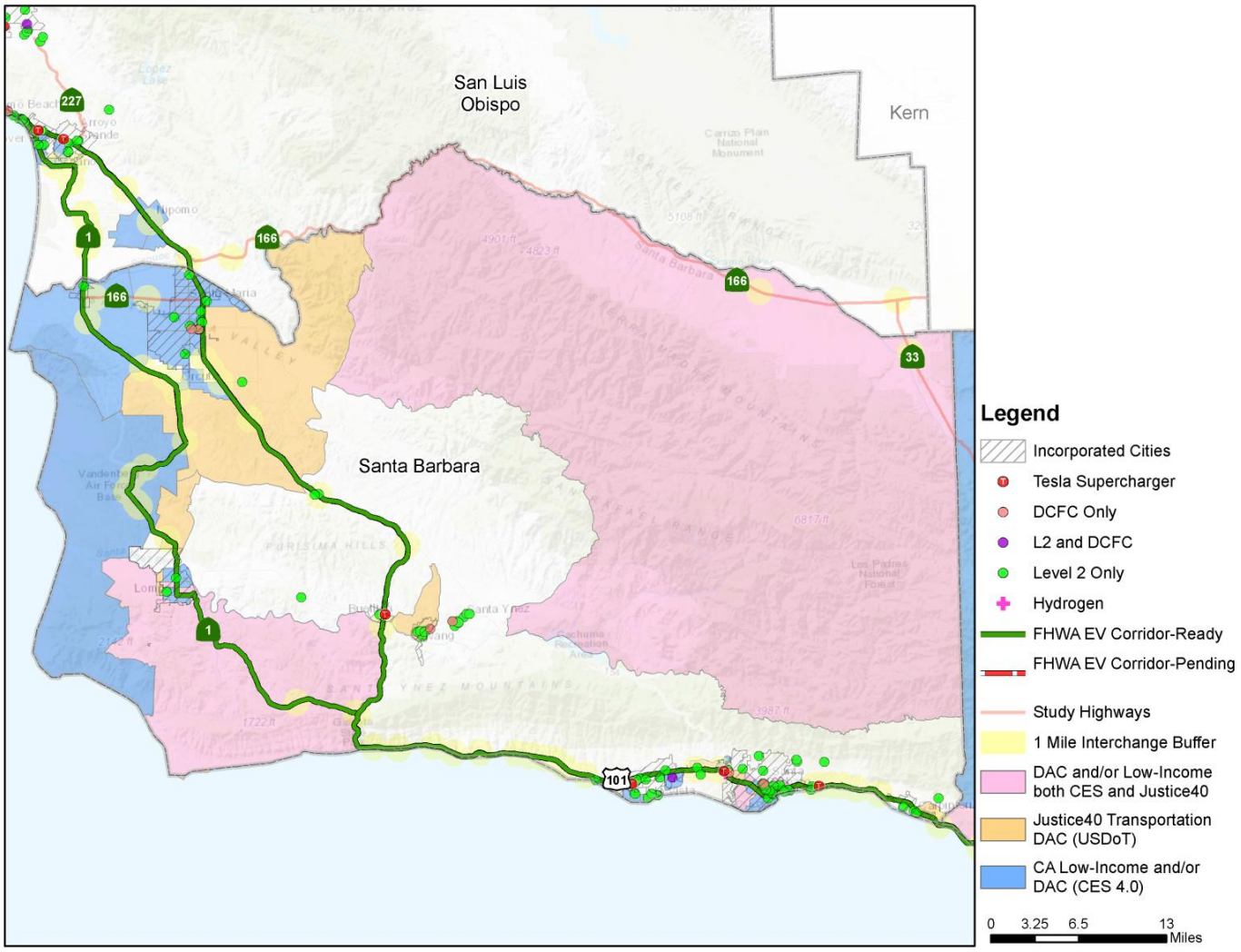


FIGURE 41: LOCATION OF EXISTING EV CHARGERS IN SANTA BARBARA COUNTY

TABLE 47: SUMMARY OF EXISTING EV CHARGERS IN SANTA BARBARA COUNTY

Location	Level 2 (Including Tesla)	DCFC	Tesla Supercharger	Total
Total Public	323	25	46	394
Unincorporated	90	2	8	100
Within Cities	233	23	38	294
Routes	101, 1	101	101	

Sources: AFDC, PlugShare

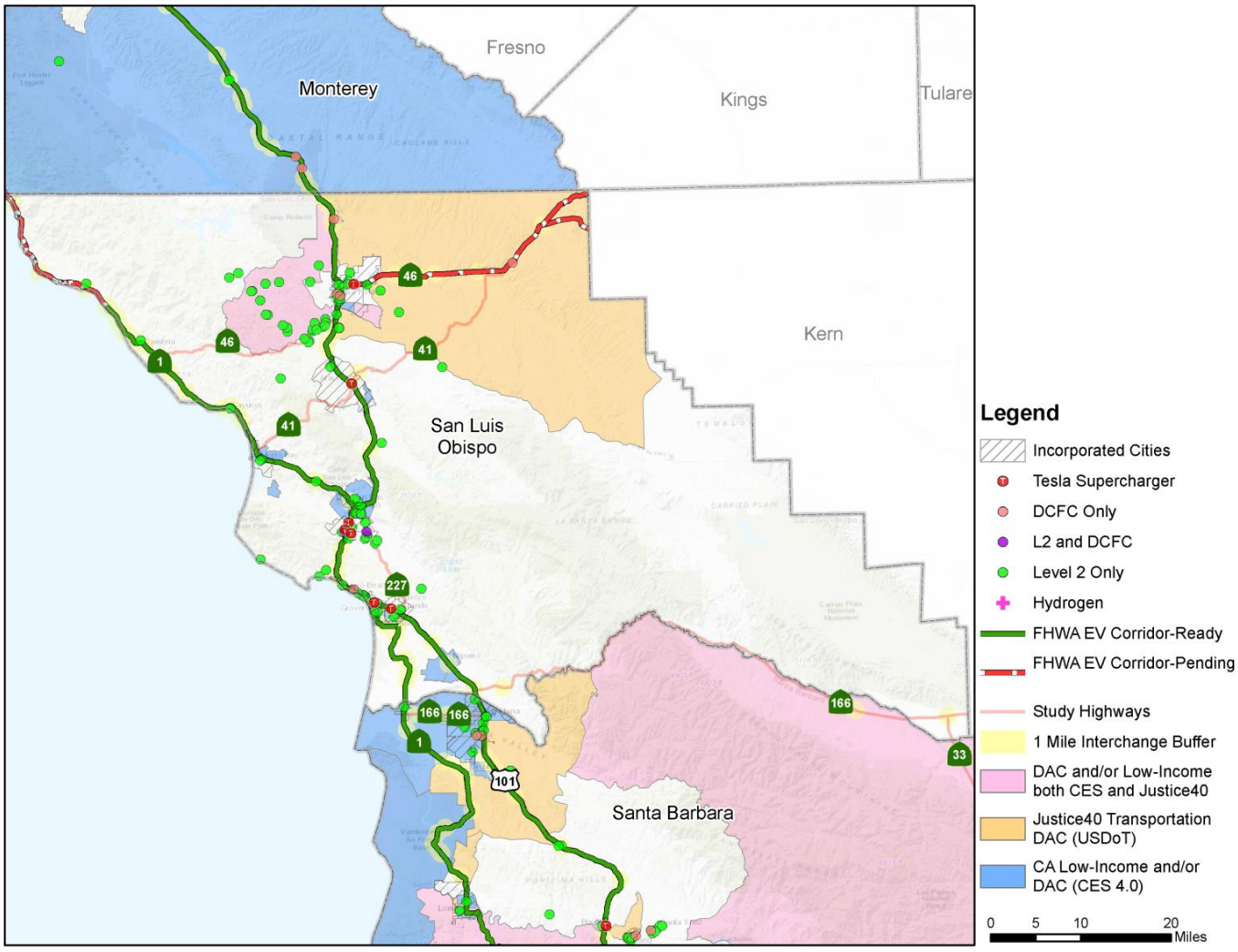


FIGURE 42: LOCATION OF EXISTING EV CHARGERS IN SAN LUIS OBISPO COUNTY

TABLE 48: SUMMARY OF EXISTING EV CHARGERS IN SAN LUIS OBISPO COUNTY

Location	Level 2 (Including Tesla)	DCFC	Tesla Supercharger	Total
Total Public	408	17	110	535
Unincorporated	210	3	0	213
Within Cities	198	14	110	322
Routes	1, 101, 41, 46, 227	101	101, 46	

Sources: AFDC, PlugShare

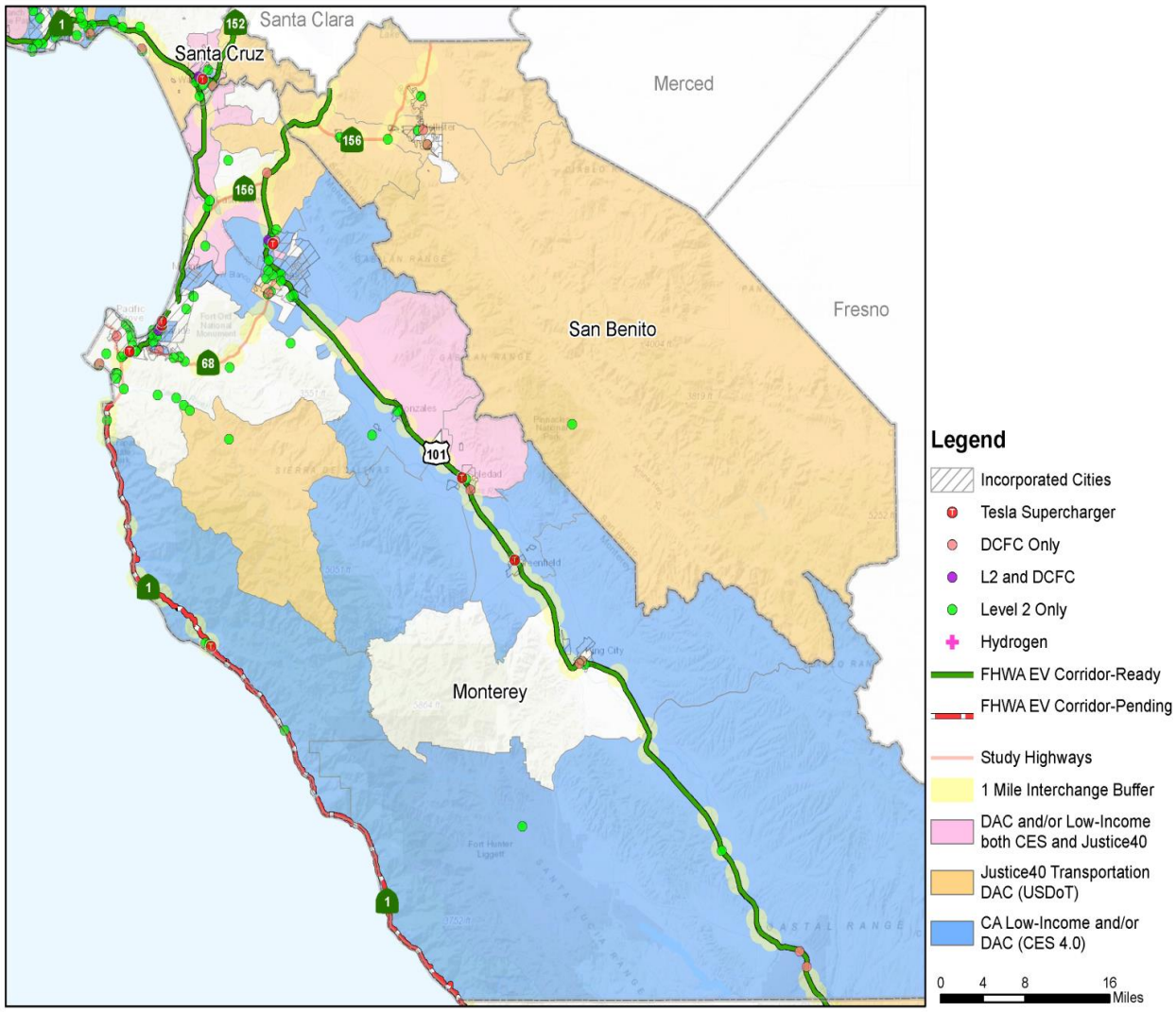


FIGURE 43: LOCATION OF EXISTING EV CHARGERS IN MONTEREY AND SAN BENITO COUNTIES

TABLE 49: SUMMARY OF EXISTING EV CHARGERS IN MONTEREY COUNTY

Location	Level 2 (Including Tesla)	DCFC	Tesla Supercharger	Total
Total Public	269	45	70	384
Unincorporated	111	20	8	139
Within Cities	158	25	62	245
Routes	1, 101, 156	1, 101	1	

Sources: AFDC, PlugShare

TABLE 50: SUMMARY OF EXISTING EV CHARGERS IN SAN BENITO COUNTY

Location	Level 2 (Including Tesla)	DCFC	Tesla Supercharger	Total
Total Public	12	5	0	17
Unincorporated	4	0	0	4
Within Cities	8	5	0	13
Routes	156	-	-	

FIGURE 44: LOCATION OF EXISTING EV CHARGERS IN SANTA CRUZ COUNTY

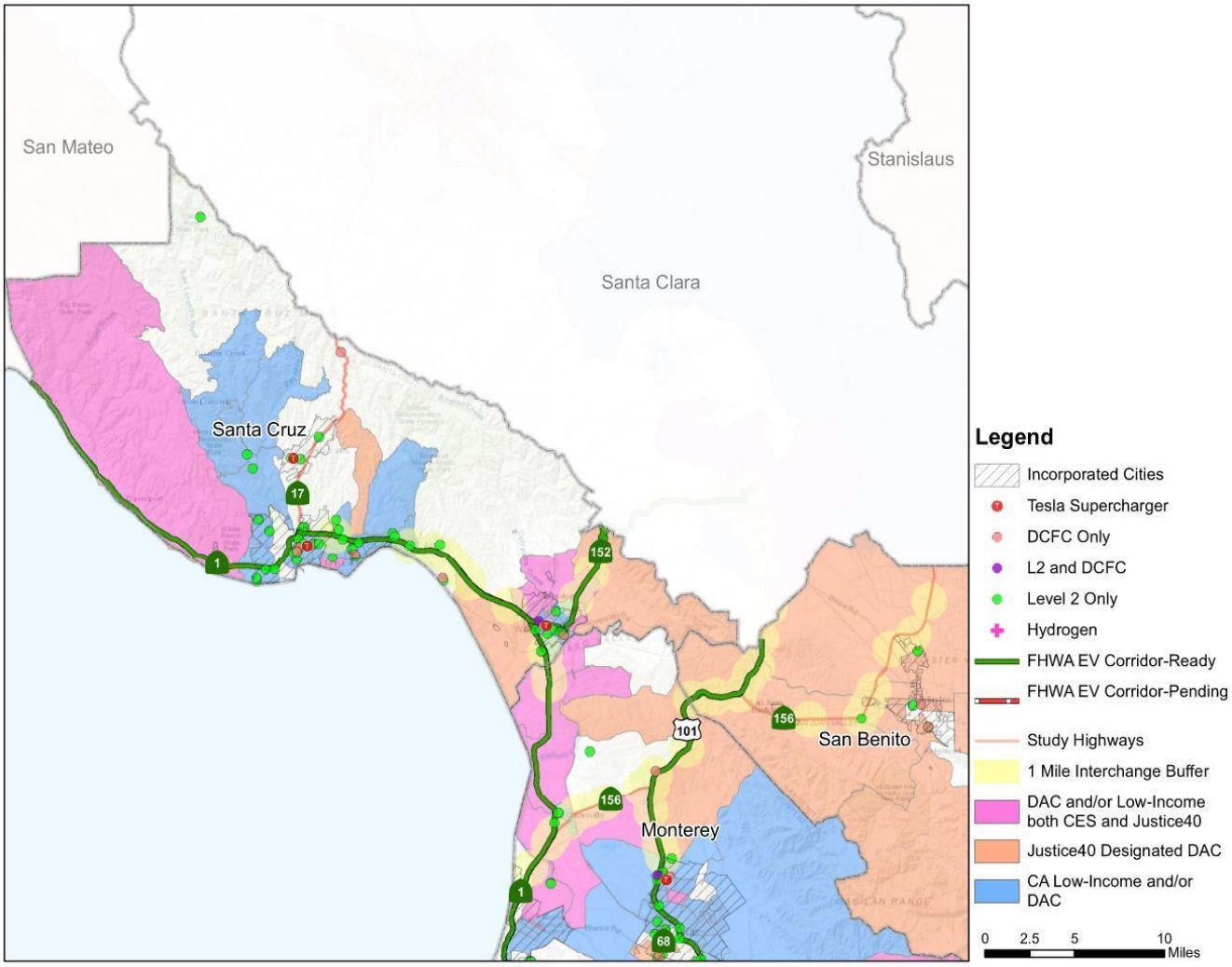


TABLE 51: SUMMARY OF EXISTING EV CHARGERS IN SANTA CRUZ COUNTY

Location	Level 2 (Including Tesla)	DCFC	Tesla Supercharger	Total
Total Public	166	20	46	232
Unincorporated	45	6	0	51
Within Cities	121	14	46	181
Routes	1, 101, 17, 152, 156	101, 17	1, 101	N/A

Sources: AFDC, PlugShare

HYDROGEN

There are currently four hydrogen stations within the study area. Three of these stations are located in Ventura County while one is located in Santa Barbara County. **Figure 45** shows the locations of these four stations in relation to the overall study area. The figure shows that all of the hydrogen stations are concentrated in the southern 50+ miles of the study area. The figure also shows that US 101 is designated as an FHWA Hydrogen Corridor throughout the study area and its status is Hydrogen Ready through Ventura County and a portion of Santa Barbara County. State Route 1 and a portion of State Route 156 are also designated as FHWA Hydrogen Corridors, however neither of them has a status of Hydrogen Ready at this time. Adjacent to the study area, there is one Hydrogen station along Interstate 5 in Coalinga. This station serves as the only Hydrogen fueling station between the greater Los Angeles area and the greater Bay Area.

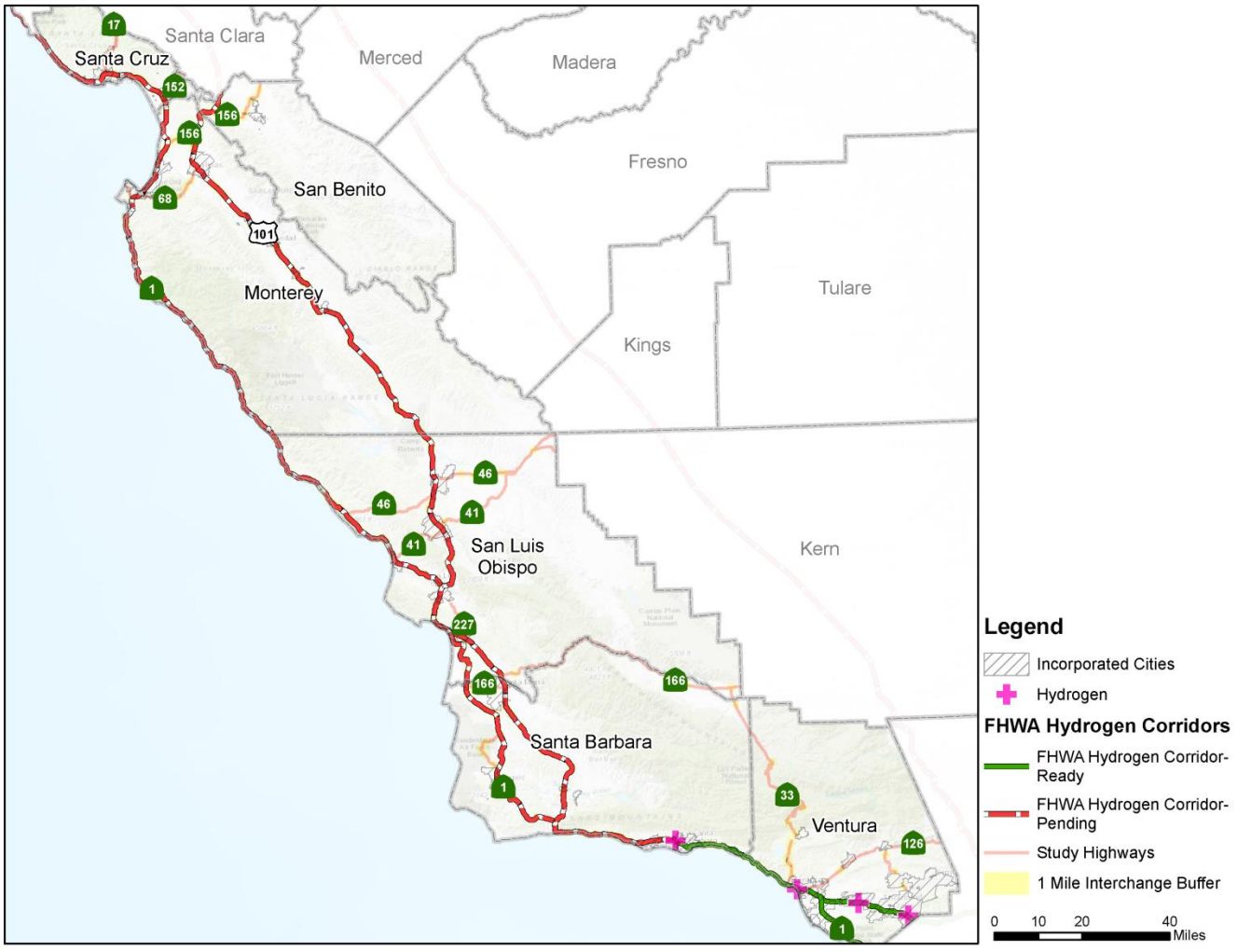


FIGURE 45: LOCATION OF EXISTING HYDROGEN STATIONS

RELEVANT PLANS, STUDIES, AND REGULATIONS

Plans and studies

Planning for zero-emission vehicle (ZEV) infrastructure has been an explicit priority of the Tri-County Central Coast (CC) region of Ventura, Santa Barbara, and San Luis Obispo Counties for more than a decade. Key objectives throughout all planning efforts include:

the encouragement and facilitation of mass ZEV adoption, raising ZEV awareness and ensuring education and outreach, efficient use of grid energy, and a diversification of energy sources towards renewables. Key benefits of the promotion of ZEV adoption include improvements in local air quality, a reduction of greenhouse gas emissions that drive climate change, an enhanced energy grid resilience, and an increased energy security as explicitly stated by the major planning documents in the Tri-County region.

As early as 2011, Ventura, Santa Barbara, and San Luis Obispo counties formed the Plug-In Central Coast (PCC) initiative[40] as the regional coordinating council for plug-in electric vehicles and the deployment of the related charging infrastructure. The PCC obtained grants from the U.S. Department of Energy and the California Energy Commission (CEC) for plug-in electric vehicle planning efforts. The PCC is the first EV readiness effort of the Central Coast region. It is set up as a public-private collaborative network of the three counties, as well as cities, other public entities, community organizations, private industry, and utilities.

In the following section, past and ongoing ZEV infrastructure planning efforts, studies, and institutions are summarized.

Alternative Fuel Vehicle Readiness Planning

Covering a broad range of alternative fuel technologies, the "Central Coast Alternative Fuel Vehicle Readiness Plan"[41] of May 2016 compiled and assessed electric, hydrogen fuel cell, biofuel, and natural gas vehicles and their related fueling or charging infrastructure and derived key recommendations for local alternative fuel programs. According to the plan, such programs are to be guided by the principle of maximum environmental and community benefit (e.g., greatest potential for greenhouse gas reduction) and focus on alternative fuel vehicles with the highest potential for mass adoption. The report also puts state, regional, and local planning entities into context with the general market and its different forces. The recommendations include advice for regional and local government action (such as related to alternative fuel vehicle fleet procurement or the provision of necessary charging infrastructure) and market development activities.

[40] More information on the initiative is gathered here.

[41] The alternative fuel vehicle readiness plan can be found here.

Electric vehicle Readiness Planning

In 2021, the CEC published the "Electric Vehicle Readiness Plan for Ventura, Santa Barbara, and San Luis Obispo Counties (Central Coast)"[42], which is the result of an extensive collaboration between members of the PCC Coordinating Council Steering Committee, including air pollution control districts, environmental councils, and the Central Coast Clean Cities Coalition (C5). The planning efforts are intended to guide the development of EV charging infrastructure in the Tri-County region, with the ultimate goal of more EV purchases. Installation of charging infrastructure near major highways was identified as a critical step towards that goal. During the development of the plan, around 200 Level 2 and multiple DCFC charging stations were built along the CC. Beyond public charging infrastructure, the report presents recommendations on implementing permitting processes for residential charging installations, adopting building code amendments to mandate EVSE readiness in new and remodeled multi-unit buildings, EV parking ordinances, EV-related signage, and the integration of EVs into local fleets. The plan also emphasizes the importance of EV marketing and outreach efforts, including "EV 101" activities, electric car shows, workshops, and the development of information resources on EVs. The EV Readiness Plan for the Tri-County region offers a comprehensive piece of guidance and an overview of best practices for EV promotion actions at the municipal level.

Transit Agency EV Rollout Plans

Over the past years, the various transit agencies in the Tri-County region have announced, adopted, or implemented various plans for the rollout of electric buses, trolleys, and other transit vehicles.

In 2018, the Santa Barbara Metropolitan Transit District adopted a goal of a 100% zero-emission fleet by the year 2030. The Santa Barbara County Association of Governments (SBCAG) introduced an all-electric 45-foot long intercity bus with a 220-mile range. The Ventura County Transportation Commission (VCTC) recently published a near-term goal to complete a zero-emission bus transition plan by late 2022. The corresponding request for proposals was issued in February 2022. In that, VCTC lays out how the requested study shall result in a zero-emission bus rollout plan, in response to the California Air Resources Board (CARB) Innovative Clean Transit (ICT) Regulation, requiring a complete transition of California bus fleets to zero-emission vehicles by 2040. The San Luis Obispo Regional Transit Authority was awarded a low-cost loan from the Build America Bureau for building a new bus operations and maintenance facility to accommodate a fleet of electric buses. This will prepare the transit agency for future electric charging needs of its bus fleet and, in addition, add capacity to the service area's operations overall.

[42] The EV readiness plan can be found on this website.

REGULATION

Relevant federal regulations that will significantly impact the vehicle fleet composition in California over the coming years are summarized below with recent federal regulations first followed by regulations specific to California.

Infrastructure Investment and Jobs Act (IIJA)

The federal $1 trillion infrastructure bill passed in November 2021 includes multiple provisions for transportation electrification efforts. This includes $5 billion for the National Electric Vehicle Infrastructure (NEVI) Formula Program , allocating funds to the states to deploy EV charging infrastructure with the goal of establishing a national charging network that facilitates data collection and is reliable and accessible. California's share will be $384 million over 5 years. A further $2.5 billion in the IIJA are to be used for charging and refueling infrastructure grants. The procurement of low- and no-emission buses and of electric school buses is funded with $5.6 billion and $2.5 billion respectively. Another $500 million is available for the electrification of state and local fleet vehicles, transit, ferries, and more. Multiple of these funding sources can be leveraged for public fleet electrification.

Inflation Reduction Act

The Inflation Reduction Act was passed by Congress and signed into law by President Biden in August 2022, including substantial funding for climate change mitigation-related efforts. The act would extend the federal tax credit of $7,500 for eligible newly purchased all-electric vehicles and eliminate the phasing out of this tax credit after manufacturers have reached 200,000 EV sales. Additionally, used EVs (i.e., previously owned clean vehicles that are at least two years old) will now have a separate tax credit of either up to $4,000 or 30% of the price of the vehicle, whichever is less.

Advanced Clean Truck (ACT) Regulation

The Advanced Clean Truck (ACT) Regulation is an existing CARB regulation that requires manufacturers to sell zero emission vehicles as an increasing percentage of annual California sales from 2024-2035. It applies to vehicles with a GVWR of 8,501 pounds and more, and the sales percentage requirements are based on vehicle classes. **Table 52** shows the percentage of vehicles by class that manufacturers are required to sell.

Advanced Clean Fleet (ACF) Regulation

The Advanced Clean Fleet (ACF) Regulation[43] is a pending regulation from the California Air Resources Board (CARB) that will require all public fleets, all port and rail drayage operators, and private fleets with 50 or more vehicles or $50 million in annual revenue to purchase zero and near-zero emission vehicles starting January 1, 2024. If adopted with the language in the draft regulation, it will apply to vehicles with a GVWR of 8,501 pounds and more. Similar regulations could follow in other states.

[43] https://ww2.arb.ca.gov/sites/default/files/2022-04/220504acfdraftstatelocal_ADA.pdf

TABLE 52: SUMMARY OF THE ADVANCED CLEAN FLEET (ACF) REGULATION

PROPOSED REQUIREMENT	DATES
50% of Class 2B-8 vehicles added to fleet must be ZEV	2024 through 2026
100% of Class 2B-8 vehicles added to fleet must be ZEV	2027 and onward

Advanced Clean Cars II Regulation

On August 25th, CARB's Board voted on the Advanced Clean Cars II plan to scale down light-duty passenger car, truck, and SUV emissions beginning with the 2026 model year through 2035. Under this regulation, all new passenger cars, trucks, and SUVs sold in California will be zero-emission vehicles ty 2035, putting Governor Newsom's Executive Order N-79-20 into law. This sets a clear timeline for transition of California's vehicle fleet toward electrification, a transformation expected to be replicated across the nation.

Transport Refrigeration Unit (TRU) Regulation—a regulation that requires the transition of diesel-powered TRUs (also called reefers) to zero-emission technology, sets a more-stringent standard for particulate matter (PM) emissions for newly manufactured non-truck TRUs, lowers the global warming-potential refrigerant, and requires facility registration and reporting.[44]

CARB staff are assessing zero-emission options for non-truck TRUs, and plan to propose a second rulemaking (Part 2) to the Board for consideration in 2025.

FIGURE 46: TRANSPORT REFRIGERATION UNIT MOUNTED ON TRUCK

EV Charging Station Permit Streamlining.

In California, the state bills AB 1236 (2015) and AB 970 (2021) set the standards for EV charging station development in the state and what processes cities and counties need to put in place to support the efficient expansion of EV charging infrastructure across California.[45] AB 1236 was passed in 2015 and is in effect since 2017. It requires all cities and counties to provide an expedited permitting process for EV charging stations (including a streamlining ordinance and checklist).

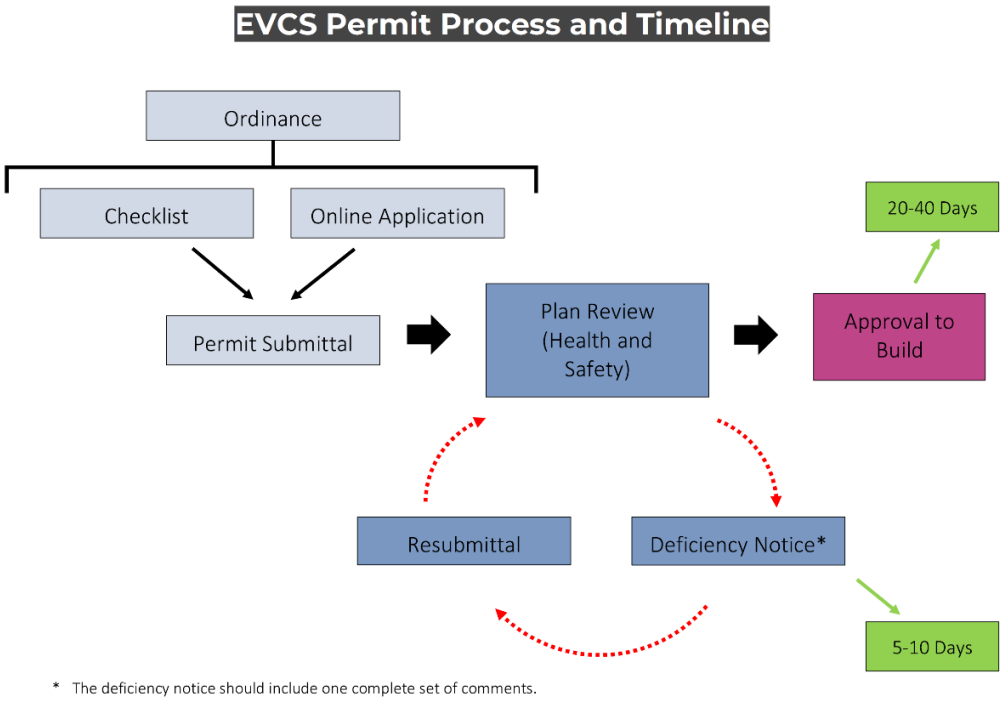
AB 970 builds on these bills and was passed in September 2021. It has been in effect since January 2022 for large cities/counties (>200,000 population) and will be in effect beginning in January 2023

[44] California Air Resources Board-2022 Amendments to the TRU ATCM https://ww2.arb.ca.gov/sites/default/files/2022-09/advisory_22_30_0.pdf

[45] An overview of AB 1236 and AB 970 can be found at this link: https://static.business.ca.gov/wp-content/uploads/2021/11/EV-Charger-Permit-Streamlining-AB-1236-Fact-Sheet-Version-1.pdf

for small (<200,000) cities/counties. The bill requires cities and counties in California to limit project review for EV charging stations to health and safety requirements. It also sets specific timelines to the review period based on the size of the project, differentiating between 1-25 stations and 26 or more stations per project site. For a 1-25-station project, EV charging station applications will be deemed complete 5 business days upon receipt, unless the city or county issues a written deficiency notice detailing all changes to be made to make the application consistent with the permitting checklist. This process is visualized in **Figure 47**.

FIGURE 47: EVCS PERMIT PROCESS AND TIMELINE IN CALIFORNIA, ACCORDING TO AB 1236 AND AB 970.



Source: Permit Streamlining

The California Governor's Office of Business and Economic Development (GO-Biz) developed the Permitting Electric Vehicle Charging Stations Scorecard, based on AB 1236 and AB 970, to help California jurisdictions streamline EVCS permitting. The criteria to be considered streamlined "EVCS Permit Ready" are listed below.

- Streamlining Ordinance for Expedited EVCS Permit Process
- Permitting Checklists Online for L2 & DCFC
- Administrative Approval of EVCS
- Approval Limited to Health & Safety Review
- Electronic Signatures Accepted
- EVCS Not Subject to Association Approval
- One Complete Deficiency Notice if Application is Incomplete

According to GO-Biz, the six Central Coast Counties have completed these criteria to a different extent. **Table 53** summarizes where each county is at in the process. Note that different criteria from the list may be incomplete when the permit streamlining status is marked as "In progress". In addition, some cities might have already completed all steps, while the county lags behind in that process. For a map of the permit streamlining progress in all jurisdictions in California, go to this link:https://california.maps.arcgis.com/apps/webappviewer/index.html?id=5b34002aaffa4ac08b84d24016bf04ce.

TABLE 53: EVCS PERMIT STREAMLINING STATUS IN THE CENTRAL COAST COUNTIES

COUNTY	PERMIT STREAMLINING STATUS
SANTA BARBARA	Complete
SAN LUIS OBISPO	Complete
MONTEREY	In progress
SANTA CRUZ	Complete
SAN BENITO	Complete
VENTURA	Complete

Updated April 11th 2023

Transit Electrification Regulation and Planning

This section reviews applicable mandates and policies for the electrification of bus transit fleets in California.

Federal Transit Mandate

At the federal level, there is no mandate to transition away from fossil fuel buses to ZEBs. Nonetheless, the federal government incentivizes the transition to ZEBs as part of its broader environmental and social justice goals.

A prime example of this is the Low- and No-Emission Vehicle Funding (Low-No) from the Federal Transit Administration (FTA). The Low-No grant is part of a broader set of funding under Section 5339 and includes both formula funding and competitive funding. The FTA has dramatically increased the funding available for Low-No grants, as shown below. **Table 54** provides an overview of the authorized funding for the 5339 program [46] through FY 2026, demonstrating the significant investment from the federal government to support ZEB transitions.

[46] https://www.transit.dot.gov/sites/fta.dot.gov/files/2022-03/FY22-Low-No-Bus-Public-Webinar.pdf

TABLE 54: AUTHORIZED FUNDING FOR SECTION 5339 PROGRAM

Program component	FY 2021 Enacted	FY 2022 (in millions)	FY 2023 (in millions)	FY 2024 (in millions)	FY 2025 (in millions)	FY 2026 (in millions)
FORMULA	$582.61	$603.99	$616.61	$632.71	$645.78	$662.20
BUSES AND BUS FACILITIES COMPETITIVE	$414.04	$375.70	$383.54	$393.56	$401.69	$411.90
LOW OR NO EMISSIONS COMPETITIVE	$180.00	$1,121.56	$1,123.06	$1,124.96	$1,126.51	$1,128.46
5339 PROGRAM TOTAL	$1,176.65	$2,101.25	$2,123.21	$2,151.23	$2,173.98	$2,202.56

This historic investment is a clear indication of the federal government's support for adoption of alternative fuels to reduce pollution and help 'green' transit fleets. To access FTA funding through the 5339(c) Low or No Emission Program (Low-No) and the 5339(b) Buses and Bus Facilities Program opportunities, transit agencies will need to comply with FTA's requirements for these competitive funding opportunities, including the development and submission of an FTA-compliant ZE Transition Plan. The FTA ZE Transition Plan contains six elements as required through the *Dear Colleague* letter and the Notice of Funding Opportunity for the Low-No competitive grant program:

1. Demonstrate a long-term fleet management plan with a strategy for how the applicant intends to use the current request for resources and future acquisitions;
2. Address the availability of current and future resources to meet costs for the transition and implementation;
3. Consider policy and legislation impacting relevant technologies;
4. Include an evaluation of existing and future facilities and their relationship to the technology transition;
5. Describe the partnership of the applicant with the utility or alternative fuel provider; and
6. Examine the impact of the transition on the applicant's current workforce by identifying skill gaps, training needs, and retraining needs of the existing workers of the applicant to operate and maintain zero emission vehicles and related infrastructure and avoid the displacement of the existing workforce.

In summary, a ZE transition plan is required if an agency wishes to apply for federal funding.

State Transit Mandate

The California Air Resources Board (CARB) adopted the Innovative Clean Transit (ICT) regulation in December 2018, which requires all public bus transit agencies in the state to gradually transition to a completely ZEB fleet by 2040. This regulation is in accordance with preceding state policies SB 375 and SB 350. SB 375, the Sustainable Communities and Climate Protection Program, creates initiatives for increased development of transit-oriented communities, better-connected transportation, and active transportation. Relatedly, SB 350 supports widespread transportation electrification through collaboration between CARB and the California Public Utilities Commission (CPUC).

ICT also states that transit agencies are required to produce a ZEB rollout plan that describes how the agency is planning to achieve a full transition to a ZE fleet by 2040 as well as outlining reporting and record-keeping requirements. Specific elements required in the rollout plan include:

- A full explanation of how the agency will transition to ZEBs by 2040 without early retirement of conventional internal combustion engine buses
- Identification of the ZEB technology the agency intends to deploy
- How the agency will deploy ZEBs in disadvantaged communities
- Identification of potential funding sources
- A training plan and schedule for ZEB operators and maintenance staff
- Schedules for bus purchase and lease options (including fuel type, number of buses, and bus type)
- Construction of associated facilities and infrastructure (including location, type of infrastructure, and timeline)

CARB defined large transit agencies as operating in "an urbanized area with a population of at least 200,000 as last published by the Bureau of Census before December 31, 2017, and has at least 100 buses in annual maximum service." Agencies that do not meet this definition are categorized as small transit agencies. The agencies in the CCZEVS area, by the CARB definition, are considered small transit agencies.

The ICT regulation outlines different ZEB purchase schedules that large and small agencies must adhere to. Beginning in 2021 and continuing annually through 2050, each transit agency will be required to provide a compliance report[47]. The initial report outlined the number of and information on active buses in the agency's fleet as of December 31, 2017. Subsequent reports must include transit agency information, information on each bus purchased, owned, operated, leased, or rented (including make, model, curb weight, engine and propulsion system, bus purchases, and any information on converted buses), ZE mobility option information (if applicable), and information on renewable fuel usage (including date purchased, fuel contract number, and effective date, if applicable).

Table 55 below outlines the ZEB purchase schedule for small transit agencies for heavy-duty transit vehicles—that is, traditional 40-ft buses. Specific vehicle types, such as motor coaches, cutaways, double decker, and 60-ft. vehicles, are exempt from this purchase schedule until 2026 or later (dependent on Altoona testing being completed). Whereas large agencies are required to start purchasing ZEBs in 2023, small agencies are exempt until 2026, when 25% of new bus purchases must be ZE.

[47] https://ww2.arb.ca.gov/sites/default/files/2019-10/ictfro-Clean-Final_0.pdf

TABLE 55: ZEB PURCHASE SCHEDULE (AS A PERCENTAGE OF TOTAL NEW BUS PURCHASES FOR SMALL TRANSIT AGENCIES) FOR STANDARD BUSES[48]

Year	Large agency	small agency
2023	25%	-
2024	25%	-
2025	25%	-
2026	50%	25%
2027	50%	25%
2028	50%	25%
2029	100%	100%

Source: ICCT Fact sheet

ICT also outlines several flexible options to comply with ZEB purchase requirements that transit agencies can take advantage of. These include receiving bonus credits for early ZEB purchases, ZE mobility options to encourage innovation, enhanced first/last mile connections and improved mobility, and the option to form a joint ZEB group, which entails transit agencies working together to collectively comply with ZEB purchase requirements and a joint ZEB rollout plan. Formation of joint ZEB groups is dependent on certain eligibility requirements (agencies must share infrastructure, be in the same air basin, air district, Metropolitan Planning Organization, or Regional Transportation Planning Organization).

The ZE mobility option outlined above specifically refers to a program that provides a ZE service, such as a shared mobility bicycle program or any service operated by the agency that includes ZE transportation, such as micro transit, demand-response service, or autonomous shuttles. The mobility option does not apply to larger buses or fixed-route transit services. Small transit agencies must achieve 180,000 zero-emission passenger miles per year to be eligible for a mobility credit. One mobility credit is the equivalent to having one ZEB in the fleet.

To account for circumstances beyond a transit agency's control that may impact their ability to comply with ICT regulations, the mandate laid out specific provisions for exemptions. Exemptions will be permitted for the following circumstances:

- If the required ZEB type is unavailable
- Daily mileage needs cannot be met
- Gradeability needs cannot be met

[48] Standard buses refer to 35-ft. or 40-ft. unless otherwise stated.

- Delays in infrastructure construction
- A financial emergency is declared by the transit agency
- In circumstances where incremental capital or electricity costs for charging cannot be offset after applying for all available funding and incentive opportunities.

Specifically, the ZEB rollout plan required to be submitted to CARB by June 30, 2023 must include the following components, broken down by CARB into nine sections.

- Section A: Transit agency information
- Section B: Rollout plan general information
- Section C: Technology portfolio
- Section D: Current bus fleet composition and future bus purchases
- Section E: Facilities and infrastructure modifications
- Section F: Providing service in disadvantaged communities
- Section G: Workforce training
- Section H: Potential funding sources
- Section I: Start-up and scale-up challenges

The service providers outlined in this section are at various stages of their electrification efforts. While some have fully developed ZEB rollout plans that are being implemented, many are just starting to develop their plans and are at the beginning stages of navigating their fleet transitions. **Table 56** summarizes each provider's electrification planning status, the fuel type(s) in consideration, and the preferred method of charging.

TABLE 56: REGIONAL TRANSIT PROVIDER ELECTRIFICATION STATUS AND NEEDS

Provider	ZEB planning status	ZEB Technology	Fueling/Charging
Santa Maria Regional Transit (SMRT)	• Currently operating BEBs • ZEB rollout plan 95% complete	BEB	Charger types and locations are in development
City of Lompoc Transit (COLT)	ZEB rollout plan is in development	In development	In development
San Luis Obispo Regional Transit Authority (RTA)	• ZEB rollout plan is in development • Goal to present draft January 2023	BEB	• Primarily depot charging • Possible on-route charging
Guadalupe Transit	ZEB rollout plan in development	BEB	Depot charging
Monterey-Salinas Transit District (MST)	ZEB rollout plan complete	• BEBs identified as the preferred technology • FCEBs will be used on long-distance routes that cannot be served by BEBs	• Depot charging for BEBs • Hydrogen infrastructure is in development
SBCAG	ZEB rollout plan in development	BEB	Depot
Santa Cruz METRO	ZEB rollout plan in development	BEB	Depot charging
San Benito County	Plan to apply for funding to develop ZEB rollout plan	In development	In development
Santa Barbara MTD	ZEB rollout plan is in development	BEB	Depot
Ventura County Transportation Commission (VCTC)	ZEB rollout plan is in development	• BEB • Hydrogen	• Depot • On-route • Hydrogen fueling

Similarly, each provider has a unique fleet with varying levels of ZEB penetration. A summary of the providers' current fleet status is provided in **Table 57**.

TABLE 57: REGIONAL TRANSIT PROVIDER FLEET STATUS

Provider	Fleet providing regional service	Number of ZEBs in fleet	Number of ZEBs providing regional service
Santa Maria Regional Transit (SMRT)	• 18 diesel buses	2 35-ft. BEBs to be in service soon	None
City of Lompoc Transit (COLT)	• 10 buses rotated • 3 vans rotated	None	None
San Luis Obispo Regional Transit Authority (RTA)	• Vehicles are mixed between the local and regional services • 40-ft. diesel buses, cutaways, minivans	None	None
Guadalupe Transit	• 4 diesel buses • 1 van	None	None
Monterey-Salinas Transit District (MST)	• 4 diesel coaches	• 1 battery electric trolley • 2 30-ft. BEBs • 2 40-ft. BEBs	None
Santa Barbara County Association of Governments (SBCAG)	• 9 diesel coaches • 4 spares	1 BYD C10 2022 will be in service soon	None
Santa Cruz METRO	• 10 40-ft. diesel hybrid buses	None	None
San Benito County Express	• 5 cutaways • 4 specialized transportation	None	None
Santa Barbara MTD*	• 7 diesel buses used for Carpinteria service • 79 40-ft. buses rotated	14 BEBs - 9 additional 40 ft BEBs will be in operation in 2023	None
Ventura County Transportation Commission (VCTC)	• 20 diesel buses	5 BYD BEBs will be in operation in 2023	None

More detailed information regarding regional transit services within the CCZEVS study area can be found in **Appendix IV**.

* Santa Barbara MTD operates public transit services throughout the South Coast region of Santa Barbara County, including the City of Santa Barbara, Goleta, Isla Vista, and Carpinteria. MTD's services are mainly local and are not regional in nature. However, For the purposes of this study, regional transit is defined as intercounty or intercity service that must traverse over 10 miles or more of relatively unincorporated undeveloped area. This criteria speaks to the issue of range

anxiety (a common concern) which is more pronounced when traversing undeveloped areas which typically have less amenities and services available including charging infrastructure. Due to this, Line 20 between downtown Santa Barbara and Carpinteria—a distance of about 11 miles one-way—could be considered 'regional' and is therefore reflected as such in this table.

CURRENT INTERREGIONAL TRAFFIC PATTERNS

Table 58 shows the daily origin and destination (OD) of daily intra-county and inter-county trips within the Central Coast region. The source of this information is the Central Coast Origin-Destination Survey (SBCAG, 2016)[49]. This study combined three data sources (license plate surveys, mail survey and Streetlight data) to determine the extent of intercounty trips between the Central Coast counties. All OD pairs reflect person trips. Note that Monterey, Santa Cruz, and San Benito Counties are holistically shown as the AMBAG region.

TABLE 58: DAILY COUNTY-TO-COUNTY FLOWS IN THE CENTRAL COAST REGION

County	San Luis Obispo	Ventura	AMBAG	Santa Barbara	Total
San Luis Obispo	649,907	1,141	7,122	38,377	**696,547**
Ventura	879	2,601,285	75	31,799	**2,634,038**
AMBAG Region	7,514	56	1,445,785	757	**1,454,112**
Santa Barbara	38,597	31,692	925	1,269,933	**1,341,147**
Total	**696,897**	**2,634,174**	**1,453,907**	**1,340,866**	**6,125,844**

Table 58 isolates the daily intra-county trips within the Central Coast (trips with both the origin and destination are within the same county/region). As shown, the greatest number of intra-county trips occurs in Ventura County followed by the AMBAG region and Santa Barbara County and then San Luis Obispo County. Given the geographic size of these counties/regions, many of these intra-county trips are inter-city trips made within a given county and are therefore interregional in nature. For instance, although not shown approximately 40,000 trips are made between areas in northern Santa Barbara County and the southern portion of Santa Barbara County on a daily basis. Similarly significant inter-city OD pairs are also prevalent Ventura and San Luis Obispo Counties. This also applies to the AMBAG region which reflects three counties and numerous cities.

[49] http://www.sbcag.org/uploads/2/4/5/4/24540302/central_coast_o-d_survey_final_report_7-8-2016.pdf

TABLE 59: INTRA-COUNTY OD TRIPS

COUNTY	2016 OD TOTAL
VENTURA	2,601,285
SANTA BARBARA	1,230,653
SAN LUIS OBISPO	649,907
AMBAG REGION (MONTEREY, SANTA CRUZ, SAN BENITO)	1,445,785

Table 59 shows the extent of inter-county trips in the Central Coast region. Caltrans' 2019 published annual average daily traffic volumes are also shown. Given that state highway entry points are limited to US 101 and SR 1, a screenline comparison can be made at each county line (i.e., AMBAG region is used for Monterey, Santa Cruz and San Benito Counties). **Table 60** shows the comparison between the 2016 inter-county OD trips relative to the 2019 AADT traffic volumes crossing at or near each county line. The screenline comparisons for Ventura County, Santa Barbara and San Luis Obispo Counties are well within tolerance especially considering that the OD pairs reflect person trips whereas the AADT are vehicles. Given the influence of vehicle occupancy (persons per vehicle) and inter-county regional transit services between these counties, greater OD pairs than AADT as shown would be expected. Conversely, the correspondence between San Luis Obispo County line with the Monterey County (AMBAG region) is less clear. This can be attributable to a number of factors or potential sampling errors associated with the OD survey.

Figure 48 provides a generalized summary of the interregional circulation characteristics of the Central Coast. These data provide a generalized geographic demand profile of electric charging needs that can serve interregional trip making in the Central Coast. As shown, the greatest future charging needs include serving inter-county trips between Ventura-Santa Barbara-San Luis Obispo Counties while intra-county charging needs are likely to be greatest in the AMBAG, Santa Barbara County and Ventura Counties.

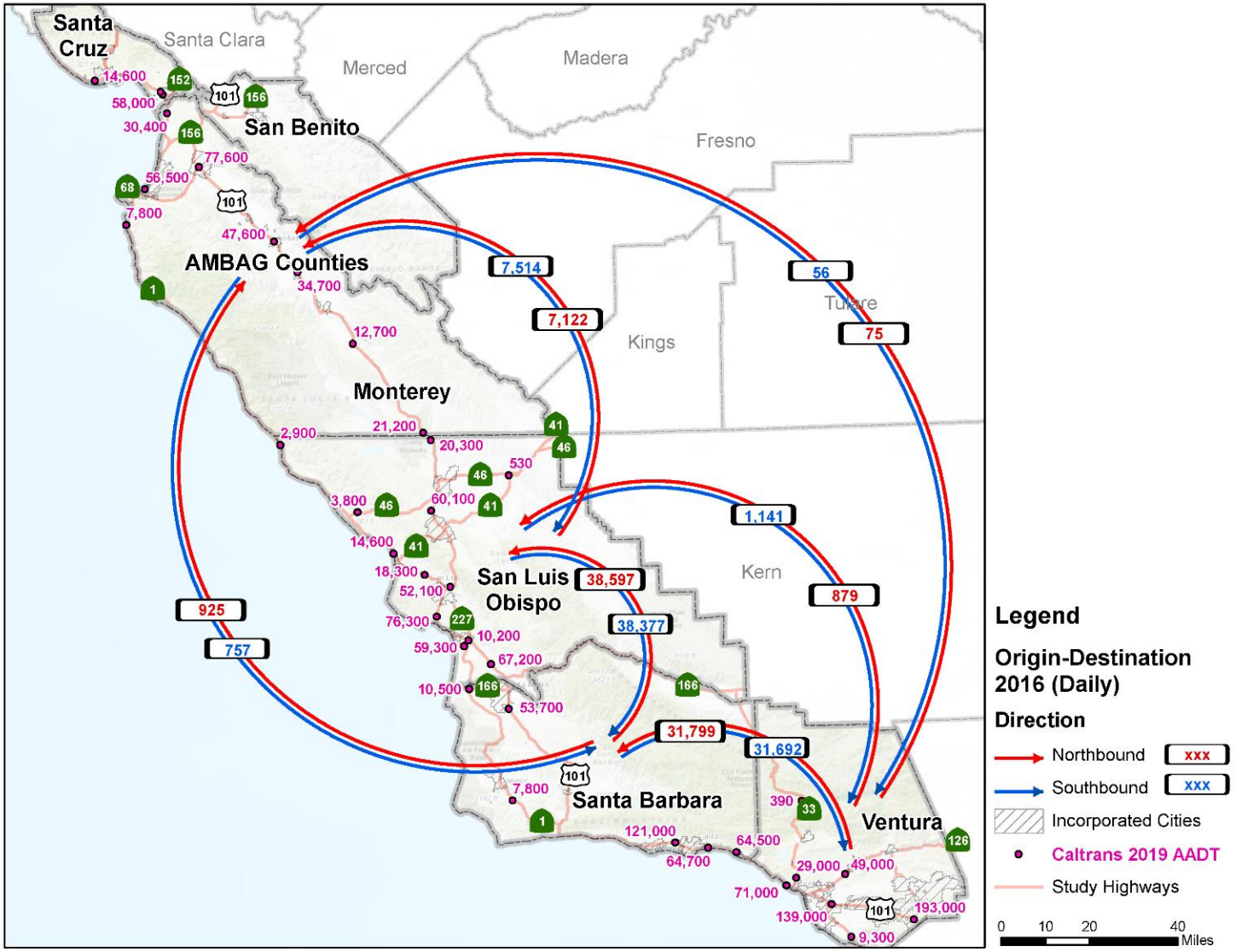
TABLE 60: COMPARISON OF INTER-COUNTY OD TRIPS WITH ANNUAL AVERAGE DAILY TRAFFIC

COUNTY LINE SCREENLINE[1]	2016 OD TOTAL	2019 AADT[2]	DELTA
VENTURA-SANTA BARBARA COUNTY SCREENLINE	65,642	64,500	1,142
SANTA BARBARA-SAN LUIS OBISPO SCREENLINE	80,807	77,700	3,087
SAN LUIS OBISPO-AMBAG REGION SCREENLINE	16,449	24,100	-7,651

[1] Sums reflect all applicable OD pairs crossing screenline

[2] Reflects sum of US 101/SR 1

FIGURE 48: DAILY COUNTY-TO-COUNTY FLOWS AND TRAFFIC VOLUMES ON STUDY HIGHWAYS IN THE CENTRAL COAST REGION



APPENDIX IV. TRANSIT SERVICES IN CCZEV STUDY AREA

This section provides an overview of the regional transit services within the CCZEVS study area. The list of services was developed together with the CCZEVS stakeholders. It is important to note the list of services is not exhaustive and is focused on routes and services that travel between cities and have the potential to share charging and/or fueling infrastructure.

SANTA MARIA REGIONAL TRANSIT & CITY OF LOMPOC TRANSIT

Regional commuter service between Santa Maria, Los Alamos, Buellton, Solvang, and Lompoc is provided by both The City of Santa Maria and the City of Lompoc. Santa Maria Regional Transit (SMRT) operates the Breeze Bus, and the City of Lompoc Transit (COLT) operates the Wine Country Express. Together, regional commuter service consists of three routes, summarized in **Table 61**. Riders can connect between the SMRT Breeze Bus and the COLT Wine Country Express.

TABLE 61: CITY OF SANTA MARIA & CITY OF LOMPOC REGIONAL SERVICE

Route	Operator	Service
Breeze Bus Route 100	Santa Maria Regional Transit	Santa Maria, Vandenberg Space Force Base, Vandenberg Village, Lompoc
Breeze Bus Route 200	Santa Maria Regional Transit	Santa Maria, Los Alamos, Buellton, Solvang
Wine Country Express	City of Lompoc Transit	Lompoc, Buellton, Solvang

The Breeze Bus

The Breeze Bus operates Monday through Friday and consists of two routes, Route 100 and Route 200, shown in **Figure 49** and **Figure 50**.

FIGURE 49: BREEZE ROUTE 100 SERVICE

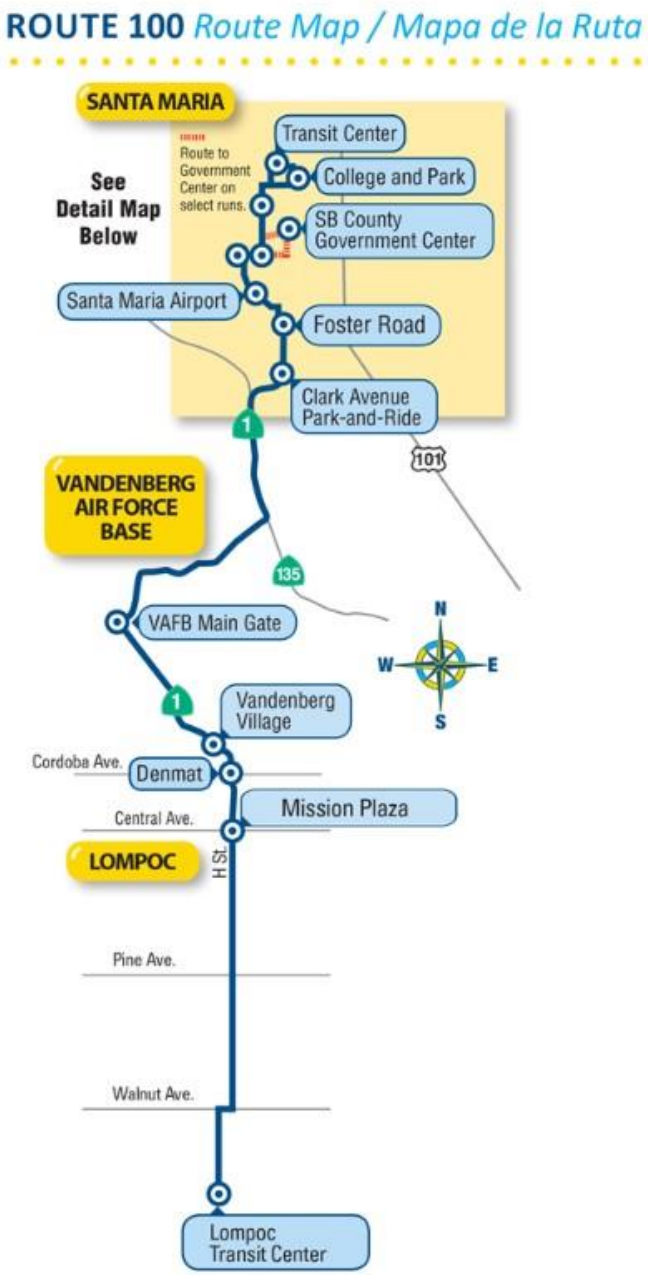


FIGURE 50: BREEZE ROUTE 200 SERVICE

SMRT's current fleet is a mix of 30-ft., 35-ft., and 40-ft. Gillig diesel buses, and two 35-ft. battery electric buses (BEBs). The two BEBs have not been used for revenue service but will enter service in November of 2022. SMRT has another 16 BEBs on order with 10 of those scheduled for delivery by the summer of 2023 and the remaining 6 in early 2024. SMRT anticipates being 100% electric by 2024. However, the two BEBs have not yet been used for revenue service. The agency uses 18 vehicles to operate Santa Maria Regional Service, with an average route daily revenue vehicle mileage of 211 miles.

Buses are dispatched from the facility at 1303 Fairway Drive, Santa Maria, with layovers occurring at the transit center, Suey Crossing Road, and Bradley at Crossroads, Santa Maria. All vehicles are fueled at the public works yard, located at 810 W Church St., Santa Maria.

Wine Country Express

The Wine Country Express is operated by COLT and is a cooperative service provided by the Cities of Lompoc, Buellton, and Solvang, as well as Santa Barbara County. It operates Monday through Friday, three times a day. Buses depart at 7:25 a.m., 1:00 p.m., and 4:45 p.m., providing roundtrip service between Lompoc, Buellton, and Solvang (**Figure 51**).

FIGURE 51: WINE COUNTRY EXPRESS SERVICE

COLT's current fleet is a mix of 28-ft. and 30-ft diesel cutaways and 3 diesel paratransit vans, with a total of 13 vehicles. The average route daily revenue vehicle mileage is 126 miles. Vehicles are dispatched from the corporate yard located at 1300 W. Laurel Ave., Lompoc.

SAN LUIS OBISPO REGIONAL TRANSIT AUTHORITY (RTA)

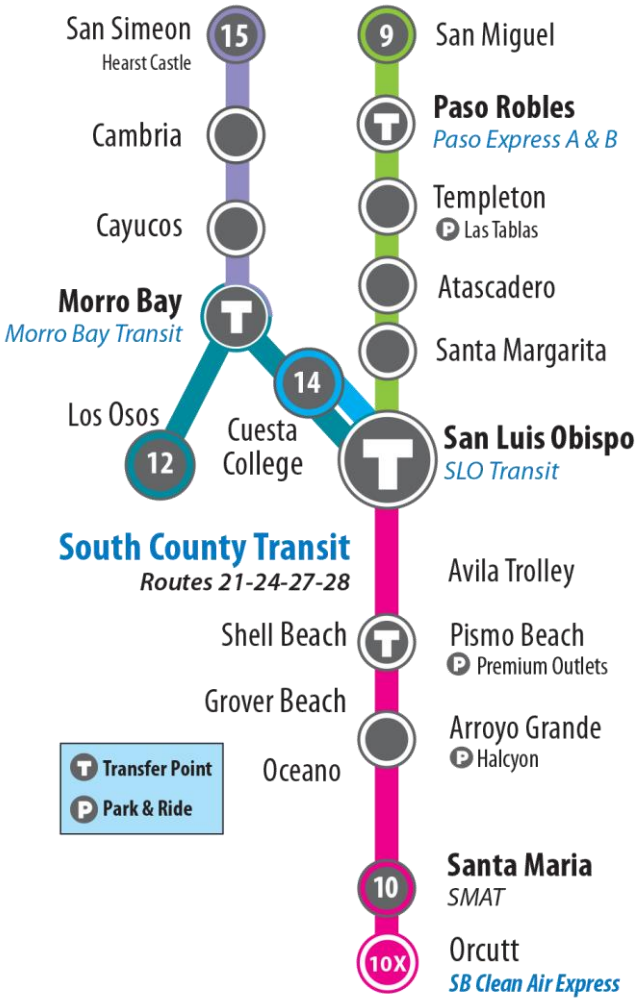
The San Luis Obispo Regional Transit Authority (RTA) provides regional service to all of San Luis Obispo County and parts of Santa Barbara County. It is a Joint Powers Authority (JPA) that connects cities including Arroyo Grande, Atascadero, Grover Beach, Morro Bay, Paso Robles, Pismo Beach, San Luis Obispo, and more. The RTA also oversees South County Area Transit (SCAT) which operates in Shell Beach, Pismo Beach, Grover Beach, Oceano, and Arroyo Grande.

The RTA's fixed-route service runs along Highways 1 and 101 to North County, the North Coast, and South County. Regional service consists of four fixed routes, summarized in **Table 62**, and shown schematically in the map in **Figure 52**.

TABLE 62: RTA REGIONAL FIXED ROUTES

Route	Service
Route 9	North County hourly, local and express service, plus limited Saturday and Sunday local service. Runs via Highway 101, between San Luis Obispo, Cal Poly (limited), Santa Margarita, Atascadero, Templeton, Paso Robles and San Miguel (limited). Operates seven days a week with less frequency on Saturdays and Sundays.
Route 10	South County weekday local and express service. Runs via Highway 101, between San Luis Obispo, Cal Poly, Shell Beach, Pismo Beach, Grover Beach, Arroyo Grande, Nipomo and Santa Maria. Operates seven days a week with less frequency on Saturdays and Sundays.
Route 12	Service between Los Osos/Baywood Park/Morro Bay and San Luis Obispo. One 12 Cal Poly express trip (12X) operates between Los Osos, Morro Bay and Cal Poly. Operates seven days a week with less frequency on Saturdays and Sundays.
Route 15	North Coast provides service from Morro Bay to Cayucos, Cambria, San Simeon and to Hearst Castle on the weekends. Operates seven days per week.

FIGURE 52: SLORTA NETWORK MAP



The RTA's current fleet for regional services includes heavy-duty diesel-powered buses, and gasoline-powered cutaways on Route 15. The roundtrip average mileage for 40-ft. buses operating on regional routes is 248 miles.

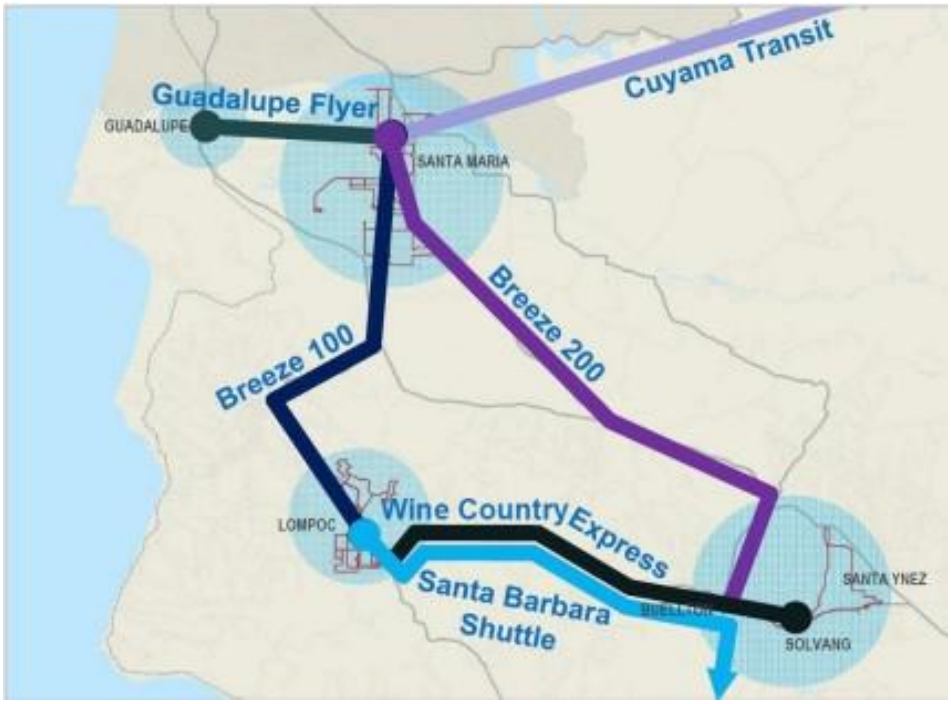
The RTA dispatches all vehicles from a newly built bus maintenance facility located at 253 Elks Lane, San Luis Obispo and utilizes park-outs in Paso Robles and Arroyo Grande.

The RTA does not currently operate any zero-emission buses (ZEBs), but they have issued a purchase order for two 40-ft. BEBs to be used primarily on Route 12, which is relatively flat and provides low-speed local service. In addition, the RTA plans to purchase five more BEBs early in 2023.

GUADALUPE TRANSIT

Guadalupe Transit provides a variety of services, including fixed-route, and paratransit service. The agency offers one regional route, the Guadalupe Flyer Express, which travels between Guadalupe and Santa Maria every hour, and one local route, the Guadalupe Flyer Local which travels within the City of Guadalupe every half-hour (**Figure 53**). The paratransit service operates on demand and provides service to a similar area.

FIGURE 53: GUADALUPE FLYER



Guadalupe Transit's fleet consists of two 29-ft. and two 40-ft. diesel buses, and one gasoline paratransit van. The Guadalupe Flyer Express averages 240 daily revenue miles Monday through Sunday, and 184 revenue miles on a truncated Sunday schedule, and the Guadalupe Flyer Local averages 156 daily revenue miles Monday through Sunday, and 120 revenue miles on a truncated Sunday schedule.

Vehicles are dispatched from SMOOTH offices in Santa Maria at 240 E. Roemer Way, and layovers occur at the same facility. Vehicles are fueled at the City of Santa Maria's fuel depot.

MONTEREY-SALINAS TRANSIT DISTRICT (MST)

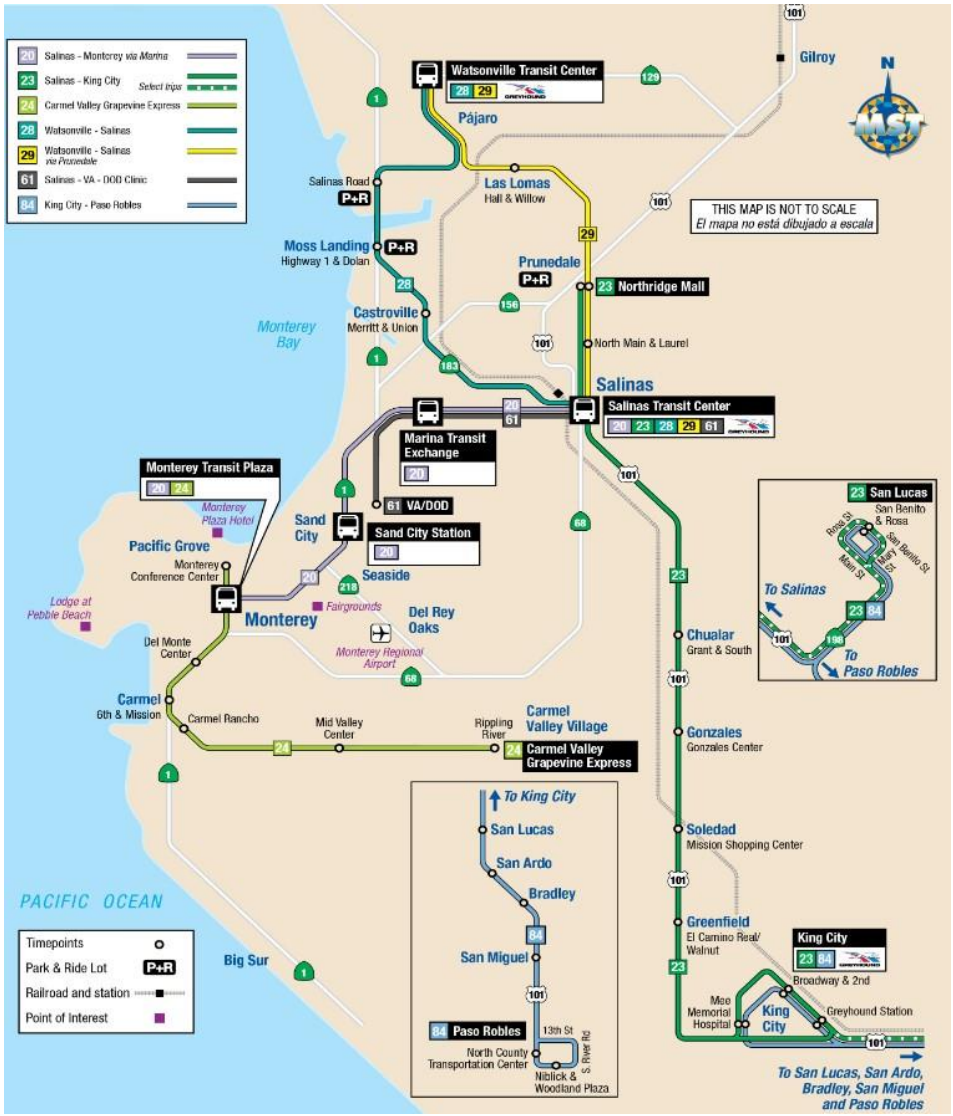
Monterey-Salinas Transit District (MST) provides service to the cities of Carmel, Del Rey Oaks, Gonzales, Greenfield, King City, Marina, Monterey, Pacific Grove, Salinas, Sand City, Seaside, Soledad, and the County of Monterey. In addition, MST also provides service to the nearby regions of San Jose, Santa Cruz, Paso Robles, and Templeton.

MST operates 50 local fixed routes and 7 regional commuter routes, with regional route lengths exceeding 120 miles. Regional routes are summarized in **Table 63**, and shown in **Figure 54** below.

TABLE 63: MST REGIONAL ROUTES

ROUTE	SERVICE
20	Salinas to Monterey via Marina
23	Salinas to King City
24	Carmel Valley Grapevine Express
28	Watsonville to Salinas
29	Watsonville to Salinas via Prunedale
61	Salinas to DOD Clinic
64	King City to Paso Robles

FIGURE 54: MST REGIONAL SERVICES MAP



MST uses over-the-road coaches for high-mileage routes. Currently, MST has two 30-ft BEBs, two 40-ft BEBs, and one electric trolley that is charged on-route through a WAVE inductive charger near 201 Pearl Street, Monterey.

MST has three facilities, located at 1 Ryan Ranch Road, Monterey, 443 Victor Way, Salinas, and 170 East San Antonio Drive, King City. The Monterey, Salinas, and King City facilities are equipped with diesel and gasoline fueling stations. In addition, a privately owned facility at 4512 Joe Lloyd Way, Seaside, and is fully equipped with gasoline fueling stations. A summary of MST's facilities, functions, capacity, and infrastructure plans are summarized in **Figure 55**.

FIGURE 55: MST FACILITIES

Facility	Address	Main function	Type(s) of infrastructure	Service capacity	Needs upgrade? (yes/no)	Estimated construction timeline
Monterey Garage	1 Ryan Ranch Rd, Monterey, CA 93940	Bus maintenance and storage	Charging Infrastructure, Liquid Hydrogen Infrastructure (if needed)	45 Vehicles	Yes	Completed by 2031
Salinas Garage	443 Victor Way, Salinas, CA 93907			31 Vehicles	Yes	Completed by 2031
Seaside Garage (privately operated)	4512 Joey Lloyd Way, Seaside, CA 93955	Para-transit vehicle maintenance and storage	Charging Infrastructure	81 Vehicles	Yes	Completed by 2031

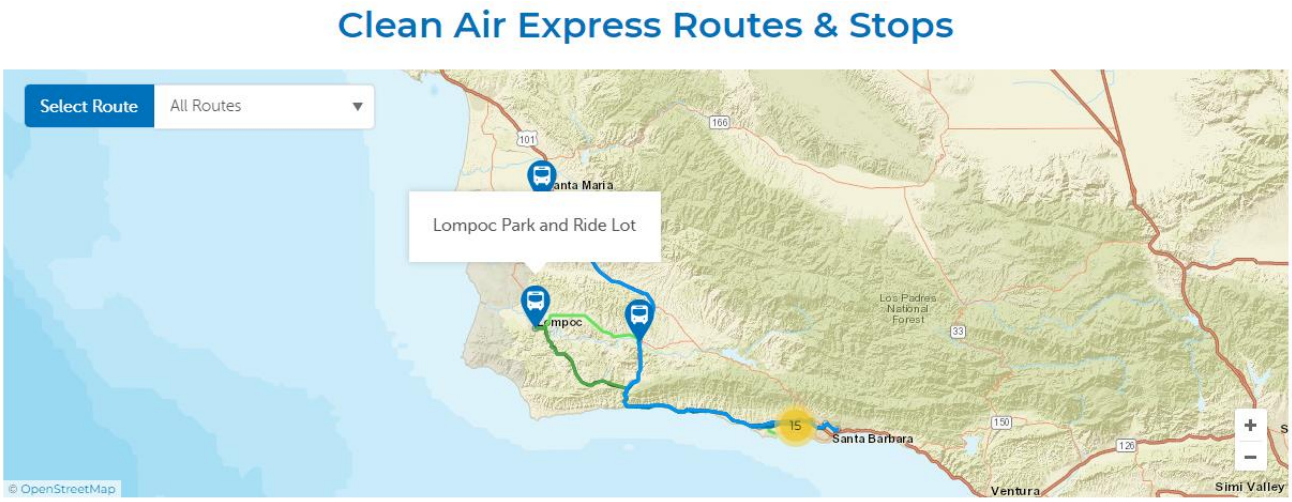
SANTA BARBARA COUNTY ASSOCIATION OF GOVERNMENTS (SBCAG)

SBCAG, in addition to its planning functions, operates a regional commuter service called the Clean Air Express. The Clean Air Express serves residents of Northern Santa Barbara County commuting to their jobs in Goleta and Santa Barbara, providing a fast, convenient, and money-saving way to get to work. The Clean Air Express has two main routes—a Lompoc set of routes operating between Lompoc and Goleta or UCSB or Santa Barbara, and a Santa Maria set of routes operating between Santa Maria and Goleta or Santa Barbara (**Figure 56**).

This service is operated with over-the-road motorcoaches fueled with diesel. The current service is operated with 9 vehicles, but pre-COVID and in the near future with the intent to restore service levels, 14 vehicles will be used. On average, vehicles operate 120 miles and a maximum of 170 miles on a typical day.

Buses are dispatched from Santa Maria and Lompoc early in the morning and run commuter routes to Goleta and Santa Barbara where they layover during the day. They then return to their origin city in the afternoon. Maintenance is performed in Grover Beach and fueling happens at the County fueling location 6416 Hollister Avenue, Goleta.

FIGURE 56: CLEAN AIR EXPRESS ROUTES



SANTA CRUZ METRO

Santa Cruz METRO (METRO) offers a variety of services throughout Santa Cruz County, including fixed-route, paratransit, microtransit, and on-demand services. It operates one commuter service called the Highway 17 Express (**Figure 57**), between Santa Cruz and the San Jose Diridon Station. In addition, METRO operates 9 inter-city routes, summarized in **Table 64**. Santa Cruz Metro uses 10 40-foot diesel hybrid buses to operate Route 17 Express, with trips averaging 68 miles round trip. Buses are dispatched from 1200 River St., Santa Cruz, and layovers occur at the Santa Cruz METRO Center, San Jose Diridon Station, and San Jose State University (SJSU).

FIGURE 57: SANTA CRUZ ROUTE 17 EXPRESS

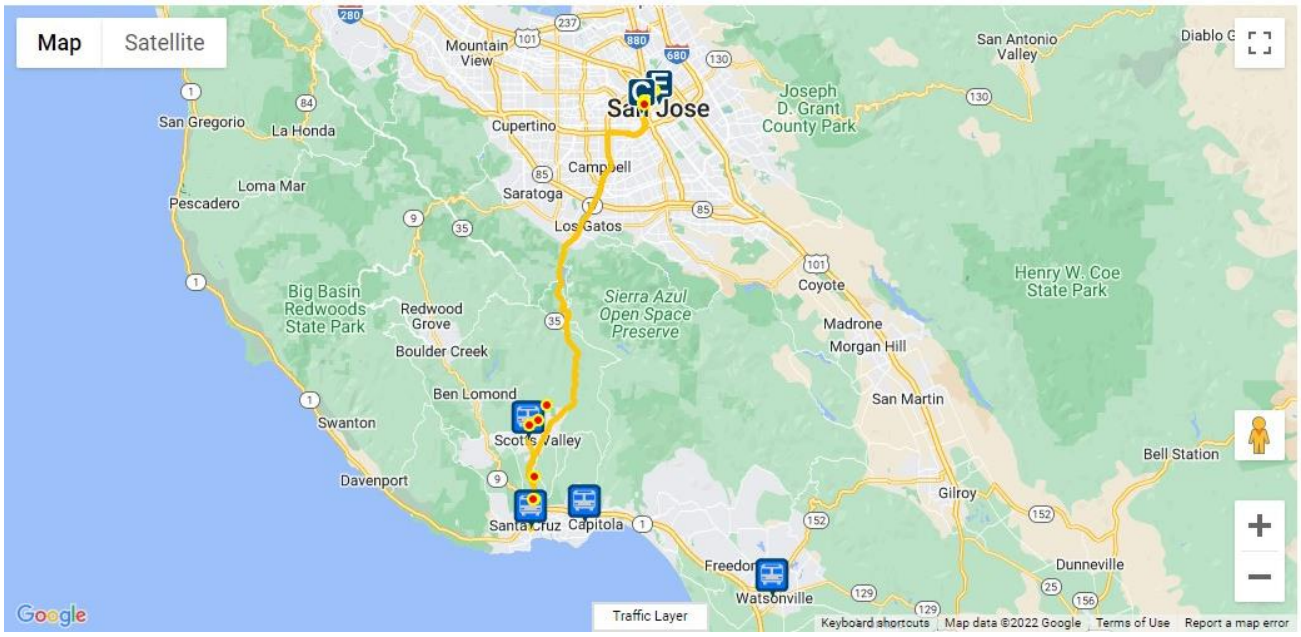


TABLE 64: SANTA CRUZ METRO INTERCITY ROUTES

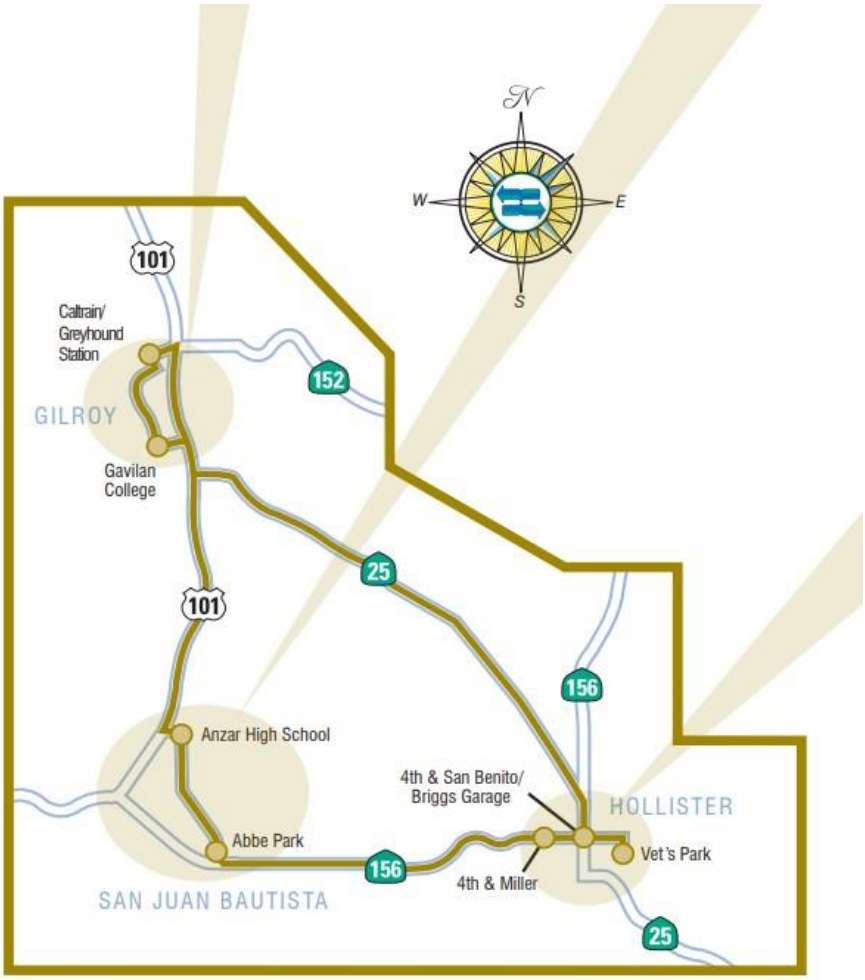
ROUTE	SERVICE DESCRIPTION
35E	Service between Santa Cruz, Scotts Valley, and Redwood Grove. Operates on weekdays and weekends.
35	Service between Santa Cruz, Scotts Valley, and San Lorenzo Park. Operates on weekdays and weekends.
40	Service between Santa Cruz and Davenport. Operates on weekdays only.
41	Service between Santa Cruz and Bonny Doon. Operates on weekdays only.
42	Service between Santa Cruz, Davenport, and Bonny Doon. Operates on weekdays and weekends.
69W	Service between Santa Cruz and Watsonville. Operates on weekdays and weekends.
69A	Service between Santa Cruz and Capitola. Operates weekdays and weekends.
71	Service between Santa Cruz and Watsonville. Operates weekdays and weekends.
91X	Express service between Santa Cruz and Watsonville via Cabrillo Highway. Operates weekdays only.

SAN BENITO COUNTY LTA

The San Benito County Local Transportation Authority (LTA) operates the San Benito County Express, providing service to the communities of Hollister, San Juan Bautista, and Gilroy. The agency provides intercounty service to Gilroy's Caltrain and Greyhound Stations and Gavilan College with connecting service to the Santa Clara VTA bus system. County Express provides service along three routes, shown in **Figure 58**.

- Gavilan College: service to Gavilan College between Hollister, San Juan Bautista, and Gilroy
- Caltrain: express bus service to the Caltrain commuter rail station in Gilroy
- Gilroy Greyhound: weekend service to the Greyhound Bus Terminal in Gilroy

FIGURE 58: SAN BENITO COUNTY LTA INTERCOUNTY SERVICE



County Express also provides an on-demand service throughout Hollister, San Juan Bautista, and Tres Pinos, as well as ADA paratransit service. Paratransit service is available in any area within ¾ miles of the County Express fixed route service.

LTA currently uses cutaways, specialized transportation cutaways, and minivans to operate its intercounty and specialized transportation services. County Express utilizes 5 diesel vehicles, with 4 gasoline vehicles being used for specialized transportation. The average mileage for a round trip is 50 miles and 60 miles for intercounty and specialized transportation services respectively.

County Express is dispatched and fueled from LTA's yard in Hollister, and layovers occur at Gavilan College and Gilroy Transit Center. Specialized transportation is dispatched from the Hollister Community Center and is fueled at the yard in Hollister. Cutaway layovers occur at the dialysis centers in Gilroy and Morgan Hill, and minivan layovers occur at various medical facilities in the area.

SANTA BARBARA MTD

Santa Barbara MTD operates public transit services throughout the South Coast region of Santa Barbara County, including the City of Santa Barbara, Goleta, Isla Vista, and Carpinteria. MTD's services are mainly local and are not regional in nature. However, For the purposes of this study, regional transit is defined as intercounty or intercity service that must traverse over 10 miles or more of relatively unincorporated undeveloped area. This is due to the concerns of range anxiety over longer distances of undeveloped areas. Due to this, Line 20 between downtown Santa Barbara and Carpinteria—a distance of about 11 miles one-way—could be considered 'regional' and is therefore reflected as such in this report. Line 20 operates every day for most of the day, with headways on the order of 20-minutes during peaks, and 30-60 minutes during off-peaks. This service is operated with heavy-duty 40-ft diesel-powered transit buses (**Figure 59**).

FIGURE 59: MTD LINE 20 BETWEEN SANTA BARBARA AND CARPINTERIA

MTD's fleet is mainly composed of 30-ft and 40-ft buses powered by diesel fuel, including diesel-electric hybrids. Currently, MTD operates 14 BEBs on one of its lines within the City of Santa Barbara and is in the process of acquiring 9 additional BEBs for deployment in early 2023.

MTD's main operating and maintenance facility (Terminal 1) is located at 550 Olive St in downtown Santa Barbara and MTD is in the process of installing bus chargers in the yard. Furthermore, MTD owns another transit facility, Terminal 2, in Goleta at 5353 Overpass Rd; this facility will be reactivated in the next few years to relieve limited space pressures at Terminal 1. Terminal 2 will be developed to accommodate a diesel fleet initially, and eventually a BEB fleet.

VENTURA COUNTY TRANSPORTATION COMMISSION (VCTC)

Ventura County Transportation Commission (VCTC) is the transportation planning body for the County of Ventura. Apart from its planning functions, VCTC also plans and operates transit services, including commuter type services between cities within the county and between Ventura County and Santa County, as well as local services in the northeastern portions of the county called the Valley Express. The service of interest for the CCZEV study is the Intercity Express service called the Coastal Express between Camarillo, Ventura, and Goleta in Santa Barbara County (**Figure 60**).

FIGURE 60: VCTC INTERCITY MAP (TOP) AND COASTAL EXPRESS MAP (BOTTOM)

The Coastal Express service currently operates with over-the-road diesel powered motorcoaches (20 buses are used throughout the day on this service). The scheduled service is mainly geared to commuters and operates during rush hours, with limited midday service. Service on the weekends is limited to five round trips. While the alignment between the two terminals is over 50 miles, VCTC operates variants of the Coastal Express service so that not all stops are served on all trips, resulting in different 'routes'.

VCTC, through an agreement with SBCAG, has recently procured BYD BEB motorcoaches for deployment on the Coastal Express service. Five BEBs are slated to begin operation sometime in 2023 with charging planned to

occur at SBCAG's facility in Goleta. Currently, there are no immediate plans to charge buses at VCTC's Intercity facility (not owned by VCTC) at 240 South Glenn Drive in Camarillo. While VCTC owns its fleet, operations and maintenance of the fleet and services is through a third-party contractor, who also provides an operations and maintenance facility, i.e., VCTC does not operate its fleet directly nor does it directly own an operations and maintenance facility.

CURRENT & FUTURE ELECTRIFICATION STATUS

This section summarizes the current electrification efforts of the transit agencies in the CCZEVS study area for their regional routes. Notably, a few agencies have deployed BEBs and some are in the process of procuring BEBs, but most are not operating ZEBs. Several are in the process of developing state-compliant ZEB Rollout Plans and are at various stages.

Santa Maria Regional Transit & City of Lompoc Transit

Santa Maria Regional Transit has recently received 2 Proterra BEBs (Model ZX5+) but have yet to deploy them; SMRT is waiting for the delivery and installation of their bus chargers. SMRT's CARB-compliant plan is nearly 95% complete and will focus on deploying battery-electric technology. Potential charger types and locations are currently in development.

The City of Lompoc Transit does not have any ZEBs in operation and is currently developing a CARB-compliant plan. The preferred technology and charging method is being examined to inform the rollout plan.

San Luis Obispo RTA

The RTA has issued a purchase order for two 40-ft. BEBs to be used primarily on Route 12, which is relatively flat and mostly provides low-speed local service. In addition, the RTA plans to purchase five more BEBs early in 2023. At the end of 2022, four fast-charging dispensers should be installed and operational in RTA's new bus maintenance facility.

The RTA is on track to complete its ZEB Rollout Plan soon and is looking to deploy BEBs. However, the RTA recognizes that several of its operating profiles may be too strenuous for the operating ranges of BEBs (due to duty cycles, terrain, mileages, etc.) recognizing the need to have layover charging its bus park outs in Paso Robles and in Arroyo Grande, as well as other layover locations in San Luis Obispo, Morro Bay, and Santa Maria.

Guadalupe Transit

The Guadalupe Transit does not currently operate ZEBs and has not developed its ZEB Rollout Plan. However, the City of Guadalupe is planning to transition its fleet to BEBs and charge in-depot at its corporation yard at 240 E. Roemer Way, Santa Maria.

Monterey-Salinas Transit

MST currently operates 5 BEBs on local services. For regional services, MST's CARB-compliant ZEB Rollout Plan tentatively indicates that it will explore not only BEBs, but likely hydrogen fuel cell-

electric bus (FCEB) technology since these vehicles are able to travel longer distances[50]. In the shorter term, BEBs will be procured and beyond 2027, FCEBs are planned to replace fossil fuel buses on the longest operating routes, particularly intercity routes. MST's fleet transition schedule is summarized in **Figure 61**.

FIGURE 61: MST FLEET TRANSITION SCHEDULE

ICT Requirement	Year	ZEB				Conventional				Total Purchased
		Qty.	% of Total	Bus Length	Technology	Qty	% of Total	Bus Length	Fuel	
0%	2022					7	100%	40′	Diesel	7
	2023	4	100%	35′ Bus	Battery - Depot					7
		3		40′ Bus	Battery - Depot					
	2024	2	100%	35′ Bus	Battery - Depot					9
		7		40′ Bus	Battery - Depot					
	2025									
25%	2026									
	2027	11	100%	35′ Bus	FCEB*					18
		7		40′ Bus	FCEB*					
	2028									
100%	2029									
	2030	20	100%	40′ Bus	FCEB*					31
		11		35′ Bus	FCEB*					
	2031									
	2032									
	2033									
	2034	7	100%	40′ Bus	FCEB*					7

SBCAG

SBCAG has procured one BYD BEB over-the-road coach (model C10). The proprietary BYD charger (which is not interoperable with other bus manufacturers) is located SBCAG's Regional Transit Facility at 6416 Hollister Ave in Goleta. Currently, the power output is limited to 25 kW (but has a 200 kW rated output) due to power availability from the utility (SCE) at the site. SBCAG hopes to deploy the BEB shortly on the Clean Air Express service.

SBCAG has not yet developed its CARB-compliant ZEB Rollout Plan. SBCAG is likely looking to pursue a battery-electric fleet in the future and is currently working closely with SCE to install Level 2 chargers and Level 3 chargers at the Regional Transit Facility. SBCAG is exploring opportunities to partner with VCTC for charging at that facility.

[50] https://mst.org/wp-content/media/MST-ICT-Final-Adopted-20211213.pdf

Santa Cruz METRO

METRO has set a goal to convert its entire 96-bus fleet to ZEBs by 2037, which will comprise of both BEBs and FCEBs. Four BEBs were procured and deployed on the Watsonville Circulator route as a part of phase 1 of this plan. Phase 2 will convert the remaining fleet serving Watsonville by 2027. Phase 3 will involve the full transition of METRO's fleet to ZEBs by 2037, putting the agency ahead of CARB's mandate to transition to 100% ZEB fleets by 2040. In FY 22, METRO's Planning and Development Department worked with the Federal Transit Administration (FTA) to use funding available for Highway 17 service to procure four additional BEBs. Staff also submitted a competitive grant to the FTA Low or No Emission Vehicle and Bus and Bus Facilities Programs for 20 FCEBs and construction of a hydrogen fueling facility and associated improvements. The FTA did not select the proposal for funding, but the agency will continue to identify and pursue funding opportunities.

San Benito County LTA

San Benito County LTA is not currently operating ZEBs and plans to apply for funding to develop their ZEB transition plan. In the LTA Short Range Transit Plan (SRTP), the agency discusses the transition to BEBs, including the installation of electric charging infrastructure. The first round of public outreach yielded positive public sentiment and overall support of the purchase of ZEBs, and the SRTP recommends early adoption of ZEBs. The SRTP outlines a redesign of the maintenance and storage yard to include EV charging capabilities in 2023-2024. In addition, the report provides a general timeline for procuring BEBs in 2022-2023, 2024-2025, and 2026-2027 (**Figure 62**).[51]

FIGURE 62: SAN BENITO COUNTY 2022-2027 ESTIMATED VEHICLE CAPITAL COSTS

Vehicle Estimated Capital Expenditures		Cost Estimate
2022-23		
2 - 27'-32' Transit bus (battery electric)		$ 1,500,000
2 - Gasoline Vans		$ 110,000
2023-24		
None		
2024-25		
2 - Gasoline 16 Pass+2 Wheelchair Cutaways		$ 140,000
1 27'-32' Transit bus (battery Electric)		$ 750,000
2025-26		
None		
2026-27		
Option A: 4 -16 pass + 2 WC Cutways (Battery Electric)		$ 1,480,000
Option A: 2 - 27'-32' Transit Bus (Battery electric)		$ 2,250,000
Option B: 6 - 27'-32' Transit Bus EV (Battery electric)		$ 5,250,000
	Total Option A	$ 6,230,000
	Total Option B	$ 7,750,000

[51] San Benito Short Range Transit Plan, May 2022 http://sanbenitocog.org/wp-content/uploads/2022/06/Final-Draft-SRTP-Report-For-June-Board-Release_June-12-2022.pdf

Santa Barbara MTD

Santa Barbara MTD currently operates 14 BEB BYDs equipped for in-depot charging. However, no BEBs operate on Line 20 route currently.

MTD is actively developing its ZEB rollout plan and is exploring all technologies and feasible options. At the moment, the analysis is trending towards a fleet of BEBs that charge in-depot only. On-route charging is unlikely needed due to the route lengths being within the operating limits of BEBs. Moreover, due to zoning and community preferences, it is unlikely that MTD will be able to install on-route chargers on public property. Nonetheless, there may be interest at a later time for deploying chargers (either low power or high power) in Carpinteria, potentially to recharge smaller microtransit electric vans planned for deployment on MTD's microtransit service in the next few years.

VCTC

VCTC is currently planning to deploy 5 BYD BEB motorcoaches on the Coastal Express in 2023 and plans to recharge buses in Goleta at SBCAG's facility at 6416 Hollister Ave in Goleta; as described under the SBCAG section, this facility has one AC BYD proprietary charger rated at 200 kW, but currently limited to 25 kW. SBCAG is working with SCE to install 2 Level 2 chargers and 2 Level 3 fast chargers at the SBCAG Regional Transit Center.

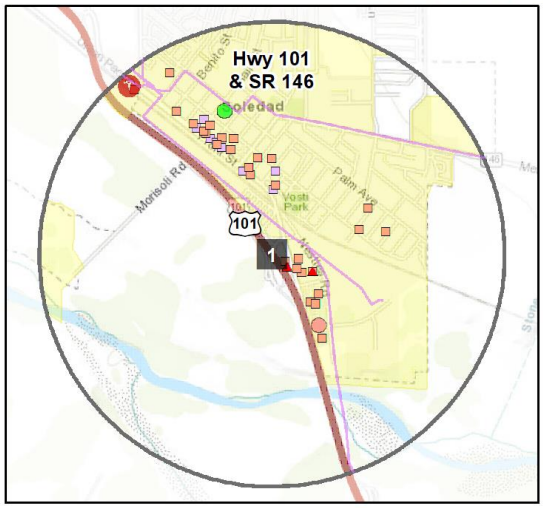
Apart from these electrification plans, VCTC is currently developing its ZEB rollout plan and is in the process of route modeling to understand the feasibility of different technologies and their implications for operations. Apart from BE coaches, VCTC is also exploring the potential use of hydrogen FCE over-the-road coaches for a few reasons. First, FCEVs have longer operating ranges than BEBs, using hydrogen fuel stored in onboard tanks to power a battery to propel the vehicle. Second, the local transit agency in Oxnard, Gold Coast Transit District (GCTD), is planning to deploy FCEBs and build a hydrogen fueling station capable of supplying hydrogen to VCTC in the near future. Thus, VCTC could reduce capital expenses and leverage local infrastructure to fuel possible FCEBs. Nonetheless, one key challenge is the current lack of readily available hydrogen-powered over-the-road coaches.

Based on this assessment, for its regional service, in the short-term, VCTC will take advantage of the chargers at the SBCAG Regional Transit Center for charging and will also likely need chargers in the Camarillo area. In the longer-term, if VCTC continues to pursue a BEB fleet for the Coastal Express, these charging needs would remain, and if the fleet alternative is an FCEB fleet, then VCTC will no longer need charging for the Coastal Express and would leverage fueling at GCTD's yard in Oxnard.

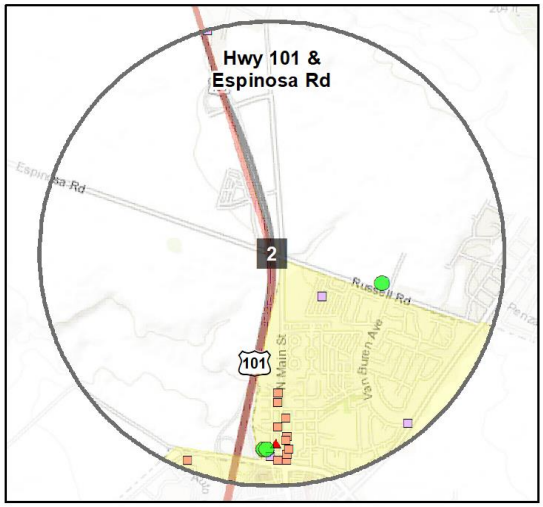
APPENDIX V: SITING ANALYSIS

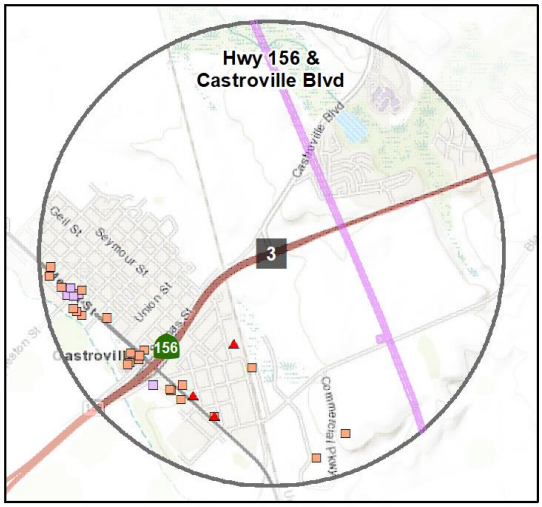
DATA MAPS - TOP FIVE RANKED LOCATIONS PER COUNTY

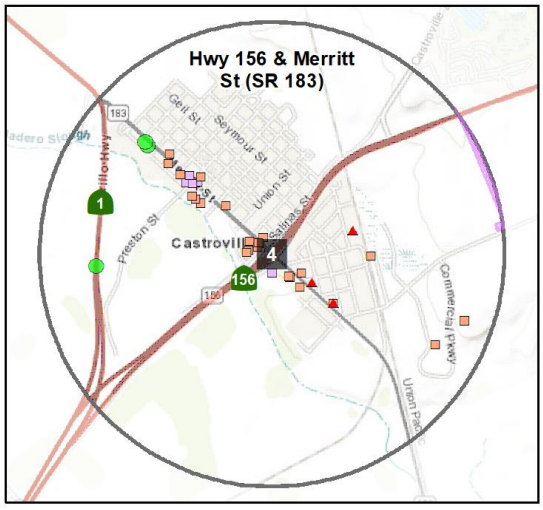
TOP 5 INTERCHANGES BY RANK
UNINCORPORATED MONTEREY COUNTY

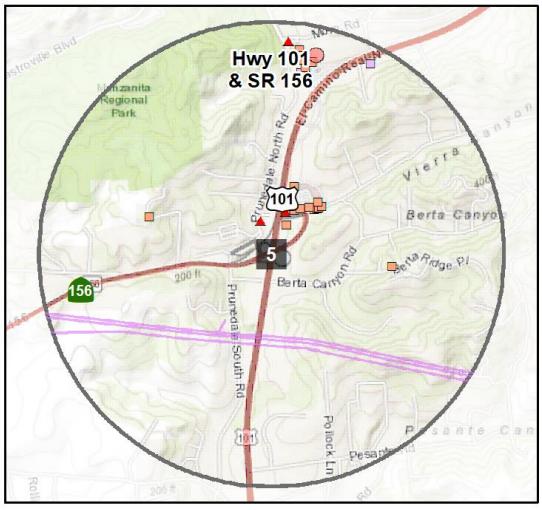


Monterey County Rank:	1	2	3	4	5
Route	101	101	156	156	101
Cross Street	SR 146	Espinosa Rd	Castroville Blvd	Merritt St (SR 183)	SR 156
Total Points	1102	931	861	822	689
Regional Rank	7	9	10	11	15
Total Daily Volume within 1 mile	22,033	20,383	17,486	15,164	16,035
Level 2 Chargers within 1 mile	1	6	0	6	0
DCFC Chargers whithin 1 mile	12	0	0	0	12
In Justice40 Area	Yes	Yes	No	Yes	Yes
In CalEnviroScreen 4.0 Area	No	Yes	No	Yes	No
Full Serve Restaurants within 1 mile	13	3	11	11	10
Fast Food Restaurants within 1 mile	5	2	2	2	5
Grocery/ Super-Center within 1 mile	0	0	1	0	0
Other Shopping within 1 mile	0	1	0	1	0
Gas Stations within 1 mile	2	2	3	3	4
Social Pinpoint Requests for DCFC	1	0	0	0	0
Social Pinpoint Requests for Level 2	1	0	0	0	2
Percent of Trips Less than 5 miles	54%	51%	27%	27%	36%
Percent of Trips Greater than 100 miles	3%	1%	2%	2%	2%
Percent of Drivers with income less than $50k	38%	35%	37%	38%	30%
Percent of Drivers who rent their home	42%	48%	51%	53%	34%
Percent of Drivers who live in MUD housing	6%	13%	10%	11%	6%









County Rank
Incorporated Cities
Study Highways
DCFC Only
L2 and DCFC
Level 2 Only
Hydrogen
Tesla Supercharger
Transmission Lines
Gas Station Locations
Restaurant Locations
Shopping Locations

1 0.5 0 1 Miles

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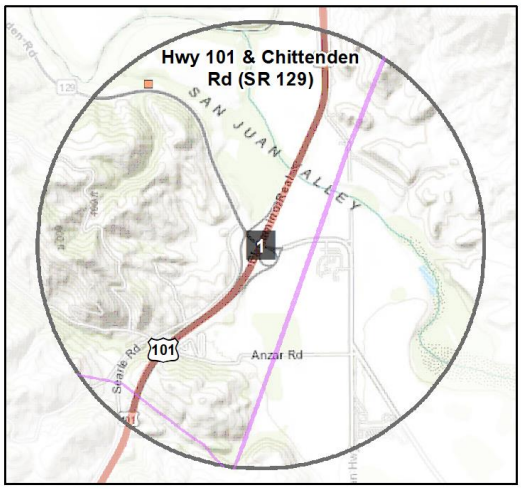
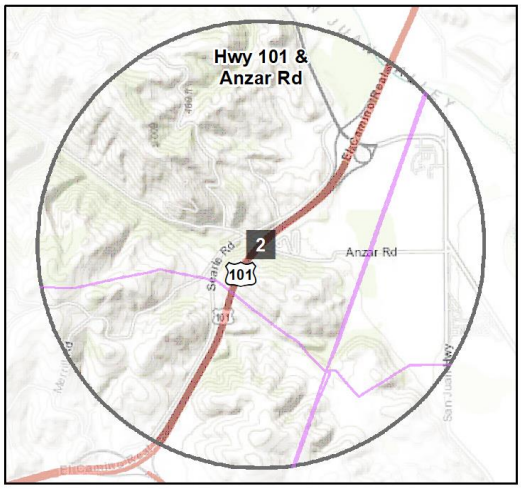
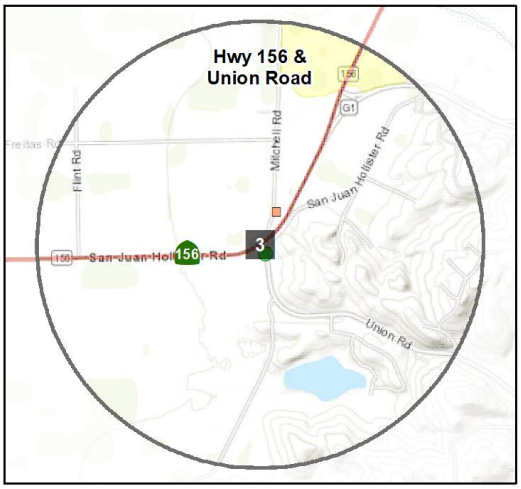
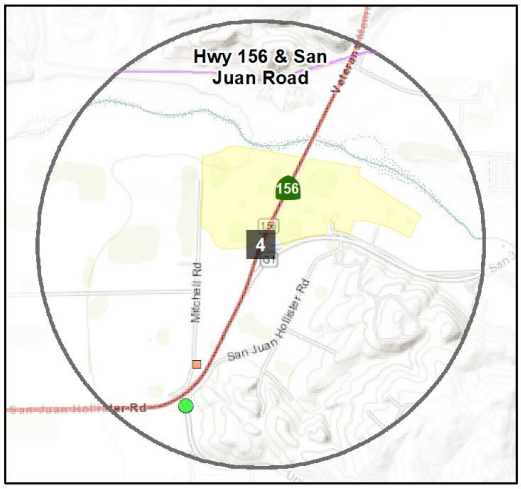
TOP 5 INTERCHANGES BY RANK
UNINCORPORATED SAN BENITO COUNTY

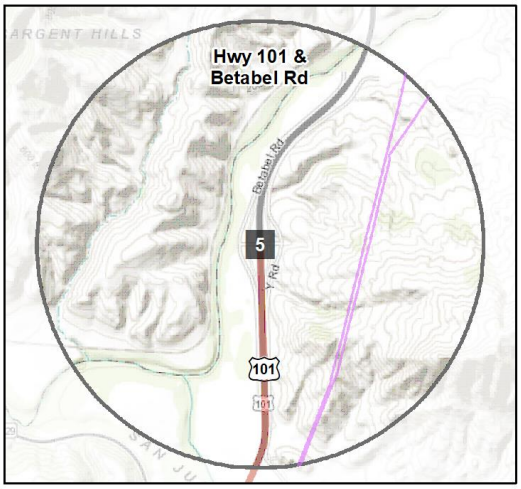


San Benito County Rank:	1	2	3	4	5
Route	101	101	156	156	101
Cross Street	Chittenden Rd (SR 129)	Anzar Rd	Union Road	San Juan Road	Betabel Rd
Total Points	159	152	104	102	100
Regional Rank	104	106	149	151	156
Total Daily Volume within 1 mile	2,001	1,892	1,681	1,582	765
Level 2 Chargers within 1 mile	0	0	2	2	0
DCFC Chargers whithin 1 mile	0	0	0	0	0
In Justice40 Area	No	No	Yes	Yes	No
In CalEnviroScreen 4.0 Area	No	No	No	No	No
Full Serve Restaurants within 1 mile	1	0	1	1	0
Fast Food Restaurants within 1 mile	0	0	0	0	0
Grocery/ Super-Center within 1 mile	0	0	0	0	0
Other Shopping within 1 mile	0	0	0	0	0
Gas Stations within 1 mile	0	0	0	0	0
Social Pinpoint Requests for DCFC	0	0	0	0	0
Social Pinpoint Requests for Level 2	0	0	0	0	0
Percent of Trips Less than 5 miles	15%	16%	25%	43%	8%
Percent of Trips Greater than 100 miles	6%	6%	1%	1%	4%
Percent of Drivers with income less than $50k	36%	35%	32%	31%	33%
Percent of Drivers who rent their home	44%	44%	39%	38%	43%
Percent of Drivers who live in MUD housing	9%	9%	6%	5%	7%









County Rank
Incorporated Cities
Study Highways
DCFC Only
L2 and DCFC
Level 2 Only
Hydrogen
Tesla Supercharger
Transmission Lines
Gas Station Locations
Restaurant Locations
Shopping Locations

1 0.5 0 1 Miles

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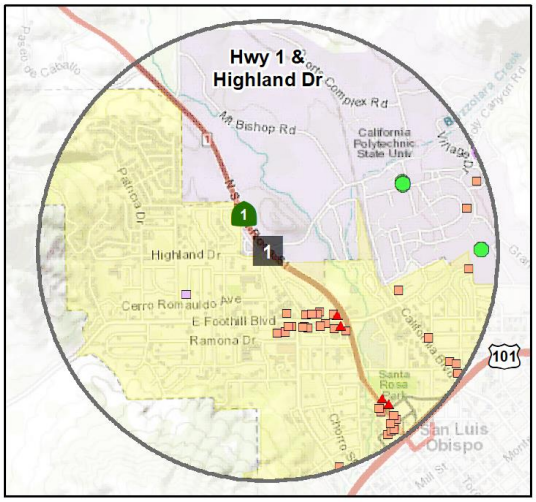
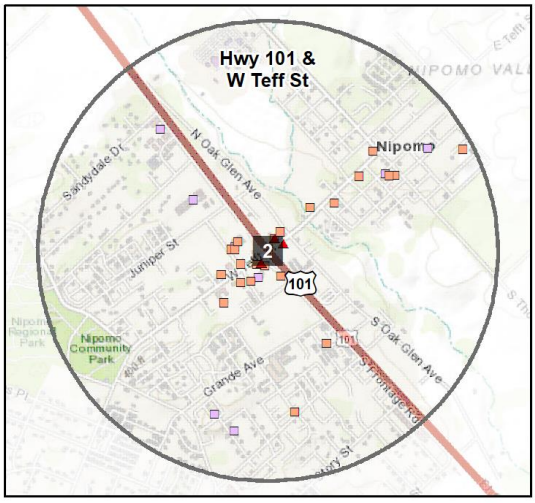
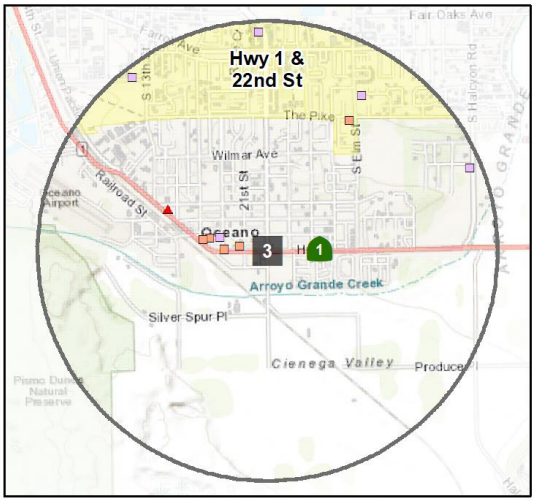
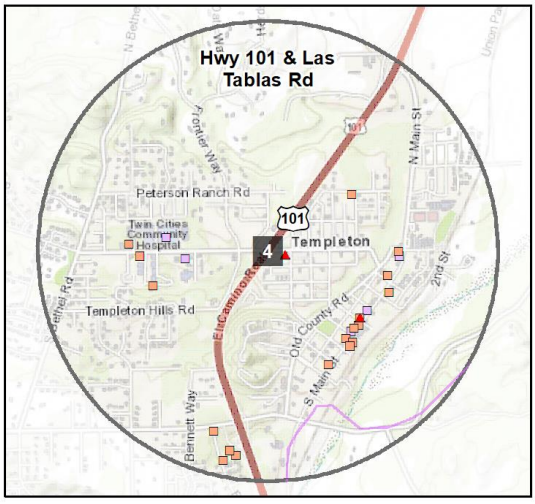
TOP 5 INTERCHANGES BY RANK
UNINCORPORATED SAN LUIS OBISPO COUNTY

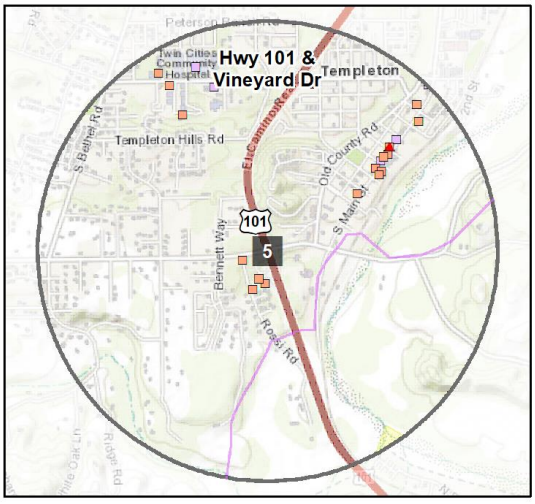


San Luis Obispo County Rank:	1	2	3	4	5
Route	1	101	1	101	101
Cross Street	Highland Dr	W Teft St	22nd St	Las Tablas Rd	Vineyard Dr
Total Points	1412	1222	802	735	619
Regional Rank	2	4	12	14	20
Total Daily Volume within 1 mile	41,913	39,280	29,716	31,205	25,418
Level 2 Chargers within 1 mile	12	0	0	0	0
DCFC Chargers whithin 1 mile	0	0	0	0	0
In Justice40 Area	No	No	No	No	No
In CalEnviroScreen 4.0 Area	No	No	No	No	No
Full Serve Restaurants within 1 mile	21	13	2	15	14
Fast Food Restaurants within 1 mile	8	5	0	0	0
Grocery/ Super-Center within 1 mile	0	1	0	0	0
Other Shopping within 1 mile	1	0	0	0	0
Gas Stations within 1 mile	4	4	1	2	2
Social Pinpoint Requests for DCFC	1	3	0	1	1
Social Pinpoint Requests for Level 2	2	3	0	3	4
Percent of Trips Less than 5 miles	58%	44%	61%	38%	38%
Percent of Trips Greater than 100 miles	2%	1%	1%	1%	1%
Percent of Drivers with income less than $50k	50%	28%	35%	28%	28%
Percent of Drivers who rent their home	59%	34%	41%	28%	28%
Percent of Drivers who live in MUD housing	21%	4%	5%	4%	4%









County Rank
Incorporated Cities
Study Highways
DCFC Only
L2 and DCFC
Level 2 Only
Hydrogen
Tesla Supercharger
Transmission Lines
Gas Station Locations
Restaurant Locations
Shopping Locations

1 0.5 0 1 Miles

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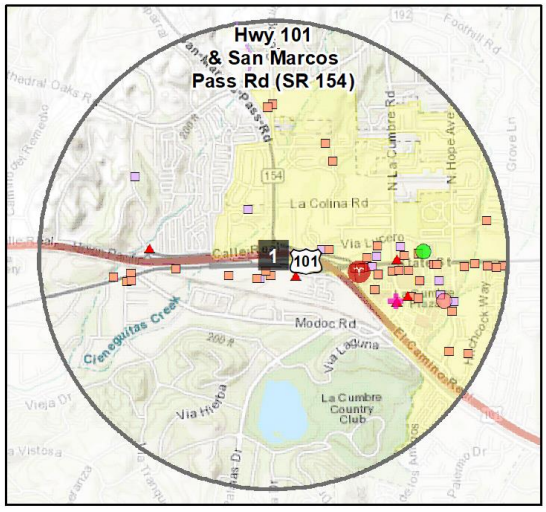
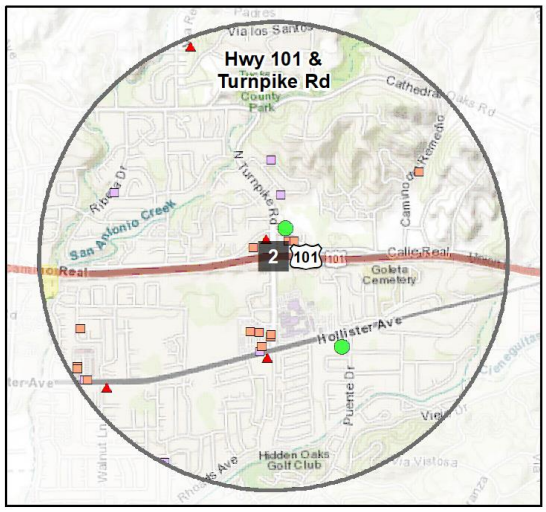
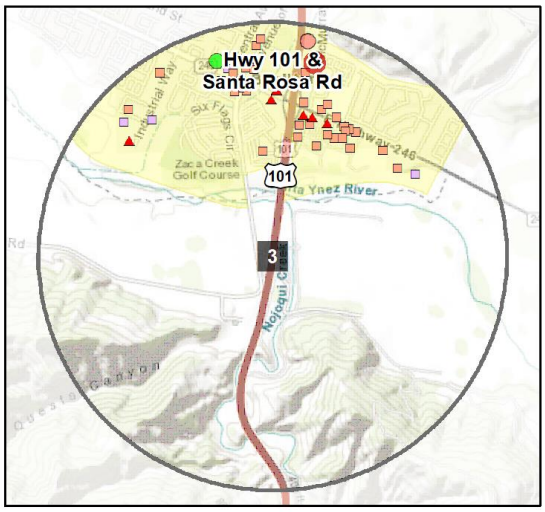
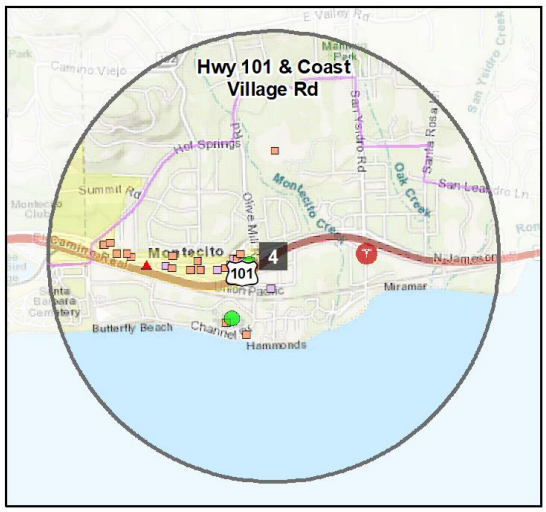
TOP 5 INTERCHANGES BY RANK
UNINCORPORATED SANTA BARBARA COUNTY

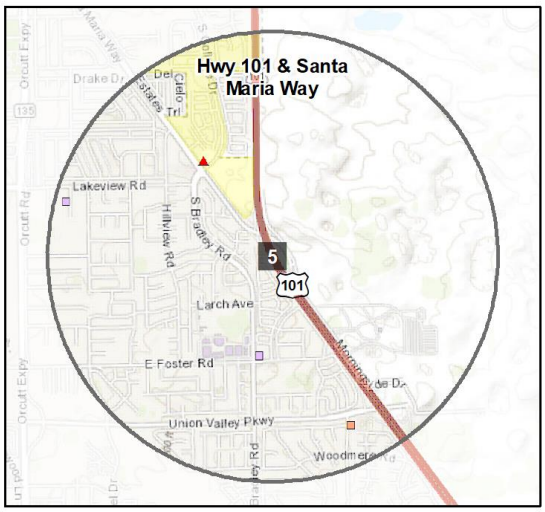


Santa Barbara County Rank:	1	2	3	4	5
Route	101	101	101	101	101
Cross Street	San Marcos Pass Rd (SR 154)	Turnpike Rd	Santa Rosa Rd	Coast Village Rd	Santa Maria Way
Total Points	1664	1187	1043	682	662
Regional Rank	1	5	8	16	17
Total Daily Volume within 1 mile	47,342	38,641	21,061	20,312	25,319
Level 2 Chargers within 1 mile	6	5	2	8	0
DCFC Chargers whithin 1 mile	19	0	12	8	0
In Justice40 Area	Yes	Yes	Yes	Yes	No
In CalEnviroScreen 4.0 Area	Yes	Yes	No	No	No
Full Serve Restaurants within 1 mile	25	8	21	17	1
Fast Food Restaurants within 1 mile	11	1	8	0	0
Grocery/ Super-Center within 1 mile	0	0	0	0	0
Other Shopping within 1 mile	0	0	0	0	0
Gas Stations within 1 mile	6	5	6	1	1
Social Pinpoint Requests for DCFC	5	6	3	7	1
Social Pinpoint Requests for Level 2	5	1	1	5	1
Percent of Trips Less than 5 miles	52%	48%	42%	49%	57%
Percent of Trips Greater than 100 miles	2%	1%	4%	2%	1%
Percent of Drivers with income less than $50k	31%	26%	30%	25%	26%
Percent of Drivers who rent their home	44%	39%	36%	41%	28%
Percent of Drivers who live in MUD housing	15%	12%	8%	13%	4%









County Rank
Incorporated Cities
Study Highways
DCFC Only
L2 and DCFC
Level 2 Only
Hydrogen
Tesla Supercharger
Transmission Lines
Gas Station Locations
Restaurant Locations
Shopping Locations

1 0.5 0 1 Miles

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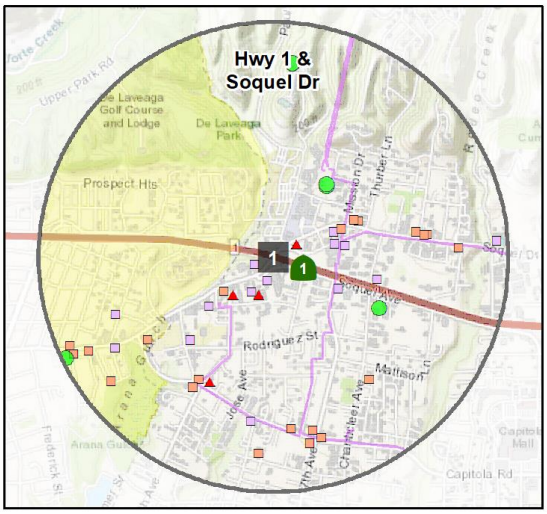
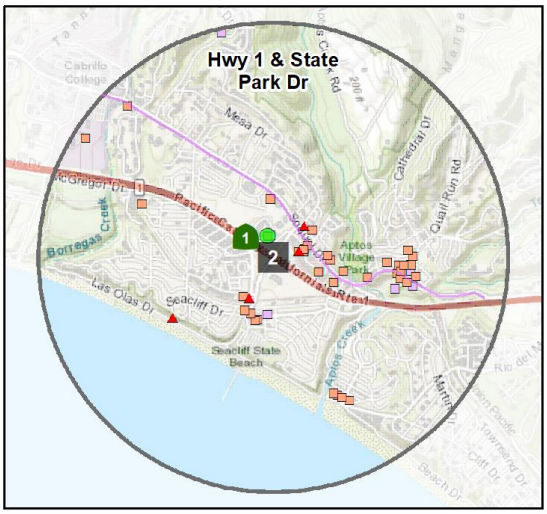
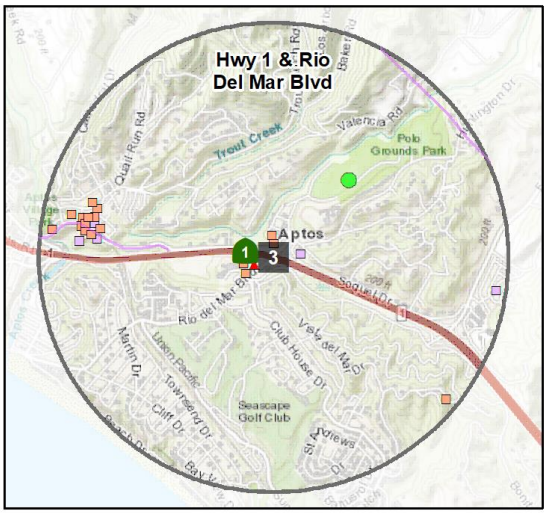
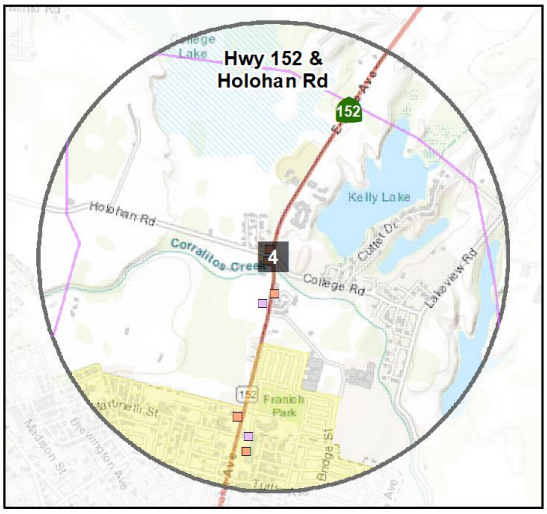
TOP 5 INTERCHANGES BY RANK
UNINCORPORATED SANTA CRUZ COUNTY

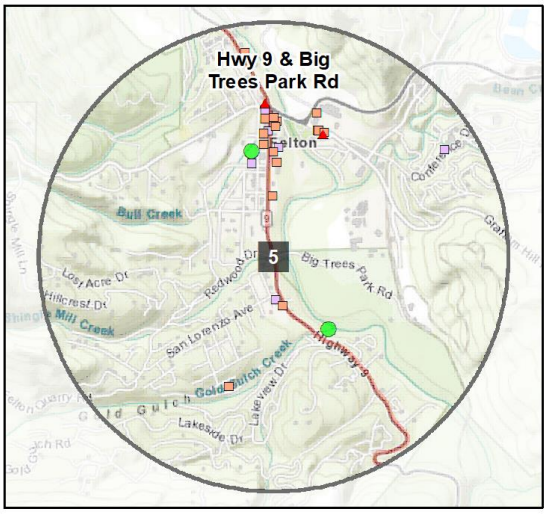


Santa Cruz County Rank:	1	2	3	4	5
Route	1	1	1	152	9
Cross Street	Soquel Dr	State Park Dr	Rio Del Mar Blvd	Holohan Rd	Big Trees Park Rd
Total Points	1366	1112	750	549	537
Regional Rank	3	6	13	24	26
Total Daily Volume within 1 mile	44,497	33,248	28,251	14,139	15,025
Level 2 Chargers within 1 mile	12	4	2	0	3
DCFC Chargers whithin 1 mile	0	0	0	0	0
In Justice40 Area	Yes	Yes	Yes	No	Yes
In CalEnviroScreen 4.0 Area	No	No	No	No	No
Full Serve Restaurants within 1 mile	12	32	15	6	9
Fast Food Restaurants within 1 mile	1	2	0	0	0
Grocery/ Super-Center within 1 mile	0	0	0	0	0
Other Shopping within 1 mile	2	0	0	0	0
Gas Stations within 1 mile	5	4	1	0	2
Social Pinpoint Requests for DCFC	11	9	10	1	13
Social Pinpoint Requests for Level 2	11	9	5	2	9
Percent of Trips Less than 5 miles	58%	47%	45%	57%	42%
Percent of Trips Greater than 100 miles	1%	1%	1%	1%	1%
Percent of Drivers with income less than $50k	30%	28%	25%	40%	26%
Percent of Drivers who rent their home	38%	34%	27%	40%	29%
Percent of Drivers who live in MUD housing	11%	7%	5%	11%	6%









County Rank
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DCFC Only
L2 and DCFC
Level 2 Only
Hydrogen
Tesla Supercharger
Transmission Lines
Gas Station Locations
Restaurant Locations
Shopping Locations

1 0.5 0 1 Miles

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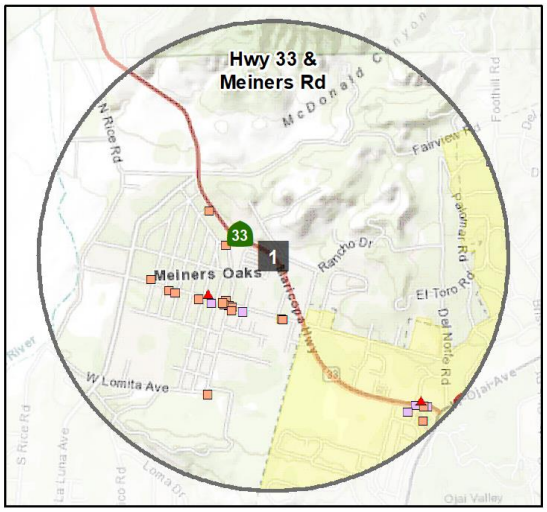
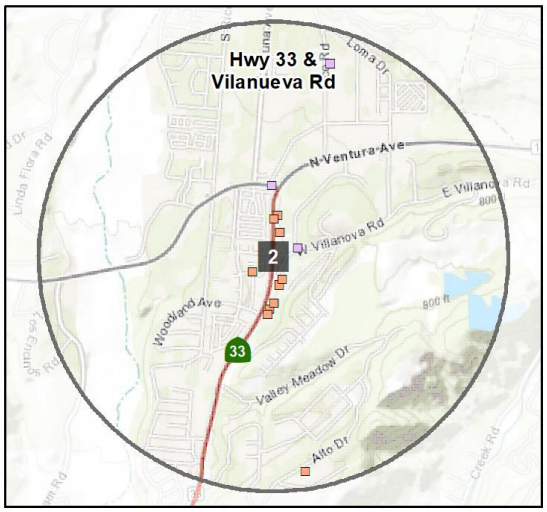
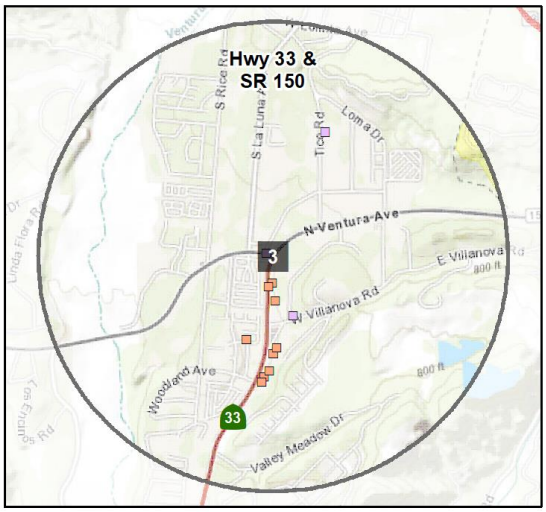
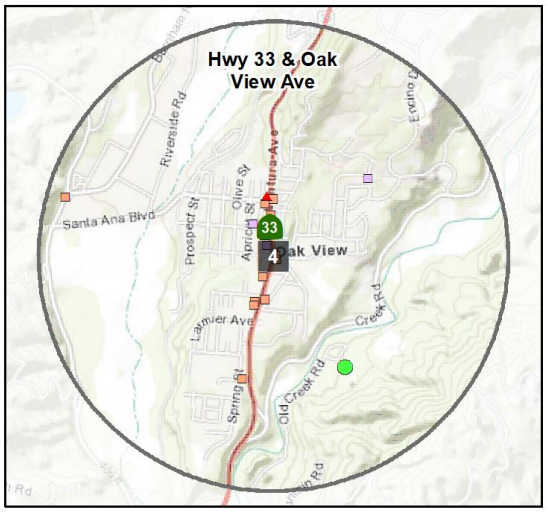
TOP 5 INTERCHANGES BY RANK
UNINCORPORATED VENTURA COUNTY

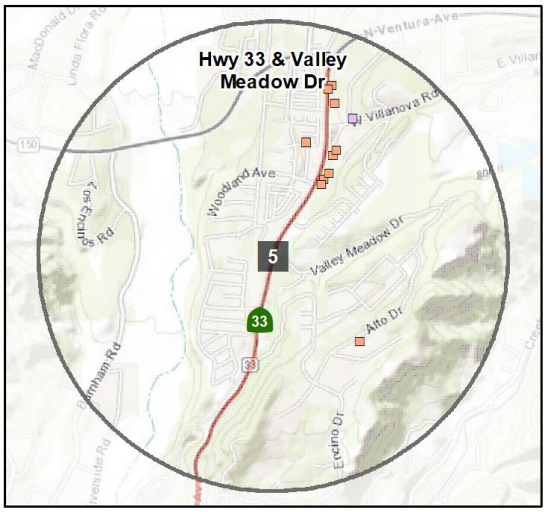


Ventura County Rank:	1	2	3	4	5
Route	33	33	33	33	33
Cross Street	Meiners Rd	Vilanueva Rd	SR 150	Oak View Ave	Valley Meadow Dr
Total Points	480	442	441	416	392
Regional Rank	30	34	35	38	44
Total Daily Volume within 1 mile	16,965	16,680	16,435	13,341	14,673
Level 2 Chargers within 1 mile	0	0	0	3	0
DCFC Chargers whithin 1 mile	0	0	0	0	0
In Justice40 Area	No	No	No	Yes	No
In CalEnviroScreen 4.0 Area	No	No	No	Yes	No
Full Serve Restaurants within 1 mile	9	4	3	7	4
Fast Food Restaurants within 1 mile	0	4	4	0	4
Grocery/ Super-Center within 1 mile	0	0	0	0	0
Other Shopping within 1 mile	0	0	0	0	0
Gas Stations within 1 mile	2	0	0	2	0
Social Pinpoint Requests for DCFC	0	0	0	0	0
Social Pinpoint Requests for Level 2	0	0	0	0	0
Percent of Trips Less than 5 miles	61%	54%	56%	37%	52%
Percent of Trips Greater than 100 miles	1%	1%	1%	1%	1%
Percent of Drivers with income less than $50k	30%	31%	32%	30%	30%
Percent of Drivers who rent their home	34%	31%	31%	30%	31%
Percent of Drivers who live in MUD housing	5%	5%	5%	4%	5%









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APPENDIX VI: ELECTROMOBILITY FAQ

ENGLISH AND SPANISH VERSIONS

Electromobility FAQ

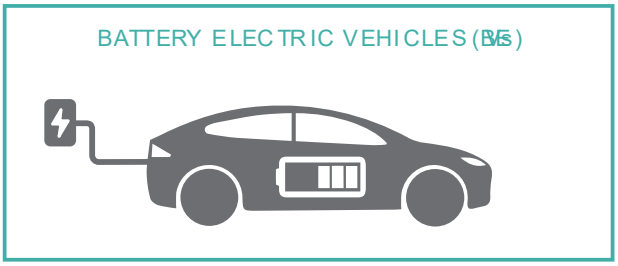
What is electromobility?

Electromobility refers to the ecosystem of electric vehicles and the electric grid that supplies their power.

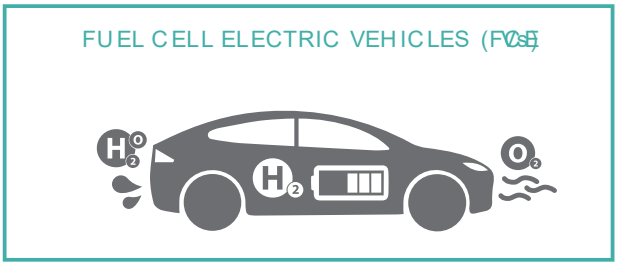
What are Electric Vehicles (EVs)?

EVs are fully or partly driven electrically and have a means of storing energy on board and are usually powered via the grid and benefit from regenerative breaking.

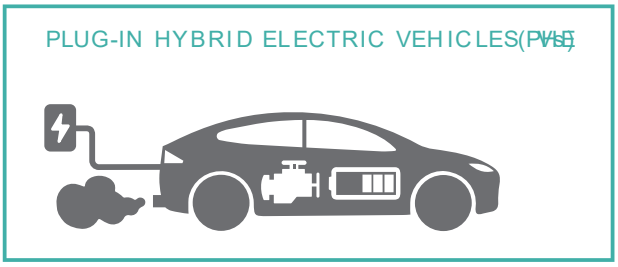
What are the different types of electric vehicles?



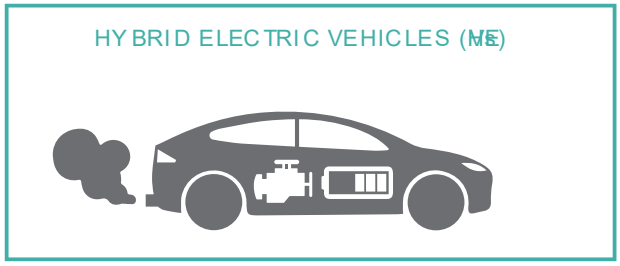
Battery Electric Vehicles (BEVs): Vehicles that are powered by an electric motor supplied by a large bank of batteries, instead of an internal combustion engine. BEVs run entirely on electricity and do not produce any exhaust from the burning of fuel.



Fuel Cell Electric Vehicles (FCEVs): Like BEVs, FCEVs are full zero emissions vehicles like BEVs except energy is stored in the form of hydrogen in a tank instead of electricity in a battery. FCEVs are fueled at hydrogen fueling stations, rather than charged at EV chargers.



Plug-in Hybrid Electric Vehicles (PHEVs): PHEVs are fossil fuel-powered vehicles driven by an internal combustion engine that also have an electric motor. PHEVs operate on electricity until the battery is nearly depleted, then the gasoline-powered engine activates to provide power. Like Battery Electric Vehicles, PHEVs must be plugged in to an EV charger to charge the battery.



Hybrid Electric Vehicles (HEVs): HEVs are fossil fuel powered vehicles that have a small electric motor and battery to provide supplemental power. HEVs use electric propulsion and regenerative breaking to improve their fuel efficiency but still burn fossil fuel and produce carbon emissions.

What environmental impact is related to an electric vehicle?

Electric vehicles have reduced environmental impacts compared to diesel and gas-powered vehicles. Electric drivelines are more energy efficient and emit no exhaust. EVs have lower environmental impacts when using electricity from renewable sources.

What is the driving force behind electromobility?

Stricter carbon emission regulations and CO_2 reduction targets coupled with desire for greater energy efficiency, lower fuel and vehicle maintenance costs and reduced noise are other key drivers.

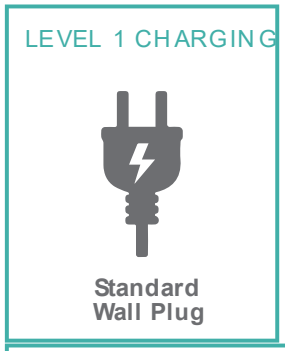
Aren't EVs just for wealthy people?

Early model EVs typically had higher purchase costs than internal combustion engine (ICE) powered equivalents but on a total cost of ownership basis, EVs are often less expensive due to their lower fuel and maintenance costs coupled with typically higher resale value. As EVs become more popular and more common, battery technology improves and EV production increases, EV prices are expected to fall. In addition, more second-hand EVs will enter the market, expanding opportunities for lower income buyers.

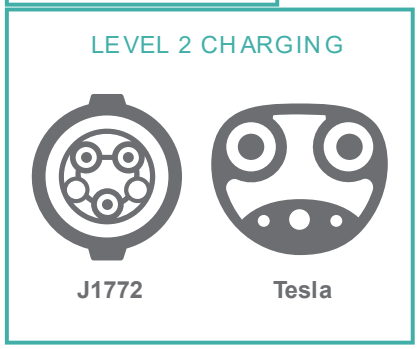
What is the average electric vehicle milage range?

Electric cars typically have a shorter maximum range on a charge than fossil-fueled cars. Most current EV models have a range of 200-300 miles per charge, with some models reaching more than 300 miles per charge.

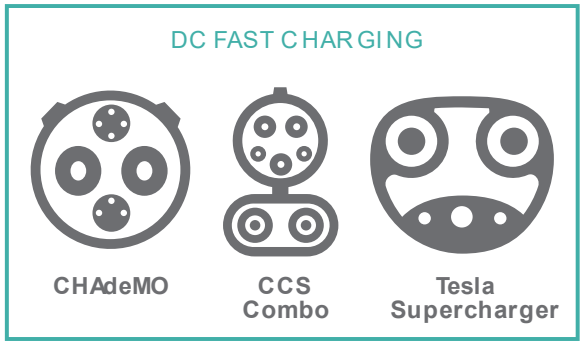
What are the types of EV chargers?



Level 1 Charging: Level 1 chargers plug directly into a standard 120 volt (V) AC outlet supplying an average power output of 1.3 kW to 2.4 kW. This power output is equivalent to 3-5 miles of EV range per hour. Level 1 charging uses standard NEMA 5-15 or NEMA 5-20 plugs. On average, full charging time varies and can take up to 20 hours, but times vary by model and state of charge.



Level 2 Charging: Charging a vehicle at "Level 2" means plugging an EV into a 240 volt AC charger. The most common applications for Level 2 charging are at home or work and Level 2 chargers are also common in public areas such as public parking lots, hotels, restaurants and retail areas where EV drivers charge while engaged in other activities. On average, full charging time varies from 2 to 6 hours, but times vary by model and state of charge. Level 2 chargers use J1772, NEMA 14-50 (RV plug), Tesla HPWC, J3608 or J3608 Type 2 plugs.



DC Fast Charging: The fastest form of charging commonly in use for light duty EVs. These types of chargers provide about 80 percent of a vehicle's potential battery power in 15 minutes for high power DC Fast Charger to an hour for a lower power DCFC. As with Level 2 chargers, charging times also vary by EV model and battery state of charge. Three charging protocols existing in the US consisting of CHAdeMO (for older Nisan and Mitsubishi EVs), CCS Combo plug for all newer EVs except Tesla EVs or a Tesla Supercharger for any Tesla model. These allow EV drivers to plug into "DC Fast Charge" networks where they are available to the public.

Where should charging occur?

Residential – By providing the convenience of charging an EV while parked overnight, residential charging is the most popular form of EV charging in the US for those with charger-equipped private parking. For EV drivers living in single family homes with garages or at least private driveways, EVs can be charged at slow speeds using Level 1 charging from a standard wall outlet or medium speeds using level 2 charging if 240V power is available.

Workplace – The second most popular location for charging is at work, especially for EV drivers without residential charging with employer-provided charging access. Worksite charging typically uses level 2 chargers shared by multiple employees.

Public – Chargers provided for charging at public locations such as grocery stores, shopping centers, restaurants and other frequently-visited areas are used by EV drivers without access to residential or workplace charging as well as travelers while away from home or work. Due to shorter vehicle dwell times, DCFC is preferred for most public charging applications though longer dwell opportunities like hotels, transit centers, airports, etc. may be suitable for Level 2 or even level 1 chargers. Public charging is sometimes provided for free as an amenity to attract customers but typically requires payments on a per kWh basis.

Fleet – Vehicle fleets typically charge at depots using banks of dedicated or shared level 2 chargers where fleet EVs are parked overnight. High Powered DC fast chargers are also used for fleet charging, especially for fleet EVs with short dwell times and for medium and heavy duty EVs.

Where are public EV chargers currently located?

The app PlugShare shows current charging stations throughout the country: https://www.plugshare.com/.

Where should additional public EV chargers be located?

Ideal locations for new public chargers include easy-to-access sites along key corridors, especially near their intersections that have amenities for EV drivers to visit while charging. Examples of popular amenities include restrooms, popular retail venues, restaurants, libraries, community centers, tourist attractions, beaches and parks, etc.

Another important consideration for locating public charging is convenient proximity to areas of concentrated high-density housing as multi-unit housing typically lacks EV charging.

Preguntas frecuentes sobre la electromovilidad

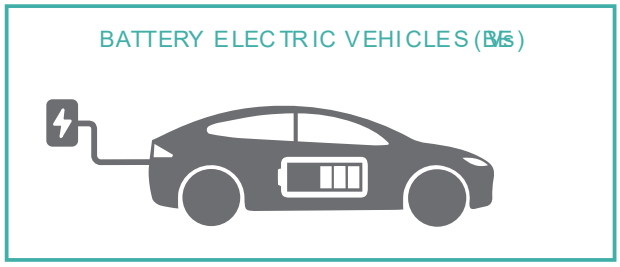
¿Qué es la electromovilidad?

La electromovilidad se refiere al ecosistema de vehículos eléctricos y a la red eléctrica que suministra su energía.

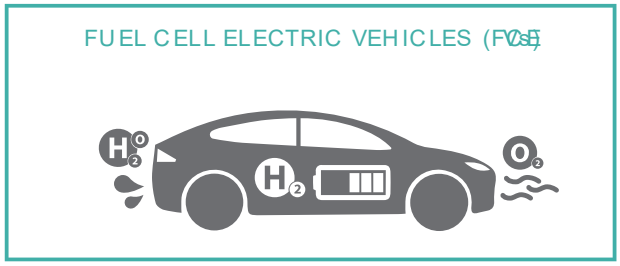
¿Qué son los vehículos eléctricos (VE)?

Los vehículos eléctricos funcionan total o parcialmente con electricidad y tienen un medio de almacenamiento de energía a bordo y, por lo general, se alimentan a través de la red y se benefician de la interrupción regenerativa.

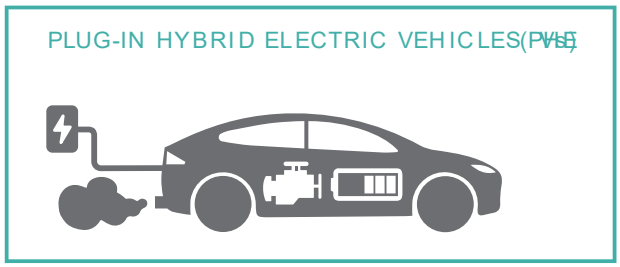
¿Cuáles son los diferentes tipos de vehículos eléctricos?



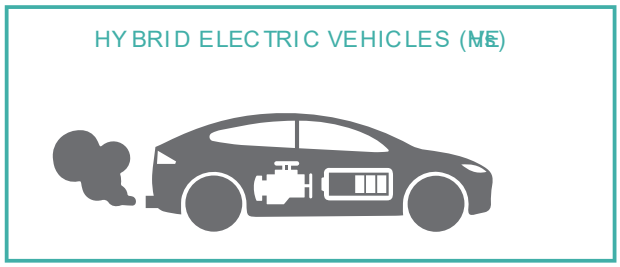
Vehículos eléctricos de batería (BEV): Vehículos que funcionan con un motor eléctrico alimentado por un gran banco de baterías en lugar de un motor de combustión interna. Los BEV funcionan completamente con electricidad y no producen gases de escape por la quemadura de combustible.



Vehículos eléctricos de pila de combustible (FCEV): Al igual que los BEV, los FCEV son vehículos de cero emisiones excepto que la energía se almacena en forma de hidrógeno en un tanque en lugar de electricidad en una batería. Los FCEV se alimentan en estaciones de servicio de hidrógeno, en lugar de cargarse en cargadores VE.



Vehículos eléctricos híbridos enchufables (PHEV): Los PHEV son vehículos propulsados por combustibles fósiles impulsados por un motor de combustión interna que también tienen un motor eléctrico. Los PHEV funcionan con electricidad hasta que la batería está casi agotada, luego el motor de gasolina se activa para proporcionar energía. Al igual que los vehículos eléctricos a batería, los PHEV deben estar enchufados a un cargador VE para cargar la batería.



Vehículos eléctricos híbridos (HEV): Los HEV son vehículos propulsados por combustibles fósiles que tienen un pequeño motor eléctrico y una batería para proporcionar energía adicional. Los HEV usan propulsión eléctrica y frenado regenerativo para mejorar su eficiencia de combustible, pero aún queman combustible fósil y producen emisiones de carbono.

¿Qué impacto ambiental está relacionado con un vehículo eléctrico?

Los vehículos eléctricos tienen un impacto ambiental reducido en comparación con los diésel y vehículos de gasolina. Las transmisiones eléctricas son más eficientes energéticamente y no emiten gases de escape. Los vehículos eléctricos tienen un menor impacto ambiental cuando usan electricidad de fuentes renovables.

¿Cuál es el motor de la electromovilidad?

Las regulaciones más estrictas sobre emisiones de carbono y los objetivos de reducción de CO2, junto con el deseo de una mayor eficiencia energética, menores costos de combustible y mantenimiento de vehículos y la reducción del ruido, son factores clave.

¿No son los vehículos eléctricos solo para gente rica?

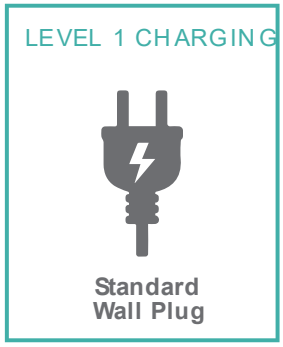
Los primeros modelos de VE generalmente tenían costos de compra más altos que los equivalentes impulsados por motores de combustión interna (ICE), pero en base al costo total de propiedad, los VE a menudo son menos costosos debido a sus menores costos de combustible y mantenimiento, junto con un valor de reventa típicamente más alto. A medida que los vehículos eléctricos se vuelven más populares y comunes, la tecnología de

las baterías mejore y la producción de vehículos eléctricos aumente, se espera que los precios de los vehículos eléctricos bajen. Además, entrarán en el mercado más vehículos eléctricos de segunda mano, lo que ampliará las oportunidades para los compradores de bajos ingresos.

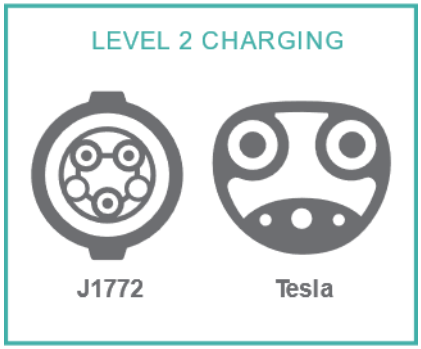
¿Cuál es el rango promedio de kilometraje de un vehículo eléctrico?

Los automóviles eléctricos suelen tener un alcance máximo más corto con una carga que los automóviles que funcionan con combustibles fósiles. La mayoría de los modelos VE actuales tienen un alcance de 200 a 300 millas por carga, y algunos modelos alcanzan más de 300 millas por carga.

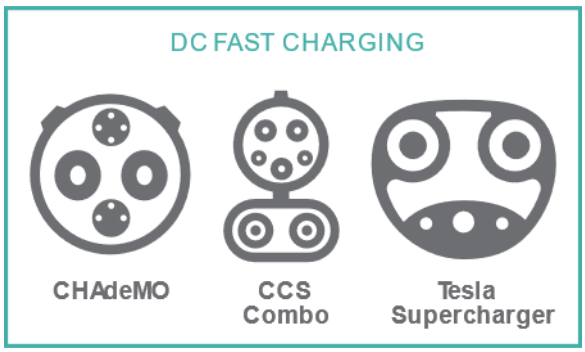
¿Cuáles son los tipos de cargadores VE?



Carga de nivel 1: Los cargadores de nivel 1 se conectan directamente a un tomacorriente de CA estándar de 120 voltios (V) que proporciona una potencia de salida promedio de 1,3 kW a 2,4 kW. Esta potencia de salida es equivalente a 3-5 millas de rango VE por hora. La carga de nivel 1 utiliza enchufes estándar NEMA 5-15 o NEMA 5-20. En promedio, el tiempo de carga total varía y puede demorar hasta 20 horas, pero los tiempos varían según el modelo y el estado de carga.



Carga de nivel 2: Cargar un vehículo en el "Nivel 2" significa conectar un EV a un cargador de CA de 240 voltios. Las aplicaciones más comunes para la carga de Nivel 2 son en el hogar o el trabajo. Los cargadores de Nivel 2 también son comunes en áreas públicas como estacionamientos públicos, hoteles, restaurantes y áreas comerciales donde los conductores de vehículos eléctricos cargan mientras realizan otras actividades. En promedio, el tiempo de carga total varía de 2 a 6 horas, pero los tiempos varían según el modelo y el estado de carga. Los cargadores de nivel 2 usan enchufes J1772, NEMA 14-50 (enchufe RV), Tesla HPWC, J3608 o J3608 tipo 2.



Carga rápida de CC: La forma más rápida de carga comúnmente utilizada para vehículos eléctricos ligeros. Estos tipos de cargadores proporcionan alrededor del 80 por ciento de la energía potencial de la batería de un vehículo en 15 minutos usando cargador rápido de CC de alta potencia a una hora usando un DCFC de menor potencia. Al igual que con los cargadores de nivel 2, los tiempos de carga también varían según el modelo de VE y el estado de carga de la batería. Existen tres protocolos de carga en los EE. UU. que consisten en CHAdeMO (para vehículos eléctricos Nisan y Mitsubishi más antiguos), enchufe CCS Combo para todos los vehículos eléctricos más nuevos, excepto los vehículos eléctricos Tesla o supercargador Tesla para cualquier modelo de Tesla. Estos permiten que los conductores de EV se conecten a las redes de "carga rápida de CC" donde están disponibles al público.

¿Dónde debe ocurrir la carga?

Residencial – Al brindar la conveniencia de cargar un EV mientras está estacionado durante la noche, la carga residencial es la forma más popular de carga de EV en los EE. UU. para aquellos con estacionamiento privado equipado con cargador. Para los conductores de vehículos eléctricos que viven en viviendas unifamiliares con cocheras o, al menos, entradas privadas, los vehículos eléctricos se pueden cargar a velocidades lentas utilizando la carga de nivel 1 desde un tomacorriente de pared estándar o velocidades medias utilizando la carga de nivel 2 si hay energía de 240 V disponible.

Lugar de trabajo – El segundo lugar más popular para cargar es el trabajo, especialmente para los conductores de vehículos eléctricos sin carga residencial con acceso de carga proporcionado por el empleador. La carga en el lugar de trabajo generalmente usa cargadores de nivel 2 compartidos por varios empleados.

Público – Los cargadores proporcionados para cargar en lugares públicos como supermercados, centros comerciales, restaurantes y otras áreas visitadas con frecuencia son utilizados por conductores de vehículos eléctricos sin acceso a carga residencial o laboral, así como por viajeros que se encuentran fuera de casa o del trabajo. Debido a los tiempos de permanencia más cortos del vehículo, se prefiere DCFC para la mayoría de las aplicaciones de carga pública, aunque las oportunidades de permanencia más prolongadas, como hoteles, centros de tránsito, aeropuertos, etc., pueden ser adecuadas para cargadores de nivel 2 o incluso de nivel 1. La carga pública a veces se proporciona

de forma gratuita como un servicio para atraer clientes, pero generalmente requiere pagos por kWh.

Flota – Las flotas de vehículos suelen cargar en depósitos utilizando bancos de cargadores de nivel 2 dedicados o compartidos donde los vehículos eléctricos de la flota se estacionan durante la noche. Los cargadores rápidos de CC de alta potencia también se utilizan para la carga de flotas, especialmente para flotas de vehículos eléctricos con tiempos de permanencia breves y para vehículos eléctricos de servicio medio y pesado.

¿Dónde se encuentran actualmente los cargadores de vehículos eléctricos públicos?

La aplicación PlugShare muestra las estaciones de carga actuales en todo el país: https://www.plugshare.com/.

¿Dónde deberían ubicarse los cargadores de vehículos eléctricos públicos adicionales?

Las ubicaciones ideales para los nuevos cargadores públicos incluyen sitios de fácil acceso a lo largo de las rutas clave, especialmente cerca de sus intersecciones que tienen comodidades para que los conductores de vehículos eléctricos visiten mientras cargan. Los ejemplos más utilizados incluyen baños, tiendas minoristas populares, restaurantes, bibliotecas, centros comunitarios, atracciones turísticas, playas y parques, etc.

Otra consideración importante para ubicar la carga pública es la proximidad a las áreas de viviendas de alta densidad, ya que las viviendas de unidades múltiples generalmente carecen de carga VE.

APPENDIX VII: GAP AND SITING ANALYSIS

METHODOLOGY

A variety of data sources were compiled to assist in both the infrastructure Gap Analysis and Siting Analysis. Data sources included:

- Published daily traffic volumes from Caltrans
- Charger locations from the US Department of Energy's Alternative Fuels Data Center
- Commercially available Streetlight Data
- Commercially available ESRI Business Analyst Data
- Geo-referenced information received from the public outreach process (Social Pinpoint)
- Generalized ArcGIS Network Analyst mapping efforts

Using data compiled from these sources, along with a series of criteria weighted by NEVI related funding criteria for future EVSE siting, highway interchanges were ranked using a site suitability scoring system. Area Suitability Scores were calculated for approximately 250 interchanges along California State Routes and US Highways in the six-county study area. State Routes were selected based on 2019 annual daily traffic volumes published by Caltrans.

Given that each county varies in terms of usage of its highways and highway interchanges greatly (for example, San Benito County's interchanges attract far less vehicle trips than other counties), interchanges have been ranked and summarized for each county individually, while total study area rankings are presented as well. For each unincorporated interchange, a one-mile buffer around the interchange (as a crow flies, not driving distance) was identified and used for the ranking analysis. Where interchanges are close to each other in denser areas, these one-mile buffers can, and do overlap. Buffer overlaps indicate areas with potentially strong future EV demand needs and also provide coverage redundancy given that actual siting in one area can be difficult due to design and power supply needs so alternatives.

Figure 63 through **Figure 67** show the candidate one-mile buffers for each county.

FIGURE 63: SANTA BARBARA COUNTY CANDIDATE INTERCHANGE/INTERSECTION BUFFERS

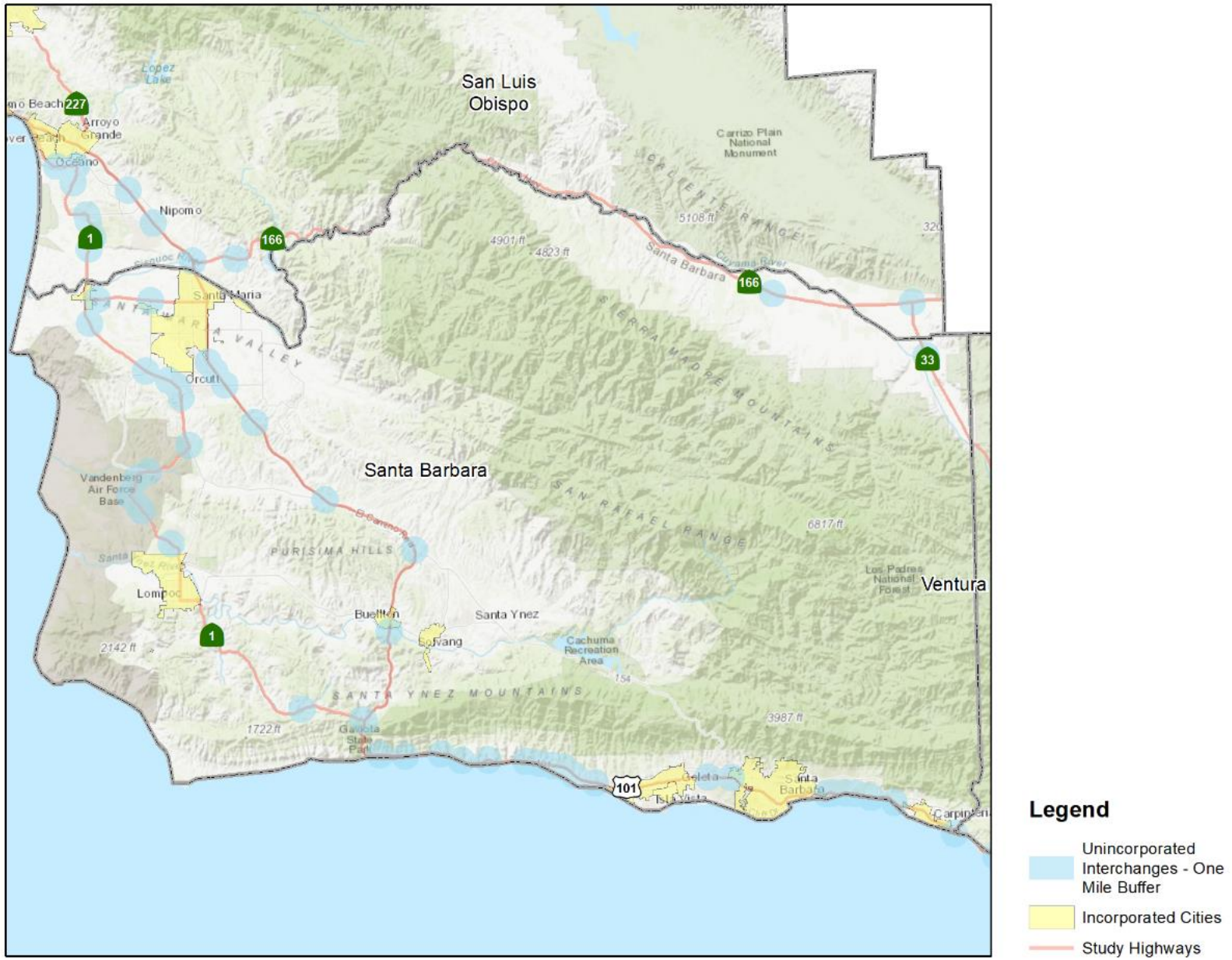


FIGURE 64: SAN LUIS OBISPO COUNTY CANDIDATE INTERCHANGE/INTERSECTION BUFFERS

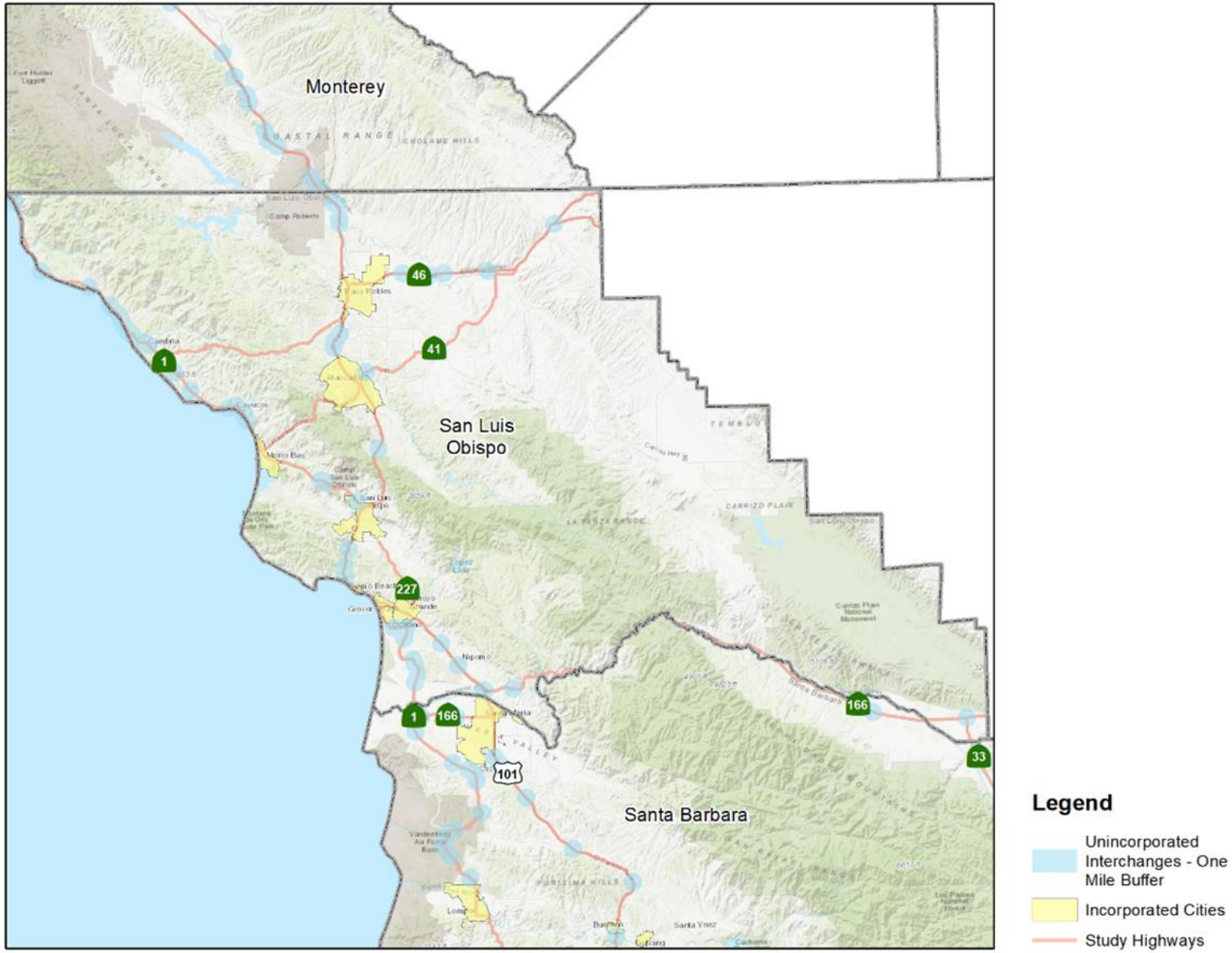


FIGURE 65: MONTEREY COUNTY CANDIDATE INTERCHANGE/INTERSECTION BUFFERS

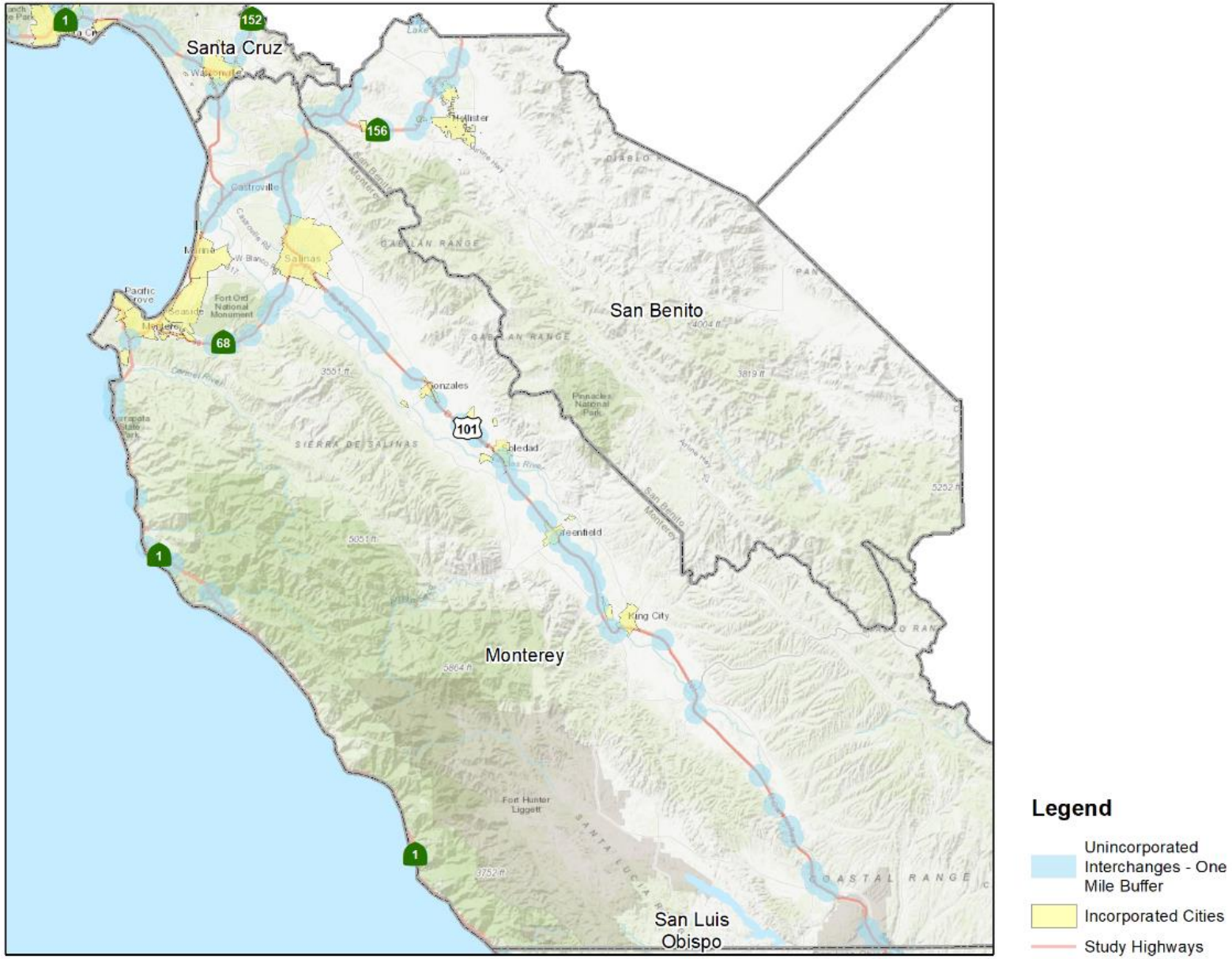


FIGURE 66: SANTA CRUZ COUNTY CANDIDATE INTERCHANGE/INTERSECTION BUFFERS

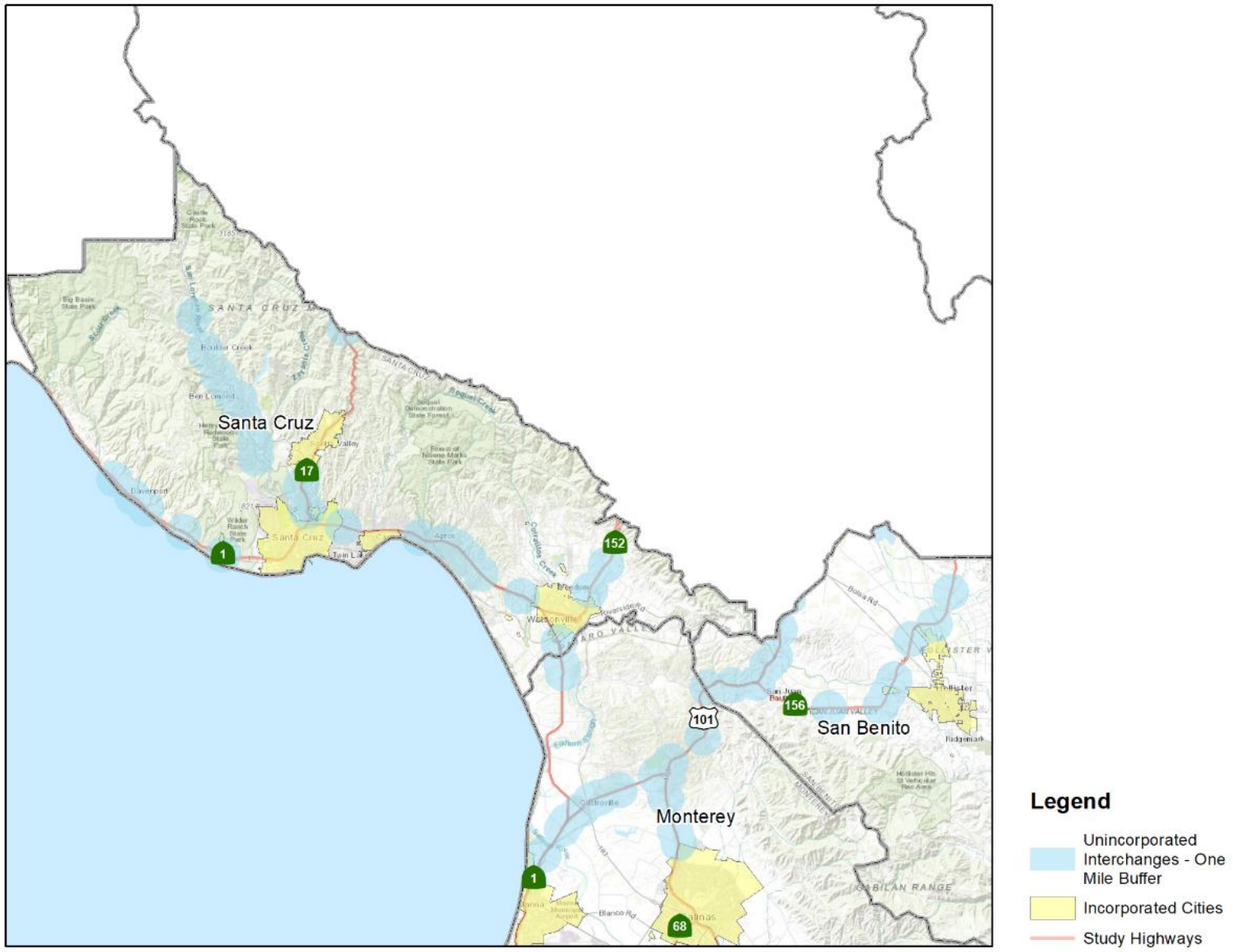
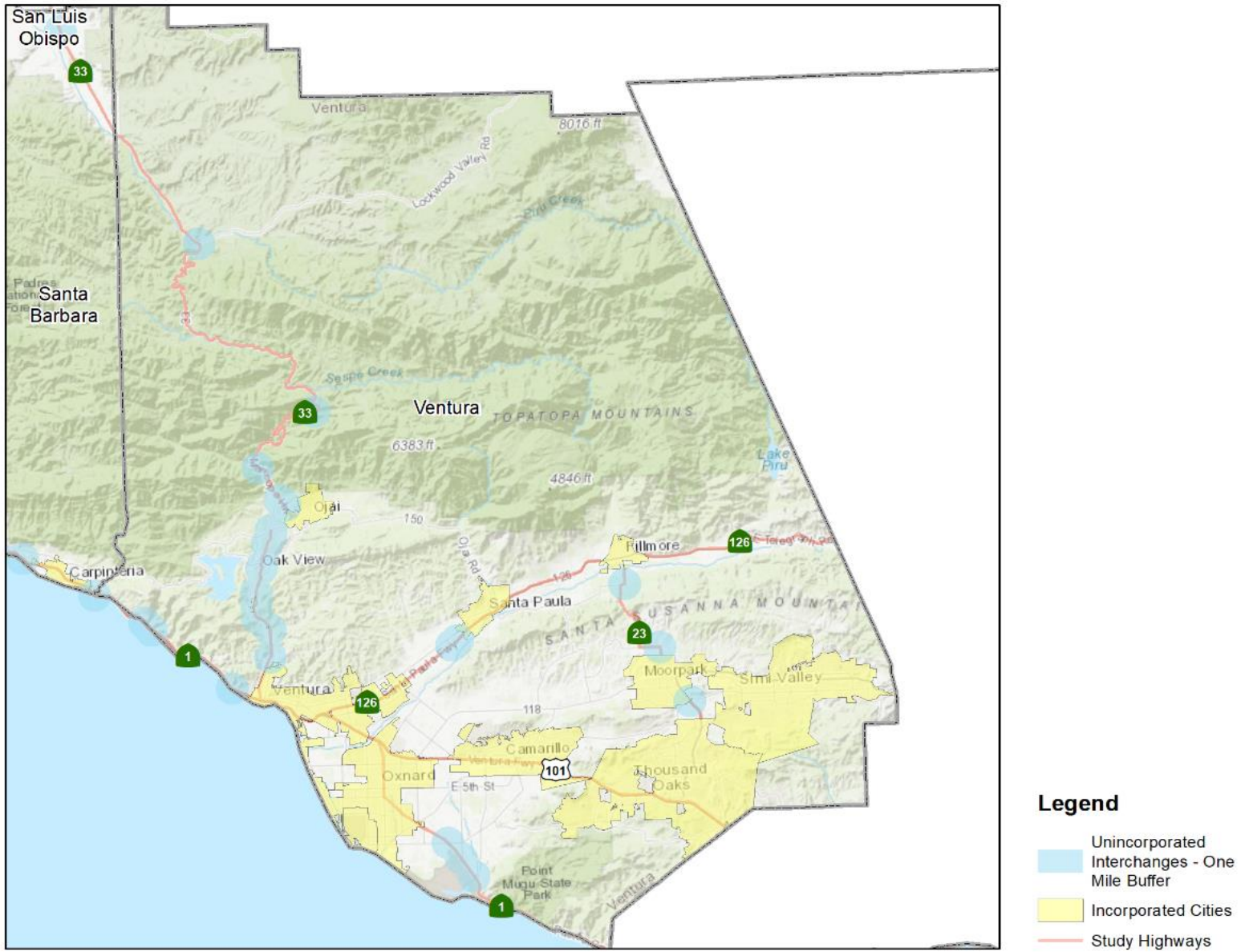


FIGURE 67: VENTURA COUNTY CANDIDATE INTERCHANGE/INTERSECTION BUFFERS



DATA SOURCES

Published Average Daily Traffic (ADT) Volumes

Caltrans annually publishes traffic volumes for all count locations on the California state highway system. Peak hours, peak month ADTs and annual ADTs are shown at each count location. All traffic volumes reflect both directions of travel for a given location. Typically, an 18-month lag occurs for the data to be published. Although data for 2020 was available for this analysis, pre-COVID 2019 volumes were used consistent with Caltrans Traffic Operations Policy Directive (TOPD) 23-01. These data were used to select the state highways for the EV charger siting analysis.

Alternative Fuels Data Center (AFDC)

The U.S. Department of Energy's Alternative Fuel Data Center (AFDC)[52] is a comprehensive online resource that provides valuable information about alternative fueling and charging stations across the United States. The AFDC is designed to support the adoption and use of alternative fuels, including electricity, hydrogen, propane, liquified natural gas (LNG), and compressed natural gas (CNG), by providing users with easy access to data on fueling and charging infrastructure.

The AFDC provides publicly available data downloads[53] on alternative fuel stations which provides information on alternative fuel stations across the United States. It includes details such as station names, addresses, fuel types offered (electricity, hydrogen, propane, LNG, CNG, etc.), operational status, accessibility, payment methods, charging levels (Level 1, Level 2 and DCFC), connector types, station owner/operator, public/private access, and the last update timestamp. At the time of this writing, charging station speeds (e.g. 50kW, 150kw, 250kW etc.) were not available for download. DKS regularly downloads this data set and utilizes the latitude and longitudinal data, station type, level and other information to generate project specific maps.

Streetlight Data

Streetlight Data (a prominent provider of "Big Data") was acquired to establish a dataset consisting of detailed travel data for the study area. For each of the study interchange "zones" (representing a one-mile buffer round each of 248 highway interchanges and intersections in unincorporated areas) Streetlight Data (SLD) provided a comprehensive report of travel data for the one-mile radius area. Data provided by SLD includes total daily volume (number of vehicles starting or stopping trip legs within each zone), breakdown of trips by trip length (in miles) and trip duration (in minutes), breakdown of vehicle drivers by income (in $5,000 increments), breakdown of drivers by education level, breakdown of drivers by race and ethnicity, breakdown of drivers with a disability, and breakdown of drivers by place of residence (own or rent home, type of residence, etc.). Streetlight Data's datasets are unique in that they provide data related to the drivers actually traveling to, from, or through a particular location, as opposed to providing data about the location itself, such as Census data.

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[52] https://afdc.energy.gov/stations/#/corridors?state=CA

[53] https://afdc.energy.gov/data_download

ESRI Business Analyst

ESRI (Environmental Systems Research Institute) is one of the largest purveyors of GIS (geographic information systems) software, services, and data. ESRI's Business Analyst service allows users to prepare location-based analyses for business siting and analysis. For this project, this service was utilized to download point-based data for the project study area including various business types pertinent to EVSE demand and siting analysis. These data downloads include full serve and fast-food restaurants, grocery and super-center shopping locations, other shopping locations, gas stations, and recreational locations (such as campgrounds and RV parks). It should be noted that while Esri provides some of the best data available, it's always possible that businesses may open, close, or move from the time the data is collected to when it is presented. Categories of businesses also must be interpreted and grouped which requires judgement calls to organize the data, this results in a certain level of subjectivity to the results. Regardless of these minimal limitations, these businesses represent locations where EV drivers tend to stop to eat, shop, or stay while fueling or charging their vehicles. Gas stations are also a useful data source as they represent where people with internal combustion engines can currently fuel their vehicles.

Project Outreach Data

An extensive community engagement program for this project (documented previously in this report and in **Appendix I**. and **Appendix II**.) was performed that included focus groups, stakeholder and public workshops and presentations, and an online geographically located suggestion board (Social Pinpoint website). The data compiled from the engagement process include general requests for additional charging infrastructure in portions of the study area, as well as specific requests for charging infrastructure (slower Level 2 or faster DC fast charging) at specific locations, including study interchanges. Approximately 400 Social Pinpoint requests were received for the areas covered by the interchange on-mile buffers.

Disadvantaged Community/ Environmental Justice Data

California's *Deployment Plan for the National Electric Vehicle Infrastructure (NEVI) Program* (published August 2022) identified disadvantaged communities (DAC's) as defined by the state with CalEnviroScreen 4.0 and by the federal government with Justice40. The Deployment Plan identifies areas within the six-county study area by the following three categories:

- California-designated Low-income and/or Disadvantaged Communities
- Justice40-designated Disadvantaged Communities
- Disadvantaged and/or Low-income communities designated by both California and Justice40

US Census American Community Survey (ACS) Housing Data

The United States Census prepares 5-year running estimates of housing and population based on the annual American Community Survey (ACS). This data is curated and published for public consumption by ESRI in their Living Atlas online data repository and website. One dataset available includes number of households in structure. This data is divided into the following classifications of households: Single unit detached, single unit attached, 2 units, 3 to 4 units, 5 to 9 units, 10 to 19 units, 20 to 49 units, 50 plus units, mobile homes, and boat, RV, or van as home. For the purposes of analysis used in this document, Multi-family Housings (MFH's) are assumed to be housing units of

5 or more units in structure. The current "vintage" of five-year data is listed as 2017-2021 and was last updated on ESRI's Living Atlas website December 2022.

DATA CRITERIA WEIGHTING AND AREA SUITABILITY SCORES

To score (i.e., calculate total "Points") each study interchange for ranking purposes, the relative value of each particular data type is calculated (by standard deviation to account for huge variances in data magnitude) and multiplied by a weighting factor to promote certain critically relevant criteria. The weighting factors used in this analysis range from a high of +3 to a low of -3. A value of +3 represents the highest weighting (most desirable for additional EVSE siting. A value of +1 represents an average weighting (the criteria is not weighted higher or lower than "typical"). A value of 0 (zero) represents a criterion that is not used in the points calculation. A negative value (-3 to -1) represents a criterion that lowers the perceived need for additional charging infrastructure. The only criterion with a negative value currently is existing EVSE (representing areas that currently have good access to charging and may have less of a need for additional charging). While some locations may receive negative points based on existing EVSE, it is possible that the positive points received from other criteria could outweigh the negative points received based on existing EVSE. The criteria derived from the data sources above are summarized in **Table 65**.

TABLE 65: SITING CRITERIA AND WEIGHTING

CRITERIA	WEIGHTING VALUE	WEIGHTING
LONG TRIPS (>=100 MILES) STARTING OR ENDING WITHIN 1 MILE OF INTERCHANGE	+3	Highest
FULL SERVE RESTAURANTS WITHIN 1 MILE OF INTERCHANGE	+2	High
FAST FOOD RESTAURANTS WITHIN 1 MILE OF INTERCHANGE	+2	High
LOCATED WITHIN JUSTICE 40 DISADVANTAGED COMMUNITY	+2	High
LOCATED WITHIN CALENVIROSCREEN DISADVANTAED COMMUNITY	+2	High
SOCIAL PINPOINT EVSE REQUESTS WITHIN 1 MILE OF INTERCHANGE	+2	High
MEDIUM TRIPS (50-100 MILES) STARTING OR ENDING WITHIN 1 MILE OF INTERCHANGE	+2	High
LOW INCOME TRIPS (<$50K) STARTING OR ENDING WITHIN 1 MILE OF INTERCHANGE	+2	High
TRIPS BY RENTERS STARTING OR ENDING WITHIN 1 MILE OF INTERCHANGE	+2	High
TRIPS BY MFH RESIDENTS STARTING OR ENDING WITHIN 1 MILE OF INTERCHANGE	+2	High
GAS STATIONS WITHIN 1 MILE OF INTERCHANGE	+2	High
GROCERY/ SUPER-CENTERS WITHIN 1 MILE OF INTERCHANGE	+1	Average
OTHER SHOPPING WITHIN 1 MILE OF INTERCHANGE	+1	Average
TOTAL DAILY TRIPS WITHIN 1 MILE OF INTERCHANGE	+1	Average
MEDIUM/ HEAVY DUTY TRIPS WITHIN 1 MILE OF INTERCHANGE	+1	Average
SHORT TRIPS (<20 MI) STARTING OR ENDING WITHIN 1 MILE OF INTERCHANGE	+1	Average
EXISTING EVSE WITHIN 1 MILE OF INTERCHANGE	-2	Low

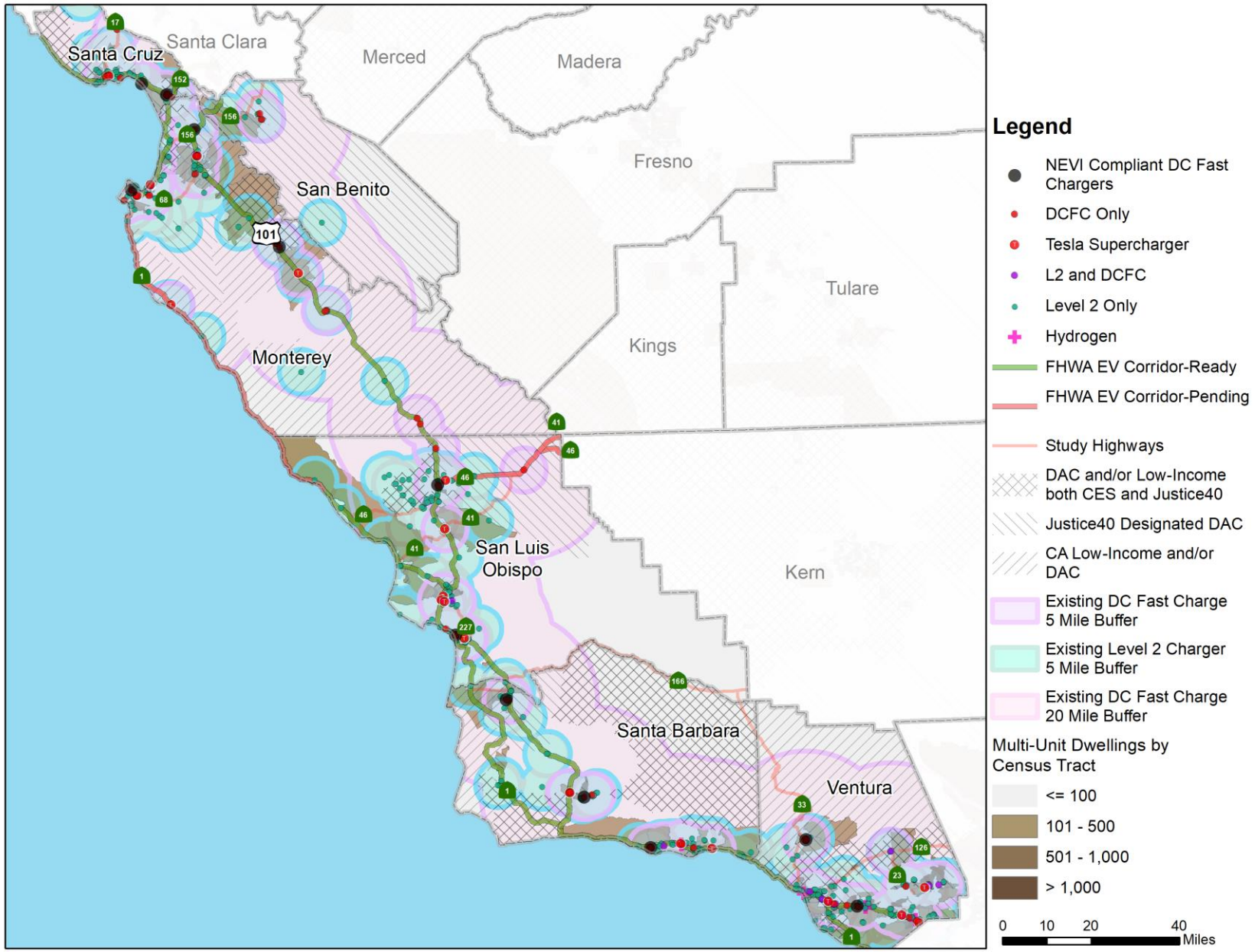
INFRASTRUCTURE GAPS

To identify EV and alternative fuel infrastructure gaps in the project study area, a number of the data sources listed above were aggregated into a single map (**Figure 68**). The map displays overlaid data including existing EV and hydrogen fueling stations (see "buffers" around the existing infrastructure), existing concentrations of multi-family housing (by census tract, as defined above), existing areas defined as disadvantaged communities (by the state, by the federal government, and by both), corridors identified by the Federal Highway Administration (FHWA) as EV Corridors (both EV "Ready" and "Pending"), and DC fast chargers identified as NEVI compliant (4 or more 150 kW + chargers within one mile of an identified EV Corridor).

The map shows that much of the study area is defined as a disadvantaged community (DAC) by either the State, Federal government, or both. Most of the multi-family housing (MFH) is located along the coast and in more urban areas along the major highways. Much of US 101 and portions of SR 1 are identified by the FHWA as EV Corridor "Ready" while portions of these routes are identified as "Pending". Most other highways are identified as "Pending". A five (5) mile buffer of both DCFC and Level 2 chargers does cover much of US 101 while large portions of other highways remain outside the five-mile buffer of these chargers. A larger twenty (20) mile buffer of non-Tesla DC Fast Chargers (typically used for longer trips) shows that most of the highway segments fall within the twenty-mile buffer of existing DCFC installations. There are currently twelve (12) DCFC stations identified as NEVI compliant (meaning that they have at least 4 chargers usable by multiple vehicle manufacturers with at least 150 kW output and are within 1 mile of an FHWA EV Corridor). These NEVI compliant stations are mostly operated by Electrify America and are spread throughout the study area, located predominantly along US 101. The data contained in this map, along with the Streetlight data, the business data obtained via ESRI Business Analyst, and the Outreach data obtained via public meetings, stakeholder meetings workshops, focus groups, and the Social Pinpoint site, have all been utilized to facilitate the prioritized siting analysis.

While it does not show clearly in the map, the City of San Luis Obispo represents a major infrastructure gap, where there is currently only one non-Tesla DC Fast Charging location, and that location is miles from US 101. Conversely, there are 54 DCFC plugs currently available only to Tesla vehicles.

FIGURE 68: GAP ANALYSIS MAP



SITE PRIORITIZATION

Given the focus of this study is on regional travel and the unincorporated portions of the study area counties, site prioritization in this section is limited to locations adjacent to (within one mile) highway (US highway and California state route) interchanges outside of incorporated cities. As stated previously, approximately 250 interchanges and intersections have been identified as candidate sites based on this analysis. Of the intersections identified for siting analysis, 69 are in Monterey County, 55 are in San Luis Obispo County, 45 are in Santa Barbara County, 30 are in Santa Cruz County, 26 are in Ventura County, and 12 are in San Benito County.

Using the methodology described above, Area Suitability Scores have been calculated for each interchange or intersection based on the weighting factors identified and locations have been ranked based on those point totals.

Of the top 20 locations within the study area, seven (7) are in Monterey County, five (5) are in San Luis Obispo County, five (5) are in Santa Barbara County, and three (3) are in Santa Cruz County. None of the top 20 study locations are in San Benito or Ventura Counties. Additionally, of the top 20 locations, twelve (12) are located along US 101, 6 are located along State Route 1, and 2 are located along SR 156. **Table 66** summarizes the number of "Top 20" locations along each highway and in each county.

TABLE 66: NUMBER OF LOCATIONS IN STUDY AREA TOP 20

ROUTE	COUNTY	NUMBER IN TOP 20
US 101	Monterey	4
	San Luis Obispo	3
	Santa Barbara	5
	Total	12
STATE ROUTE 1	Santa Cruz	3
	San Luis Obispo	2
	Monterey	1
	Total	6
STATE ROUTE 156	Monterey	2
	Total	2

Given the disparity in both the number of locations per county (69 in Monterey County vs 12 in San Benito County) and the highest ranking of any location in a given county (San Benito's highest ranking is 104), rankings have been identified for both the study area as a whole and for each county

individually. **Table 67** through **Table 70** show the top twenty (20) locations within the study area based on the weighting system used and the Area Suitability Scores for each location. In addition to the ranking for each location, the tables summarize the pertinent data for each location that contributed to the location's relative point score and ranking. **Figure 69** shows the distribution of these top 20 locations throughout the study area. The figure shows that eight of the top twenty locations study area wide are located in the Monterey Bay/Santa Cruz area. Six are located between Paso Robles and Santa Maria. Four are located between Solvang/Buellton and the Santa Barbara coastline. As stated previously, none of the top 20 locations are located in San Benito or Ventura Counties.

Of the top twenty locations in the entire study area, twelve are located along US 101:

- Rank 1: US 101 at San Marcos Pass Road/ SR 154 (Santa Barbara County)
- Rank 4: US 101 at West Teft Street (San Luis Obispo County)
- Rank 5: US 101 at Turnpike Road (Santa Barbara County)
- Rank 7: US 101 at SR 146 (Monterey County)
- Rank 8: US 101 at Santa Rosa Road (Santa Barbara County)
- Rank 9: US 101 at Castroville Road (Monterey County)
- Rank 14: US 101 at Las Tablas Road (San Luis Obispo County)
- Rank 15: US 101 at SR 156 (Monterey County)
- Rank 16: US 101 at Coast Village Road (Santa Barbara County)
- Rank 17: US 101 at Santa Maria Way (Santa Barbara County)
- Rank 18: US 101 AT San Miguel Canyon Road (Monterey County)
- Rank 20: US 101 at Vineyard Drive (San Luis Obispo County)

Of the top twenty locations in the entire study area, six are located along SR 1:

- Rank 2: SR 1 at Highland Drive (San Luis Obispo County)
- Rank 3: SR 1 at Soquel Drive (Santa Cruz County)
- Rank 6: SR 1 at State Park Drive (Santa Cruz County)
- Rank 12: SR 1 at 22nd Street (San Luis Obispo County)
- Rank 13: SR 1 at Rio Del Mar Boulevard (Santa Cruz County)
- Rank 19: SR 1 at SR 68 (Monterey County)

Finally, of the top twenty locations in the entire study area, two are located along SR 156:

- Rank 10: SR 156 at Castroville Boulevard (Monterey County)
- Rank 11: SR 156 at SR 183 (Monterey County)

While all the locations are outside of incorporated cities, many of the top twenty locations are located within an urban area (i.e., Santa Barbara/ Goleta, Santa Maria, San Luis Obispo, Monterey, or Santa Cruz). This is primarily due to the influence of the NEVI-based criteria which tends to cluster the top scoring candidate locations near more developed unincorporated areas.

FIGURE 69: TOP 20 LOCATIONS – WHOLE STUDY AREA

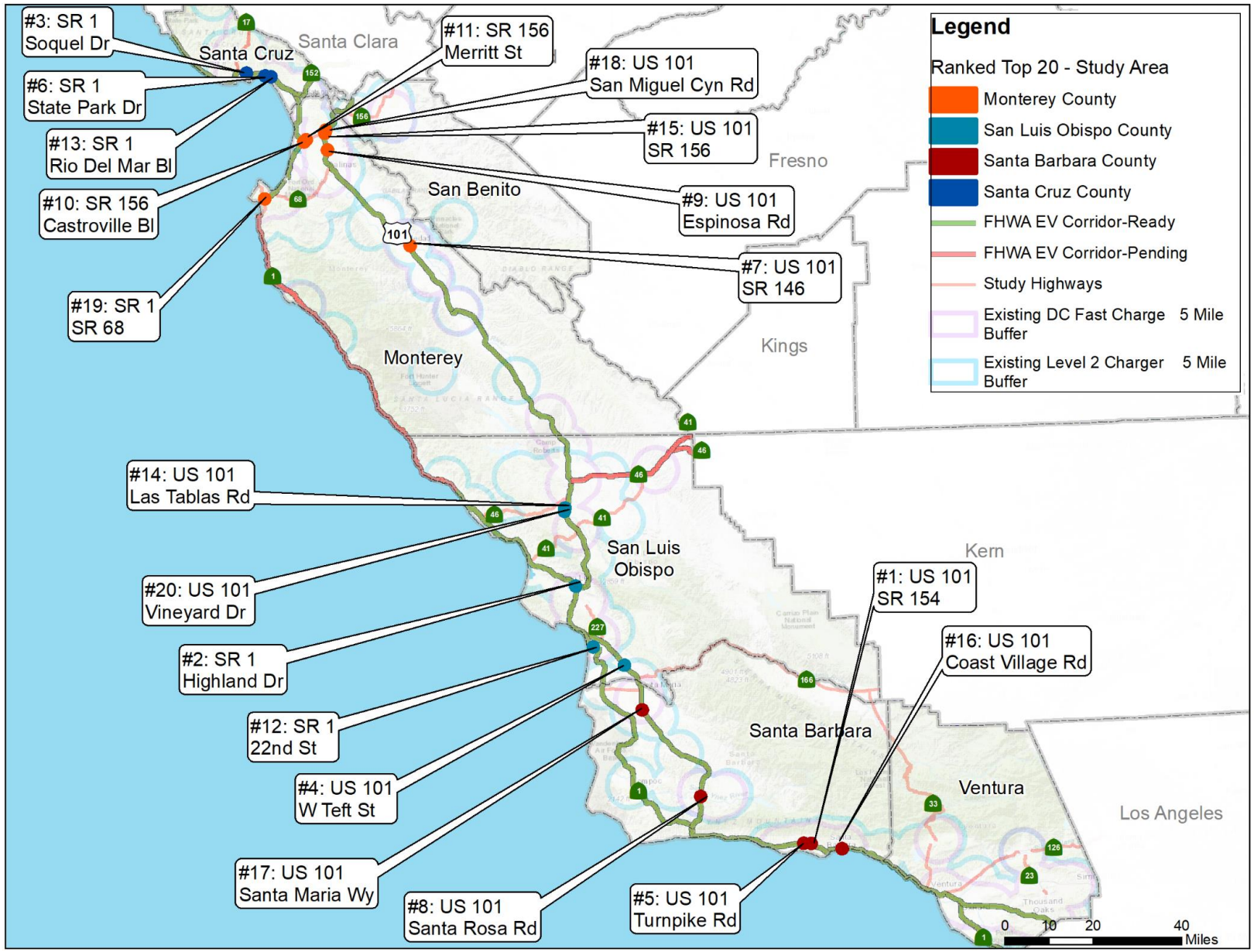


TABLE 67: SITING ANALYSIS RESULTS: STUDY AREA RANK 1-5

	RANK IN STUDY AREA				
	1	2	3	4	5
ROUTE	US 101	SR 1	SR 1	US 101	US 101
CROSS STREET	SR 154	Highland Dr	Soquel Dr	W Teft St	Turnpike Rd
COUNTY	Santa Barbara	San Luis Obispo	Santa Cruz	San Luis Obispo	Santa Barbara
TOTAL POINTS	1,664	1,412	1,366	1,222	1,187
TOTAL DAILY VOLUME WITHIN 1 MILE	47,342	41,913	44,497	39,280	38,641
LEVEL 2 CHARGERS WITHIN 1 MILE	6	12	12	-	5
DCFC CHARGERS WHITHIN 1 MILE	19	-	-	-	-
IN JUSTICE40 AREA	Yes	No	Yes	No	Yes
IN CALENVIROSCREEN 4.0 AREA	Yes	No	No	No	Yes
FULL SERVE RESTAURANTS WITHIN 1 MILE	25	21	12	13	8
FAST FOOD RESTAURANTS WITHIN 1 MILE	11	8	1	5	1
GROCERY/ SUPER-CENTER WITHIN 1 MILE	-	-	-	1	-
OTHER SHOPPING WITHIN 1 MILE	-	1	2	-	-
GAS STATIONS WITHIN 1 MILE	6	4	5	4	5
SOCIAL PINPOINT REQUESTS FOR DCFC	5	1	11	3	6
SOCIAL PINPOINT REQUESTS FOR LEVEL 2	5	2	11	3	1
PERCENT OF TRIPS LESS THAN 5 MILES	52%	58%	58%	44%	48%
PERCENT OF TRIPS GREATER THAN 100 MILES	2%	2%	1%	1%	1%
PERCENT OF DRIVERS WITH INCOME LESS THAN $50K	31%	50%	30%	28%	26%

Table 67 shows that two of the top five ranked locations are located in Santa Barbara County, two are located in San Luis Obispo County, and one is located within Santa Cruz County. Three of the top five are located along US 101 while two are located along SR 1. It should be noted that the location ranked #2 (SR 1 at Highland Drive) is located directly adjacent to the City of San Luis Obispo and Cal Poly San Luis Obispo. Note that the City of San Luis Obispo has been identified previously in this report as having a large number of Tesla Supercharger plugs (54) but only one non-Tesla DCFC location (a relatively low power EVGo station away from either of the major highways that traverse through San Luis Obispo). For this reason, this location (or any other viable location directly adjacent to the City of San Luis Obispo and SR 1 or US 101) presents a key opportunity for needed infrastructure improvements. **Table 68** shows that while there are currently twelve Level 2 charges within 1 mile of the intersection, there are zero DCFC chargers.

TABLE 68: SITING ANALYSIS RESULTS: STUDY AREA RANK 6-10

	RANK IN STUDY AREA				
	6	7	8	9	10
ROUTE	SR 1	US 101	US 101	US 101	SR 156
CROSS STREET	State Park Dr	SR 146	Santa Rosa Rd	Espinosa Rd	Castroville Blvd
COUNTY	Santa Cruz	Monterey	Santa Barbara	Monterey	Monterey
TOTAL POINTS	1,112	1,102	1,043	931	861
TOTAL DAILY VOLUME WITHIN 1 MILE	33,248	22,033	21,061	20,383	17,486
LEVEL 2 CHARGERS WITHIN 1 MILE	4	1	2	6	-
DCFC CHARGERS WHITHIN 1 MILE	-	12	12	-	-
IN JUSTICE40 AREA	Yes	Yes	Yes	Yes	No
IN CALENVIROSCREEN 4.0 AREA	No	No	No	Yes	No
FULL SERVE RESTAURANTS WITHIN 1 MILE	32	13	21	3	11
FAST FOOD RESTAURANTS WITHIN 1 MILE	2	5	8	2	2
GROCERY/ SUPER-CENTER WITHIN 1 MILE	-	-	-	-	1
OTHER SHOPPING WITHIN 1 MILE	-	-	-	1	-
GAS STATIONS WITHIN 1 MILE	4	2	6	2	3
SOCIAL PINPOINT REQUESTS FOR DCFC	9	1	3	-	-
SOCIAL PINPOINT REQUESTS FOR LEVEL 2	9	1	1	-	-
PERCENT OF TRIPS LESS THAN 5 MILES	47%	54%	42%	51%	27%
PERCENT OF TRIPS GREATER THAN 100 MILES	1%	3%	4%	1%	2%
PERCENT OF DRIVERS WITH INCOME LESS THAN $50K	28%	38%	30%	35%	37%

TABLE 69 shows that, while some of the other top twenty rankings may depend a large part on overall volume near the interchange or intersection, some locations do rank highly based on factors other than sheer traffic volume. Locations ranked #10 and #11 have significantly lower traffic volume than those ranked #12 and #13.

TABLE 69: SITING ANALYSIS RESULTS: STUDY AREA RANK 11-15

	RANK IN STUDY AREA				
	11	12	13	14	15
ROUTE	SR 156	SR 1	SR 1	US 101	US 101
CROSS STREET	SR 183	22nd St	Rio Del Mar Blvd	Las Tablas Rd	SR 156
COUNTY	Monterey	San Luis Obispo	Santa Cruz	San Luis Obispo	Monterey
TOTAL DAILY VOLUME WITHIN 1 MILE	15,164	29,716	28,251	31,205	16,035
TOTAL POINTS	822	802	750	735	689
LEVEL 2 CHARGERS WITHIN 1 MILE	6	0	2	-	-
DCFC CHARGERS WHITHIN 1 MILE	-	-	-	-	12
IN JUSTICE40 AREA	Yes	No	Yes	No	Yes
IN CALENVIROSCREEN 4.0 AREA	Yes	No	No	No	No
FULL SERVE RESTAURANTS WITHIN 1 MILE	11	2	15	15	10
FAST FOOD RESTAURANTS WITHIN 1 MILE	2	-	-	-	5
GROCERY/ SUPER-CENTER WITHIN 1 MILE	-	-	-	-	-
OTHER SHOPPING WITHIN 1 MILE	1	-	-	-	-
GAS STATIONS WITHIN 1 MILE	3	1	1	2	4
SOCIAL PINPOINT REQUESTS FOR DCFC	-	-	10	1	0
SOCIAL PINPOINT REQUESTS FOR LEVEL 2	-	-	5	3	2
PERCENT OF TRIPS LESS THAN 5 MILES	27%	61%	45%	38%	36%
PERCENT OF TRIPS GREATER THAN 100 MILES	2%	1%	1%	1%	2%
PERCENT OF DRIVERS WITH INCOME LESS THAN $50K	38%	35%	25%	28%	30%

TABLE 70: SITING ANALYSIS RESULTS: STUDY AREA RANK 16-20

	RANK IN STUDY AREA				
	16	17	18	19	20
ROUTE	US 101	US 101	US 101	SR 1	US 101
CROSS STREET	Coast Village Rd	Santa Maria Way	San Miguel Canyon Rd	SR 68	Vineyard Dr
COUNTY	Santa Barbara	Santa Barbara	Monterey	Monterey	San Luis Obispo
TOTAL POINTS	682	662	651	648	619
TOTAL DAILY VOLUME WITHIN 1 MILE	20,312	25,319	15,283	18,914	25,418
LEVEL 2 CHARGERS WITHIN 1 MILE	8	-	-	5	-
DCFC CHARGERS WHITHIN 1 MILE	8	-	12	1	-
IN JUSTICE40 AREA	Yes	No	Yes	No	No
IN CALENVIROSCREEN 4.0 AREA	No	No	No	No	No
FULL SERVE RESTAURANTS WITHIN 1 MILE	17	1	10	10	14
FAST FOOD RESTAURANTS WITHIN 1 MILE	-	-	5	2	0
GROCERY/ SUPER-CENTER WITHIN 1 MILE	-	-	-	-	-
OTHER SHOPPING WITHIN 1 MILE	-	-	-	-	-
GAS STATIONS WITHIN 1 MILE	1	1	4	2	2
SOCIAL PINPOINT REQUESTS FOR DCFC	7	1	-	1	1
SOCIAL PINPOINT REQUESTS FOR LEVEL 2	5	1	2	-	4
PERCENT OF TRIPS LESS THAN 5 MILES	49%	57%	38%	47%	38%
PERCENT OF TRIPS GREATER THAN 100 MILES	2%	1%	2%	1%	1%
PERCENT OF DRIVERS WITH INCOME LESS THAN $50K	25%	26%	30%	28%	28%

As stated previously, due to some counties being highly represented in the study area wide top twenty locations while other counties have no locations represented, the top locations in each county are represented on the following pages. **Figure 70** shows the top locations (top ten for Santa Cruz, Monterey, San Luis Obispo, and Santa Barbara and top five for San Benito and Ventura) for each county in the study area, while **Figure 71** through **Figure 73** more detailed locations for each county. **Appendix V** provides data maps of the top five ranked locations per county.

FIGURE 70: TOP LOCATIONS – BY COUNTY

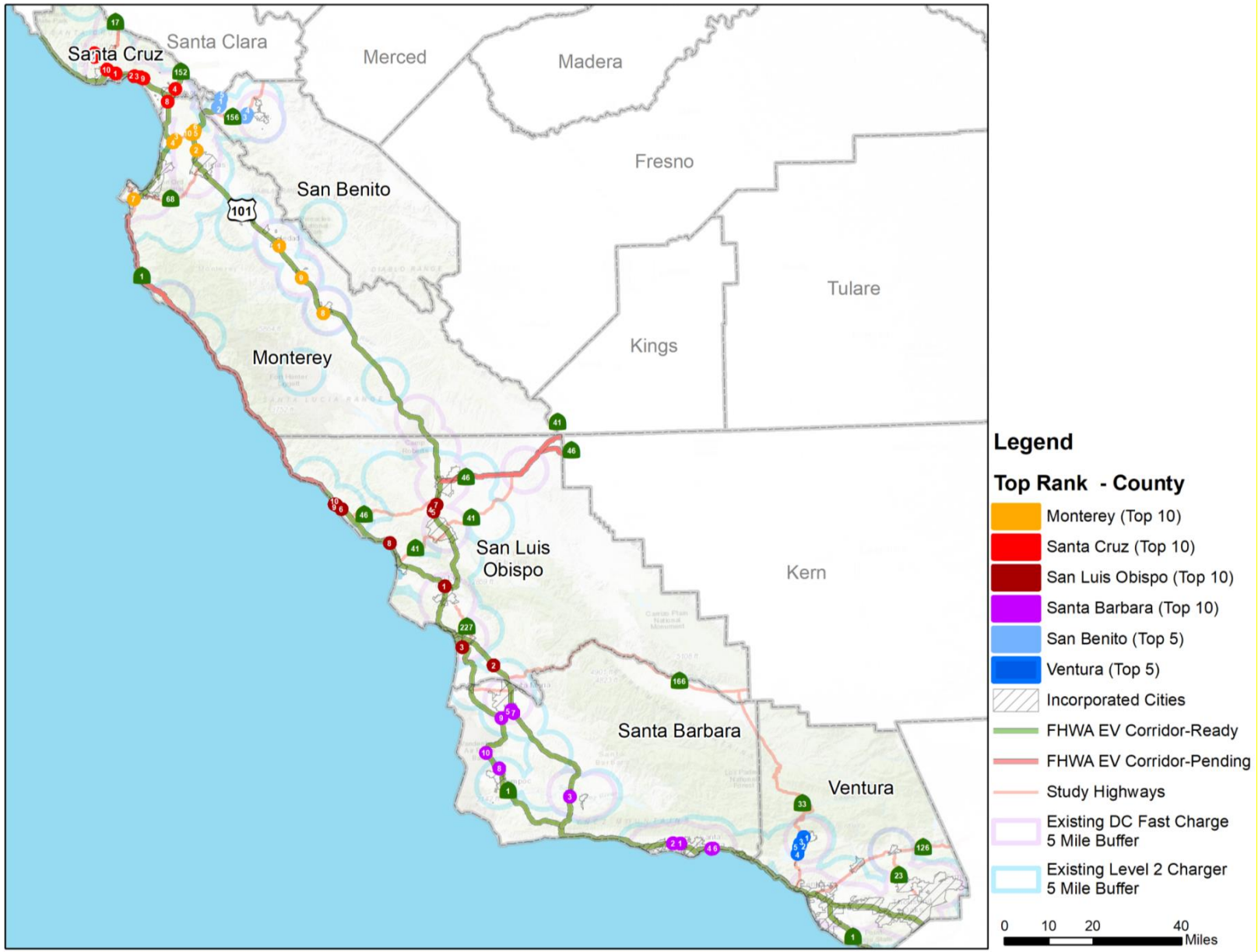


FIGURE 71: TOP LOCATIONS – SANTA CRUZ, MONETEREY, AND SAN BENITO COUNTIES

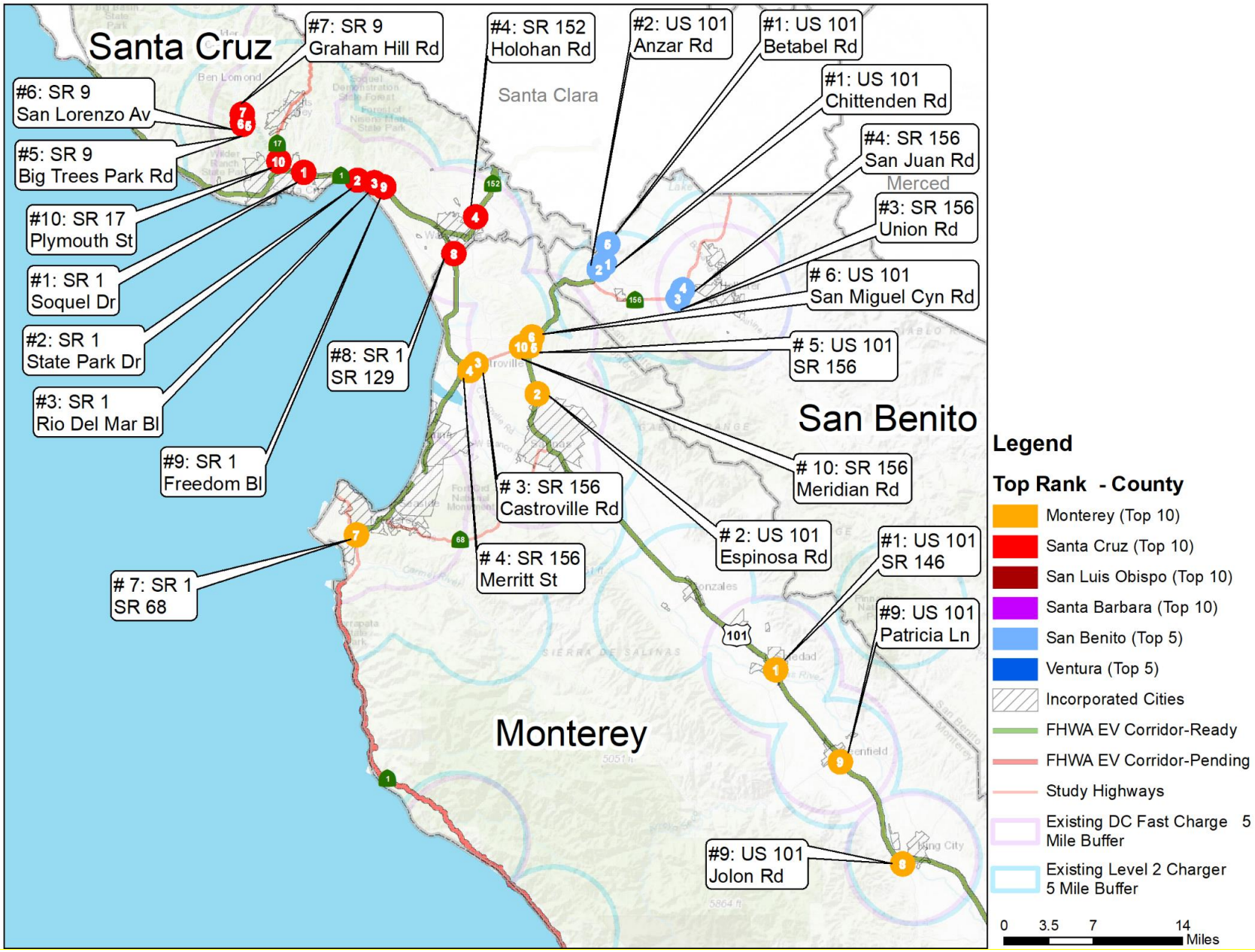


FIGURE 72: TOP LOCATIONS – SAN LUIS OBISPO COUNTY

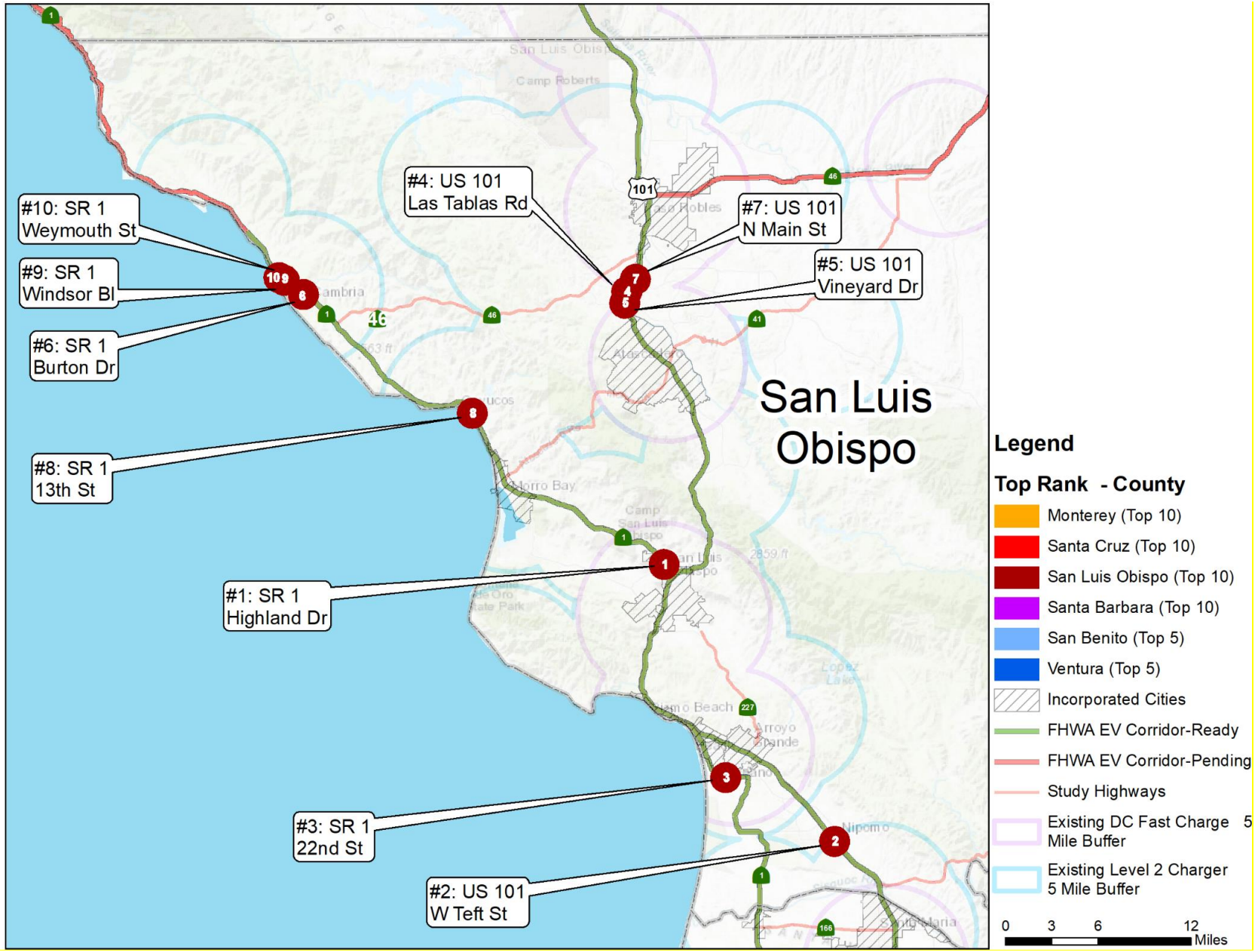


FIGURE 73: TOP LOCATIONS – SANTA BARBARA AND VENTURA COUNTIES

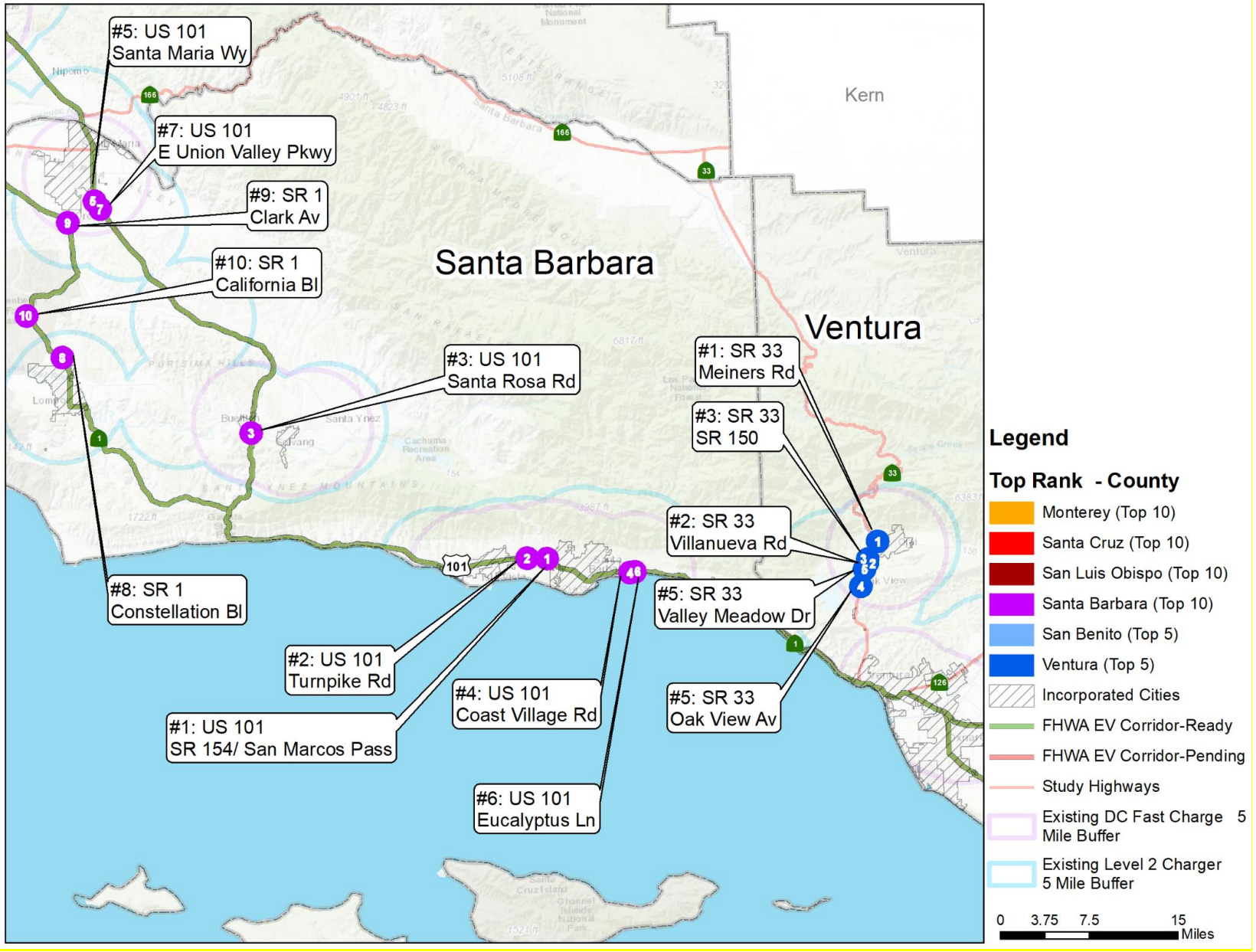


TABLE 71: SITING ANALYSIS RESULTS: MONTEREY COUNTY RANK 1-5

	RANK IN MONTEREY COUNTY				
	1	2	3	4	5
ROUTE	US 101	US 101	SR 156	SR 156	US 101
CROSS STREET	SR 146	Espinosa Rd	Castroville Blvd	SR 183	SR 156
TOTAL POINTS	1102	931	861	822	689
RANK IN STUDY AREA	7	9	10	11	15
TOTAL DAILY VOLUME WITHIN 1 MILE	22,033	20,383	17,486	15,164	16,035
LEVEL 2 CHARGERS WITHIN 1 MILE	1	6	-	6	-
DCFC CHARGERS WHITHIN 1 MILE	12	-	-	-	12
IN JUSTICE40 AREA	Yes	Yes	No	Yes	Yes
IN CALENVIROSCREEN 4.0 AREA	No	Yes	No	Yes	No
FULL SERVE RESTAURANTS WITHIN 1 MILE	13	3	11	11	10
FAST FOOD RESTAURANTS WITHIN 1 MILE	5	2	2	2	5
GROCERY/ SUPER-CENTER WITHIN 1 MILE	-	-	1	-	-
OTHER SHOPPING WITHIN 1 MILE	-	1	-	1	-
GAS STATIONS WITHIN 1 MILE	2	2	3	3	4
SOCIAL PINPOINT REQUESTS FOR DCFC	1	-	-	-	-
SOCIAL PINPOINT REQUESTS FOR LEVEL 2	1	-	-	-	2
PERCENT OF TRIPS LESS THAN 5 MILES	54%	51%	27%	27%	36%
PERCENT OF TRIPS GREATER THAN 100 MILES	3%	1%	2%	2%	2%
PERCENT OF DRIVERS WITH INCOME LESS THAN $50K	38%	35%	37%	38%	30%

TABLE 72: SITING ANALYSIS RESULTS: MONTEREY COUNTY RANK 6-10

	RANK IN MONTEREY COUNTY				
	6	7	8	9	10
ROUTE	US 101	SR 1	US 101	US 101	SR 156
CROSS STREET	San Miguel Canyon Rd	SR 68	Jolon Rd	Patricia Ln	Meridian Rd
TOTAL POINTS	651	648	551	539	493
RANK IN STUDY AREA	18	19	22	25	29
TOTAL DAILY VOLUME WITHIN 1 MILE	15,283	18,914	7,753	10,318	10,196
LEVEL 2 CHARGERS WITHIN 1 MILE	-	5	-	4	-
DCFC CHARGERS WHITHIN 1 MILE	12	1	2	-	-
IN JUSTICE40 AREA	Yes	No	No	No	No
IN CALENVIROSCREEN 4.0 AREA	No	No	No	No	No
FULL SERVE RESTAURANTS WITHIN 1 MILE	10	10	1	7	7
FAST FOOD RESTAURANTS WITHIN 1 MILE	5	2	4	1	3
GROCERY/ SUPER-CENTER WITHIN 1 MILE	-	-	-	-	-
OTHER SHOPPING WITHIN 1 MILE	-	-	-	-	-
GAS STATIONS WITHIN 1 MILE	4	2	2	1	3
SOCIAL PINPOINT REQUESTS FOR DCFC	-	1	2	2	-
SOCIAL PINPOINT REQUESTS FOR LEVEL 2	2	-	-	1	2
PERCENT OF TRIPS LESS THAN 5 MILES	38%	47%	50%	54%	36%
PERCENT OF TRIPS GREATER THAN 100 MILES	2%	1%	7%	1%	3%
PERCENT OF DRIVERS WITH INCOME LESS THAN $50K	30%	28%	37%	38%	30%

TABLE 73: SITING ANALYSIS RESULTS: SANTA CRUZ COUNTY RANK 1-5

	RANK IN SANTA CRUZ COUNTY				
	1	2	3	4	5
ROUTE	SR 1	SR 1	SR 1	SR 152	SR 9
CROSS STREET	Soquel Dr	State Park Dr	Rio Del Mar Blvd	Holohan Rd	Big Trees Park Rd
TOTAL POINTS	1,366	1,112	750	549	537
RANK IN STUDY AREA	3	6	13	24	26
TOTAL DAILY VOLUME WITHIN 1 MILE	44,497	33,248	28,251	14,139	15,025
LEVEL 2 CHARGERS WITHIN 1 MILE	12	4	2	-	3
DCFC CHARGERS WHITHIN 1 MILE	-	-	-	-	-
IN JUSTICE40 AREA	Yes	Yes	Yes	No	Yes
IN CALENVIROSCREEN 4.0 AREA	No	No	No	No	No
FULL SERVE RESTAURANTS WITHIN 1 MILE	12	32	15	6	9
FAST FOOD RESTAURANTS WITHIN 1 MILE	1	2	-	-	-
GROCERY/ SUPER-CENTER WITHIN 1 MILE	-	-	-	-	-
OTHER SHOPPING WITHIN 1 MILE	2	-	-	-	-
GAS STATIONS WITHIN 1 MILE	5	4	1	0	2
SOCIAL PINPOINT REQUESTS FOR DCFC	11	9	10	1	13
SOCIAL PINPOINT REQUESTS FOR LEVEL 2	11	9	5	2	9
PERCENT OF TRIPS LESS THAN 5 MILES	58%	47%	45%	57%	42%
PERCENT OF TRIPS GREATER THAN 100 MILES	1%	1%	1%	1%	1%
PERCENT OF DRIVERS WITH INCOME LESS THAN $50K	30%	28%	25%	40%	26%

TABLE 74: SITING ANALYSIS RESULTS: SANTA CRUZ COUNTY RANK 6-10

	RANK IN SANTA CRUZ COUNTY				
	6	**7**	**8**	**9**	**10**
ROUTE	SR 9	SR 9	SR 1	SR 1	SR 17
CROSS STREET	San Lorenzo Avenue	Graham Hill Road	Riverside Dr (SR 129)	Freedom Blvd	Plymouth Street
TOTAL POINTS	526	478	460	449	398
RANK IN STUDY AREA	27	31	32	33	42
TOTAL DAILY VOLUME WITHIN 1 MILE	14,478	13,309	8,665	16,453	12,074
LEVEL 2 CHARGERS WITHIN 1 MILE	3	3	8	2	4
DCFC CHARGERS WHITHIN 1 MILE	-	-	-	-	-
IN JUSTICE40 AREA	Yes	Yes	Yes	Yes	Yes
IN CALENVIROSCREEN 4.0 AREA	No	No	Yes	No	No
FULL SERVE RESTAURANTS WITHIN 1 MILE	8	10	2	7	4
FAST FOOD RESTAURANTS WITHIN 1 MILE	-	-	1	-	-
GROCERY/ SUPER-CENTER WITHIN 1 MILE	-	-	-	-	-
OTHER SHOPPING WITHIN 1 MILE	-	-	-	-	-
GAS STATIONS WITHIN 1 MILE	2	2	2	1	0
SOCIAL PINPOINT REQUESTS FOR DCFC	13	13	1	8	2
SOCIAL PINPOINT REQUESTS FOR LEVEL 2	9	10	-	4	2
PERCENT OF TRIPS LESS THAN 5 MILES	42%	43%	47%	42%	55%
PERCENT OF TRIPS GREATER THAN 100 MILES	1%	1%	3%	1%	1%
PERCENT OF DRIVERS WITH INCOME LESS THAN $50K	26%	27%	34%	24%	29%

TABLE 75: SITING ANALYSIS RESULTS: SAN LUIS OBISPO COUNTY RANK 1-5

	RANK IN SAN LUIS OBISPO COUNTY				
	1	2	3	4	5
ROUTE	SR 1	US 101	SR 1	US 101	US 101
CROSS STREET	Highland Dr	W Teft St	22nd St	Las Tablas Rd	Vineyard Dr
TOTAL POINTS	1,412	1,222	802	735	619
RANK IN STUDY AREA	2	4	12	14	20
TOTAL DAILY VOLUME WITHIN 1 MILE	41,913	39,280	29,716	31,205	25,418
LEVEL 2 CHARGERS WITHIN 1 MILE	12	-	-	-	-
DCFC CHARGERS WHITHIN 1 MILE	-	-	-	-	-
IN JUSTICE40 AREA	No	No	No	No	No
IN CALENVIROSCREEN 4.0 AREA	No	No	No	No	No
FULL SERVE RESTAURANTS WITHIN 1 MILE	21	13	2	15	14
FAST FOOD RESTAURANTS WITHIN 1 MILE	8	5	-	-	-
GROCERY/ SUPER-CENTER WITHIN 1 MILE	-	1	-	-	-
OTHER SHOPPING WITHIN 1 MILE	1	-	-	-	-
GAS STATIONS WITHIN 1 MILE	4	4	1	2	2
SOCIAL PINPOINT REQUESTS FOR DCFC	1	3	-	1	1
SOCIAL PINPOINT REQUESTS FOR LEVEL 2	2	3	-	3	4
PERCENT OF TRIPS LESS THAN 5 MILES	58%	44%	61%	38%	38%
PERCENT OF TRIPS GREATER THAN 100 MILES	2%	1%	1%	1%	1%
PERCENT OF DRIVERS WITH INCOME LESS THAN $50K	50%	28%	35%	28%	28%

TABLE 76: SITING ANALYSIS RESULTS: SAN LUIS OBISPO COUNTY RANK 6-10

	RANK IN SAN LUIS OBISPO COUNTY				
	6	7	8	9	10
ROUTE	SR 1	US 101	SR 1	SR 1	SR 1
CROSS STREET	Burton Drive	N Main St	13th Street	Windsor Blvd	Weymouth Street
TOTAL POINTS	441	417	413	410	394
RANK IN STUDY AREA	36	37	39	40	43
TOTAL DAILY VOLUME WITHIN 1 MILE	10,439	17,431	10,769	9,605	8,708
LEVEL 2 CHARGERS WITHIN 1 MILE	1	7	1	-	-
DCFC CHARGERS WHITHIN 1 MILE	-	-	-	-	-
IN JUSTICE40 AREA	No	Yes	No	No	No
IN CALENVIROSCREEN 4.0 AREA	No	No	No	No	No
FULL SERVE RESTAURANTS WITHIN 1 MILE	28	5	10	14	13
FAST FOOD RESTAURANTS WITHIN 1 MILE	-	-	-	-	-
GROCERY/ SUPER-CENTER WITHIN 1 MILE	-	-	-	-	-
OTHER SHOPPING WITHIN 1 MILE	-	-	-	-	-
GAS STATIONS WITHIN 1 MILE	1	1	-	-	-
SOCIAL PINPOINT REQUESTS FOR DCFC	2	-	1	2	2
SOCIAL PINPOINT REQUESTS FOR LEVEL 2	2	1	1	-	0
PERCENT OF TRIPS LESS THAN 5 MILES	55%	38%	35%	56%	54%
PERCENT OF TRIPS GREATER THAN 100 MILES	3%	1%	4%	4%	5%
PERCENT OF DRIVERS WITH INCOME LESS THAN $50K	32%	28%	32%	30%	30%

TABLE 77: SITING ANALYSIS RESULTS: SANTA BARBARA COUNTY RANK 1-5

	RANK IN SANTA BARBARA COUNTY				
	1	2	3	4	5
ROUTE	SR 101	SR 101	SR 101	SR 101	SR 101
CROSS STREET	SR 154	Turnpike Rd	Santa Rosa Rd	Coast Village Rd	Santa Maria Way
TOTAL POINTS	1,664	1,187	1,043	682	662
RANK IN STUDY AREA	1	5	8	16	17
TOTAL DAILY VOLUME WITHIN 1 MILE	47,342	38,641	21,061	20,312	25,319
LEVEL 2 CHARGERS WITHIN 1 MILE	6	5	2	8	-
DCFC CHARGERS WHITHIN 1 MILE	19	-	12	8	-
IN JUSTICE40 AREA	Yes	Yes	Yes	Yes	No
IN CALENVIROSCREEN 4.0 AREA	Yes	Yes	No	No	No
FULL SERVE RESTAURANTS WITHIN 1 MILE	25	8	21	17	1
FAST FOOD RESTAURANTS WITHIN 1 MILE	11	1	8	-	-
GROCERY/ SUPER-CENTER WITHIN 1 MILE	-	-	-	-	-
OTHER SHOPPING WITHIN 1 MILE	-	-	-	-	-
GAS STATIONS WITHIN 1 MILE	6	5	6	1	1
SOCIAL PINPOINT REQUESTS FOR DCFC	5	6	3	7	1
SOCIAL PINPOINT REQUESTS FOR LEVEL 2	5	1	1	5	1
PERCENT OF TRIPS LESS THAN 5 MILES	52%	48%	42%	49%	57%
PERCENT OF TRIPS GREATER THAN 100 MILES	2%	1%	4%	2%	1%
PERCENT OF DRIVERS WITH INCOME LESS THAN $50K	31%	26%	30%	25%	26%

TABLE 78: SITING ANALYSIS RESULTS: SANTA BARBARA COUNTY RANK 6-10

	RANK IN SANTA BARBARA COUNTY				
	6	7	8	9	10
ROUTE	US 101	US 101	SR 1	SR 1	SR 1
CROSS STREET	Eucalyptus Ln	E Union Valley Pkwy	Constellation Rd	Clark Ave	California Blvd
TOTAL POINTS	582	551	499	388	341
RANK IN STUDY AREA	21	23	28	45	49
TOTAL DAILY VOLUME WITHIN 1 MILE	17,560	22,514	15,879	13,950	6,515
LEVEL 2 CHARGERS WITHIN 1 MILE	8	-	-	-	-
DCFC CHARGERS WHITHIN 1 MILE	8	-	-	-	-
IN JUSTICE40 AREA	Yes	No	No	No	No
IN CALENVIROSCREEN 4.0 AREA	No	No	No	No	No
FULL SERVE RESTAURANTS WITHIN 1 MILE	14	1	3	12	-
FAST FOOD RESTAURANTS WITHIN 1 MILE	-	-	1	-	-
GROCERY/ SUPER-CENTER WITHIN 1 MILE	-	-	-	-	-
OTHER SHOPPING WITHIN 1 MILE	-	-	-	-	-
GAS STATIONS WITHIN 1 MILE	1	0	1	1	0
SOCIAL PINPOINT REQUESTS FOR DCFC	5	1	1	-	-
SOCIAL PINPOINT REQUESTS FOR LEVEL 2	4	1	1	2	1
PERCENT OF TRIPS LESS THAN 5 MILES	47%	51%	47%	49%	46%
PERCENT OF TRIPS GREATER THAN 100 MILES	2%	1%	1%	1%	1%
PERCENT OF DRIVERS WITH INCOME LESS THAN $50K	25%	26%	30%	27%	34%

TABLE 79: SITING ANALYSIS RESULTS: SAN BENITO COUNTY RANK 1-5

	RANK IN SAN BENITO COUNTY				
	1	2	3	4	5
ROUTE	US 101	US 101	SR 156	SR 156	US 101
CROSS STREET	Chittenden Rd (SR 129)	Anzar Rd	Union Road	San Juan Road	Betabel Rd
TOTAL POINTS	159	152	104	102	100
RANK IN STUDY AREA	104	106	149	151	156
TOTAL DAILY VOLUME WITHIN 1 MILE	2,001	1,892	1,681	1,582	765
LEVEL 2 CHARGERS WITHIN 1 MILE	-	-	2	2	-
DCFC CHARGERS WHITHIN 1 MILE	-	-	-	-	-
IN JUSTICE40 AREA	No	No	Yes	Yes	No
IN CALENVIROSCREEN 4.0 AREA	No	No	No	No	No
FULL SERVE RESTAURANTS WITHIN 1 MILE	1	-	1	1	-
FAST FOOD RESTAURANTS WITHIN 1 MILE	-	-	-	-	-
GROCERY/ SUPER-CENTER WITHIN 1 MILE	-	-	-	-	-
OTHER SHOPPING WITHIN 1 MILE	-	-	-	-	-
GAS STATIONS WITHIN 1 MILE	-	-	-	-	-
SOCIAL PINPOINT REQUESTS FOR DCFC	-	-	-	-	-
SOCIAL PINPOINT REQUESTS FOR LEVEL 2	-	-	-	-	-
PERCENT OF TRIPS LESS THAN 5 MILES	15%	16%	25%	43%	8%
PERCENT OF TRIPS GREATER THAN 100 MILES	6%	6%	1%	1%	4%
PERCENT OF DRIVERS WITH INCOME LESS THAN $50K	36%	35%	32%	31%	33%

TABLE 80: SITING ANALYSIS RESULTS: VENTURA COUNTY RANK 1-5

	RANK IN VENTURA COUNTY				
	1	2	3	4	5
ROUTE	SR 33	SR 33	SR 33	SR 33	SR 33
CROSS STREET	Meiners Rd	Vilanueva Rd	SR 150	Oak View Ave	Valley Meadow Dr
TOTAL POINTS	480	442	441	416	392
RANK IN STUDY AREA	30	34	35	38	44
TOTAL DAILY VOLUME WITHIN 1 MILE	16,965	16,680	16,435	13,341	14,673
LEVEL 2 CHARGERS WITHIN 1 MILE	-	-	-	3	0
DCFC CHARGERS WHITHIN 1 MILE	-	-	-	-	-
IN JUSTICE40 AREA	No	No	No	Yes	No
IN CALENVIROSCREEN 4.0 AREA	No	No	No	Yes	No
FULL SERVE RESTAURANTS WITHIN 1 MILE	9	4	3	7	4
FAST FOOD RESTAURANTS WITHIN 1 MILE	-	4	4	-	4
GROCERY/ SUPER-CENTER WITHIN 1 MILE	-	-	-	-	-
OTHER SHOPPING WITHIN 1 MILE	-	-	-	-	-
GAS STATIONS WITHIN 1 MILE	2	-	-	2	0
SOCIAL PINPOINT REQUESTS FOR DCFC	-	-	-	-	-
SOCIAL PINPOINT REQUESTS FOR LEVEL 2	-	-	-	-	-
PERCENT OF TRIPS LESS THAN 5 MILES	61%	54%	56%	37%	52%
PERCENT OF TRIPS GREATER THAN 100 MILES	1%	1%	1%	1%	1%
PERCENT OF DRIVERS WITH INCOME LESS THAN $50K	30%	31%	32%	30%	30%

Based on the data presented above, recommended locations for additional charging infrastructure are summarized in **Table 81**. This list includes the top 20 ranked locations based on the siting methodology described above, plus additional locations to ensure that each county in the study area is represented by at least five potential locations. This list does not represent a prescriptive list of locations for additional infrastructure, rather it represents potential locations distributed over all counties participating in this study. It is clear that locations in San Benito County rank lower than the other counties (its highest ranking is 104 and the daily volumes within a mile of each interchange are quite low) however San Benito County is also very underserved by existing charging infrastructure and home to underserved communities.

TABLE 81: RECOMMENDED CHARGING LOCATIONS

#	LOCATION	COUNTY	STUDY AREA RANK	COUNTY RANK	DAILY TRAFFIC VOLUME
1	US 101 AT SR 154 (SAN MARCOS PASS ROAD)	Santa Barbara	1	1	47,342
2	STATE ROUTE 1 AT HIGHLAND DRIVE	San Luis Obispo	2	1	41,913
3	STATE ROUTE 1 AT SOQUEL DRIVE	Santa Cruz	3	1	44,497
4	US 101 AT WEST TEFT STREET	San Luis Obispo	4	2	39,280
5	US 101 AT TURNPIKE ROAD	Santa Barbara	5	2	38,641
6	STATE ROUTE 1 AT STATE PARK DRIVE	Santa Cruz	6	2	33,248
7	US 101 AT STATE ROUTE 46	Monterey	7	1	22,033
8	US 101 AT SANTA ROSA ROAD	Santa Barbara	8	3	21,061
9	US 101 AT ESPINOSA ROAD	Monterey	9	2	20,383
10	STATE ROUTE 156 AT CASTROVILLE ROAD	Monterey	10	3	17,486
11	STATE ROUTE 156 AT STATE ROUTE 183	Monterey	11	4	15,164
12	STATE ROUTE 1 AT 22ND STREET	San Luis Obispo	12	3	29,716
13	STATE ROUTE 1 AT RIO DEL MAR BOULEVARD	Santa Cruz	13	3	28,251
14	US 101 AT LAS TABLAS ROAD	San Luis Obispo	14	4	31,205
15	US 101 AT STATE ROUTE 156	Monterey	15	5	16,035
16	US 101 AT COAST VILLAGE ROAD	Santa Barbara	16	4	20,312
17	US 101 AT SANTA MARIA WAY	Santa Barbara	17	5	25,319
18	US 101 AT SAN MIGUEL CANYON ROAD	Monterey	18	6	15,283
19	STATE ROUTE 1 AT STATE ROUTE 68	Monterey	19	7	18,914
20	US 101 AT VINEYARD DRIVE	San Luis Obispo	20	5	25,418
21	STATE ROUTE 152 AT HOLOHAN ROAD	Santa Cruz	24	4	14,139
22	STATE ROUTE 9 AND BIG TREES PARK ROAD	Santa Cruz	26	5	15,025
23	STATE ROUTE 33 AND MEINERS ROAD	Ventura	30	1	16,965
24	STATE ROUTE 33 AT VILLANUEVA ROAD	Ventura	34	2	16,680
25	STATE ROUTE 33 AT STATE ROUTE 150	Ventura	35	3	16,435

#	LOCATION	COUNTY	STUDY AREA RANK	COUNTY RANK	DAILY TRAFFIC VOLUME
26	STATE ROUTE 33 AT OAK VIEW AVENUE	Ventura	38	4	13,341
27	STATE ROUTE 33 AT VALLEY MEADOW DRIVE	Ventura	44	5	14,673
28	US 101 AT CHITTENDEN ROAD (SR 129)	San Benito	104	1	2,001
29	US 101 AT ANZAR ROAD	San Benito	106	2	1,892
30	STATE ROUTE 156 AT UNION ROAD	San Benito	149	3	1,681
31	STATE ROUTE 156 AT SAN JUAN ROAD	San Benito	151	4	1,582
32	US 101 AT BETABEL ROAD	San Benito	156	5	765

CCZEVS NON-NEVI BASED SITING AUGMENT

The previously described methodology utilized for siting potential charging locations resulted in a list of top ranked locations by county, totaling 50 potential locations (ten each in Santa Barbara, San Luis Obispo, Monterey and Sana Cruz Counties, and five each in San Benito and Ventura Counties). Given that the CCZEV siting suitability points were oriented towards NEVI siting criteria and factor weightings, the siting outcomes tended to cluster locations near more developed unincorporated areas (i.e., areas adjacent to incorporated cities). Consequently, geographic gaps in the US and State Highway system in the study area remained. To remedy, an additional set of locations were identified. In total, twelve additional locations were identified with locations in each study area county. Locations were selected based on potential to serve interregional travel, geographic gap (i.e., range anxiety potential), potential for a desirable and safe charging location, including but not limited to existing amenities (restaurants, bathrooms, and parking) and nearby attractions such as state or national parks. NEVI related criteria such as vehicular traffic (i.e., utilization), one-mile buffer of an interchange, presence of disadvantage communities, etc., were not considered. The added locations are shown on **Figure 74** and summarized by county below.

- Santa Cruz County
  - State Route 1 at Davenport Avenue
    - Location in the town of Davenport
    - Multiple food and retail establishments in local proximity
- Monterey County
  - State Route 1 and Coast Ridge Road
    - Location in Big Sur
    - Multiple lodging opportunities including hotels and campgrounds
    - Existing Tesla Superchargers - appropriate for non-Tesla chargers
  - State Route 1 at Gorda
    - Fills large gap between San Luis Obispo County line and Big Sur
    - Location of existing resort
  - State Route 1 at Carmel Valley Rd. (Carmel-By-The-Sea)

        - Location of the city of Carmel-by-the-Sea
        - Tourist destination and shopping
        - South of the State Route 1 and State Route 68 interchange
    - US 101 at Main Street
        - Location in town of Chualar
        - Serves underserved communities in inland Monterey County
        - No existing EV charging stations - mid-way between Gonzales/Salinas stations
- San Benito County
    - State Route 25 and State Route 146
        - Adjacent to Pinnacles National Park entrance
        - No existing charging infrastructure nearby
        - Serves rural San Benito County
- San Luis Obispo County
    - State Route 1 at Hearst Castle Road
        - Large tourist destination
        - Current charging near this location is Tesla Destination chargers (Level 2)
    - US 101 at Tenth Street
        - Location in town of San Miguel
        - Fills gap on US 101 between Paso Robles and King City (in Monterey County)
        - Location of Mission San Miguel and multiple other amenities
    - US 101 at State Route 58
        - Location in town of Santa Margarita
        - Charging access for vehicles to/from eastern county and Central Valley
        - Multiple amenities in Santa Margarita
- Santa Barbara County
    - US 101 at El Capitan State Beach Road
        - Access to popular El Capitan State Beach
        - Multiple campsites and recreational opportunities
        - Fills charging gap west of metro Santa Barbara and Goleta
    - US 101 at Padaro Lane
        - Location near town of Carpinteria
        - Fills charging gap between Carpinteria and Santa Barbara
        - Near multiple tourist destinations and attractions
    - US 101 at Gaviota Rest Stop[54]

[54] Federally funded highways do not allow commercial activities at highway rest stops due to regulatory policy. Since most EV chargers are privately owned and charge a fee for use (much like gas stations), they are considered "commercial activity" and therefore prohibited. As a result, any chargers installed at the Gaviota Rest Stop would need to provide free charging. Due to this, the original site recommendations did not include rest stops like Gaviota to avoid implying responsibility on behalf of CalTrans. However, CalTrans has shown its support for chargers at rest stops in recent discussions. They have stated that due to the restrictions on commercial activities, many of these chargers utilize solar to provide power. It should be noted, however, that solar does not provide charging speeds that meet NEVI standards. In addition, as mentioned previously, the scope of this study adhered to NEVI criteria, which focus on highway interchanges and identified 1-mile buffer areas rather than specific sites to allow for flexibility.

        - Potential for Level 2 charger at Caltrans rest stop
        - Fills gap between Goleta and Buellton
- Ventura County
    - US 101 at Bates Road
        - Adjacent to Rincon Point Park
        - Adjacent amenities and attractions

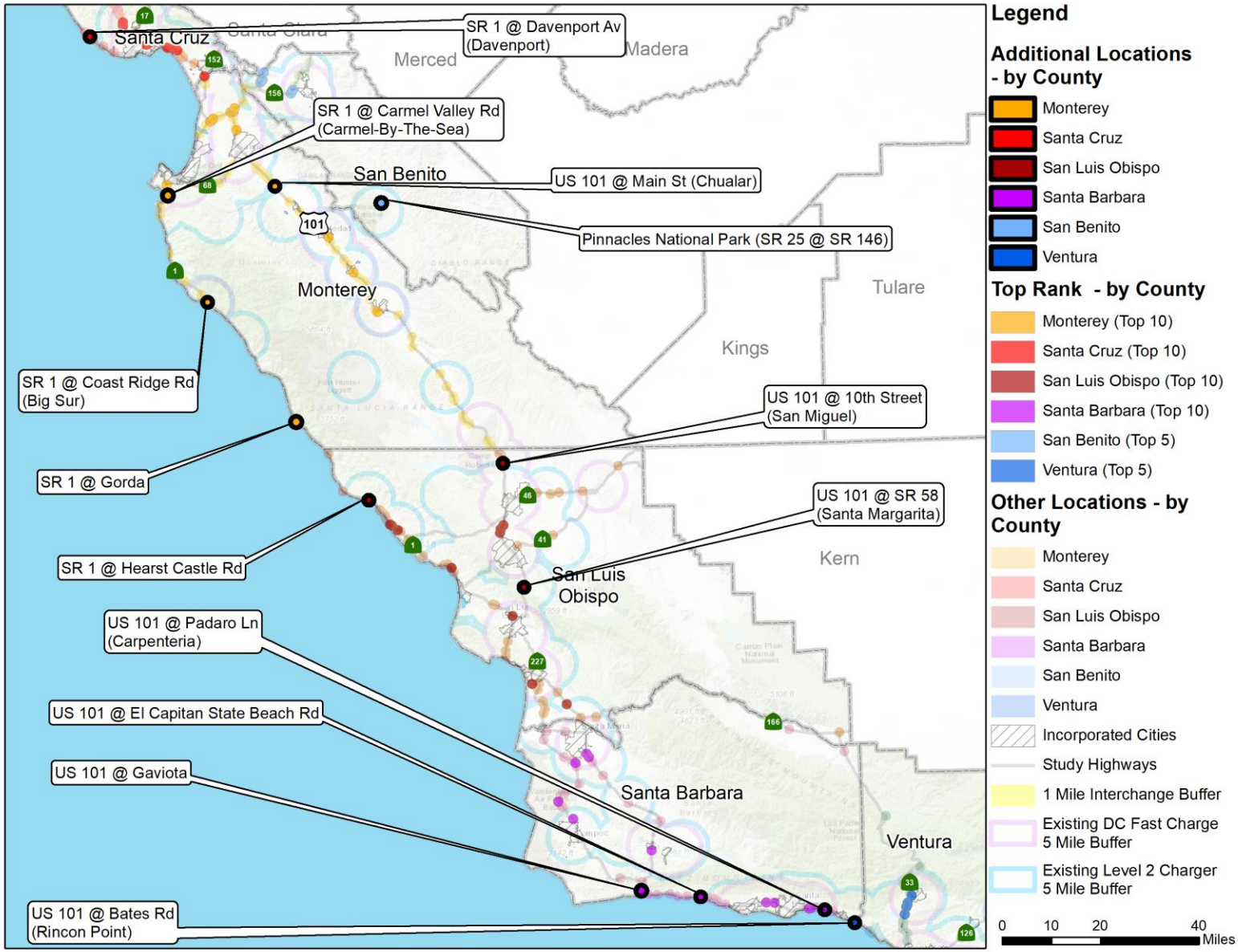


FIGURE 74: CCZEVS ADDED SITE LOCATIONS

APPENDIX VIII: FUNDING

Funding opportunities in the electromobility space continue to grow rapidly. Covered expenses include the purchase or lease of EVs, the purchase and installation of charging infrastructure, and expenses for hydrogen fuel cell electric vehicles (FCEVs) and their refueling infrastructure. Several dozen funding opportunities exist federally as well as in each state, with eligible applicants ranging from private customers, state and local government agencies, tribal governments, school districts, transit agencies, utilities, fleet owners and operators, to vehicle dealers and charging infrastructure vendors. Funding programs typically have a fixed term and a limited allocation of funds. However, the range of funding options has vastly expanded over the past couple of years and especially in the past few months. Information on specific programs can change quickly and we encourage interested parties to monitor and identify funding sources timely and carefully.

This memo serves as an overview of the most relevant programs with substantial funding resources. Numerous other funding opportunities related to electric vehicles and their charging infrastructure exist in addition to those mentioned.

The resources listed below include information on funding opportunities which we recommend monitoring:

- Alternative Fuels Data Center Overview of Federal and State Laws and Incentives: https://afdc.energy.gov/laws
- California Governor's Office of Business and Economic Development (GO-Biz) ZEV Funding Resources library: https://business.ca.gov/industries/zero-emission-vehicles/zev-funding-resources/
- PlugStar searchable database by ZIP code: https://plugstar.com/tools/incentives
- DSIRE (database of clean energy programs): https://programs.dsireusa.org/system/program

FEDERAL FUNDING

National Electric Vehicle Infrastructure (NEVI) Program

The infrastructure bill provides a total of $7.5 billion in federal funding for EV charging infrastructure. A funding source only available to states, the National Electric Vehicle Infrastructure (NEVI) Program, allocates funding to all states to deploy EV charging infrastructure along designated alternative fuel corridors (AFCs).[55] The NEVI program is part of the Infrastructure Investment and Jobs Act, a $1 trillion infrastructure bill passed by Congress in November 2021.[56] The bill required states to submit their respective NEVI implementation plans to the newly established Joint Office of the Departments of Energy and Transportation[57] by August 2021. California submitted their NEVI plan August of

[55] US Dept. of Energy-Alternative Fuels Data Center: National Electric Vehicle Infrastructure (NEVI) Formula Program: https://afdc.energy.gov/laws/12744

[56] US Dept. of Transportation-Federal Highway Administration: Bipartisan Infrastructure Law *National Electric Vehicle Infrastructure Formula Program*: https://www.fhwa.dot.gov/bipartisan-infrastructure-law/nevi_formula_program.cfm

[57] Joint Office of Energy and Transportation: https://driveelectric.gov/

2022.[58] The California Energy Commission will manage funding solicitations or Grant Funding Opportunities (GFO). The DOT will also establish an additional grant fund for states and localities that require additional assistance. At the time of this writing, further details on the distribution of funding and eligibility have not been released.

Volkswagen Settlement Funds

Volkswagen's violation of the Clean Air Act by using illegal emissions testing "defeat" devices in approximately 590,000 model year 2009 to 2016 diesel vehicles has resulted in the Volkswagen Settlement Funds.[59] The settlement has different elements, one of which includes zero-emission vehicle investments, amounting to more than $2.8 billion. California's portion of these funds amounts to $423 million,[60] assigned to different project categories as shown in **Table 82**. As of August 2022, about $70 million of these have been awarded to projects across the state. The different project categories have different eligibility criteria and are administered by different Air Quality Management District (San Joaquin Valley, Bay Area, South Coast). Generally, the funds can be used for projects in the heavy-duty sector (except for one project category that reserves funds for the light-duty sector), including on-road freight trucks, transit and shuttle buses, school buses, forklifts and port cargo handling equipment, commercial marine vessels, and freight switcher locomotives.[61] A minimum of 50% of the funds will be directed to low-income or disadvantaged communities.[62] At the time of this writing, funding for light duty ZEV infrastructure and school buses has been closed, an additional round for school buses may open at a later date.

[58] California's NEVI implementation plan, as prepared by Caltrans and the California Energy Commission and submitted in August 2022: https://dot.ca.gov/-/media/dot-media/programs/sustainability/documents/nevi/2022-ca-nevi-deployment-plan-a11y.pdf

[59] United States Environmental Protection Agency: Volkswagen Clean Air Act Civil Settlement: https://www.epa.gov/enforcement/volkswagen-clean-air-act-civil-settlement

[60] National Association of Clean Air Agencies: VW State and Local Agency Information: https://ww2.arb.ca.gov/resources/documents/californias-beneficiary-mitigation-plan

[61] California Air Resources Board: Volkswagen Environmental Mitigation Trust for California: https://ww2.arb.ca.gov/our-work/programs/volkswagen-environmental-mitigation-trust-california

[62] California VW Mitigation Trust: https://www.californiavwtrust.org/ev-infrastructure/

TABLE 82: CALIFORNIA VOLKSWAGEN MITIGATION TRUST PROJECT CATEGORIES

PROJECT CATEGORY	APPLICATION TYPE	BENEFITING DISADVANTAGED OR LOW-INCOME COMMUNITIES	TOTAL AMOUNT ALLOCATED
ZERO-EMISSION TRANSIT, SCHOOL, AND SHUTTLE BUSES	First-Come/First-Served	50%	$130 million
ZERO-EMISSION CLASS 8 FREIGHT AND PORT DRAYAGE TRUCKS	First-Come/First-Served	50%	$90 million
ZERO-EMISSION FREIGHT AND MARINE PROJECTS	First-Come/First-Served	75%	$70 million
COMBUSTION FREIGHT AND MARINE PROJECTS	First-Come/First-Served	50%	$60 million
LIGHT-DUTY ZERO-EMISSION VEHICLE INFRASTRUCTURE	Competitive Solicitation	35%	$10 million
RESERVE (INCL. ADMINISTRATIVE COSTS)			$63 million
TOTAL		**> 50%**	**$423 million**

Source: https://ww2.arb.ca.gov/resources/documents/californias-beneficiary-mitigation-plan

Summary of Federal Funding

Table 83 below provides a summary of federal funding opportunities and relevant key information for each.

TABLE 83: SUMMARY OF FEDERAL FUNDING SOURCES

SOURCE	PROGRAM/AWARD NAME	ELIGIBLE APPLICANTS	CATEGORY	APPLICATION TYPE	BENEFITING DISADVANTAGED OR LOW-INCOME COMMUNITIES	FUNDING AMOUNT
THE U.S. DEPARTMENT OF TRANSPORTATION-FEDERAL HIGHWAY ADMINISTRATION	National Electric Vehicle Infrastructure Program (State Allocations)	States	DCFC along highway corridors	N/A: Awarded to States on a formula basis	40% as per Justice40	Varies by formula
THE U.S. DEPARTMENT OF TRANSPORTATION-FEDERAL HIGHWAY ADMINISTRATION	National Electric Vehicle Infrastructure Program (DOT Allocation)	States	EVSE, H2 and Alt. Fuel stations in community locations	Competitive Grant	40% as per Justice40	Up to 80%
VOLKSWAGEN	Volkswagen mitigation trust for California	Owners of transit buses, school buses and shuttle buses	ZEV Transit, School, and Shuttle Buses	First-Come/First-Served	50%	Up to $400,000 per vehicle
VOLKSWAGEN	Volkswagen mitigation trust for California	Public and private entities that own and operate eligible vehicles	ZEV Class 8 Freight and Port Drayage Trucks	First-Come/First-Served	50%	Up to $200,000 per vehicle
VOLKSWAGEN	Volkswagen mitigation trust for California	Individuals, businesses, nonprofits, or government entities based in California	ZEV Freight and Marine Projects	First-Come/First-Served	75%	Up to $10 Million (last round)

SOURCE	PROGRAM/AWARD NAME	ELIGIBLE APPLICANTS	CATEGORY	APPLICATION TYPE	BENEFITING DISADVANTAGED OR LOW-INCOME COMMUNITIES	FUNDING AMOUNT
VOLKSWAGEN	Volkswagen mitigation trust for California	Public and private entities that own and operate eligible equipment anywhere in California	Combustion Freight and Marine Projects	First-Come/First-Served	50%	Cap per entity: 10% ($ 3.0 million)

STATE SPECIFIC CALIFORNIA PROGRAMS

The following incentive programs and projects are specific to California, administered and/or funded by state agencies, such as the California Air Resources Board (CARB)[63] or the California Energy Commission (CEC).[64] Some of the funding available in California-specific programs derives from revenue continually generated in the state's greenhouse gas emissions cap-and-trade program[65] or the Low Carbon Fuel Standard (LCFS).[66]

California Electric Vehicle Infrastructure Project (CALeVIP)

The California Electric Vehicle Infrastructure Project (CALeVIP) is funded by the California Energy Commission and implemented by the Center for Sustainable Energy. The program is split into different regions across California, including the Central Coast Region. Funding availability depends highly on the region and should be checked before considering an application. DCFC chargers are generally subject to tighter funding constraints; in many areas, only Level 2 charger funding remains. Eligible applicants include public agencies, businesses, non-profits, tribal governments, and other site owners.[67] The Central Coast region is covered by CALeVIP's Central Coast (for Monterey, San Benito, and Santa Barbara Counties) and South-Central Coast (for Santa Barbara, San Luis Obispo, and Ventura Counties) branches. The Central Coast branch is presented by Central Coast Community Energy. The South-Central Coast branch is presented in partnership with Central Coast Community Energy, Clean Power Alliance, SLOCOG, and the Air Pollution Control Districts of San Luis Obispo, Santa Barbara, and Ventura counties.

The Central Coast Incentive Project offers up to $70,000 or 75% of project cost (whichever is less) per DC fast charger and an additional $10,000 if the installation site is in a disadvantaged community. For level 2 chargers, the project offers up to $5,000 per connector and an additional $500 if the charger is located in a disadvantaged community. Another $1,000 is available for chargers being installed in Multi-family Housings. At the time of this writing all funds appear to have been issued, reserved, or provisionally reserved though level 2 funding is listed as available.[68]

The South Central Coast Incentive Project offers up to $3,500, or 75% of project costs (whichever is less) with an additional $500 if the charger is located in a disadvantaged community and an additional $2,000 if located in a Multi-family Housing. The project offers up to $30,000 or 75% of project costs (whichever is less) for DC Fast Chargers that deliver 50 kW - 99.99 kW, and an additional $10,000

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[63] California Air Resources Board: https://ww2.arb.ca.gov/

[64] California Energy Commission: https://www.energy.ca.gov/

[65] California Air Resources Board: Cap-and-Trade Program: https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program

[66] California Air Resources Board: Low Carbon Fuel Standard: https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard

[67] CALeVIP: https://calevip.org/

[68] CALeVIP Central Coast Incentive Project: https://calevip.org/incentive-project/central-coast

for projects in disadvantaged communities. For DC Fast Chargers that deliver 100kW or more, the project offers up to $60,000; or 75% of the total project cost (whichever is less) and an additional $20,000 for projects located in disadvantaged communities. At the time of this writing all funds appear to have been issued, reserved, or provisionally reserved though level 2 funding is listed as available.[69]

CALeVIP 2.0 Project: Golden State Priority Project (GSPP)

The Golden State Priority project will provide a DC Fast Charger rebate and currently includes the Central and Eastern region counties and may add additional regions as funding availability allows. The application window will open around January 2023 with $10 million allocated to the Central region and $20 million to the Eastern region. Funding is only available for sites located within DACs or low-income communities though subsequent incentive projects under CALeVIP 2.0 may fund projects outside of DACs and LICs.

Site requirements no longer require 24/7 site access and have been reduced to a minimum of 18 hours per day, 7 days a week, excluding holidays. Only CCS will be eligible for funding, Tesla and CHAdeMO may be installed, but will not be considered for funding. Chargers must also be networked (Wi-Fi, ethernet, or cellular connection) and use OCPP. Construction cannot have started prior to the closing of the application window.

4-20 connecters can be funded and up to 50% of total approved costs covered by the program. Costs incurred starting September 1, 2022, will be eligible. **Table 84** outlines the rebate caps per active connector.

TABLE 84: GOLDEN STATE PRIORITY PROJECT REBATE CAPS

GUARANTEED OUTPUT PER ACTIVE CONNECTOR	REBATE CAPS PER ACTIVE CONNECTOR
150-275 KW	up to $55,000 per active connector
275 KW+	275 kW+: up to $100,000 per active connector
BELOW 150 KW	Below 150 kW: no funding

Source: https://calevip.org/incentive-project/golden-state-priority-project

Low Carbon Fuel Standard (LCFS)

Though not a direct source of rebates, incentives, or other upfront funding, the Low Carbon Fuel Standard (LCFS) is a market-based approach to incentivizing clean energy administered by CARB.

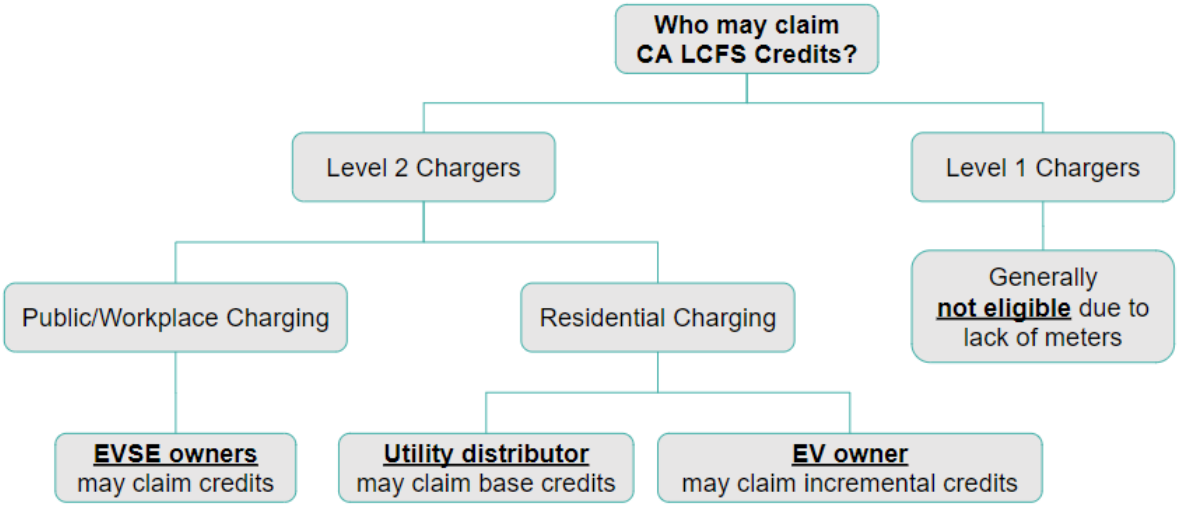
[69] CALeVIP South Central Coast Incentive Project: https://calevip.org/incentive-project/south-central-coast

The LCFS creates a marketplace where air polluters may acquire credits to continue to operate, while clean energy users sell credits to generate revenue.[70]

Owners of EV chargers, utility distributors, and EV owners may be eligible for California LCFS credits, as long as the EV charging is metered, outlined by **Figure 75**. Since EV charging must be metered to qualify for LCFS credits, Level 1 chargers are usually not eligible unless they are individually metered like a Level 2 or DC Fast charger. The owner of a public charger can claim LCFS credits if the charger is publicly available. While in the case of residential charging, the base LCFS credit (similar to the LCFS credit from a public charger) may be claimed by the utility distributor while an incremental credit may be claimed by the EV owner as long as charging is metered.[71]

LCFS credits have the potential to generate a significant stream of revenue for the charging station owner or the utility. A 7.2 kW Level 2 charger could generate about $1,725 of LCFS credits annually if it is utilized about 7-8 hours per day and 3-5 days per week, at an LCFS credits price of $200 per ton. The LCFS credit value is subject to market fluctuation and has been decreasing since mid-2021 to be at $66 per ton as of Oct. 2022.[72] The LCFS credits could be a significant revenue stream that could potentially offset operating costs or repay capital expenditures of the chargers.

FIGURE 75: WHO MAY CLAIM CALIFORNIA LCFS CREDITS?



Source: California Air Resources Board

[70] California Air Resources Board: Low Carbon Fuel Standard: https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard

[71] California Air Resources Board: LCFS ZEV Infrastructure Crediting: https://ww2.arb.ca.gov/resources/documents/lcfs-zev-infrastructure-crediting

[72] NESTE: California Low Carbon Fuel Standard Credit Price: https://www.neste.com/investors/market-data/lcfs-credit-price#301065d0

Upcoming state of California Funding

California Energy Commission (CEC) Investment Plan

In December of 2022, the California Energy Commission (CEC) approved the 2022-2023 Investment Plan Update that increased the budget of the Clean Transportation Program by thirty times 2019 levels with 50% of funding benefitting priority populations.[73] The Clean Transportation Program has been investing in a broad portfolio of alternative fuel transportation projects throughout the state. As part of that program, over four years, the CEC will distribute nearly $2.9 billion funding as follows:

- $1.7 billion for medium- and heavy-duty ZEV infrastructure.
- $900 million for light-duty EV charging infrastructure.
- $118 million for ZEV manufacturing.
- $90 million for hydrogen refueling infrastructure.
- $97 million for emerging opportunities such as aviation, locomotive, marine vessels and vehicle-grid integration.
- $15 million zero- and near-zero-carbon fuel production and supply.
- $15 million for low-carbon fuels.
- $10 million for workforce development.

California Energy Commission (CEC) Convenient, High-Visibility, Low-Cost Level 2 Charging (Chill-2)

The CEC Clean Transportation Plan (CTP) will fund the Convenient, High-Visibility, Low-Cost Level 2 Charging (CHiLL-2) grant. The primary goal of the CHiLL-2 grant will be to increase perception of Level 2 charging through high-density, highly visible installations. Additional goals include testing business models for charging such as smart charging and observing utilization across site types. $24 million in total funding is available and the CEC proposes two awards totaling $10 million each and 25% match funding required. Eligible projects will need to include a minimum of 500 Level 2 chargers within a 1-mile radius across two or more different site types. 50% or more of the chargers must also be installed in disadvantaged/low-income communities. Applications are due in Feb/March 2023.[74]

[73] CEC Approves $2.9 Billion Investment for Zero-Emission Transportation Infrastructure: https://www.energy.ca.gov/news/2022-12/cec-approves-29-billion-investment-zero-emission-transportation-infrastructure

[74] California Energy Commission: Convenient, High-Visibility, Low-Cost Level 2 Charging (CHiLL-2) grant presentation

California Energy Commission (CEC) Communities in charge

Communities in Charge will provide funding for light-duty Electric Vehicle Supply Equipment (EVSE). The CEC awarded CALSTART with $250 million block grant (GFO-20-607) in April of 2021 to design and implement this project. CALSTART will collaborate with CEC and the public to design Communities in Charge projects. [75]

California Air Resources Board Clean Mobility Options

The California Air Resources Board (CARB) offers the Clean Mobility Options program that provides funding for two types of projects, Clean Mobility Projects, and Community Transportation Needs Assessments.[76] The funding window has not been announced.[77]

Green School Bus Grants

As part of California's 2022-2023 budget, Governor Newsom proposed $1.5 billion of funding for a competitive grant program for school districts to replace nonelectric school buses with electric buses and construct charging stations ("Green School Bus Grants"). Grant awards would be at least $500,000 each and be prioritized in areas with a high concentration of low-income students and English learners and smaller and more rural school districts. It is estimated that the program could help replace 3,000 older buses with electric buses.[78]

[75] California Energy Commission Communities in Charge block grant: https://www.energy.ca.gov/proceedings/energy-commission-proceedings/communities-charge

[76] CARB's Clean Mobility Options program: https://cleanmobilityoptions.org/

[77] California Energy Commission- 2021–2023 Investment Plan Update for the Clean Transportation Program: https://www.energy.ca.gov/publications/2021/2021-2023-investment-plan-update-clean-transportation-program

[78] Green School Bus Grants: https://lao.ca.gov/Publications/Report/4525

Summary of California Funding

Table 85 below provides a summary of California funding programs related to ZEV infrastructure and relevant key information for each.

TABLE 85: SUMMARY OF CA ZEV INFRASTRUCTURE FUNDING

SOURCE	PROGRAM/AWARD NAME	ELIGIBLE APPLICANTS	CATEGORY	APPLICATION TYPE	BENEFITING DISADVANTAGED OR LOW-INCOME COMMUNITIES	FUNDING AMOUNT
CEC	CALeVIP	Site owner or their authorized agent	Level 2 & DCFC	Rebate	Varies by region	Varies by region
CEC	GSPP	Site owner or their authorized agent	DCFC-150kW-274.99kW	Rebate	100%	Up to 50% of project costs capped at $55,000 per connector
CEC	GSPP	Site owner or their authorized agent	DCFC-274kW+	Rebate	100%	Up to 50% of project costs capped at $100,000
CA	LCFS	Electric Utilities, EVSE and EV owners	Clean Energy Credits	LCFS Marketplace	n/a	Market Based
CEC	TBD	TBD	Light duty EVSE	TBD	TBD	$314 million total

SOURCE	PROGRAM/AWARD NAME	ELIGIBLE APPLICANTS	CATEGORY	APPLICATION TYPE	BENEFITING DISADVANTAGED OR LOW-INCOME COMMUNITIES	FUNDING AMOUNT
CEC	TBD	TBD	Med.-Heavy Duty ZEV Infrastructure	TBD	TBD	$690 million total
CEC	TBD	TBD	H2 Infrastructure	TBD	TBD	$77 million total
CEC	CHiLL-2	All public and private entities in the state of CA	Level 2	Competitive Grant	50%	$10 million with 25% match
CEC/CALSTART	Communities in Charge	TBD	TBD	TBD	TBD	TBD
CARB	Clean Mobility Options	Government entity, Nonprofit organization and CA Native American Tribal Government	Clean Mobility Projects and Transportation Needs Assessments	Voucher	100%	Up to $1 million for projects and $100k for assessments
CA	Green School Bus Grants	School districts	School Buses and EVSE	Competitive Grant	TBD-Will prioritize DAC	Minimum $500k each

LOCAL AND REGIONAL FUNDING PROGRAMS

Pacific Gas and Electric (PG&E) Programs

Pacific Gas and Electric (PG&E) is the electric utility for the majority of the central coast region. The California Public Utilities Commission (CPUC) authorizes programs run by investor-owned utilities such as Pacific Gas and Electric (PG&E).

PG&E EV Fast Charge Program

Pacific Gas and Electric (PG&E) runs an "EV Fast Charge Program" which pays to install electric infrastructure from the utility pole to the parking space at qualifying customer sites to support the expansion of publicly available DC Fast Chargers. This includes site design, permitting, and construction. A limited number of sites are selected on a competitive basis. Sites need to be accessible to the public 24 hours a day, 7 days a week. Additionally, sites meeting Disadvantaged Community (DAC) requirements may qualify for a rebate up to $25,000 per charger. A total of $22.4 million of funding is available for the years 2020-2025.[79]

PG&E EV Charge program

Similar to PG&E's Fast Charge Program, although not limited to fast charging stations, the "EV Charge Program" helps pay for infrastructure expenses related to EV charger installations, often covering 60-80% of total project costs depending on if the site host or the utility will own the chargers. A minimum of 10 parking spaces with EV charging need to be included in each project, with different possible ownership models. While the original program is fully subscribed at the time of this writing as of December 2022, the California Public Utility Commission approved $52,248,000 in funding for PG&E to implement the first phase of their EV Charge 2 program.[80]

Southern California Edison (SCE) Programs

Southern California Edison (SCE) is the electric utility serving the remaining portion of the Central coast region including Santa Barbara County and all of Ventura County. Like PG&E, SCE is an investor-owned utility governed by The California Public Utilities Commission (CPUC).

SCE Electric Vehicles for Business/Charge Ready Program

This program is run by SCE to provide rebates for businesses, the public sector, and multi-family property owners for the purchase and installation of qualifying EV charging equipment. The program was subdivided into 3 parts: "New Construction Rebate", "Charging Infrastructure and Rebate", "Turn-Key Installation", each with different eligibility criteria, rebate amounts, and other program

[79] PG&E: EV Fast Charge Program: https://www.pge.com/evfastcharge

[80] California Public Utility Commission: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M500/K043/500043974.PDF

specifics. Beginning September 1, 2022, new program applications are temporarily being added to a waitlist. An update will be provided January 2023.[81]

San Luis Obispo County Air Pollution Control District

The San Luis Obispo County Air Pollution Control District offers an "Alt Fuel Infrastructure Grant Program" with $130,000 of available funding. Business, public agencies, and individuals are eligible to apply for grants to be used for new non-residential Level 2 or DCFC EV charging stations and the expansion of existing ones. Multi-family Housing sites (residential) are also considered on a case-by-case basis.[82]

Santa Barbara County Air Pollution Control District

The Santa Barbara County Air Pollution Control District offers grant funding for the installation of electric, hydrogen and natural gas fueling stations. Projects must be located within Santa Barbara County to be eligible. Recipients will be eligible to receive between $10,000-$250,000.[83] Projects will be competitively ranked with priority going to projects located withing low income and disadvantaged communities as defined by the California Climate Investments Priority Populations 2022 CES 4.0 Map.[84] Funding will cover new, the conversion of existing, and the expansion to existing non-residential electric vehicle charging (level 2 or greater), hydrogen and natural gas fueling stations. These stations may serve public, workplace, and fleet needs. Out of county applicants may apply if infrastructure is located within Santa Barbara County and Multi-family Housing projects will be considered on a case-by-case basis. At the time of this writing, submissions have been closed for 2022 applications; 2023 funding has not yet been announced.

[81] Southern California Edison: Charge Ready: https://www.sce.com/evbusiness/chargeready

[82] The San Luis Obispo County Air Pollution Control District: SLO County EV & Alternative Fuel Infrastructure Programs: https://www.slocleanair.org/community/grants/altfuel.php

[83] Santa Barbara County Air Pollution Control District: 2022 Clean Air Grants for Infrastructure: https://www.ourair.org/ev-charging-program

[84] California Climate Investments Priority Populations 2022 CEC 4.0 Map: https://webmaps.arb.ca.gov/PriorityPopulations/

Summary of Local and Regional Funding Programs

Table 86 below provides a summary of local and regional funding programs and relevant key information for each.

TABLE 86: SUMMARY OF LOCAL AND REGIONAL FUNDING PROGRAMS

SOURCE	PROGRAM/AWARD NAME	ELIGIBLE APPLICANTS	CATEGORY	APPLICATION TYPE	BENEFITING DISADVANTAGED OR LOW-INCOME COMMUNITIES	FUNDING AMOUNT
PG&E	EV Charge program	Individuals, public and private entities who are PG&E customers	Level 2 EVSE	Rebate/ First come, first served	n/a	Make-ready: 100% Installation and EVSE: 60%-80%
PG&E	EV Fast Charge program	Private entities	DCFC	Competitive	DAC's may qualify for EVSE funding	Make-ready: 100% and PG&E owned DAC: up to 25% EVSE costs
SCE	Charge Ready- New Construction Rebate Program	Public and private entities who are SCE customers	New Multifamily Construction EVSE: Level 1&2	Rebate	n/a	up to $3,500 per port
SCE	Charge Ready- Charging Infrastructure and Rebate Program	Public and private entities who are SCE customers	Multifamily, Commercial or public sector EVSE	Rebate	n/a	up to 80% of the estimated costs

SOURCE	PROGRAM/AWARD NAME	ELIGIBLE APPLICANTS	CATEGORY	APPLICATION TYPE	BENEFITING DISADVANTAGED OR LOW-INCOME COMMUNITIES	FUNDING AMOUNT
SCE	Charge Ready-Turnkey Installation Program	Public and private entities who are SCE customers	EVSE installation for Multifamily properties in Disadvantaged Communities	First come, first served	100%	100%, equipment will be owned and operated by SCE
SAN LUIS OBISPO COUNTY AIR POLLUTION CONTROL DISTRICT	Alt Fuel Infrastructure Grant Program	Individuals, public and private entities	non-residential Level 2/DCFC EVSE	First come, first served	n/a	Capped at $300,000
SANTA BARBARA COUNTY AIR POLLUTION CONTROL DISTRICT	2022 Clean Air Grants for Infrastructure	Public and private entities	non-residential Level 2/DCFC EVSE and Alternative fueling stations	Competitive grant	Priority given to low-income and disadvantaged communities	$10,000-$250,000

PRIVATE FINANCING

There is an emerging opportunity to obtain the full amount of capital needed to fund charging infrastructure, charging only a usage fee to the user. Such outside capital will allow the fleet EVSE hosts to avoid the high up-front capital expenditure and still realize the lower Total Cost of Operating for EVs. Although private EVSE operators have existed for a while, it may make more sense from a financial and risk perspective to partner with a company that finances the chargers, the vehicles and all future maintenance, upgrades, and expansions. The outside capital generally would consist of a combination of equity and debt and will be tailored to the project. Private financing groups like 7Gen[85] and investment groups like Sustainability Partners[86] have established some of the most creative and beneficial structures to ensure the highest excellence and efficiency for public sector customers.

[85] https://www.7gen.com/

[86] https://www.sustainability.partners/

APPENDIX IX: PUBLIC COMMENT

The Central Coast Zero Emission Vehicle (CCZEV) Strategy underwent public comment from April 15th to June 9th, 2023, a 55-day public review period. The full plan was posted on the project website[87] for the duration of this period. The plan received comments from the following jurisdictions:

- City of Santa Barbara
- AMBAG Board
- SBCAG
- SLOCOG
- Caltrans
- California Energy Commission

A small number of comments were received by individual members of the public; however, these did not relate to the CCZEV Strategy.

The following table includes a summary of comments received for the CCZEV strategy as well as responses to these comments.

[87] http://www.centralcoastzevstrategy.com/

PUBLIC COMMENT AND RESPONSES

TABLE 87: SUMMARY OF COMMENT AND RESPONSES TO CCZEV STRATEGY

COMMENTER	DATE RECEIVED	COMMENT	RESPONSE
CITY OF SANTA BARBARA	5/9/23	1. Appendix V: a. DCFC peach circle and the restaurant's peach square are too similar on the map, and different colors should be selected to more clearly identify features at each interchange. b. Divide DCFCs counted into different categories: i. DCFCs within 1-mile data should be parsed out into Tesla-specific and CCS. Although Tesla may open up their proprietary fast chargers to other manufacturers at some point in the future, the timing is still unknown, and should not be assumed to be anytime soon. Thus, combining the Tesla heads/chargers in this count is misleading, since there may actually be very few DCFCs near an interchange that non-Tesla drivers can access. ii. CCS DCFCs should be parsed out into >150kW and <150kW.	1. Appendix V: a. We cannot change the color palette at this stage of the process as it would necessitate changes to all maps for all counties in the report. These maps were widely circulated throughout the development of this study, with no objections to the color palette identified. DKS will provide all GIS files to SBCAG at the conclusion of this study to allow for any future edits of content or design features at their discretion. b. Divide DCFCs counted into different categories: i. DCFC is categorized in each figure of Appendix V by "DCFC only" vs. "Tesla" by a red circle Tesla Symbol for Tesla Superchargers and by a peach circle for DCFC only. ii. At the time this study was developed, data about DCFC

			Within Santa Barbara, there are several older 50 kW DCFCs that provide a much slower charge rate compared to almost all new DCFCs (NEVI, CALeVIP 2.0, and other grants have mostly standardized on 150kW+). From a public interface standpoint, this is the difference between a 45-60 minute charge and a 10-15 minute charge.		charger speeds were not readily available for "existing" EV charging infrastructure, this explanation will be added to the methodology section as outlined in Appendix VII. However, this will not have a notable impact for grants and ability to use the plan given that all "future" EV charging infrastructure funded by the National Electric Vehicle Infrastructure (NEVI) program must be greater than 150kW. This is documented Appendix VII.
		iii.	Using the example of Santa Barbara County analysis, which identifies 19 DCFCs within 1 mile of the San Marcos pass/101 interchange. However, 12 of these are Tesla only and 3 are less than 150 kW, leaving only 4 DCFCs with a CCS head and 150kW+. The difference between 19 and 4 is significant. The Coastal village rd(ranked #16 overall and #4 in SB county) and Eucalyptus Lane (ranked 6 in SB county) locations, all 8 counted DCFCs are Tesla only.	iii.	Example noted, see response to b. ii.
		iv.	Areas ranked #1 (3) and # 16 (1) both have several grocery stores within 1-mile radius not counted.	iv.	The project team utilized the best available data at the time of this analysis. It is possible some businesses may not have been included in the data set as new businesses may have opened after the data set was created or

			categorization within the database may have been interpreted differently. This explanation has been added to the "data sources" section of Appendix VII. Our recommendations target general areas based on the criteria disclosed in the methodology section of this report (see Chapter 3 and Appendix VII). Those seeking to install charging stations should evaluate specific installation sites on a case-by-case basis. This report provides considerations for siting chargers in Chapter 3.
		2. Appendix VII a. Existing EVSE within 1 mile of interchange should be on a sliding scale based on how many and what Kw of chargers are provided. i. <49kW installed = 0 pt ii. >50 Kw, <100kW = -1 pt iii. >101 Kw, <150kW = -2 pt iv. >151kW = -3pt v. Tesla supercharger = 0 pt b. Figure 24: i. "DCFC only" and "Tesla Supercharger" dots are almost identical and indistinguishable when looking at the map. Recommend using a different color for one of the two.	2. Appendix VII a. Given the data available, we could not include this level of granularity in our siting criteria. This explanation has been added to the "data sources" section of Appendix VII See response to 2. B ii b. Figure 24 i. At this stage of the plan, we cannot make cosmetic changes to the color palette. However events in recent weeks (at the time of this writing) have potentially put NACS (Tesla) on the path to becoming the standard DCFC connector. As a result, differentiation may become a moot point in the near future.

		ii. Data is not digestible at this scale. Recommend making separate maps for each county.	ii. This comment is not applicable to Figure 24. Therefore, no changes have been made. It should be noted that upon project completion, DKS will provide SBCAG with all GIS shape files to update as needed.
		c. Due to its population density and isolated location, Lompoc in Santa Barbara County should be considered as a priority site for equity concerns.	c. To maintain consistency with federal grants our siting analysis aligns with NEVI standards and utilizes Justice40 and CalEnviroscreen criteria for identifying disadvantaged communities. Additionally, in order to address geographic gaps in the siting analysis results, additional sites will be identified, and an updated map will be included in the final report in Appendix VII.
		d. 2020 Caltrans, NCST UC Davis research report identified the Gaviota rest stop as a high-demand, high-congestion area ideal for DCFCs. How come this location is not identified as a potential site?	d. Federally funded highways do not allow commercial activities at highway rest stops due to regulatory policy. Since most EV chargers are privately owned and charge a fee for use (much like gas stations), they are considered "commercial activity" and therefore prohibited. As a result, any chargers installed at Gaviota would need to provide free charging. Due to this, site recommendations did not include rest stops like Gaviota to avoid implying responsibility on behalf of CalTrans. However, CalTrans has shown its support for chargers at rest stops in recent discussions. They have stated that due to the restrictions on commercial activities, many of these chargers utilize

			solar to provide power. It should be noted, however, that solar does not provide charging speeds that meet NEVI standards. In addition, as mentioned previously, the scope of this study adhered to NEVI criteria, which focus on highway interchanges and identified 1-mile buffer areas rather than specific sites to allow for flexibility.
		3. We would want a Sustainability and Resilience representative on the Central Coast Committee for Advancing ZEVs	3. We highly recommend the City of Santa Barbara reach out to SBCAG to express its' desire to be involved in the Central Coast working group.
		4. Revisit priority siting since number one in the study is very close to two nearby DCFC locations.	4. It is correct that this location is near two existing DCFC installations (Tesla and CCS/CHAdeMO). The analysis considered this proximity in the scoring system, deducting points for existing charger proximity. Nevertheless, other features resulting in net-positive points negated the charger proximity deduction. Existing chargers can, and should be, taken into consideration before planning or installing new chargers at any location. Additionally, in order to address geographic gaps in the siting analysis results, additional sites will be identified, and an updated map will be included in the final report in Appendix VII.
AMBAG	5/10/2023 BOARD MEETING	1. Are there mandates to install EV charging stations at gas stations? 2. Are there opportunities for single-family residential chargers to be shared (the Airbnb model)?	1. No, there are no mandates to install chargers at gas stations. 2. Yes, there are opportunities for single-family residential chargers to be shared. Companies like EV Match run software that manages charger sharing for individuals. Plugshare also offers a filter to show shared chargers owned by individuals.

		3. Are Tesla superchargers only for Teslas?	3. As of March 2023, Tesla began rolling out "magic docks" at 12 of their stations, one of which is located in Santa Cruz County in Scotts Valley, which allows EVs that use CCS to charge at these stations. In June of 2023, Multiple automakers as well as EVSE vendors announced they would be adopting the NACS (Tesla) standard in the coming years, which could mean NACS will be available to all EVs in the future.
		4. Are there opportunities to be added to the list of recommended sites?	4. This study is intended to be a starting point. We suggest regular updates to site recommendations. We strongly encourage AMBAG's participation in the Mega-Region Central Coast Committee for Advancing Electromobility, led by SBCAG for the addition of new sites.
		5. Comment about the importance of Multi-Family Housing charging.	5. We concur with the importance of MFH charging. While out of scope for this study, solving the challenge of providing charging for Multi-Family Housing (MFH) is important to facilitate the clean transportation transition.
		6. Concerns about EV chargers being broken or being hard to read in the sunshine.	6. We agree issues with hardware can be challenging, and while beyond the scope of this study, each jurisdiction should work to address specific system details during a design or related phase of a project at installation sites.
		7. Question about the timeline of putting that many chargers in by 2030.	7. Ideally, the pace of installing chargers would align with EV adoption rates and support California's goals. As stated in the report, all projections for Monterey County were based on the latest California Energy Commission (CEC) projections. Note that the CEC updates its projections periodically, and we recommend AMBAG review these updates accordingly. However, the timeline will also be greatly impacted by technical feasibility issues like the

			availability of power as well as the availability of funding.
		8. Question about making sure chargers are sited in safe locations.	8. As per the scope of this study, we have identified 1-mile buffer areas in which to locate chargers. The implementing agencies will be responsible for identifying specific installation sites and design features and amenities, including those that promote safety. Safety should always be a top consideration when siting chargers. We provide recommendations for siting chargers, including safety considerations, in Chapter 3 of this report.
		9. Can cities do this on their own, or should they be responsible for building the infrastructure?	9. Yes, cities can absolutely install and build their own charging infrastructure, as can counties and other jurisdictions. We also recommend a regional collaborative approach since transportation crosses jurisdictional boundaries, as well as close coordination with local electric utilities.
		10. Comment that an upscale charging experience is the way to go for interregional travel, with sit-down restaurants, et cetera.	10. Restaurants and other amenities were included in the siting criteria analysis. Chapter 3 also notes locating chargers near amenities such as restaurants, popular retail venues, libraries, community centers, tourist attractions, beaches, parks, etc. Conversely, interregional travel is often characterized by short dwell times and limited amenities.
		11. Why not include truck stops and Costco gas stations as potential locations?	11. As per the scope of this study, we have identified 1-mile buffer areas in which to locate chargers. The implementing agencies will be responsible for identifying specific installation sites' desired design features and amenities. This is due to the fact that the installation of chargers requires willing site hosts to allow and support the installation of chargers on their property, which

			is an additional level of granularity outside the scope of this study. By identifying recommended areas for charger installation, jurisdictions can take the next step of identifying willing site hosts as well as evaluating specific sites as per the criteria discussed in Chapter 3 of this report.
		12. Do we have a sense of the potential number of ports for 32 sites? beyond just the federal minimum requirements of four chargers per site?	12. The number of ports/plugs per site will need to be determined on a case-by-case basis based on the needs of that site. The current standard per NEVI is 4 150 kW DC Fast chargers per site. Pursuant to the scope of this study, recommended areas to install chargers within a 1-mile buffer were identified. Each identified 1-mile buffer area could encompass any number of potential sites for chargers.
		13. How much does a DCFC cost per charger?	13. This depends on the size and speed of the charger. For a NEVI package, a reasonable assumption is about $500K to cover the cost of four 150 kW DC Fast chargers. Costs can also range dramatically depending on make-ready costs needed to prepare a site for charger installation, such as utility equipment upgrades, trenching, etc.
		14. How did you reach out to our partners in the agricultural industry as it relates to heavy-duty vehicles?	14. As a part of the outreach process during the development of this study, the farm bureau was contacted and invited to participate in Focus Group Sessions to gather input specific to EV charging of their heavy-duty trucks. They did not attend or participate.
SBCAG	5/18/2023-BOARD MEETING	1. Concern over the cost of EV infrastructure (very expensive) The grant application requests $20 million for 20 sites, or $1 million per station. EV stations have multiple plugs	1. Costs included in the grant represent industry-standard estimated costs. The report does include a section on funding opportunities to help pay for the equipment and installation. There can be two plugs per station, and there may be many stations per site, meaning some sites

			could cost more than others. Differing make-ready costs such as transformers, utility upgrades, and trenching can also add to site preparation costs and cause costs to vary greatly per site.
		2. Who at the federal or state level is tracking the growth in demand resulting from EV market penetration? How are we going to generate it?	2. Market penetration of EVs will be gradual, allowing time for energy production to keep pace with demand. The California Energy Commission projects energy demand for California periodically, including electricity demand to accommodate the influx of electric vehicles. The Department of Energy and the US Department of Transportation also track EV market penetration.
		3. How will the California Energy Commission ensure there is enough electricity when 100% of vehicles are electric?	3. Electric utilities across the country are engaged in planning for the electrification of transportation and are obligated by regulatory bodies to meet and manage electricity demand. For this reason, we encourage collaboration with local electric utilities when planning for the installation of EV charging infrastructure. A number of tools and technical advancements are also being used to balance demand and generation such as: Microgrids which include renewable generation sources such as solar paired with batteries meeting electricity demand in a small area separate from the larger electrical grid. Demand response which consists of responding to electricity demands dynamically by either "shedding" load, shifting the time it is used, or even charging batteries to be used later during times when an abundance of electricity is being generated but less is needed. Load sharing is another tool commonly seen among a group of EV chargers to reduce the electricity being delivered to two or more vehicles to allow more to be charged on the same amount of available electricity. More details about these types of tools can be found in Chapter 3 of this report.

		4. Public Comment from "Cars Are Basic": Not supportive: EVs do not contribute to the highway fund for maintenance.	4. Comment noted. EVs do contribute to the highway fund for maintenance through annual vehicle registration fees. To negate the loss of gas tax revenue, many states (California included) require additional registration fees, which must be paid annually for Battery Electric and Plug-in Hybrid vehicles, to ensure EV drivers still contribute to the maintenance of highways, roads, and other infrastructure projects. Federal and state agencies are also evaluating alternatives to the gas tax to help support infrastructure.
		5. Santa Barbara Air Pollution Control District: Supportive of effort	5. Comment noted.
		6. Is anyone considering the impact on pavement since EVs can weigh up to 5,000 lbs?	6. At this time, there is no standardized methodology or state guidance to estimate the pavement degradation caused by electric vehicles. However, the state of California is beginning to evaluate the impact on pavement caused by personal vehicles, public transportation, and freight.
		7. Stated concern regarding the environmental and ecological negative externalities associated with EVs, specifically the mining of lithium and disposal of batteries.	7. Comment noted. The manufacturing process of building any vehicle, electric or not, has an ecological impact. The impacts of lithium extraction and end-of-life disposal of batteries are known issues and something that should be addressed with responsible mining practices and efficient battery reuse and recycling. It should be noted that batteries have an expected useful life span of 8-10 years in an electric vehicle and can have another 8-10 years of use as energy storage. From there the materials can be recycled.
SLOCOG	6/7/2023-BOARD MEETING	1. What is the actual source of the NEVI funding? What is the mechanism for generating the dollars that go into this federal program?	1. The U.S. Department of Transportation funds the NEVI program through the Infrastructure Investment and Jobs Act (IIJA). We recommend reviewing official documents, budget proposals,

			or announcements from the U.S. Department of Transportation's Federal Highway Administration for further details on their funding sources.
		2. CO2 as the single metric results in a net transfer of wealth; the ecological and financial costs of EVs need to be addressed; it far offsets the GHG reduction societal benefit cost.	2. Comment noted. Although Electric Vehicles can provide a societal benefit by reducing GHG emissions, it's important to recognize that the manufacturing process of building any vehicle, electric or not, has an ecological impact. To make informed decisions and develop effective policies during the clean transportation transition, it's important to evaluate the complete lifecycle of EVs, including manufacturing, energy sources, and end-of-use recycling. It's also important to consider factors like improved air quality, reduced dependence on fossil fuels, and economic opportunities in the clean energy sector.
		3. People are getting taxed to allow the upper-middle and upper-income motorists to go electric.	3. Comment noted. Policymakers should always be mindful of how different initiatives could affect people with lower incomes. Progressive taxation, incentives based on financial need, and alternative funding mechanisms are examples of tools policymakers can use to help ensure the burden doesn't fall too heavily on those who can least afford it. Clean Cars 4 All is an example of a program in California that provides incentives specifically to lower-income individuals. In addition to this, EVs continue to become more affordable. The availability of used EVs is growing, and even new EVs have come down dramatically in cost.
CALTRANS	6/9/2023	1. Overall, it would have been beneficial to have an Administrative Draft to review before going Straight to the Public Review Draft. We believe there are some potential issues with the Recommended Charging Locations and how they were determined.	1. An administrative draft (February 2023) was developed and circulated to the participating agencies.

		2. (pg. 14) It would be helpful to briefly define charging types in Table 1. Although they can be found in Appendix III, page 131, maybe some readers are not fully aware of the differences.	2. Added reference to charging definitions in the report in the section noted.
		3. (pg. 15) Define MFH and DCFC in Table 2	3. These definitions have been added to the report in the section noted.
		4. (pg. 20) Highland Drive at SLO-1 rank number 2. I understand there is a lack of non-Tesla chargers, but does the 50% below $50K have anything to do with this ranking?	4. The percentage of low-income drivers is a key determinant in the ranking procedure, as is whether there is already charging in the immediate vicinity of the location. San Luis Obispo is unique in that it does have a large number of chargers, but nearly all of the DCFC chargers are Tesla (NACS). With the recent news of many vehicle manufacturers and charging companies announcing their intent to adopt the NACS standard, this issue is becoming less relevant.
		5. (pg. 20) Monterey ranks 3 and 4 are less than half a mile apart; can they be combined?	5. Based on our criteria, having closely spaced locations is appropriate given the inherent difficulties of siting and design. One location can be used in place of another if issues arise. The final draft of the report will also identify the additional location(s) to augment at least one of the tightly spaced locations (Chapter 3 and Appendix VII).
		6. (Pg. 20) Tefft Street is misspelled.	6. The misspelling of Tefft Street has been fixed in the section noted.
		7. (pg. 20) Provide a description of "Daily Traffic Volumes" in this table. One would assume they had something to do with the mainline highway volumes, but they do not. It seems like the mainline highway volumes would also be an important component to consider when looking at interregional travel and the need to fill gaps	7. Although not explicitly described in the report, the analysis focused on highways with the highest volumes of traffic traveling through the region (i.e., US 101 and SR 1, along with other smaller east-west state highways). The daily volumes in the report refer to activity at each interchange or intersection to account for the

		to reduce "range anxiety" in locations with no available charging locations.	activity level (including refueling of ICE vehicles) at and around each interchange or intersection for prioritization.
		8. (Pg. 20) One of the goals of the study is to "focus on the unincorporated rural areas between cities that experience significant interregional travel," yet the top five locations are urban areas.	8. A primary goal of this study was to better position the Central Coast for NEVI funding. Hence, analysis and siting criteria were geared toward aligning with NEVI requirements. To address the discrepancies between low- and high-volume unincorporated area locations, we utilized a standardized deviation methodology. However, more developed unincorporated high-volume areas outperformed more rural low-volume locations across other parameters. Other factors, such as the presence of disadvantaged communities in specific areas, also impacted the overall outcomes. See also a response to comment #5, as additional rural areas will be included in the final document (Chapter 3 and Appendix VII).
		9. (Pg. 21) For example, San Benito locations all rank very low, despite the fact they had the fewest number of existing chargers in the study as identified in Table 1. There is this must have to do with the methodology? There definitely a GAP in San Benito County and they didn't make the top 20 presents a significant problem with the siting methodology. Traffic volumes on San Benito 101 are higher and the services are comparable to that of the much higher ranked location at US 101/Mon 146.	9. See response to #8
		10. (Pg. 208) Methodology - The Streetlight Data includes the number of vehicle trips starting or stopping within a zone (248 of these one-mile zones in the study) and seems to put rural communities and areas with service gaps at a disadvantage. Again, the top five rated candidates are all in urban areas. If the goal is to increase interregional travel by reducing	10. See response to #8

		range anxiety, can the ranking or scoring of locations be modified so that lower-served areas are more competitive?	
		11. (Pgs. 18 & 40) Consider language about chargers needing to be free (by law) if sited on State Right of Way.	11. Due to the prohibition on commercial activity within state right of way, siting recommendations did not include these types of sites to avoid implying responsibility on behalf of CalTrans. However, CalTrans has shown its support for chargers at rest stops in recent discussions. Within their own right-of-way, CalTrans has the authority to provide free charging to the public. An explanation regarding this topic will be included in the final draft of Chapter 3.
		12. (Pg. 36) Spell out NEVI (first time seeing this acronym).	12. National Electric Vehicle Infrastructure has been added to the section noted.
		13. (Pg. 20) Table 4: Recommended Charging Locations - Consider removing "Study Area Rank" in favor of County Rank and/or general locations. Ultimately, each location's priority will change depending on project batching, availability of funding, regional needs, etc. Similarly, having the "study rank" brings into question methodology and criteria weighting, seeing as locations in Montecito and Ventura are scoring higher than San Benito County.	13. Analysis for these rankings included inputs from criteria including traffic volumes, social and economic factors, the location of amenities, housing types, gaps in the availability of charging infrastructure, stakeholder input, public comment, and much more. Even so, the ranking results represent broad recommendations. Complete scoring for all locations will be provided to the participating agencies, and they are free to coordinate with their member agencies to arrange re-ordering of rankings based on their specific needs or additional criteria.
		14. (Pg. 22) Consider adding a link to the Department of Energy's Vehicle Cost Calculator. It is a vehicle cost comparison calculator aimed at helping individuals see the long-term cost savings benefits of switching to EVs.	14. A reference to the Department of Energy's Vehicle Cost Calculator has been added to the education and outreach recommendations in Chapter 3.

		15. (Pg. 22) Consider language about how DACs and MFH are weighted in the siting analysis. There seems to be a lot of confusion as to how locations like San Benito County (a very high justice40 % community) are ranked so low compared to technically unincorporated areas like Montecito and SLO (outside Cal Poly).	15. Justice40 and CES 4.0 were included in our analysis; however, they were "yes" or "no" categories, not "very high" vs. other ratings of J40 or CES. As discussed in the methodology of this report, many other criteria also played a role in the ranking of recommended areas.
		16. (Pg. 23) Consider adding language as to how Solar EV can also be cost-saving as it is usually a free option not tied to the grid.	16. While solar generates electricity independent of the grid, it is not free, as the equipment and initial installation do incur costs. For this reason, it is not appropriate to include such a statement. That being said, a cost-benefit analysis should always be performed when considering the financial impacts of solar. Solar can be a great solution when electrical infrastructure is not available, or it is cost-prohibitive to upgrade to meet the needs of supporting EV chargers. It is also important to note that solar panels are not very energy dense, meaning they produce relatively little energy for their footprint, so the electricity generated may not be enough to adequately supply a DC fast charger. For example, unless a large number of panels can be installed and battery storage is also available to store the energy until enough is available for an adequate supply, desired charging speeds may not be achievable. At worst, if not tied to the grid, there may be times when no electricity is available.
		17. (Pg. 24) "Throughout this study several ongoing these initiatives have been identified relating to ZEV implementation including"; remove 'these'	17. ‘these’ has been removed in the section noted.
		18. (Pg. 35) Consider adding language or a link to the methodology behind the numbers for the CEC estimates showcased in Table 5. This seems like a nearly insurmountable projection compared to the existing numbers.	18. The California Energy Commission (CEC) report, which includes their methodology, is cited and linked in Chapter 3 (CEC Report-Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment Analyzing Charging Needs to Support Zero-Emission Vehicles in 2030

			https://efiling.energy.ca.gov/getdocument.aspx?tn=238853). A brief discussion on upcoming CEC analysis updates and how projected numbers will change is also briefly discussed in Chapter 3.
		19. Overall, I am missing the discussion about freight. I see freight is mentioned a few times here and there, but there is no dedicated section to talking about plans for the future relating to freight. "MEDIUM AND HEAVY-DUTY VEHICLE OPERATIONS" talks about transit; I think that could be a good section to talk about freight too. It touches on a few freight studies but I feel like an introduction is missing	19. Additional content on medium- and heavy-duty vehicles will be added to the final report at the end of chapter 3.
		20. The overall narrative doesn't seem to consider hydrogen fueling often. I understand there are a few mentions of it in the narrative as well as in the appendices; however, hydrogen fueling is a considerable zero-emission alternative, especially for freight. Maybe consider amending some paragraphs to clarify this is a largely EV/personal use vehicle plan.	20. The primary focus of this study was on electric vehicle charging. However, the location of hydrogen fueling stations has been included in the existing conditions analysis. In addition, hydrogen will be discussed as part of the added text in response to comment #19.
California Energy Commission (CEC)	6/8/2023-	1. Provide Effective Education and Outreach, page 54. This section mentions that some ZEV-focused events have occurred in the region. A more comprehensive listing of the events that regularly occur could be included, as well as suggestions for where to hold future events and how to fund them. Best practices for holding a successful event and ensuring significant attendance could be included. For example, to our knowledge, no ZEV-related events have occurred in many cities in the region, such as Carpinteria, Guadalupe, Santa Paula, and others. Central Coast ZEV stakeholders could set a goal of holding new ZEV events in cities that haven't had them, preferably co-located with large community events that have significant, built-in audiences.	1. Comment noted. Such an exercise was not scoped for this plan. However, this would be an excellent topic for the Central Coast Committee for Advancing ZEVs to consider.

		2. ZEV Infrastructure Equity Planning, page 61. The Strategy mentions super commuters as an area of future study. Research is emerging showing that small numbers of long-distance commuters have a significant outside impact on transportation GHG emissions. This study or follow-on work could provide more insight into where the largest numbers of super commuters live in our region, and how to target charging infrastructure and education and outreach to support them to choose ZEVs.	2. Comment noted. The highest weighted siting criteria applied in this analysis (See Appendix VII) was: LONG TRIPS (>=100 MILES) STARTING OR ENDING WITHIN 1 MILE OF INTERCHANGE. This information was informed using Streetlight cell data.
		3. Utilize Code to Increase Infrastructure, page 62. The description of CALGreen and voluntary tiers for EV chargers is well done. A list of Central Coast cities/counties that have gone beyond mandatory codes would be helpful. Case studies from these jurisdictions, including city-wide impact data and of specific large apartment buildings or other developments would be helpful. If no local case studies are available, more details from other regions would be useful.	3. Comment noted. Such an exercise was not scoped for this plan. However, this would be an excellent topic for the Central Coast Committee for Advancing ZEVs to examine.
		4. Future Transit Electrification Needs, page 66. The roll-up data of regional transit providers' ZEV plans is fairly comprehensive but appears incomplete. Some transit operators such as Gold Coast, Thousand Oaks Transit, Simi Valley Transit, and others are excluded. Including all transit providers in the region and their ZEV plans would be helpful. Another useful data point would be total numbers of vehicles in the fleet, rather than just number of vehicles providing regional service.	4. The primary focus of this study was on interregional travel. As such, the assessment of transit was limited to regional providers and services. Hence, local municipal/county services, paratransit, and school-bus services were not analyzed.
		5. ZEV school buses have also been widely deployed. Data listing the various school districts, total numbers of vehicles in the fleet, and ZEV status would be helpful.	5. See response to Comment 4.

		6. Social Pinpoint public response, page 90. The Strategy has compiled an impressive documentation of user-generated ZEV infrastructure suggestions and requests. The 40+ pages of specific comments and 30+ pages of analysis is very comprehensive. It will be up to regional stakeholders to make EV charging station companies and others aware of this data. Suggestions of ways SBCAG and others can proactively get this data to ZEV infrastructure companies, both those planning investments and considering grant opportunities would be helpful. At a minimum, a list of the 20 largest EV charging companies doing business in California would be helpful for this outreach.	6. Comment noted. This is a public document and available to all. This would be an excellent exercise for the Central Coast Committee for Advancing ZEVs to consider.