CALIFORNIA ENERGY COMMISSION

CALIFORNIA NATURAL RESOURCES AGENCY

California Energy Commission

Clean Transportation Program

FINAL PROJECT REPORT

Kern Electric Vehicle Charging Station Blueprint

Prepared for: California Energy Commission

Prepared by: Kern Council of Governments

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PREFACE

Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007) created the Clean Transportation Program. The statute authorizes the California Energy Commission (CEC) to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the state's climate change policies. Assembly Bill 8 (Perea, Chapter 401, Statutes of 2013) reauthorizes the Clean Transportation Program through January 1, 2024, and specifies that the CEC allocate up to $20 million per year (or up to 20 percent of each fiscal year's funds) in funding for hydrogen station development until at least 100 stations are operational.

The Clean Transportation Program has an annual budget of about $100 million and provides financial support for projects that:

- Reduce California's use and dependence on petroleum transportation fuels and increase the use of alternative and renewable fuels and advanced vehicle technologies.
- Produce sustainable alternative and renewable low-carbon fuels in California.
- Expand alternative fueling infrastructure and fueling stations.
- Improve the efficiency, performance, and market viability of alternative light-, medium-, and heavy-duty vehicle technologies.
- Retrofit medium and heavy-duty on-road and nonroad vehicle fleets to alternative technologies or fuel use.
- Expand the alternative fueling infrastructure available to existing fleets, public transit, and transportation corridors.
- Establish workforce-training programs and conduct public outreach on the benefits of alternative transportation fuels and vehicle technologies.

To be eligible for funding under the Clean Transportation Program, a project must be consistent with the CEC's annual Clean Transportation Program Investment Plan Update. The CEC issued GFO-17-604, to for Phase I of an expected two-phase effort for electric vehicle (EV) ready communities. Phase I is for the development of the planning blueprints to identify the actions and milestone needed to proceed towards implementation of the EV ready community. In response to GFO-17-604, the recipient submitted an application which was proposed for funding in the CEC's notice of proposed awards June 1, 2018 and the agreement was executed as ARV-17-045 on July 2, 2018.

ABSTRACT

This Kern Electric Vehicle Charging Station Blueprint is intended to identify goals, strategies and charging station site locations to accelerate the installations of electric vehicle charging stations to support and drive an increased market demand for electric vehicles throughout urban, rural, and disadvantaged communities within Kern County.

This Blueprint identifies two scenarios for Kern County to meet the State of California's 2015 Zero Emission Vehicle Action Plan goal of 1.5 million zero emission vehicles on California roads by the year 2025.

The Blueprint identifies at least 12 shovel-ready sites (with one in each Kern Council of Government member agency jurisdiction [Cities of Arvin, Bakersfield, California City, Delano, Maricopa, McFarland, Ridgecrest, Shafter, Taft, Tehachapi, Wasco, and the County of Kern]) and positions those sites for California Energy Commission Phase II funding or other funding.

Local government staff, private businesses, multi-unit dwelling owners, nonprofits and public agency entities should use the Blueprint for:

- Electric Vehicle Infrastructure gaps & siting analysis,
- Recommended implementation actions,
- Shovel ready site profiles,
- Pursing grants and incentives for installing EVI, and
- Toolkits to help electric vehicle infrastructure project owners complete their projects.

Keywords: Center for Sustainable Energy (CSE), electric vehicle (EV), electric vehicle charging station (EVCS), electric vehicle infrastructure (EVI), Kern County, Kern Council of Governments (Kern COG).

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EXECUTIVE SUMMARY

Kern Council of Governments and Center for Sustainable Energy jointly applied for a CEC Electric Vehicle Ready Communities Challenge grant to develop an Electric Vehicle Charging Station Blueprint. The CEC awarded a grant to Kern Council of Governments and subsequently, Kern Council of Governments entered into a subcontract with Center for Sustainable Energy to develop the Blueprint. The Electric Vehicle Charging Station Blueprint will place Kern County on a pathway to achieve its Sustainable Communities Strategy greenhouse gas emission reduction goals at an accelerated rate by identifying high-impact transportation electrification projects and assigning community-specific implementation strategies to reach the following project goals.

- **Project Goal No. 1:** Develop and deploy a Blueprint to accelerate the transition to electrified transportation within Kern County with a holistic and futuristic view of regional transportation planning and consideration for disadvantaged communities. The Blueprint identifies two scenarios for Kern County stakeholders to meet the State of California's 2015 Zero Emission Vehicle Action Plan goal of 1.5 million zero emission vehicles on California roads by the year 2025.
- **Project Goal No. 2:** Identify at least 12 shovel-ready sites (with one in each Kern Council of Governments member agency jurisdiction [Cities of Arvin, Bakersfield, California City, Delano, Maricopa, McFarland, Ridgecrest, Shafter, Taft, Tehachapi, Wasco, and the County of Kern]) and position those sites for CEC Phase II funding or other funding.

In support of reaching project goals and contextualizing the work for Kern County, the team (Kern Council of Governments and Center for Sustainable Energy) convened a working group. A total of six working group meetings were held and participants reviewed and provided feedback/input on all deliverables, selected 35 potential sites for electric vehicle infrastructure investment, and conducted outreach activities.

Project tasks culminated in the development of the Blueprint which identifies two planning scenarios. Scenario A calls for the addition of 1,364 spaces/plugs across Kern County (682 dual plug electric vehicle charging stations), and Scenario B requires an additional 4,426 spaces/plugs (2,387 dual plug electric vehicle charging station) be added by 2025. Both scenarios require installing chargers at a variety of identified location categories, including multi-unit dwellings, public institutions, workplaces, and destinations, as well as along highway corridors. Meeting either scenario target can be identified as meeting the State of California's 2015 ZEV Action Plan goal (https://opr.ca.gov/docs/Governors_Office_ZEV_Action_Plan_(02-13).pdf). Achieving Scenario B targets will generate additional estimated 188,991,674 pounds of carbon dioxide equivalent emissions savings.

The Blueprint also includes a summary of existing actions ongoing in Kern County, electric vehicle infrastructure gaps & siting analysis, recommended implementation actions, shovel ready site profiles, and toolkits to help electric vehicle infrastructure project owners.

CHAPTER 1:
Project Background

Project & Kern COG Goals

Kern COG and CSE jointly applied for a CEC EV Ready Communities Challenge Grant[1] to develop a Blueprint. The CEC awarded a grant to Kern COG and subsequently, Kern COG entered into a subcontract with CSE to develop the EV Charging Station Blueprint (Blueprint).[2] The Blueprint will place Kern COG on a pathway to achieve its Sustainable Communities Strategy greenhouse gas (GHG) emission reduction goals at an accelerated rate through identifying high-impact transportation electrification projects and developing community-level implementation strategies to reach the following project goals.

- **Project Goal No. 1:** Develop and deploy a Blueprint to accelerate the transition to electrified transportation within Kern County with a holistic and futuristic view of regional transportation planning and consideration for disadvantaged communities (DACs). The Blueprint identifies two scenarios for Kern County to meet the State of California's 2015 Zero Emission Vehicle (ZEV) Action Plan[3] goal of 1.5 million ZEVs on California roads by the year 2025.
- **Project Goal No. 2:** Identify at least 12 shovel-ready sites (with one in each Kern COG member agency jurisdiction [Cities of Arvin, Bakersfield, California City, Delano, Maricopa, McFarland, Ridgecrest, Shafter, Taft, Tehachapi, Wasco, and the County of Kern]) and position those sites for CEC Phase II funding or other funding.

Purpose of the Kern County EV Blueprint Project

The purpose of the Kern COG EV Blueprint Project was to develop a comprehensive and replicable blueprint that puts Kern County on a pathway to achieve its 2018 Regional Transportation Plan and Sustainable Communities Strategy GHG emission reduction goals at an accelerated rate through high-impact transportation electrification projects.

Objectives of Kern COG EV Blueprint

The objectives of the Project were to:

- Develop an education and outreach strategy to engage stakeholders.
- Document existing emission reduction and transportation electrification goals, as well as steps taken to achieve them.
- Identify potential transportation electrification projects in Kern County communities.

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[1] CEC EV Ready Communities Challenge Grant Application
https://sacramento.granicus.com/MetaViewer.php?view_id=21&clip_id=4721&meta_id=599443

[2] EV Charging Station Blueprint https://www.kerncog.org/wp-content/uploads/2019/06/EV_Blueprint_2019.pdf

[3] State of California's 2015 Zero Emission Vehicle Action Plan
https://opr.ca.gov/docs/Governors_Office_ZEV_Action_Plan_(02-13).pdf

- Develop a methodology to analyze and then rank specific electrification projects based on superior economic, environmental, and technical performance with a weighting towards DACs.
- Using the blueprint rubric, identify from the list of projects the most optimal transportation electrification projects based on the economic, environmental, and technical analyses and present as an appendix to the EV Blueprint.
- Showcase financial and business models as well as cooperative strategies in the Kern EV Blueprint Plan and among the identified projects.
- Produce a blueprint plan toolkit with scoring rubrics, document templates and lessons learned summaries for implementers working throughout Kern County and other communities.

Progress Toward Electrification of Transportation

The Kern County region has EV drivers, EV infrastructure and numerous existing conditions that support wider EV adoption. Table 1 below shows vehicle registration statistics and charging station data are primary indicators of the existing EV market size. Department of Motor Vehicles registration data identifies general plug-in electric vehicles (PEV) market attributes but does not readily provide information on the types of vehicles deployed. There are currently 873 plug-in hybrid electric vehicles (PHEVs) and 951 battery electric vehicles (BEVs) in the region according to 2018 vehicle registration data from the state.

Table 1: Kern County Vehicle Registrations

Areas	BEV	PHEV	Total PEV Registrations	Total Vehicle Registrations
State of California	178,348	163,591	341,939	30,581,168
Kern County	951	873	1,824	627,075
Kern County Percent of State	0.53 percent	0.53 percent	0.53 percent	2.05 percent

Source: State of California, Department of Motor Vehicles, California Motor Vehicle Fuel Types by County, Jan.1, 2018

Clean Vehicle Rebate Program Data

The Clean Vehicle Rebate Program[4] was initiated in March 2010. This program offers incentives to purchasers of PEVs in California, however, the program is elective and participation rates can be impacted by vehicle eligibility and applicant income caps. As of May 31, 2018, this program had issued 247,084 PEV rebates. Less than 1 percent (1,365) of those rebates were issued in the region. Kern County has seen steady increases in this program's rebates issued year over year from 2011 through 2018.

[4] California Clean Vehicle Rebate Project https://cleanvehiclerebate.org/eng

Existing EV Charging Stations

The U.S. Department of Energy's Alternative Fuel Data Center[5] provides an alternative fueling station locator using data for existing and planned stations. Data is provided by site hosts, trade media, Clean Cities coordinators, infrastructure equipment and fuel providers, original equipment manufacturers and regular station users. The station locator provides details about the station location, power level, number of plugs, connector and network type for alternative fueling stations. CSE collected supplemental charging station location information from the Working Group and Kern COG which, when aggregated with this data, indicated a total of 98 Level 2 charging station plugs and 18 direct current fast charging (DCFC) plugs sited in Kern County.

Barriers

Barriers to EVI Adoption

The Working Group provided input on regional barriers to EVI adoption, listed below. The barriers identified are consistent with industry-wide barriers. This Blueprint addresses the identified barriers by recommending actions that regional stakeholders should take to enhance existing conditions and activities that support EVI adoption and recommend specific actions to remove associated barriers.

- **Lack of EV/EVI Awareness & Knowledge:** Public knowledge of PEV technology and charging infrastructure.
- **Complex Installation Process:** Lack of standard ordinances in the region that facilitate the installation and access to publicly available charging infrastructure.
- **Cost to Install, Operate, and Maintain:** Real and perceived issues exist relative to the capital costs required to install EVI as well as operational & maintenance costs, which can impact the business case (a return on investment) for installing EVI.
- **Success in Isolation:** Early adopters of EVI have completed impressive and impactful EVI projects in Kern County. Generally, these actions are performed in isolation and the County would benefit from increased collaboration.
- **Lack of Demand from Regional Drivers:** In 2018, Kern County total PHEV registrations (1,824) was 0.29 percent of total vehicle registrations (627,075), indicating that there was a lack of demand for EVs.

DACs

Kern County is challenged by poor air quality. According to the California Environmental Protection Agency website, DACs in California are specifically targeted for investment of proceeds from the state's cap-and-trade program. These investments are aimed at improving public health, quality of life, and economic opportunity in California's most burdened communities, and at the same time they are reducing pollution that causes climate change. To identify the DACs, California's Office of Environmental Health Hazard Assessment developed the CalEnviroScreen tool. According to CalEnviroScreen 3.0, 81-90 percent of Kern County classifies as DACs.

Two air districts serve Kern County, the Eastern Kern Air Pollution Control District, and the San Joaquin Valley Air Pollution Control District. The San Joaquin Valley Air Pollution Control

[5] U.S. Department of Energy's Alternative Fuel Data Center U.S. Department of Energy's Alternative Fuel Data Center

District jurisdiction is currently in nonattainment for the eight-hour 2008 Ozone Standard and the 2006 particular matter 2.5 Standard; the district is in serious nonattainment for the 2008 U.S. National Ambient Air Quality Standards (expected attainment 2020) and nonattainment for the eight-hour 2008 Ozone Standard. The CalEnviroScreen 3.0 map of Kern County demonstrates that a large portion of the City of Bakersfield and neighboring communities receive scores of 71 percent and above. The map of Kern County can be found online at the CalEnviroScreen website (https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30).

CHAPTER 2:
Project Activities Performed and Results

Task 1: Administrative

The goal of this task was to comply with conditions of the CEC grant (execute subcontracts, hold a Critical Project Review Meeting, Submit Final Report to CEC, submit Monthly Progress Reports) and identify/obtain matching funds. The following sections summarize activities performed under Task 1.

Match Funds

Prior to project award, four match partners were engaged and agreed to provide match. The following table identifies the match partners, match commitment values, and final match accrual. Table 2 identifies match committed and match accrued.

Critical Project Review Meeting, Monthly Reports, and Final Report

Kern COG submitted monthly progress reports to the CEC beginning in October 2018. Due to the slow start of the project, the October progress report detailed activities performed from July 1, 2018 through September 30, 2018. Monthly progress reports were submitted from October 2018 through project term. Kern COG, CSE, and CEC held a Critical Project Review meeting on February 20th, 2019. The Draft Final Report was submitted by Kern COG to CEC on April 30th, 2019.

Table 2: Project Match Summary

Organization	Match Committed	Match Accrued	Description of Match Activities
Kern COG	$38,686		
Direct Labor	$10,684	$6,210.22	Geographic Information System Assistance provided to CSE Staff conducting site selection analysis, Administrative Review of documents, Project Management, Meetings with Match Partners and site searches in Bakersfield and Arvin, Blueprint Toolkit Outreach, Contract Management, Meetings with CEC

Organization	Match Committed	Match Accrued	Description of Match Activities
			Critical project review Brian Fauble. Blueprint Outreach – presentation to the San Joaquin Valley EV Partnership and meeting with Fresno Council of Government (5/8/2019).
Fringe Benefits	$3,532	$2,115.20	
Indirect	$22,942	$19,726.77	
Travel	$1,528	$640.54	Travel to Ridgecrest for an EVs Made EZ Workshop hosted by Project Clean Air to introduce the EV Charging Station Blueprint and Toolkits. (6/25) Linda travelled to Ridgecrest with Project Clean Air, so no travel funds were expended. Travel to Arvin to tour potential sites with City of Arvin and ChargePoint (6/6). Blueprint Outreach presentation to the San Joaquin Valley EV Partnership and meeting with Fresno COG (5/8/2019). Blueprint Outreach Panel at the Statewide Energy Efficiency Collaborative Energy Efficiency Forum in Long Beach (6/27). CEC Critical project

Organization	Match Committed	Match Accrued	Description of Match Activities
			review meetings in Sacramento were budgeted but not held ($999)
Sub Total	—	**$28,692.73**	
Subcontractors	$28,000		
ChargePoint, Inc.	$6,000	$6,158.98	Attended Working Group Meetings (Nov 29th, Jan 11th, March 8th, April 12th, and May 17th). Conducted outreach and information gathering from existing and perspective EVSE site hosts. Produced and reviewed EVSE utilization data for Kern County. Reviewed and commented on project documents. Promoted Blueprint and toolkits.
Powerflex Systems	$2,500	$2,504	Powerflex reviewed project documents and performed outreach to prospective clients.
Envoy, Inc.	$5,000	$5,000	Envoy released multiple rounds of social media and email communications to Kern County partners to share the ARV-17-045 initiative and build project visibility. Envoy participated on the project team panel at the Statewide Energy

Organization	Match Committed	Match Accrued	Description of Match Activities
			Efficiency Collaborative Forum. The session spoke to barriers and solutions for Multi-Unit Dwellings (MUDs) identified in the project.
City of Ridgecrest	$5,000	$6,025.66	Envoy released multiple rounds of social media and email communications to Kern County partners to share the ARV-17-045 initiative and build project visibility. Envoy participated on the project team panel at the Statewide Energy Efficiency Collaborative Forum. The session spoke to barriers and solutions for MUDs identified in the project.
Kern COG in the City of Ridgecrest	-	$5,000	Sponsored an EVs Made EZ Workshop hosted by nonprofit Project Clean Air on June 25, 2019. Kern COG staff presented the Blueprint and Toolkits to the 17 individuals in attendance. They work for the City of Ridgecrest, Kern County Economic Development, Cerro Coso College, California

Organization	Match Committed	Match Accrued	Description of Match Activities
			Department of Transportation (Caltrans) District 9, Proterra, ChargePoint, Project Clean Air, and local businesses including an engineering firm.
CSE	$9,500	$9,500	Travel, Labor, Materials budget provided by Kern COG to CSE.
Sub Total	**-**	**$34,188.64**	

Source: Kern Council of Governments

Task 2: Coordinate

The goal of this task was to document progress towards transportation electrification goals and solicit project concepts in collaboration with stakeholders. This task included the creation of an Informal Working Group comprised of community, industry, and other engaged stakeholders interested in supporting the Kern EV Blueprint Plan for Electrification.

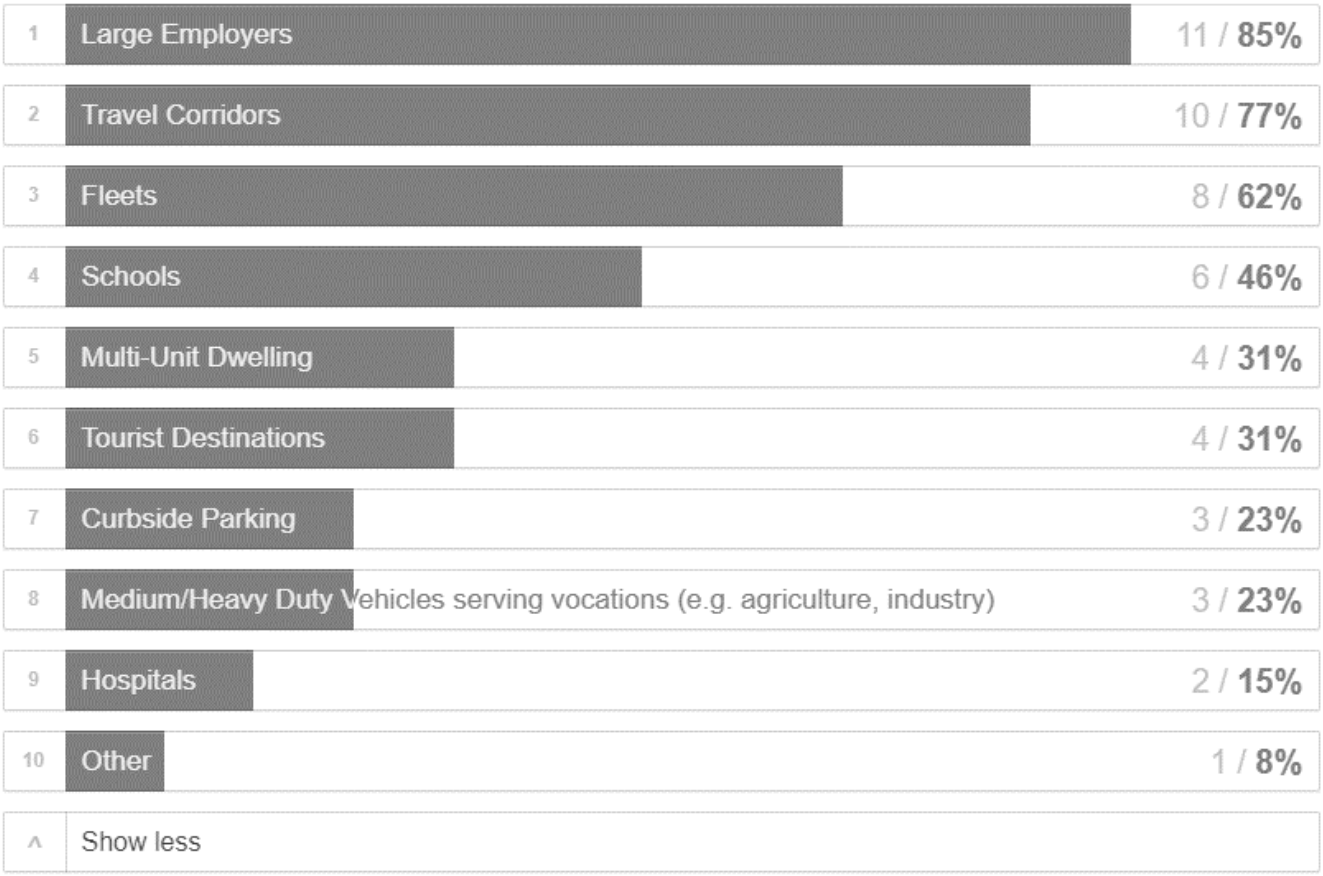
Activities & Results

The project team identified key focus areas and level of EV/EVI knowledge from an initial survey submitted to the working group members. Figure 1 shows the results of the survey, and Figure 2 on the next page shows the installations by type/user that would benefit the most from expanded EV infrastructure.

Figure 1: Knowledgeability About EVs & EVIs on a Scale of 1 – 10

Source: Kern Council of Governments

Figure 2: Installations by Type/User That Would Benefit the Most From Expanded EV Infrastructure



Source: Kern Council of Governments

After gauging feedback from the group, the Project Team convened six Working Group meetings that included participation up to 20 to 30 stakeholders. The Working Group members are listed below, and an overview of each meeting follows.

Working Group Members

- A-C Electric: Jeff Petrini.
- Center for Race, Poverty, and the Environment: Caroline Farrell.
- ChargePoint: Robb Lichtman, Brendan O'Donnell.
- City of Arvin: Christine Viterelli.
- City of McFarland: Alex Lee.
- City of Ridgecrest: Bard Lower, Christopher Smith.
- City of Taft: Mark Staples.
- CSE: Dave Lange, Kevin Wood, Derek Ichien.
- CSU, Bakersfield: Jennifer Sanchez.
- Eastern Kern APCD: Jeramiah Cravens.
- Envoy: Aric Ohana, Jack Axelrod, Paul Hernandez.
- EV Community Representative: Collin Burnell, Paul Gipe.
- Kern COG: Bob Snoddy, Linda Urata, Rob Ball.

- Kern Community College District: Bill Elliott, Dave Teasdale.
- Kern County Farmers Bureau: Ariana Joven.
- Leadership Counsel for Justice and Accountability: Jasmene del Aguila.
- Pacific Gas & Electric: Marcos Montes.
- PowerFlex Systems: Max Wilcox, George Lee.
- San Joaquin Valley APCD: Brian Dodds, Dante Sanson, Jacob Whitson, Nhia Vu.
- Sierra Club, Kern-Kaweah Chapter: Gordon Nipp.
- Southern California Edison: Bill Rock, Michelle Marquette, Traeger Cotton.

Through the course of the Working Group meetings the project team was able to solicit meaningful feedback and direction from the stakeholders using in-person and web-based tactics. These tactics included the use of webinars, presentations, and on-demand polling activities.

Meeting #1: Project Introduction and Overview - November 29, 2018
This meeting included an introduction to the project and an overview of the following:

- Why you are here, why is it important?
- What does the current Kern County EV landscape look like?
- Review project scope and schedule.
- Project selection methodology.
- Sites, prioritization criteria, and partners.
- Deliverable review and scheduling.

Meeting #2: EV Infrastructure and Outreach Strategy – January 11, 2019
This meeting provided an overview of existing EVI actions already underway in Kern County and sought feedback and input from the Working Group. Another priority of this meeting was to review the outreach strategy and submitted projects. CSE also introduced the pin-drop tool for collecting site/project suggestions.

Meeting #3: Outreach Strategy and Stakeholder Engagement – March 8, 2019
This meeting focused on the outreach strategy, project concepts, and siting & methodology report review. CSE solicited feedback from the Working Group on the discussion items and encouraged suggestions for stakeholder engagement.

Meeting #4: Blueprint and Outreach Plan Review – April 12, 2019
This meeting provided an overview of the Draft Blueprint, including siting feedback from Working Group members. CSE also reviewed the Outreach Plan and Schedule moving forward.

The project team developed a list of project concepts from analysis and working group input. Working Group input was facilitated through two platforms. The first, WikiMapping[6], is a web-based mapping tool that allowed project contributors to identify Shovel-Ready, Potential, and Planned Projects as well as Existing Charging Stations.

The second, a Google Form, allowed for feedback from the working group on project concepts and sites in a spreadsheet format.

[6] WikiMapping Website https://wikimapping.com/blog/

Meeting #5: Outreach Training – May 17, 2019

This meeting provided an overview of Outreach activities, provided training for Working Group members with general outreach training, and reviewed ChargePoint's activities in Kern County.

Meeting #6: Project Review – June 20, 2019

This meeting provided an overview of the project including implementation actions, toolkits, recommendations, and a preliminary review of slides for Statewide Energy Efficiency Collaborative program at which Working Group members (CSE, Kern COG, City of Arvin, and Envoy) presented findings from the project.

The Project Team invited Working Group members to participate in a survey prior to Working Group Meeting #6. The results of the survey are summarized below.

- Forty percent of respondents said they increased their knowledge of EVs significantly.
- Fifty-seven percent said the Blueprint's recommended implementation actions set a sound course for achieving goals, another twenty-nine percent said they will lead to partial achievement of goals.
- The group prioritized designing and building charging stations as the top priority for the group.
- Eighty-five percent said they would likely or would definitely share the Blueprint or Toolkits with others in their network.

Task 3: Analyze

The goal of this task was to develop an agreed upon methodology and rank projects identified in Task 2 based on their cost-effectiveness, economic or environmental impact on the region's DACs, and ability to spur additional deployment efforts. Kern COG submitted to the CEC both a Project Selection Methodology Report and a High-Impact Project Concepts Report.

Activities & Results

The project team utilized a quantitative siting methodology which consisted of a Multi-Attribute Decision Making method, Weighted Linear Combination method, and the Analytical Hierarchy Process technique to assess Kern County parcel data. Utilizing this analysis, the project team identified criterion, shown in Table 3, for weighted analysis used in each site type equation: Public, Workplace, MUD, and Destination.

Table 3: Criteria Used in Analysis

Criteria
Assessed net value.
Disadvantaged Community.
Distance to nearest EV level 2 public charging station (miles).
Distance to nearest DCFC public charging station (miles).
Count of BEV in zip code.
Count of PHEV in zip code.
Percent of vehicles that are BEVs in zip code.
Percent of vehicles that are PHEVs in zip code.
Total population residing in corresponding travel analysis zone.
Total number of employees that work in this zone.
Total number of office employees that work in this zone.
Total number of trips to/from this zone.

Source: CSE

Furthermore, the Project Team identified recommendations for a DCFC charging corridor network throughout Kern County. This analysis took into consideration the existing FAST Act[7] Alternative Fuel Corridors throughout the region and recommended near-term siting of DCFC at least every 50 miles along the network and long-term siting of DCFC every 20 miles along the network.

Overall, 14 DCFC sites were recommended for siting every 50 miles along the network. The project team identified corridor destination and public parcels using the siting methodology and the top five scoring locations nearest each recommend DCFC site.

Task 4: Plan

The goal of this task was to use goals identified in Task 2 and findings from Task 3 to create and publish the Blueprint. The Blueprint outlines a plan to accelerate transportation electrification with locally relevant financial and business models (financing, public investment) and at least twelve electrification projects.

Continued engagement with stakeholders was conducted to refine the Blueprint and ensure community buy-in. The Blueprint complements current regional and local planning efforts (the Regional Transportation Plan) and considers workforce development needs (the Regional Industry Clusters of Opportunity project a CEC funded effort leading to the formation of the San Joaquin Valley EV Partnership as a San Joaquin Valley Clean Cities Coalition working group).

[7] U.S. Department of Transportation Federal Highway Administration Fast Act
https://www.fhwa.dot.gov/fastact/guidance.cfm

Activities & Results

The Project Team developed the Blueprint through the completion of Tasks 2 & 3 and the continued engagement of stakeholders. Throughout the Blueprint development process, the Project Team received stakeholder feedback, presented findings to the Kern COG Transportation Technical Advisory Committee and Regional Planning Advisory Committee, and ensured consistency with regional planning efforts and programs. Efforts to create the plan included contributions from workforce development staff from the Kern Community College District participation on the Working Group and the San Joaquin Valley Clean Cities Coalition as noted above. The Blueprint sets deployment goals with annual increases for both Scenarios A and B.

Kern COG submitted a draft Blueprint to the CEC on May 14, 2019. Kern COG submitted the final Blueprint to the CEC on June 7, 2019. The Kern COG Transportation Policy and Planning Committee voted to receive and file the Blueprint on June 20, 2019. Kern COG notified the CEC on June 26, 2019 that the Blueprint and the Toolkits were posted to the Kern COG website, www.kerncog.org.

Task 5: Share

The goal of this task was to produce and then successfully distribute both the Blueprint and toolkits.

Activities & Results

The Project Team developed the Blueprint and associated toolkits; they were posted to Kern COG's website for public consumption. The Blueprint and toolkits were also distributed to Working Group members to share with their stakeholders.

Its goals are to:

- Foster transparency in government.
- Expand citizen awareness of government and the decision-making process.
- Provide programming of interest and educational value.
- Encourage participation in government services and activities.
- Provide complete and unedited coverage of government proceedings by broadcasting. local government meetings.
- Provide County departments with the means to promote their services to the public.

Kern County Board of Supervisors, Bakersfield City Council and County/City Planning Commission meetings are broadcast live as well as rebroadcast later in the week. The Kern COG's monthly meetings are aired several times a month. As a service to our armed services community, Kern County TV airs Army News, Navy News, and Air Force News several times a week. Kern County TV special presentations include a variety of programming topics including how to find a job, to health and safety tips for your home and family.

When the station is not airing shows or meetings, InfoKern[8], a bulletin board service, is on the air with information about special events and helpful tips from various government departments.

[8] Kern County Bulletin Board https://www.kerncounty.com/government/departments/countywide-communications-home/county-tv/kern-county-tv-faq

On June 25, 2019, the San Joaquin Valley EV Partnership hosted an EVs Made EZ workshop in Ridgecrest where Kern COG presented the Blueprint and Toolkits and ChargePoint spoke about EV Charging. Proterra spoke about EV. Key attendees include Kern County Economic Development staff from Eastern Kern County, Cerro Coso College, Caltrans District nine staff, Stantec, the Sierra Sands School District and the City of Ridgecrest.

The Project Team and members of the Working Group presented project findings and engaged public agency leaders at the Statewide Energy Efficiency Collaborative Conference on June 27, 2019. The presentation, "Addressing Barriers to EVI Deployment in DACs was listed on the Conference agenda in advance of the workshop. CSE provided a "sizzle" overview of the panel in advance of the workshop to encourage participation. More than 45 individuals attended the session in Long Beach.

In July, CSEposted an article and a link to the Blueprint on their website, promoting the post through CSE's communication channels at https://energycenter.org/ which includes monthly sessions (~15,000), Energy Loop subscribers (~17,000), Facebook followers (~5,000), Twitter followers (~1,300), and LinkedIn followers (~8,500).

CHAPTER 3:
EVI Gaps & Siting Analysis

Gaps Analysis

As of 2018, the total number of PEVs within Kern County was 1,824. This number accounts for 0.29 percent of the total vehicle registrations in the County. To accommodate the existing number of PEVs both within and traveling through the County, current EVI includes 98 L-2 plugs and 18 DCFC plugs; a majority of the DCFC plugs currently along corridors are Tesla chargers. CARB's Emission Factors (EMFAC) model estimates that by 2040 the total EVs in Kern County will reach 5.18 percent of the registered vehicles in the County. As EV adoption grows in Kern County, so will the need for adequate EV infrastructure. This section identifies County PEV and EVI projections, as well as the siting analysis by type, including Workplace, MUD, Destination, and Public Institution.

PEV & EVI Growth Projections

To estimate EV charging needs for the County by 2025, the Project Team applied the 2017 EMFAC Mobile Sources Emissions Inventory model to develop PEV projections through 2040. According to the EMFAC model, Kern County is projected to reach 3,942 light-duty PEVs by the end of 2019. This goal exceeds the current registration totals in the county by more than 2,000 PEVs. Table 4 shows the projected number of PEVs through 2040.

Table 4: Kern County PEV Projection Ranges to 2040

Year	Low	Mid	High
2020	3,375	5,091	10,182
2025	9,977	14,965	29,930
2030	18,259	27,388	54,702
2035	25,447	38,129	76,258
2040	30,969	46,499	92,908

Source: EMFAC, 2017

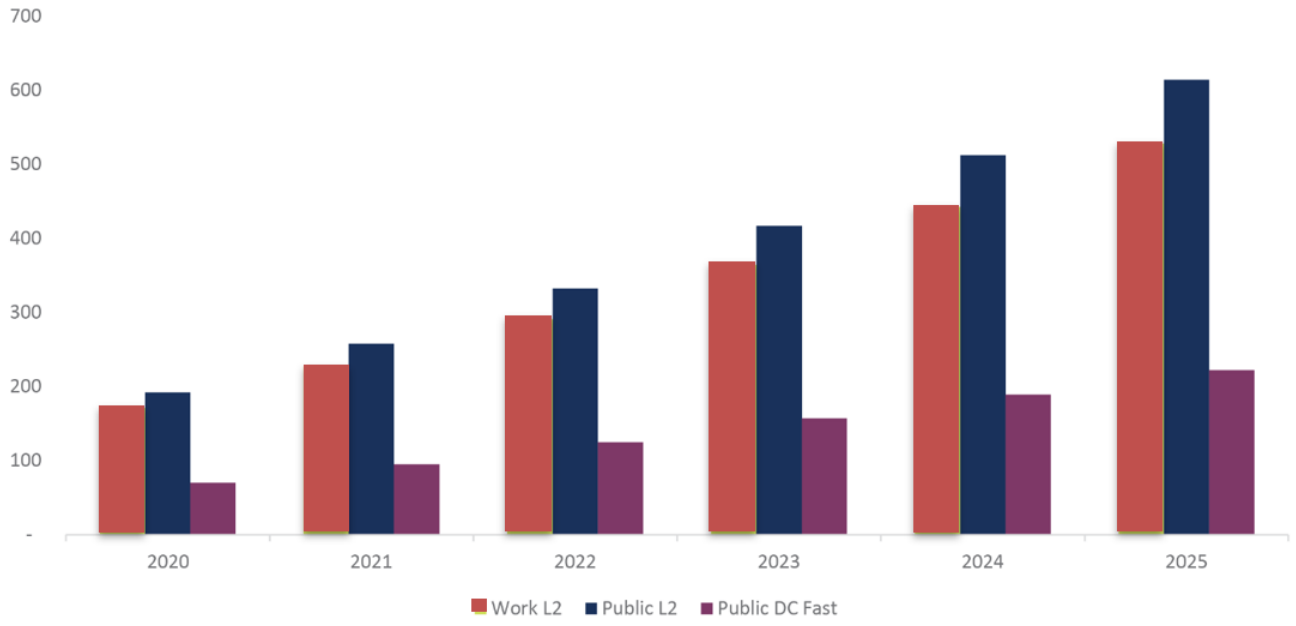
Project Scenarios

EV infrastructure projections help transportation planners anticipate future EV charging demand and deploy adequate infrastructure. To generate projections, the National Renewable Energy Laboratory's EVI Projection Tool model utilizes four primary inputs: PEV attributes such as electric range and efficiency; infrastructure attributes for residential, workplace, and public charging; travel data from regional models or transportation surveys; and county-level sales projections by technology type.

Scenario A

Scenario A utilizes this projection method to find the total number of chargers needed by 2025. According to the EVI-Pro analysis, 682 charging stations or 1,364 plugs are needed in the county by 2025 (CEC, 2018). Figure 3 and Table 5 on the next page depict Scenario A.

Figure 3: Scenario A: EVI-Pro Projection



Source: EVI-Pro, 2019

Table 5: Scenario A: EVI-Pro Based Projections

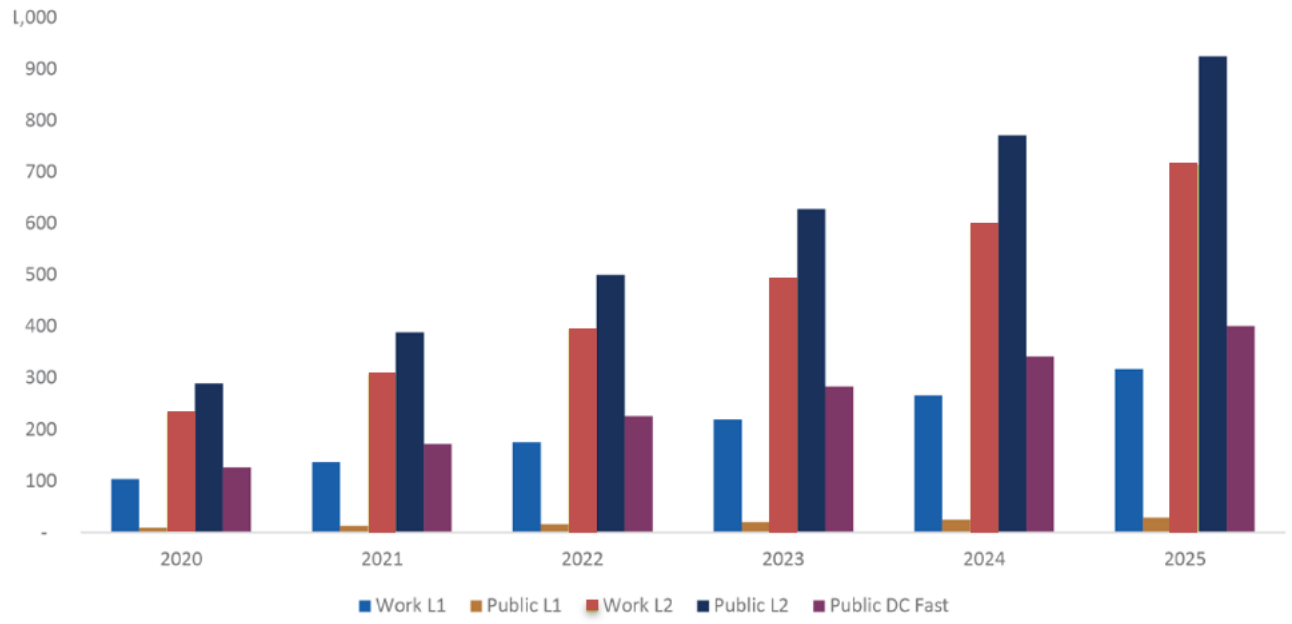
Year	2017	2018	2019	2020	2021	2022	2023	2024	2025
Work L2	24	40	61	86	114	146	182	222	264
Public L2	26	44	68	96	129	166	209	256	307
Public DCFC	9	16	25	35	48	63	79	95	111
Total EVCS	58	100	153	217	290	374	469	572	682

Source: EVI-Pro, 2019

Scenario B

The EVI-Pro analysis reflects the minimum number of charging plugs and stations needed to meet California's goal of 1.5 million ZEVs by 2025. To further benefit the county and provide significant environmental remediation, Scenario B was developed by the Project Team to model the ideal network of charging infrastructure. Scenario B is a population-based projection to identify the total projected PEVs in Kern County by 2025. This model identifies the projected State population through 2025 using data from the California State Department of Finance Population Projections, 2016. To identify the projected Kern County population by 2025, the Project Team used population projections from the Kern COG 2018 Regional Transportation Plan (Table 3-5: Growth Trends for Kern County and Selected Communities). Figure 4 and Table 6 on the next page depict Scenario B.

Figure 4: Scenario B: Population Based Projection



Source: EVI-Pro 2019

Table 6: Scenario B: Population Based Projections

Year	2017	2018	2019	2020	2021	2022	2023	2024	2025
Work L1	28.3	48.2	72.9	103.0	136.7	175.3	219.2	266.8	318.0
Public L1	2.6	4.4	6.6	9.4	12.5	16.0	20.0	24.3	29.0
Work L2	60.2	102.5	155.0	231.1	306.8	393.3	492.0	598.7	713.6
Public L2	65.3	112.7	173.0	289.3	388.7	500.2	628.2	771.4	925.0
DCFC	23	41	63	126	172	226	284	341	401
Total	180	309	470	759	1016	1311	1643	2003	2387

Source: California State Department of Finance Population Projections, 2016 & Kern COG Regional Transportation Plan, 2018

Siting Analysis

The siting analysis includes locations within the 11-member cities as well as Census-Designated Places within Kern County. The members include:

- City of Arvin
- City of Bakersfield
- City of California City
- City of Delano
- City of Maricopa
- City of McFarland
- City of Ridgecrest
- City of Shafter

- City of Taft
- City of Tehachapi
- City of Wasco
- County of Kern

The siting analysis is a quantitative exercise that analyzes regional travel data, land parcel data, existing station locations, vehicle registration data and site-specific factors to identify high-impact project locations for EV infrastructure investment. The overarching goal of the siting analysis is to ensure that future EV charging station deployment is highly utilized, provides adequate range for regional and interregional drivers, and reduces GHG emissions associated with internal combustion engine vehicle travel.

The value of investing in quantitative siting analysis has been proven through an Idaho National Laboratory study conducted in Oregon, which measured the utilization of charging stations deployed as part of a planning process versus siting in unplanned locations. Results indicated charging station deployment within areas identified as part of a planning process experienced nearly 90 percent greater utilization (measured in charging events per week) than stations deployed in unplanned locations.

To reach the Scenario B goals, the project team conducted siting analysis to identify approximately 2,400 sites. These sites are listed by top five by site type per city or Census-Designated Places in the following sections and top 50 by site type per city or Census-Designated Places Verifying 200 of the identified sites allowed the project team to project the approximate total number of eligible EV charging spaces among the high-ranking sites (the 2,400 identified). These projections are listed in Table 7.

Table 7: Approximation of EV Spaces Identified

Criteria	**Spaces for EVCS**
Workplace	843
MUD	2,013
Public	1,087
Destination	2,705
Total	**6,648**

Source: CSE

CHAPTER 4:
Blueprint Implementation

Implementation Scenarios

Two infrastructure deployment scenarios (Scenario A & B) are recommended for Kern COG to meet its share of the State of California's 2015 Zero-Emission Vehicle Action Plan goal of 1.5 million ZEVs on California Roads by 2025.

Scenario A: Utilizes the EVI-Pro tool. The tool incorporates data from personal vehicle travel patterns, EV attributes, and charging station characteristics to estimate the quantity, location, and type of charging infrastructure necessary to support regional adoption of EVs. The tool has a built-in assumption that the EV market will grow more quickly where high populations of EVs already exist, such as the Bay Area or Orange County. Given current statewide EV adoption trends, the tool projects 1,364 EV charging spaces (682 EV charging stations) are needed in Kern County by 2025.

Scenario B: Uses Kern County's projected population in 2025, compared to statewide population in 2025, to determine Kern County's share of the 2025 ZEV goal. Utilizing population more directly focuses on the potential impact electrification of transportation can have on air quality conformity goals identified in Kern COG's 2018 Regional Transportation Plan. In Scenario B, Kern County will need 4,426 EV charging spaces (2,387 EV charging stations) by 2025.

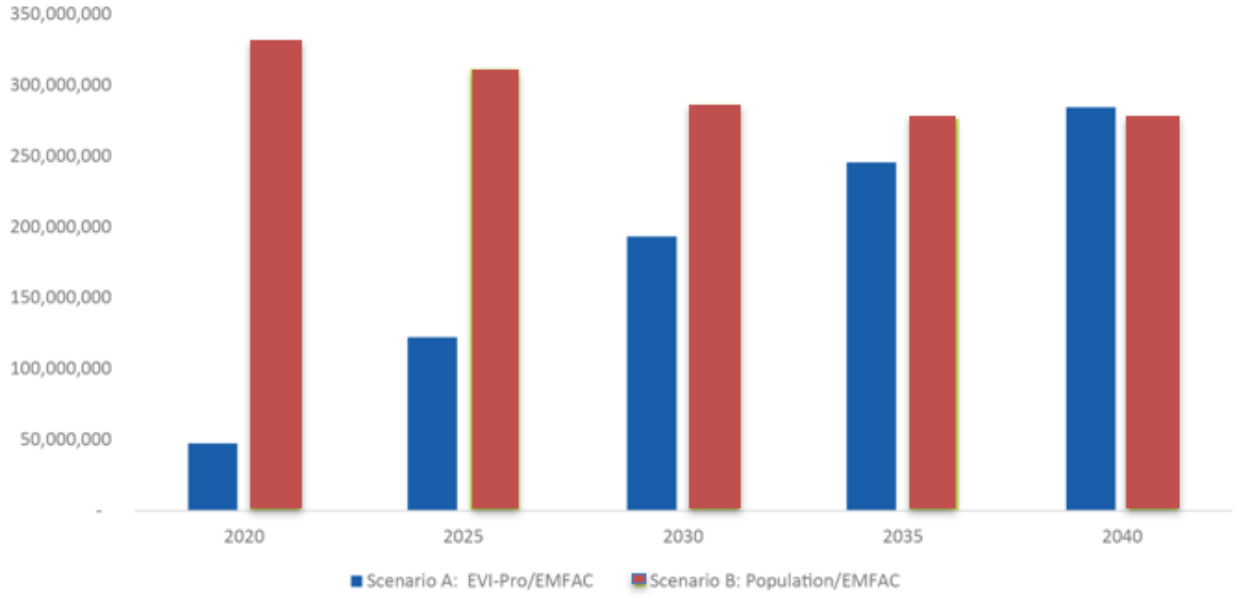
Implementation Goals

Implementation goals were developed to ensure that proposed actions meet project goals and have the greatest impact on the community through adding EV infrastructure cost efficiently, maximizing emissions reductions and environmental benefits, advancing community understanding of EVs and EVI, and connecting community leaders to resources. Metrics were developed to track the effectiveness of actions against the implementation goals.

Implementation Goal 1 (GHG Emissions Reduction)

Address the California Planning Emphasis Area of Environmental Sustainability to enhance the performance of the transportation system while protecting and enhancing the natural environment. Improve air quality in Kern County and reduce the impact to DACs through reducing GHG emissions. Figure 5 on the next page identifies the total emissions reductions potential through planning Scenario A and B.

Figure 5: Total Pounds of Tailpipe Carbon Dioxide Equivalent Saved per Year by Scenario



Sources: CSE

Performance Metrics

- 1a: EV Registration data and EV market share calculations.
- 1b: GHG emissions attributed to electric vehicle miles traveled and reduction of GHGs attributable to added electric vehicle miles traveled over time.
- 1c: Total number of charging stations sited in DACs as well as the percent DAC versus total.

Implementation Goal 2 (Transportation Infrastructure Readiness)

Enhance the performance of the transportation system by creating a path for Kern County communities to establish 4,000+ EV charging spaces by the year 2025.

Performance Metrics

- 2a: Number of EV charging stations deployed in Kern County over time.
- 2b: Regional EVCS utilization rates.
- 2c: EV range density measured Countywide and by City; Calculation of the maximum and average EV range per area.

Implementation Goal 3 (EV & EVI Awareness & Increased Adoption)

Improve EV & EVI awareness and advance adoption among Kern County residents, employees, and travelers through education and outreach.

Performance Metrics

- 3a: Number of public participants reached during dedicated outreach activities.
- 3b: Increased awareness of EV & EVI over implementation phase (10 years). (Measured through public surveys administered in each implementation phase and the total number of EV registrations/EV chargers).
- 3c: Advertising campaign analytics demonstrates numbers of individuals reached.

Implementation Goal 4 (EVI Affordability)

Reduce cost and effort required to install EVI making it more accessible to a broader range of users. Position public and private stakeholders (business owners, fleet managers, MUD owners) to capitalize on funding opportunities and to bring investment to their communities to drive the cost of EVI lower than traditional fuels.

Performance Metrics

- 4a: Time & Cost required to issue permits for charging infrastructure.
- 4b: EVI installation timeline, defined as the period between permitting and first charging event.
- 4c: Number of EVI incentives & grants issued in Kern County.
- 4d: Average cost of EVI project measured over time.

Implementation Strategy

The following actions were proposed for Kern County to meet the state goal via Scenario A or Scenario B.

Ongoing Actions

Create and Maintain a Regional EVI Collaborative

Kern COG should invite the current Working Group to participate in a cross-jurisdictional/regional EVI Collaborative and invite other community members to join. Additionally, Kern COG could provide support for existing regional collaboratives, such as the San Joaquin Valley Clean Cities Coalition.

Integrate Blueprint into Local Planning

Kern County local governments, employers, community-based organizations (CBOs) and other stakeholders that develop strategic plans should integrate Blueprint goals, actions, and metrics into relevant documents and internal policies.

Utilize and Promote Funding Opportunities (Grants, Incentives, and California's Low Carbon Fuel Standards)

Kern COG and its municipal partners should consider funding and hosting workshops and outreach events to promote available funding programs to regional stakeholder groups. Identifying the owners and managers of the properties identified through the siting analysis and specifically targeting them as workshop invitees may prove valuable in fostering awareness of available funding opportunities.

Workforce Training Program

Kern County organizations that support workforce development and training (Chambers of Commerce, Kern COG member agencies, Community Action Partnership of Kern, Kern Community College District, Project Clean Air, Employer's Training Resource Center, Kern, Kern Economic Development Foundation, etc.) should pursue grant funding to provide workforce development and training. Regional CBOs could provide workforce training specific to EVI deployment by partnering with vocational schools, community colleges and EVI technology providers to develop an EVI installation training program.

Blueprint Tracking & Reporting

As the regional planning agency and Blueprint organizer, Kern COG has developed a website designed to serve as an informational base for transportation efforts. The website should additionally function as a repository for all Blueprint and Outreach resources and future EVI

resources and provide a method of tracking regional progress on EVCS deployment activities and progress toward the 2025 goals.

GHG Emissions Tracking & Reporting

Kern COG is committed to improving air quality in the region. Electrification of transportation can significantly reduce GHG emissions by replacing internal combustion engine vehicles with EV. It is recommended that GHG emissions reductions metrics be calculated and shared with regional stakeholders on an annual basis.

Near-Term Actions

Large Transit Agency Planning for Zero Emission Bus

Large transit agencies (per the California Air Resources Board (CARB) Innovative Clean Transit Regulation, in the San Joaquin Valley, these are operators with fleets of 65 or more buses operating at annual maximum service) are required by the State to develop a rollout plan to transition to a 100 percent zero-emission bus fleet by 2040. Large transit agencies must have the plan submitted to the CARB in 2020.

Streamlined Permitting & Local EVI Ordinance

In accordance with California law Assembly Bill 1236[9], jurisdictions should develop and adopt ordinances creating an expedited, streamlined permitting process for EVCS, including Level 2 and DCFC. It may be additionally helpful to produce informational brochures and/or flyers on the permitting process to offer the public, either through targeted distribution, online publication, or on a walk-up basis.

Prioritize Investments in DCFC at 50-mile radius

Increasing the availability of DCFCs is a recommended pathway for improving BEV utility and accelerating market adoption. Utilizing a 50-mile charging radius (gaining 50 miles of charge in less than 30 mins of charging), an additional 14 DCFC stations are recommended in Kern County to provide adequate range coverage to facilitate all intercounty and intra-county travel by EVs.

Regional EVI Expert & Technical Advisory Program

To help decision-makers with EVI deployment, Kern COG should create an EVI expert & technical advisory program. San Diego Association of Governments created a similar grant program as part of PEV readiness implementation and conducted over 150 unique consultations providing guidance for EVCS installations.

EV & EVI Marketing Campaign

Convening a focus group (or series of focus groups) to deeply understand community barriers to EV/EVI adoption is recommended, especially in DACs where industry messaging typically does not penetrate as deeply as in other segments. Leveraging focus group input, Kern COG should partner with existing efforts and build on its past marketing efforts and develop a marketing plan to increase awareness, and ultimately adoption, of plug-in hybrids and EV to reach all stakeholders but with specific focus on disadvantaged and low-to-moderate income communities.

An example of an existing effort within Kern County is the Valley Clean Air Now. Valley Clean Air Now currently markets the Enhanced Fleet Modernization Program and Enhanced Fleet

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[9] AB-1236 Local Ordinances: Electric Vehicle Charging Stations
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160AB1236

Modernization Program Plus Up which provide incentives for replacing high-emitting vehicles. The range of incentives, from $2,500 to $9,500, is dependent on socioeconomic factors including income. Kern COG is also currently working to collaborate with stakeholders on the future of transportation within Kern County through the Transitions Transit Symposium[10], which Kern COG hosted in 2018 and 2019, and expects to host in 2020 and following thereafter either annually or biannually. Transitions brings together regional transportation stakeholders to discuss impactful transportation issues and alternatives.

CEC Phase II Funding Application

CEC Phase I funding was awarded to Kern COG under Alternative and Renewable Fuel and Vehicle Technology Program[11] to develop this Blueprint. One of the project goals for this Blueprint is to provide technical assistance to at least 12 site-owners identified during the siting analysis performed in Section V. Selection for Phase II funding is anticipated in late 2019 or early 2020.

Mid-Term Actions

Incentivize Renewables & EVI

During peak solar power generation (typically in summer and fall), solar power can provide most or all the midday generation, allowing EVs to potentially charge from GHG-free electricity. Municipalities should provide incentives (reduced permitting costs or timelines) to EV project owners to encourage co-locating renewable energy generation with EVI.

Small Transit Agency Zero Emission Bus Planning

Small transit agencies (per the CARB Innovative Clean Transit Regulation in the San Joaquin Valley, these are operators with fewer than 65 buses operating at annual maximum service) must develop a rollout plan to transition to 100 percent zero-emission bus fleets by 2040. Small transit agencies must have the rollout plan submitted to CARB in 2023.

Update High Impact Projects

Kern COG should consider updating the list of High Impact Projects to identify which have deployed EVI and if new sites have emerged that warrant outreach and/or advisory engagement.

EV & EVI Marketing Campaign #2

Kern COG should conduct or sponsor a second Regional EV/EVI awareness marketing campaign to educate consumers/residents/travelers about the environmental and financial benefits of PEVs.

Regional Update on EVI Costs

It is recommended that Kern COG, with help from regional stakeholders, develop a regional update on costs to install, operate, and maintain EVCS in 2025, when project goal timelines are met. Reporting is warranted to summarize changes from project commencement and to provide updated costs to continue pursuing EVI deployment through the planning horizon (10 years).

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[10] Transitions Transit Symposium https://californiahvip.org/events/transitions-2019-transit-symposium-2-26-2019/

[11] Alternative and Renewable Fuel and Vehicle Technology Program https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program

Long-Term Actions

Transit Fleet Zero Emission Bus Phasing

Under the CARB Innovative Clean Transit Regulation, all transit operators must begin phasing their fleets to 100 percent zero-emission buses (new purchases) in 2025 if minimum number of Zero Emission Buses were purchased by 2021; otherwise begin in 2023. Transit agencies will complete their Zero Emission Bus rollout plans by 2040 in compliance with CARB Innovative Clean Transit Regulation.

Autonomous Vehicles & Inductive Charging

Existing EV-ready infrastructure and/or EVCS infrastructure could be modified to support inductive (wireless) charging pads. While there is a potential energy loss in inductive transfer of power (up to 10 percent), there are significant benefits of inductive charging for AV, especially in Fleets. Current Kern COG planning documents identify the potential impacts of new on-road technologies.

Conclusions

This Blueprint identified two scenarios for Kern COG stakeholders to transition the Kern County region to electrified transportation with a holistic and futuristic view of regional transportation planning, consideration for DACs, and meeting its share of the State of California's 2015 ZEV Action Plan goal. Scenario A calls for the addition of 1,364 spaces/plugs across Kern County (682 dual plug EVCS), and Scenario B requires an additional 4,426 spaces/plugs (2,387 dual plug EVCS) be added by 2025. Both scenarios require installing chargers at a variety of identified location categories, including MUDs, public institutions, workplaces, and destinations, as well as along highway corridors. Near-term actions identified in the Implementation Plan were identified to quickly remove the principal barriers to EVI adoption in Kern County and strategically select DCFC locations for primary investment. Investing in regional fast charging capacity will significantly reduce regional driver range anxiety, promote inter-county EV travel, achieve maximum GHG reductions due to maximum electric vehicle miles traveled potential, and may add direct financial incentives with capacity based on California's Low Carbon Fuel Standards credits.

It is recommended that Kern COG stakeholders invest time and resources into the actions identified in the Implementation Plan, meeting implementation goals, and tracking metrics/progress. At the end of each project phase (near-term, mid-term, long-term) Kern COG and EVI stakeholders should evaluate progress against the targets identified in Scenario A and B. Meeting either scenario target can be identified as meeting the State of California's 2015 ZEV Action Plan goal; achieving Scenario B targets will generate additional estimated 188,991,674 pounds of carbon dioxide equivalent emissions savings.

CHAPTER 5:
Outreach & Engagement

Outreach Activities

CSE identified the following target audiences to engage during this project:

- Working Group.
- Kern COG Internal Stakeholders.
- Public Agencies (municipalities, school districts, transit planners).
- Workplaces (employers, chambers of commerce).
- MUDs Destinations (areas of interest/Visitor Boards).
- Fleet (public and/or private fleet managers).
- Community-Based Organizations (non-profits, workforce groups, equity organizations).

Table 8 shows these target audience, what they do and the project benefits.

Table 8: Audience Profile

AUDIENCE	WHAT THEY DO	PROJECT BENEFITS
Working Group	Work in transportation, work in Kern County	EV infrastructure for the community
Kern COG Internal Stakeholders (Kern COG Transportation Technical Advisory Committee, Regional Planning Advisory Committee, and Kern COG Board)	Advise, review, and direct Kern COG's work	Kern COG seeks air quality conformity.
Public Agencies (Cities, School Districts, Corridor, Caltrans Districts 6 & 9)	Work in regional planning agencies or government	EV infrastructure for employees and the public
Workplace (employers, Chambers of Commerce)	Employ Kern County residents	Boost employer attractiveness and serve their employees
Multi-Unit Dwellings (owners & operators)	Provide housing options for Kern County residents	Advisory for adding EV charging amenities for residents
Destinations (Visitor Centers, short/long dwell)	Facilitate recreation activities in Kern County	Better connecting Kern County facilitating more enjoyment/use. Additional revenue from EV drivers supporting local businesses

AUDIENCE	WHAT THEY DO	PROJECT BENEFITS
Fleet (Public & Private Fleet Managers)	Work in transportation managing fleets	EV infrastructure to maintain compliance and optimize fleet
Community-Based Organizations (workforce, social equity, DACs)	Promote social justice, equity, and fairness	EV infrastructure & air quality benefit to the community.

Source: Kern EV Charging Station Blueprint Working Group

Because CSE and Kern COG successfully engaged a dynamic and representative Working Group, we relied on them and Kern COG Internal Stakeholders to provide holistic and critical input on the format of the Blueprint and the methodology for generating a master list of potential EVI sites. We also engaged all audiences during Blueprint Deployment to increase disperse project recommendations and encourage EVI adoption. Table 9 details which audiences were engaged during each project phase.

Table 9: Outreach Schedule

PROJECT PHASE	GOAL	AUDIENCE ENGAGED	RATIONALE
Blueprint Development	Develop a Kern County Charging Station Blueprint for Kern County communities to achieve its 2018 Regional Transportation Plan & Sustainable Communities Strategy through establishing 4,000 EV charging spaces by 2025.	Working Group & Kern COG Internal Stakeholders	Stakeholders are leaders in the community and demonstrated supporters of Kern County's progress.
Site Selection	Develop a master list of projects to reach the 4,000 EV charging spaces by 2025. AND Position at least 12 sites for future CEC funding under Phase II of the EV Ready Communities Challenge program.	ALL	Input from all audiences will help prioritize sites for public/private investment leading to more rapid adoption.
Blueprint Deployment	Deploy the Blueprint and provide toolkits to all audiences. Share project findings, make the blueprint visible, increase the rate of EV/EVI adoption, and generate momentum for Kern County to continue reaching the 4,000 EV spaces goal beyond the term of this project.	ALL	Widespread dispersion of the Blueprint and toolkits is best reached through engaging all audiences.

Source: Kern EV Charging Station Blueprint Working Group

Table 10 provides a high-level overview of the channels that can be used to reach each target audience.

Table 10: Engagement Channels

Channel	Working Group	Internal Stakeholder	Public Agencies	Workplaces	Muds	Destinations	Fleet	CBOS
Meetings	X	x						
Webinars	x							
Email	x							
Talking Points	x							
Toolkits	x		x	x	x	x	x	x

Source: Kern EV Charging Station Blueprint Working Group

Blueprint Deployment

The project team engaged the working group, internal stakeholders, and select public agencies over the course of the project and during Blueprint deployment to disperse project recommendations and encourage EVI adoption. Regional stakeholders are encouraged to deploy the Blueprint and toolkits to other audiences to ensure that Kern COG to achieves its 4,000 EV space goals.

Deployment Results

The Project Team developed the Blueprint and associated toolkits; they were posted to Kern COG's website for public consumption. The Blueprint and toolkits were also distributed to Working Group members to share with their stakeholders.

The Blueprint and associated toolkits were presented to the Kern COG Transportation Policy and Planning Committee on June 20, 2019. All Kern COG Transportation Policy and Planning Committee meetings are broadcast on Kern Government Television known as KGOV. All broadcasts are posted to YouTube.com where Kern COG has 397 subscribers as of July 1, 2019. Kern County Television is Kern County's local government cable television station. Geographically, Kern County TV is the largest government station, covering over 8,000 square miles.

Its goals are to:

- Foster transparency in government.
- Expand citizen awareness of government and the decision-making process.
- Provide programming of interest and educational value.
- Encourage participation in government services and activities.
- Provide complete and unedited coverage of government proceedings by broadcasting local government meetings.
- Provide County departments with the means to promote their services to the public.

Kern County Board of Supervisors, Bakersfield City Council and County/City Planning Commission meetings are broadcast live as well as rebroadcast later in the week. The Kern

COG's monthly meetings are aired several times a month. As a service to our armed services community, Kern County TV airs Army News, Navy News, and Air Force News several times a week. Kern County TV special presentations include a variety of programming topics including how to find a job to health and safety tips for your home and family.

When the station is not airing shows or meetings, InfoKern, a bulletin board service, is on the air with information about special events and helpful tips from various government departments.

On June 25, 2019, the San Joaquin Valley EV Partnership hosted an EVs Made EZ workshop in Ridgecrest, CA where Kern COG presented the Blueprint and Toolkits and ChargePoint spoke about EV Charging. Proterra spoke about electric vehicles. Key attendees include Kern County Economic Development staff from Eastern Kern County, Cerro Coso College, Caltrans District 9 staff, Stantec, the Sierra Sands School District and the City of Ridgecrest.

The Project Team and members of the Working Group presented project findings and engaged public agency leaders at the Statewide Energy Efficiency Collaborative Forum on June 27, 2019. The presentation, "Addressing Barriers to EVI Deployment in DACs was listed on the conference agenda in advance of the workshop. CSE provided a "sizzle" overview of the panel in advance of the workshop to encourage participation. More than 45 individuals attended the session. In July, CSE has scheduled to post an article and a link to the Blueprint to their website promoting the post through CSE's communication channels which includes EnergyCenter.org monthly sessions (~15,000), Energy Loop subscribers (~17,000), Facebook followers (~5,000), Twitter followers (~1300), and LinkedIn followers (~8,500).

GLOSSARY

BATTERY ELECTRIC VEHICLE (BEV)—Also known as an "All-electric" vehicle (AEV), BEVs utilize energy that is stored in rechargeable battery packs. BEVs sustain their power through the batteries and therefore must be plugged into an external electricity source in order to recharge.

CALIFORNIA AIR RESOURCES BOARD (CARB)— The state's lead air quality agency consisting of an 11-member board appointed by the Governor, and just over thousand employees. CARB is responsible for attainment and maintenance of the state and federal air quality standards, California climate change programs, and is fully responsible for motor vehicle pollution control. It oversees county and regional air pollution management programs.

CALIFORNIA AIR RESOURCE BOARD'S EMISSION FACTORS (EMFAC)—The EMFAC emissions model is developed and used by CARB to assess emissions from on-road vehicles including cars, trucks, and buses in California, and to support CARB's regulatory and air quality planning efforts to meet the Federal Highway Administration's transportation planning requirements.

CALIFORNIA DEPARTMENT OF TRANSPORTATION (Caltrans)—Responsible for the design, construction, maintenance, and operation of the California State Highway System, as well as that portion of the Interstate Highway System within the state's boundaries.[12]

CALIFORNIA ENERGY COMMISSION (CEC)—The state agency established by the Warren-Alquist State Energy Resources Conservation and Development Act in 1974 (Public Resources Code, Sections 25000 et seq.) responsible for energy policy. The Energy Commission's five major areas of responsibilities are:

1. Forecasting future statewide energy needs.
2. Licensing power plants sufficient to meet those needs.
3. Promoting energy conservation and efficiency measures.
4. Developing renewable and alternative energy resources, including providing assistance. to develop clean transportation fuels.
5. Planning for and directing state response to energy emergencies.

CENTER FOR SUBSTAINABLE ENERGY (CSE)—We are committed to creating strategies, advising on policies, and administering programs with the goal of maximizing renewable energy adoption and distributed energy resources to help drive the decarbonization of transportation and the built environment in an economically affordable way.[13]

COMMUNITY BASED ORGANIZATIONS (CBOs)—Refers to organizing aimed at making desired improvements to a community's social health, well-being, and overall functioning. Community organization occurs in geographically, psychosocially, culturally, spiritually, and digitally bounded communities.[14]

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12 Department of Transportation Glossary Webpage https://dot.ca.gov/az.html

13 The Center for Sustainable Energy https://energycenter.org/

14 Community Based Organization Definition https://en.wikipedia.org/wiki/Community_organization

DIRECT CURRENT FAST CHARGING (DCFC)— Converts AC power to DC within the charging station and delivers DC power directly to the battery, which is why they charge faster.[15]

DISADVANTAGED COMMUNITIES (DACs)—Areas throughout California that are affected most by economic, health and environmental burdens. These burdens include poverty, high unemployment, increased risk of asthma and heart disease and often limited access to safe and clean drinking water.[16]

ELECTRIC VEHICLE (EV)—A broad category that includes all vehicles that are fully powered by electricity or an electric motor.

ELECTRIC VEHICLE CHARGING STATION (EVCS)—An electric vehicle charging station, also called EV charging station, electric recharging point, charging point, charge point, electronic charging station (ECS), and electric vehicle supply equipment (EVSE), is an element in an infrastructure that supplies electric energy for the recharging of plug-in electric vehicles—including electric cars, neighborhood electric vehicles and plug-in hybrids.[17]

ELECTRIC VEHICLE CHARGING STATION BLUEPRINT (BLUEPRINT)—The Blueprint will place Kern County on a pathway to achieve its Sustainable Communities Strategy greenhouse gas emission reduction goals at an accelerated rate through identifying high-impact transportation electrification projects and assigning community-specific implementation strategies to reach the following project goals.[2]

ELECTRIC VEHICLE INFRASTRUCTURE (EVI)—This network allows for the rapid charging of battery electric vehicles through out every major highway and thoroughfare in the Golden State. Targeting transportation corridors allows drivers of electric vehicles to travel throughout California and conveniently charge their cars in the least amount of time possible.[18]

GREENHOUSE GAS (GHG)—Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include water vapor, carbon dioxide (CO2), methane (CH4), nitrous oxide (NOx), halogenated fluorocarbons (HCFCs), ozone (O3), per fluorinated carbons (PFCs), and hydrofluorocarbons (HFCs).

KERN COUNCIL OF GOVERNMENTS (Kern COG)—Is the Metropolitan Planning Organization (MPO) for the Kern Region as designated by the Federal government, and the Regional Transportation Planning Agency (RTPA) as designated by the State of California. It is responsible for developing and updating a variety of transportation plans and for allocating the federal and state funds to implement them.[19]

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[15] Direct Current Fast Charging https://www.chargepoint.com/blog/when-and-how-use-dc-fast-charging/

[16] Disadvantaged Communities Definition https://www.watereducation.org/aquapedia-background/disadvantaged-communities

[17] Electric Vehicle Charging Station https://en.wikipedia.org/wiki/Charging_station

[18] Electric Vehicle Infrastructure https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program/clean-transportation-funding-areas-0

[19] Kern Council of Governments https://www.kerncog.org/

MULTI-UNIT DWELLING (MUDS)—(also known as multi-dwelling unit or MDU) is a classification of housing where multiple separate housing units for residential inhabitants are contained within one building or several buildings within one complex. Units can be next to each other (side-by-side units) or stacked on top of each other (top and bottom units). A common form is an apartment building. Many intentional communities incorporate multifamily residences, such as in cohousing projects.

PLUG-IN ELECTRIC VEHICLE (PEV)—A general term for any car that runs at least partially on battery power and is recharged from the electricity grid. There are two different types of PEVs to choose from—pure battery electric and plug-in hybrid vehicles.

PLUG-IN HYBRID ELECTRIC VEHICLE (PHEV)—PHEVs are powered by an internal combustion engine and an electric motor that uses energy stored in a battery. The vehicle can be plugged in to an electric power source to charge the battery. Some can travel nearly 100 miles on electricity alone, and all can operate solely on gasoline (similar to a conventional hybrid).

ZERO EMISSION VEHICLE (ZEV)—Vehicles that produce no emissions from the on-board source of power (e.g., an electric vehicle).