Summary Review of Policies to Guide Program Development

Task 2.2

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1. Introduction

This memorandum provides a summary report on the federal, state, regional, and local policies that will guide the development of SANDAG's Regional Electric Vehicle (EV) Charging Infrastructure Program. The objective of this review is to identify policy priorities to address in development of SANDAG's charging program framework. This document includes a review of the following policies:

- Federal policies: Outside of the federal tax credit and federal fuel economy standards, there are fewer explicit policies in place today to support EV or EV charging infrastructure deployment. Both of these policies are subject to Congressional and/or Executive intervention. This document reviews the status of the federal tax credit for qualified EVs and summarizes the current status of fuel economy standards or tailpipe greenhouse gas (GHG) emission standards.
- California policies: California has a myriad of policies that encourage transportation electrification, largely due to aggressive air pollution and GHG reductions required to meet federal air quality standards and state GHG emission targets. This document reviews the policies that are in place to ensure that light-duty vehicles make a fair-share contribution to criteria air pollutant emission reductions and GHG emission reductions.
- Regional and local policies: SANDAG has led regional EV readiness planning efforts in the San Diego region and the San Diego Air Pollution Control District (APCD) is making strides towards developing and implementing policies and programs that will support EV and EV charging infrastructure deployment. Locally, the majority of local governments have included policies that support EV adoption in local Climate Action Plans (CAPs).

2. Federal Policies

The most significant federal policies related to EVs include the federal tailpipe GHG emissions and fuel economy standards and the tax credit for the purchase of new EVs.

Federal Light-Duty Vehicle Emissions Standards

Federal vehicle GHG emissions and fuel economy standards are promulgated by the United States Environmental Protection Agency (US EPA) and the National Highway Traffic Safety Administration (NHTSA). In 2009-2010, the Obama Administration and the State of California agreed to harmonize federal tailpipe emission and fuel economy standards. The new nationally harmonized program had two phases: Phase 1 was Model Year (MY) 2012-2016 and Phase 2 MY 2017-2025. The second phase was to achieve a GHG emissions target of 163 grams per mile, which would require an effective fuel economy for new vehicles of about 54.5 miles per gallon (mpg)—note that the US EPA analyses demonstrates that the actual on-road fuel economy was expected to be about 36-37 mpg by 2025.

The federal vehicle emissions and fuel economy standards were subject to a mid-term evaluation (MTE). The US EPA under the Obama Administration originally determined that the emission standards developed for MY 2022-2025 were appropriate; however, in March 2017, the US EPA under the Trump

Administration indicated that it would revisit the MTE. In April 2018, the US EPA announced that in its reconsideration of the MTE that GHG emission standards for MY 2022-2025 light-duty vehicles "are not appropriate" and warrant revision.[1] EPA stated that it would collaborate with NHTSA on joint rulemaking to propose and finalize amended (i.e., less stringent) GHG emission standards and corresponding corporate average fuel economy standards for light-duty cars and pickup trucks manufactured in MYs 2022-2025. The agencies issued the Safer Affordable Fuel Efficient (SAFE) Vehicles Rule for MY 2021-2026 in August 2018.[2]

The Trump Administration has stated its intent to revoke the waiver previously granted to California to implement its own GHG emission reduction standards, which includes the ZEV program. However, California's Zero Emission Vehicle (ZEV) program (discussed in more detail below), and actions by other states that adopted California's provisions, are the main drivers behind EV adoption today. It is unclear whether actions to remove California's Clean Air Act waiver will slow the EV market, as strong commitments and investments are underway by industry and through other government mechanisms. The previously promulgated stronger GHG emission and fuel economy standards would do more to encourage EV adoption among car buyers and pave the way for more rapid transportation electrification.

Federal Tax Credit for EVs

The federal tax credit for EVs has been in place for almost 10 years. The credit amounts to between $2,500 and $7,500, depending on the kilowatt-hour capacity of the vehicle's battery. Importantly, the credit phases out on a per-manufacturer basis over a one-year period, with the phase-out period triggered by an automotive manufacturer's (referred to as OEMs) sale of 200,000 qualifying vehicles for use in the United States.[3]

The US Congress recently amended the federal tax code (Public Law 115-97). In the development of the bill to change the tax code, the House of Representatives advanced a version of the bill that removed the EV tax credit. However, after reconciliation between the House of Representatives and Senate, the EV tax credit was left unchanged. This suggests that the EV tax credit will likely remain as part of federal policy for the foreseeable future as it appears unlikely there is sufficient support in the Congress to remove it from law.

Tesla and General Motors exceeded the 200,000 vehicle phase-out cap as of October 2018. Other OEMs, including Nissan, Toyota, Ford, Volkswagen are not nearing the sales cap yet.[4]

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[1] 83 FR 16077 (Apr. 13, 2018), available at https://www.gpo.gov/fdsys/pkg/FR-2018-04-13/pdf/2018-07364.pdf. The Agency's associated April 2 press release can be found at https://www.epa.gov/newsreleases/epa-administrator-pruitt-ghg-emissions-standards-cars-and-light-trucks-should-be.

[2] 84 FR 42986 (Aug. 24, 2018), available at https://www.govinfo.gov/content/pkg/FR-2018-08-24/pdf/2018-16820.pdf.

[3] IRS, "Plug-In Electric Drive Vehicle Credit (IRC 30D)," available at https://www.irs.gov/businesses/plug-in-electric-vehicle-credit-irc-30-and-irc-30d.

[4] See http://evadoption.com/ev-sales/federal-ev-tax-credit-phase-out-tracker-by-automaker/.

Workforce Development for Electric Vehicle Infrastructure Installers

Various stakeholders are actively engaged in efforts to ensure that EV charging infrastructure is installed safely and according to relevant electrical codes and standards. Local jurisdictions require permits and installations must be completed by state licensed electricians. One training program offered to licensed electricians that provides information specific to electric vehicle supply equipment (EVSE) [5] is the Electric Vehicle Infrastructure Training Program (EVITP). EVITP is a voluntary initiative developed to train and certify installers of EVSE, with curriculum developed by stakeholders across automotive, utility, EVSE manufacturing, and education sectors.[6] The program has certified over 3,000 electricians in the United States and Canada.[7] There are 54 EVITP-certified electrical contractors in California including 8 in the San Diego region.[8] At the federal level, the Department of Energy's Clean Cities Coalition Network works with EVITP to address training and safety needs of local Clean Cities coalitions.[9] Various vehicle OEMs and EV charger companies also offer training programs to provide specialized information on EVCS installations for licensed electricians.

3. California Policies and Programs

California has a variety of policies, programs, and incentives to help drive EV adoption, and deploy EV charging infrastructure to support those EVs.

Zero Emission Vehicle Program

California's Zero Emission Vehicle (ZEV) Program is administered by the California Air Resources Board (CARB) and dates back to 1990. In its current form, the program requires the largest automotive manufacturers (referred to as OEMs) to manufacture and deliver for sale in California a sufficient number of ZEV credit-producing vehicles (battery electric, plug-in hybrid electric (PHEV), and fuel cell electric vehicles) such that each OEM attains specific ZEV credit and minimum ZEV floor percentages depending on the average of their overall annual in-state vehicle (passenger car and light-duty trucks) sales over a preceding three-year period. The requisite ZEV credit and minimum ZEV floor percentages ramp up gradually through MY 2025, as shown in Table 1.[10]

[5] EVSE refers to the equipment needed to safely connect an EV to electric power from the grid.

[6] https://evitp.org/partner-advisors/

[7] https://evitp.org/about-us/

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

[9] https://www2.eere.energy.gov/cleancities/evitp.html

[10] See 13 CCR 1962.2(b)(1)(A), (b)(2)(E).

Table 1. ZEV Program Compliance Targets

Model Year	ZEV Credit Percentage Requirement	Minimum ZEV Floor	Maximum Credits from Qualifying PHEVs
2018	4.5%	2%	2.5%
2019	7.0%	4%	3.0%
2020	9.5%	6%	3.5%
2021	12.0%	8%	4.0%
2022	14.5%	10%	4.5%
2023	17.0%	12%	5.0%
2024	19.5%	14%	5.5%
2025	22.0%	16%	6.0%

To date, nine states across the country—Connecticut, Maine, Maryland, Massachusetts, New Jersey, New York, Oregon, Rhode Island, and Vermont–have adopted California's ZEV standards pursuant to section 177 of the Clean Air Act. Together with California, these nine states comprise almost 30 percent of the national light duty vehicle market.

For the section 177 ZEV states, a particularly notable aspect of the current ZEV program is the recent expiration of the so-called travel provision for all but fuel cell electric vehicles. That provision allowed OEMs to earn ZEV credits in every ZEV state that had adopted the standard for battery electric and fuel cell electric vehicles sold in California (or any other ZEV state).[11] With the travel provision's expiration for battery electric vehicles (BEVs) at the end of MY 2017, it is widely anticipated that all nine states will now see a resulting increase in the number of light-duty EVs offered for sale in their jurisdictions. As the Northeast States for Coordinated Air Use Management explained early last year:

> The ZEV requirements have not fully taken effect in our states due to a regulatory provision that allows automakers to concentrate early marketing efforts in California. If [CARB] accepts Staff recommendations [which CARB did], that provision will expire at the end of the 2017 model year, which will boost electric vehicle availability, marketing and sales in the Northeast ZEV states.[12]

[11] See "Why Electric Cars are Rare Outside CA: Arcane 'Travel Provision' Rule" (June 1, 2015), available at http://www.greencarreports.com/news/1098525_why-electric-cars-are-rare-outside-ca-arcane-travel-provision-rule.

[12] NESCAUM, "NESCAUM States Support Recommendations for No Changes to California Zero Emission Vehicle Standards" (Jan. 18, 2017), available at http://www.nescaum.org/documents/nescaum-states-support-california-clean-car-program-review-results-20170118.pdf/.

California Zero Emission Vehicle Action Plan

The ZEV Action Plan was borne out of Executive Order B-16-2012 that directed California to "encourage the development and success of zero-emission vehicles to protect the environment, stimulate economic and improve the quality of life in the State." California established the Governor's Interagency Working Group on ZEVs to develop the Plan. The first edition of the Plan was first released in 2013,[13] and was designed as a roadmap to achieve 1.5 million ZEVs on California roadways by 2025. The Interagency Working Group includes the entities listed in Table 2.

Table 2. Participants on the Governor's Interagency Working Group on Zero-emission Vehicles

Governor's Interagency Working Group on Zero-emission Vehicles	
Air Resources Board	Labor and Workforce Development Agency Employment Training Panel
Department of Food and Agriculture Division of Measurement Standards	Public Utilities Commission
Caltrans	Department of General Services Division of State Architect Building Standards Commission
California Energy Commission	Governor's Office of Business & Economic Development
Housing and Community Development Department	Governor's Office of Planning & Research
California Independent System Operator	

The original Action Plan identified four broad goals for state government to advance ZEVs:

- Complete needed infrastructure and planning
- Expand consumer awareness and demand
- Transform fleets
- Grow jobs in the private sector

These four goals have since evolved and been parsed out into more detail and provided more structure (and are listed below). Updates to the ZEV Action Plan were published in 2016[14] and more recently in September 2018.[15] The 2018 update accounts for EO B-48-18, which set targets of 200 hydrogen fueling stations and 250,000 EV chargers to support 1.5 million ZEVs by 2025, and put California on a path to 5 million ZEVs by 2030.

- The 2016 ZEV Action Plan contained more than 200 specific action items for state agencies to accelerate ZEV adoption in California.

[13] 2013 ZEV Action Plan, Governor's Interagency Working Group on Zero-emission Vehicles, February 2013. Available online at http://opr.ca.gov/docs/Governors_Office_ZEV_Action_Plan_(02-13).pdf.

[14] 2016 ZEV Action Plan, Governor's Interagency Working Group on Zero-emission Vehicles, October 2016. Available online at https://www.gov.ca.gov/wp-content/uploads/2017/09/2016_ZEV_Action_Plan.pdf.

[15] 2018 ZEV Action Plan: Priorities Update, Governor's Interagency Working Group on Zero-emission Vehicles, September 2018. Available online at http://business.ca.gov/Portals/0/ZEV/2018-ZEV-Action-Plan-Priorities-Update.pdf.

- The 2018 update is referred to as a Priorities Update and highlights the 39 actions that state agencies plan to undertake, or have already started, to implement the new directives in EO B-48-18. These actions are characterized into the following categories:
    - Achieve mainstream consumer awareness of ZEV options and benefits
    - Make ZEVs an affordable and attractive option for drivers and passengers
    - Ensure convenient charging and fueling infrastructure for greatly expanded use of ZEVs
    - Maximize economic and job opportunities from ZEV technologies
    - Bolster ZEV market growth outside of California
    - Lead by example integrating ZEVs into state government

Caltrans 30-30 ZEV Implementation Plan

California's Department of Transportation (Caltrans) is a member of the Interagency Working Group on Zero-emission Vehicles; however, they also published their "30-30" Zero-Emission Vehicle Implementation Plan in November 2017. The "30-30" designation focuses on the installation of DC fast charging equipment at a minimum of 30 locations within 30 months of the Governor's ZEV direction.[16] The objective is to fill gaps within the existing DC fast charger corridor network along key routes of the state highway system—more specifically, they seek to fill gaps in DC fast charging service of 80 miles or greater in remote or under-served locations. Caltrans estimates total costs of $25.3 million, with $16.2 million dedicated to construction and support costs of $9.1 million—this is equivalent to $683,000 per DC fast charger unit installed. The Plan seeks to deploy 37 public DC fast charging facilities within the state highway right of way and other Caltrans owned locations, with 34 in place by November 2017 and three more under construction by March 2019. Of the 37 locations, Caltrans is deploying the DC fast charging equipment in 31 locations that are located in Disadvantaged Communities and/or Low Income Communities.

Caltrans has also assumed a leadership role in understanding the impact of EV charging—they are piloting "smart" charging technologies at the 37 EV charging stations and will collaborate with the Energy Commission, that will help inform the development of California's DC fast charger corridor network. Caltrans has also focused its implementation strategies on siting, including siting criteria, site design components, developing standards, and providing capital and support costs.

Clean Vehicle Rebate Project

The Clean Vehicle Rebate Project (CVRP)[17] is an incentive program that reduces the purchase price of ZEVs. Consumers can get up to $7,000 for the purchase or lease of a new, eligible ZEVs. Applicants must be an individual, business, nonprofit or government entity based in California. Standard rebates are worth $1,500 for plug-in hybrid electric vehicles (PHEVs) and $2,500 for BEVs. Electric motorcycles are also eligible and receive a rebate up to $900. The program does have income eligibility requirements for individual consumers. More specifically, consumers with household incomes greater than $150,000 for

[16] Caltrans "30-30" Zero-Emission Vehicle Implementation Plan, Caltrans, November 2017. Available online at http://www.dot.ca.gov/hq/transprog/ctcliaison/2017/1217/superbook/49_4.20_Combined4Linking.pdf.

[17] More information is available online at https://cleanvehiclerebate.org/.

single filers, $204,000 for head-of-household filers, or $300,000 for joint filers are not eligible. On the other hand, the rebate levels go up for low- and moderate-income consumers. Consumers with household incomes less than or equal to 300 percent of the federal poverty level (and linked to the household size) are eligible for a $2,000 increase in the rebate amount.

Individuals and businesses are eligible to receive up to two CVRP rebates via direct purchase or lease. However, traditional rental car fleets and car share fleets are allowed up to 20 rebates per calendar year.

The CVRP also has a dedicated fund for public agencies, which are eligible to receive up to $7,000 for the purchase or lease of a new ZEV. The incentive amounts are the same for public fleets as they are for consumers: $1,500 for PHEVs and $2,500 for BEVs. The increased rebate amounts are available to fleets that are located within a California disadvantaged community census track, as designated by the CalEnviroScreen tool. Public fleets are limited to 30 rebates per calendar year.

To date, the program has issued rebates for more than 100,000 PHEVs and 150,000 BEVs, with total funding exceeding $547 million. The CVRP has largely been funded by Cap-and-Trade auction proceeds, which are directed to the Low Carbon Transportation Investments.

Low Carbon Fuel Standard

The AB 32 Scoping Plan identifies California's Low Carbon Fuel Standard (LCFS) Program[18] as an Early Action Item. The standard requires a 7.5 percent reduction in transportation fuel carbon intensity by 2020, with the program starting in 2011. Carbon intensity (CI) is measured in grams of carbon dioxide equivalents (gCO_2e) per unit energy (megajoules, MJ) of fuel and is quantified on a lifecycle or well-to-wheels basis. The LCFS program is the most significant emissions reduction program in the California transportation sector, delivering as much reduction as all other transportation programs combined.[19] The reductions delivered by the LCFS program are essential to achieving overall GHG goals in California.

CARB recently completed an amendment process to extend the program to 2030 with a 20 percent target in 2030.[20] As part of the amendment process, CARB modified the compliance curve for the LCFS program for 2019 and 2020, in addition to a post-2020 curve. In short, CARB reduced the stringency of the program in 2019 and 2020, and introduced a linear compliance curve between 2020 and 2030, thereby improving the feasibility of the program.

Most credits generated by the use of electricity as a transportation fuel are generated via residential charging of light-duty EVs. However, there are other credit generating opportunities, including by fleets, charging provided to employees by an employer and publicly available charging (e.g., via a third party network provider like ChargePoint). EVs have played a minor role in the program to date, accounting for

[18] More information is available online at https://www.arb.ca.gov/fuels/lcfs/lcfs.htm.

[19] CARB, California's 2017 Climate Change Scoping Plan, November 2017. Available online at https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

[20] The revised regulation can be found online at https://www.arb.ca.gov/regact/2018/lcfs18/fro.pdf.

less than 5% of credits generated; however, because California has aggressive targets with regard to EV adoption, the role of electricity in the program will expand considerably in the near-term future.

Credits from the LCFS program can be used to reduce the costs of owning and operating an EV. In the case of residential charging, investor owned utilities (IOUs) are required to return the value generated from the sale of LCFS credits to EV drivers. For instance, SDG&E currently issues an EV Climate Credit, an on-bill credit to EV drivers in their service territory. However, this program will be changing with the new amendments to the program. Upon CPUC approval of filings by Pacific Gas and Electric (PG&E), Southern California Edison (SCE), and SDG&E to initiate a statewide point of purchase rebate for EVs, all utilities (including municipally owned utilities, for instance) are required to dedicate funding generated from LCFS credit sales to the rebate program. Fleets that own EVs and the charging equipment can monetize the credits, and can use the revenue to defray the EV ownerships costs. Charging station owners can also generate and monetize credits to improve their value proposition to EV owners and operators.

California State Strategy for the State Implementation Plan

The federal Clean Air Act requires that areas that exceed ambient air quality standards for pollutants like ozone and particulate matter (PM2.5) must develop State Implementation Plans (SIPs) that demonstrate how the standards are to be achieved by a certain date. CARB adopted the California State SIP Strategy in March 2017.[21] The State SIP Strategy has a fifteen-year timeline to show how California will meet federal air quality standard for both ozone and PM2.5. The SIP Strategy includes consideration of both stationary and mobile sources. San Diego County has a Moderate classification for ozone attainment (the 75 ppb 8-hour standard). The remainder of this sub-section focuses on the mobile source strategy, and the components of it that are focused on EV adoption.

Mobile Source Strategy

The Mobile Source Strategy[22] is a key component of the State's SIP Strategy—largely because mobile sources comprise about 80 percent of NOx emissions, 90 percent of diesel PM emissions, and nearly 50 percent of GHG emissions. The Mobile Source Strategy has multiple components: On-Road Light-Duty, On-Road Heavy-Duty, Off-Road Federal and International Sources, and Off-Road Equipment Sources. We focus here on the On-Road Light-Duty vehicles. The strategy includes the following measures:

- Increased ZEV sales coupled with expansion of necessary infrastructure
- More stringent engine performance standards and increased fuel efficiency
- Requirements to ensure durability of passenger vehicle technologies
- Incentive funding to achieve further ZEV deployment beyond vehicle regulations
- Electricity grid representing 50 percent renewable energy generation

[21] Revised Proposed 2016 State Strategy for the State Implementation Plan, California Air Resources Board, March 2017. Available online at https://www.arb.ca.gov/planning/sip/2016sip/rev2016statesip.pdf.

[22] Mobile Source Strategy, California Air Resources Board, May 2016. Available online at https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf.

- Increased use of renewable fuels
- Reductions from passenger vehicle miles traveled and intelligent transportation systems

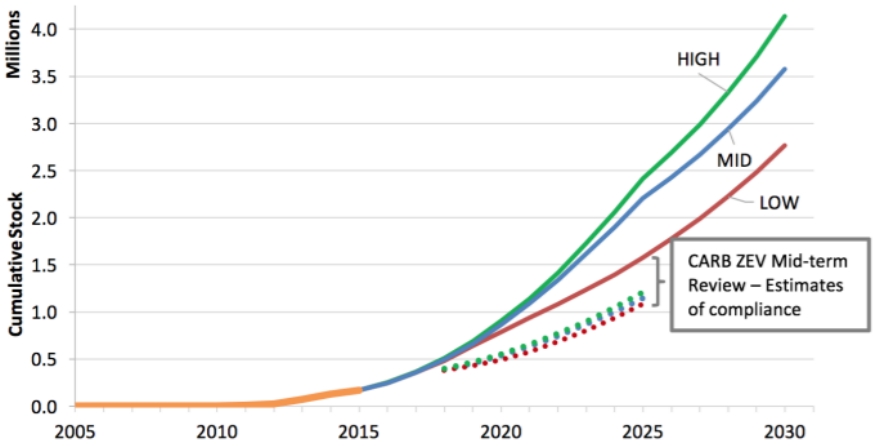
Most of these have direct corollary with respect to EV adoption and supporting the deployment of the required EV charging infrastructure. Much of the reductions that would be achieved via the implementation of the Mobile Source Strategy are attributable to existing program—like the ZEV Program and the LCFS program. However, the Strategy does call for an increase by over 50 percent, for instance, of EV adoption compared to what is required by existing programs. For instance, CARB outlines a Cleaner Technology and Fuels Scenario that yields a population of 4.2 million ZEVs on the road and a fleetwide fuel efficiency of 49 miles per gallon by 2030; furthermore, the EVs would need to be powered by 50 percent renewable electricity. Those numbers are significantly higher than what would otherwise be required by existing programs.

California Integrated Energy Policy Report

The California Integrated Energy Policy Report (IEPR) is the energy policy blueprint for the state prepared by the California Energy Commission (CEC). It contains an integrated assessment of major energy trends and issues facing California's electricity, natural gas, and transportation fuel sectors. The CEC also provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety. The CEC adopts an IEPR every two years, and an update every other year. The IEPR Update tends to have less commentary and simply focuses on improving aspects of the IEPR from the year preceding it that require modifications.

For transportation, the IEPR focuses on forecasting transportation energy demand from different fuels, and reviewing trends associated with both fuel consumption and for vehicle deployment (including light-, medium-, and heavy-duty vehicles). In its most recent forecasts, the CEC estimates that a range of 1.5 million to 2.5 million ZEVs and PHEVs (combined) will be deployed by 2025, which is in line with the state's goal of 1.5 million ZEVs by 2025 (see Figure 1).

Figure 1. ZEV and PHEV Forecast by California Energy Commission[23]



California Electric Vehicle Infrastructure Project (CALeVIP)

The CaleVIP offers incentives for the purchase and installation of EV charging infrastructure at publicly accessible sites in select regions of the state. The project is funded by the Alternative and Renewable Fuel and Vehicle Technology Program, with potential funding up to $200 million. The project currently has funding for more than $39 million. The project also serves as a hub through which stakeholders can connect and share resources and information to promote access to more EV charging infrastructure. The program is currently operating in two regions, and is expected to expand into four regions for 2019, as summarized below. Furthermore, it is anticipated that the program expands into San Diego in 2020.

- The Southern California Incentive Project (SCIP) aims to promote access to EV charging infrastructure in Los Angeles, Orange, Riverside, and San Bernardino Counties. The program has a total funding of $29 million and began in August 2018. The project is focused on providing funding for DC fast chargers, with rebates worth up to up to $80,000.
- The Fresno County Incentive Project (FCIP) aims to promote access to EV charging infrastructure in Fresno County. The program began in late 2017 and is open as long as funding is available. The program had $4 million in funding; as of October 2018, the program has issued $625,000 and has $3,375,000 to distribute. The program focuses on deploying Level 2 EV chargers with rebates up to $7,000 for dual port equipment and $4,000 for single port equipment.

[23] California Energy Commission staff. 2017. 2017 Integrated Energy Policy Report. California Energy Commission. Publication Number: CEC-100-2017-001-CMF. See Figure 60 on p.208.

- The Energy Commission worked with the Center for Sustainable Energy (CSE) to develop the 2019 CALeVIP Projects Roadmap, which outlines the plans for four additional incentive projects: the Sacramento Incentive Project (Sacramento County), the Northern California Incentive Project (serving Shasta, Humboldt, and Tehama Counties), the Central Coast Incentive Project (serving Santa Cruz, Monterey, and San Benito Counties), and the Central Valley Incentive Project (serving Fresno, San Joaquin, and Kern Counties; this project will absorb the aforementioned FCIP).

Workforce Training and EVITP

At the state level, the California Public Utilities Commission (CPUC) has incorporated EVITP into its safety requirements checklist for approved utility transportation electrification programs: specifically, contractors that do electrical work on the customer side of the utility meter to deploy EVSE must provide EVITP certification prior to commencing construction.[24] This included San Diego Gas & Electric's Power Your Drive program for large workplace and multi-unit dwelling EVSE projects where SDG&E owns and operates the equipment.[25]

4. Regional and Local Policies

SANDAG

The San Diego Association of Governments (SANDAG) is the designated Metropolitan Planning Organization (MPO) for the San Diego region. SANDAG serves as the forum for regional decision-making. SANDAG builds consensus; makes strategic plans; obtains and allocates resources; plans, engineers, and builds public transportation, and provides information on a broad range of topics pertinent to the region's quality of life.[26] SANDAG has served in a leadership role in a variety of regional policy initiatives that have focused on or are related to EVs and EV charging infrastructure deployment in the region. Several key initiatives are summarized here: San Diego Forward: The Regional Plan, EV Readiness Planning and Implementation, and the Regional Energy Strategy.

San Diego Forward: The Regional Plan

San Diego Forward: The Regional Plan[27] (2015 Regional Plan) serves as the Regional Transportation Plan and Sustainable Communities Strategy for the San Diego region and was adopted in October 2015.

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[24] http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442458882

[25] DECISION REGARDING UNDERLYING VEHICLE GRID INTEGRATION APPLICATION AND MOTION TO ADOPT SETTLEMENT AGREEMENT, Decision No. 16-01-045, California Public Utilities Commission, February 4, 2016, available at: http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M158/K241/158241020.PDF

[26] SANDAG's Missions Statement, available online: https://www.sandag.org/index.asp?fuseaction=about.home.

[27] San Diego Forward: The Regional Plan, SANDAG, October 2015. Available online at https://www.sdforward.com/pdfs/RP_final/The%20Plan%20-%20combined.pdf.

Broadly, the 2015 Regional Plan provides a big picture vision for how the region will grow through 2050, with an implementation program to help make that vision a reality. The 2015 Regional Plan integrates transportation, land-use, and housing policies to constitute a plan that will achieve GHG emissions targets for San Diego region. Although The Regional Plan is focused on achieving GHG emissions by reducing vehicle miles traveled, there are a variety of initiatives that augment those GHG emissions reductions through technology adoption. More specifically, GHG mitigation measure 4c from the Regional Plan Environmental Impact Report[28] states that SANDAG will allocate funding for charging infrastructure via regional incentive program by 2020 to promote and increase publicly accessible EV charging infrastructure. The GHG emission reductions attributable to the measure are linked to increased electric miles traveled using plug-in hybrid electric vehicles (PHEVs), a subset of total EVs. SANDAG recognizes that all-electric battery electric vehicles (BEVs) will also benefit from the program, however, the GHG impact of the measure was quantified using the conservative assumption that only the GHG emissions reductions achieved via PHEV charging contribute towards meeting the targets of the Sustainable Communities Strategy.

SANDAG is currently leading a broad-based community effort to develop San Diego Forward: The 2019-2050 Regional Plan (2019 Regional Plan). As part of the process, SANDAG is updating its consideration of the regional EV charger infrastructure program, with a focus toward implementation and potential expansion. For instance, the program was initially conceived as an incentive program for both Level 1 and Level 2 charging equipment. However, as the market matures, focus has shifted to incentives for Level 2 public and workplace charging equipment.

EV Readiness Planning and Plug-in San Diego

Since 2012, SANDAG has provided a forum for local governments and other regional stakeholders to address barriers to deploying alternative fuel vehicles and siting charging and fueling stations. In 2014, SANDAG completed a regional readiness plan for plug-in electric vehicles and charging stations titled the San Diego Regional Plug-in Electric Vehicle Readiness Plan.[29] The plan is part of a statewide effort funded through the California Energy Commission to prepare local governments for the deployment of EVs. San Diego's Readiness Plan identifies barriers to the deployment of EV charging infrastructure and includes recommendations and resources for public agencies, property owners, consumers, and other stakeholders to overcome those barriers. This effort was expanded to planning for all alternative fuels, with a regional alternative fuel plan completed in 2016. With additional funding from the California Energy Commission, SANDAG helped transition from readiness to implementation via the Plug-in SD initiative. The initiative is a combination of resource development, training, technical assistance, and outreach. The primary audience of the project includes member agencies, employers, and multi-family properties. The project is also developing a needs assessment to help document existing infrastructure and identify gaps, including access, in the current EV charging network. One of the novel aspects of the initiative is the availability of a technical expert (the "EV Expert") who is made available in person, via

[28] The Final Environmental Impact Report is available online at http://www.sdforward.com/envimpactreport.

[29] San Diego Regional Plug-in Electric Vehicle Readiness Plan, SANDAG. Available online at https://www.sandag.org/uploads/projectid/projectid_511_23915.pdf

phone, and email to assist stakeholders. The *San Diego Regional Plug-In Electric Vehicle Readiness Plan* also identifies EVITP as a training resource for local electrical contractors looking to support EVSE installations, provides an overview of previous EVITP trainings, and outlines how contractors can incorporate EVITP certification in a response to Requests for Proposals to deploy charging infrastructure.[30]

San Diego Regional Energy Strategy

SANDAG's Regional Energy Strategy[31] (RES) serves as an energy policy blueprint for the San Diego region. Last updated in 2014[32], the RES focuses on a variety of clean energy goals across eleven areas: energy efficiency and conservation, renewable energy, distributed generation, energy and water, peak demand, smart grid, natural gas power plants, transportation fuels, land use and transportation planning, energy and borders, and the clean energy economy.

The RES outlines 12 guiding principles, with the intent to help shape the vision for the region to guide decision-making on energy-related items in response to key policy drivers and future projections. The guiding principles include an objective of readying the region for wide-scale deployment of alternative fuel vehicles. This principle was developed to ensure that the region has convenient access to alternative transportation fuels that reduce San Diego's dependence on foreign oil supply, reduce local economic impacts from oil price volatility and reduce GHG emissions. In 2009 and in the 2014 update, SANDAG keenly focused on EVs, observing that "[for] passenger vehicles, plug-in hybrids and electric vehicles are the priority" for the region.[33]

Furthermore, the RES tasks SANDAG with a leading role in coordinating the planning of alternative fuel infrastructure, including through the development of a coherent regional vision, identifying funding opportunities, and developing standardized guidelines for infrastructure siting, permitting, and education.

Three of the seven recommended actions for Transportation Fuels in the RES focused on EVs:

- TF-5: Develop streamlined permitting requirements and standardized design guidelines and siting criteria for all types of electric charging stations (e.g., single- and multi-family residential, commercial, public access, etc.) and alternative fueling stations.

[30] https://www.sandag.org/uploads/publicationid/publicationid_1817_17061.pdf

[31] 2014 Regional Energy Strategy for the San Diego Region is available at: https://www.sandag.org/uploads/projectid/projectid_374_18168.pdf.

[32] The Regional Energy Strategy has been updated in 2003, 2009, and 2014. The first SANDAG energy strategy was a 1994 Regional Energy Plan.

[33] 2014 Regional Energy Strategy for the San Diego Region is available at: https://www.sandag.org/uploads/projectid/projectid_374_18168.pdf.

- TF-6: Accelerate the transition to plug-in hybrid electric and battery electric vehicles by developing a regional plan for the installation of a public access electric car charging network, as recommended in the Regional Alternative Fuels, Vehicles, and Infrastructure Report.[34]
- TF-7: Analyze the potential impacts of widespread plug-in hybrid and electric vehicle deployment on the electricity grid.

County of San Diego and APCD: Climate Action Plan

The Board of Supervisors adopted the County's Climate Action Plan (CAP)[35] in February 2018. The County CAP includes strategies and measures to reduce GHG emissions from the unincorporated county and County operations. The on-road transportation sector accounts for 45 percent of the total GHG emissions from the 2014 baseline inventory. The County focused its effort relative to EVs in Strategy T-3: Decarbonize On-Road and Off-Road Vehicle Fleet, and more specifically measure T-3.5: Install Electric Vehicle Charging Stations. More specifically, the measure:

- Calls for the installation of 2,040 Level 2 EV charging stations through public-private partnerships at priority locations in the unincorporated county by 2030.
- The program is divided into two phases:
    - In 2020-2025, it calls for the development of a pilot program to install 100 EV charging stations in priority areas.
    - Building upon the pilot program, the plan calls for the remaining 1,940 EV charging stations to be installed from 2025-2030.
- The plan also includes several supporting efforts:
    - Provide education and marketing related to the purchase of electric vehicles (EVs), available charging infrastructure, and existing EV resources and programs
    - Develop and implement a local EV Incentive Program
    - Collaborate with regional partners to encourage installation of EVCS in new residential and nonresidential developments
    - Promote the State's Electric Vehicle Climate Credit
    - Ongoing Support programs from the local utility to install EVCS

The CAP assigns the responsibility of implementing these actions to the APCD, the County's Department of General Services (DGS), the County's Department of Parks and Recreation (DPS), and the County's Department of Public Works (DPW). Currently, APCD is leading incentive program development and participating with SANDAG on discussions of a region-wide program to implement in 2020.

The CAP also has other measures with an ancillary focus on EVs, including Measure T.3.2: Use Alternative Fuels in County Projects and T.3.4 Reduce the County's Fleet Emissions. These measures include the following:

[34] Regional Alternative Fuels, Vehicles and Infrastructure Report, SANDAG, September 2009. Available online at https://www.sandag.org/uploads/publicationid/publicationid_1440_9766.pdf

[35] County of San Diego Climate Action Plan, Available online at https://www.sandiegocounty.gov/content/sdc/pds/ceqa/Climate_Action_Plan_Public_Review.html.

- Implement the 2016 Green Fleet Action Plan Implementation Strategy
- Implement the County's Strategic Energy Plan

The County DGS is assigned the responsibility for implementing these action items in the 2020 timeframe.

Local Government Climate Action Plans

Local governments have integrated EV readiness policies and goals into local planning efforts, such as regional transportation plans, general plans, or CAPs to require or encourage EV charging. When incorporated into CAPs, local governments can streamline environmental review of EV strategies in the future, since the CEQA Guidelines allow lead agencies to streamline project-level environmental review off these plans.

These plans are broader and less detailed than building codes and zoning ordinances, so policies calling for increased charging opportunities typically do not contain specific details on where chargers are needed or on how much charging should be provided. However, even voluntary or vague policies can provide a basis for local governments to negotiate with developers to install chargers during discretionary review, as well as set the stage for more detailed implementation through building codes or zoning ordinances.

Table 3 below lists the measures and actions related to EV and EV charging infrastructure that are included in the CAPs for nine cities in San Diego County, including for Carlsbad, San Marcos, National City, Del Mar, Chula Vista, Solana Beach, Encinitas, La Mesa, and Oceanside. The County CAP information was referenced earlier.

Table 3. Summary List of CAP Measures and Actions for Cities in the County of San Diego

	Measure	Description
Carlsbad	**Measure L: Promote an Increase in the Amount of Zero-Emissions Vehicle Travel**	
	L-1	Working with industry partners, construct a “PV to EV” pilot project to install a PV charging station at a city facility (such as the Faraday Center), to charge city ZEVs. The purpose of the pilot project would be to evaluate the feasibility of incorporating more ZEV into the city’s fleet.
	L-2	Prepare a community-wide charging station siting plan, which evaluates site visibility and exposure, EV driving ranges, high volume destinations, locations with high ownership or interest in EVs, and cost of construction.
	L-3	Construct ZEV charging stations based on the community-wide charging station siting plan described in L-2 above. The ZEV charging stations will be funded by grant funds when available, and the city will post signage directing ZEVs to charging stations
	L-4	Offer dedicated ZEV parking, and provide charging stations adjacent to ZEV parking as identified in the community-wide charging station siting plan
	L-5	Adopt requirements for ZEV parking for new developments
	L-6	Adopt a residential energy conservation ordinance, similar to Palo Alto, requiring the installation of EV chargers or pre-wiring in new residential construction and major renovations

	Measure	Description
	L-7	Update the city's Fleet Management Program to include a low and zero-emissions vehicle replacement/purchasing policy. Increase the proportion of fleet low and zero–emissions vehicle miles traveled to 25 percent of all city-related VMT by 2035. (Short-term)
San Marcos	**T-6 Low Carbon/Alternative Fuel Vehicles.** Expand the availability and use of alternative fuel vehicles and fueling infrastructure.	
	T-6.1	Work with SANDAG and community organizations to implement the San Diego Regional Plug-In Vehicle Readiness Plan as it pertains to San Marcos.
	T-6.2	Coordinate with the California Center for Sustainable Energy and the California Plug-In Electric Vehicle Collaborative to develop streamlined permitting requirements, standardized design guidelines, and siting criteria for all types of electric charging stations.
	T-6.3:	Encourage the development of a compressed natural gas or other alternative fueling stations within the City to support the conversion of heavy-duty gasoline and diesel vehicles to alternative fuels.
National City	**e. Alternative Fuel Vehicles**	
	A2e1	Develop streamlined permitting requirements and standardized design guidelines and siting criteria for all types of electric charging stations
Del Mar	**Goal 16: Increase percentage of vehicle miles traveled (VMT) driven by electric (EVs) and alternative fuel vehicles**	
	16a	Support public and private sector provision of alternative fueling stations in Del Mar and adjacent cities
	16b	Explore grant funding for EV charging infrastructure
	16c	Explore the potential for replacing municipal fleet with EVs when feasible
	16d	Advocate for expansion of an EV car sharing fleet network to serve Del Mar
	Goal 17: Increase Number of Preferential Parking Spaces for Clean Vehicles	
	17a	Set aside 10% of all on street parking spots on Camino del Mar and in City-owned lots for high-efficiency and clean fuel vehicles by 2020
	17b	Explore modifying the Del Mar Municipal Code parking standard requirements to incentivize stall designed for micro-vehicles and to provide a credit toward parking requirements for providing parking stalls for EVs and charging station
	17c	As part of the Camino Del Mar Streetscape project design, plan to include spaces designated for EVs.
	17d	Include dedicated stalls for EV parking and charging stations at City facilities
Chula Vista	**Strategy 4.3.1.Support the installation of more local alternative fueling stations**	
	4.3.1.A	Install a 12,000-gallon biodiesel tank at Public Works Yard
	4.3.1.B	Install a publicly-available CNG fueling station at Public Works Yard
	4.3.1.C	Install publicly-available EV chargers at 5 sites
	4.3.1.D	Convert transit and solid waste hauler to alternative fuel vehicles

	Measure	Description
	4.3.1.E	Facilitate EV chargers, through programs such as SDG&E's Power Your Drive, in areas of City not currently served
	4.3.1.F	Update City's Alternative Fuel Station map to promote fuel availability
	4.3.1.G	Convert street sweeper and tow trucks to alternative fuel vehicles
	Strategy 4.3.2. Designate preferred parking for alternative fuel vehicles.	
	4.3.2.A	Establish preferred parking for Alternative Fuel Vehicles (AFV) at public parking lots
	4.3.2.B	Develop new AFV parking requirements for new commercial sites for City Council consideration
	Strategy 4.3.3. Design all new residential and commercial buildings to be "EV Ready"	
	4.3.3.A	Develop an EV-Ready ordinance for City Council consideration
	4.3.3.B:	Integrate EV-Ready requirement information into outreach program
	4.3.3.C	Complete Neighborhood Electric Vehicle network in Otay Ranch
Solana Beach	**Measure T-1: Increase electric vehicles and alternative fuel vehicles miles traveled to 30 percent of total vehicle miles traveled**	
	T-1.1	Support public and private sector provisions of alternative fueling stations in the City and adjacent cities
	T-1.2	Require EV charging stations and EV charger-ready wiring in commercial/multi-family and residential structures (both new and substantial remodels) as follows: residential EV charger-ready wiring; commercial and multi-family EV charger-ready wiring in all garages; and EV chargers in quantities proportional to the total parking spaces available
	T-1.3	Collaborate with SANDAG to increase EVs in the region
	T-1.4:	Provide incentives for the City's residents to increase use of EVs
	T-1.5	Explore grant funding for EV chargers
	T-1.6	Advocate for and facilitate the implementation of an EV car sharing fleet network to serve the City
	T-1.7:	Explore barrier for EV charging for garage-free homes, install charging infrastructure integrated into streetlights; support use of electric bikes
	Measure T-5: Increase preferred parking for electric vehicles and alternative fuel vehicles by converting 20 percent of eligible parking spots	
	T-5.1	Identify eligible on-street parking spots and spots in City-owned lots for conversion to preferred parking for EVs and AFVs.
	T-5.2	Explore modifying the Solana Beach Municipal Code parking standard requirements to incentivize parking stalls for EVs and charging stations as a credit toward parking requirements.
	T-5.3	Install dedicated stalls for EV parking and charging stations at City facilities.
	T-5.4	Conduct outreach and education for the City's businesses and commercial property owners to encourage the conversion of private parking spaces to EV and AFV preferred parking.
E n	**Goal 4.3.CET-4: Require Residential Electric Vehicle Charging Stations**	

	Measure	Description
	Goal 4.3.CET-5: Require Commercial Electric Vehicle Charging Stations	
	Goal 4.3.a	Expand and implement a Green Building Incentive Program to Increase EV charging at home and businesses
	Goal 4.3.b	Complete and implement an Electric Vehicle Charging Station Master Plan to increase the use of Zero-Emission vehicles by the community
	Goal 4.3.c	Work with SDG&E to explore projects through their Power Your Drive program
	Goal 4.3.d	Develop and implement EV charging plan for municipal facilities
	Goal 4.3.e	Pursue partnerships with school districts and NCTD to explore the use of electric busing or public transit busing for schools
	Goal 4.3.f	Implement a wayfinding program with signage and information systems to facilitate walking, biking, and efficient driving and parking
	Goal 4.3.g	Implement educational activities to raise awareness about EVs among residents and businesses
	Goal 4.3.h	Develop and implement a program to incentivize City employees commuting to work by EV or other modes of alternative transport as a model for other local employers
La Mesa	**T-5: Alternative Refueling Infrastructure Development**	
	T-5.A	Participate in regional discussions regarding application and development of pre-wiring requirements for at-home EV charging ports in new single-family and multi-family construction; update City's building code to reflect regional approach
	T-5.B	Partner with SANDAG, SDAPCD, and local multi-family property managers to develop strategies to increase installations of EV charging infrastructure in existing multi-family complexes, including development of technical guidance, permitting support from Building Division, and identification of rebates or financing options
	T-5.C	Require installation of public-use EV charging units in parking lots of new non-residential construction; work with regional partners to establish threshold for such requirements (e.g., new construction of more than 10,000 sqft, parking lots with more than 20 parking spaces); update City's Building Code to reflect these changes
	T-5.D	Coordinate with SANDAG and other regional partners to develop informational brochures and technical support for developers / contractors installing EV charging ports in new projects; share information on City's website
	T-5.E	Participate in regional discussions with SANDAG and SDG&E on technical aspects of alternative refueling infrastructure development, as it relates to increased electricity demand and / or natural gas service expansion, as well as long-term infrastructure development strategies to support broad regional transition towards alternative fuel vehicle options
	T-5.F	Partner with SANDAG, SDAPCD, and other area jurisdictions in exploring cost-effective ways to increase alternative vehicle charging / refueling infrastructure available for public use within community, through grant funded opportunities or partnerships with technology providers (e.g., EV charging infrastructure providers)
	T-5.G	As alternative fueling and recharging station options become available throughout city and region, provide links to maps showing their location on Sustain La Mesa webpage; include information on available clean vehicle rebate programs, as well

	Measure	Description
Oceanside	**Measure TL2: Electric Vehicle Promotion** **Measure TL3: Preferential Parking Spaces for Clean Air Vehicles**	
	TL2.1	Require all new single-family residential developments to include prewiring of the site with a dedicated 240-volt branch circuit to allow for future installation of a level 2 charging circuit and electrical retrofits to support EV charging stations at an interior or exterior space such as the garage or driveway.
	TL2.2	Require all single-family residential solar PV systems installations to include prewiring of the garage with a dedicated 240-volt branch circuit to allow for installation of a level 2 charging circuit and electrical retrofits to support EV charging stations.
	TL2.3	Consistent with state requirements for pre-wiring for level 2 charging circuits in multi-family developments (currently 10 percent of all resident surface parking), 10 require charging stations to be installed at half of all pre-wired spaces.
	TL2.4	Consistent with state requirements for pre-wiring for charging circuits in commercial and industrial developments, require charging stations to be installed at half of all pre-wired spaces.
	TL2.5	Promote incentives for purchase of ZEVs such as available federal tax credits (up to $7,500) and available rebates offered through the California Clean Vehicle Rebate Project (up to $2,500).
	TL2.6	Provide permit fee waivers for construction related solely to the installation of EV charging station circuitry such as electrical rewire permitting, electrical service upgrade permitting, or other miscellaneous permitting that is typically charged at an hourly rate.
	TL2.7	Allow by-right sale of ZEV vehicles within all retail-oriented commercial zones.
	TL2.8	Incentivize installation of direct current fast charging stations at gas stations and other retail.
	TL2.9	Establish public-private partnerships to increase charging infrastructure at existing office and industrial facilities.
	TL2.10	Promote commercial businesses and industry that provides EV charging stations and incentives for EV use to employees through added marketing and benefits from City's Green Oceanside Business Network program.
	TL2.11	Collaborate with local EV retailers to establish an Aggregated Demand EV Program. To implement the program, the City will advertise to the community on behalf of local vendors in exchange for negotiated for discounted "bulk pricing."
	TL3.1	Require commercial and industrial developments to incorporate 12 percent designated parking for clean air vehicles.
	TL3.2	Provide incentives through Green Oceanside Business Network to businesses that designate additional parking for clean air vehicles.
C –	**Strategy 2: Clean & Renewable Energy**	

	Measure	Description
	2.1	Include presenting an ordinance to City Council to require new residential and non-residential construction to install conduit for future photovoltaics and EV charging stations, and to install plumbing for future solar water heating.
	2.2	Present to City Council for consideration an update to City Administrative Regulation 90.73 to increase the number of municipal zero emissions vehicles.
	2.2	Present to City Council for consideration an Electric Vehicle Charging Plan

In addition to the CAP measures and actions outlined in the table above, some cities have developed CAP Consistency Checklists and CEQA Screening Tables. In several cases, these cities include measures related to EVs and EV charging infrastructure, as summarized in Table 4 below.

Table 4. Summary of CAP Checklist Items related to Electric Vehicles

City	Item/Identifier	Description
Carlsbad[36]	Increased ZEV Travel Item 6	• One- and two-family dwellings and townhouses with attached private garages: Would the required parking serving each new dwelling be "EV Ready"4 to allow for the future installation of electric vehicle supply equipment to provide an electric vehicle charging station for use by the resident?
		• Multi-Family Projects of fewer than 17 dwelling units: Would a minimum of one parking space be "EV Ready" to allow for the future installation of electric vehicle supply equipment to provide electric vehicle charging stations at such time as it is needed for use by residents?
		• Multi-Family Projects of 17 or more dwelling units: Would five percent of the total parking spaces required, or a minimum of two spaces, whichever is greater, be "EV Capable"5 to allow for the future installation of electric vehicle supply equipment to provide electric vehicle charging stations at such time as it is needed for use by residents? Of the total "EV Capable" spaces provided, would 50 percent of them, or a minimum of one, whichever is greater, have the necessary electric vehicle supply equipment to provide active charging stations ready for use by residents and guests?
		• Non-residential projects: Would six percent of the total parking spaces required, or a minimum of one space, whichever is greater, be "EV Capable" to allow for the future installation of electric vehicle supply equipment to provide electric vehicle charging stations at such time as it is needed for use by future occupants? Of the total "EV Capable" spaces provided, would 50 percent of them, or a minimum of one, whichever is greater, have the necessary electric vehicle supply equipment to provide active charging stations ready for use by customers and employees?
City of San Diego[37]		• Multiple-family projects of 17 dwelling units or less: Would 3% of the total parking spaces required, or a minimum of one space, whichever is greater, be

[36] City of Carlsbad, Climate Action Plan Consistency Checklist P-30, Available online at http://www.carlsbadca.gov/civicax/filebank/blobdload.aspx?BlobID=32816.

[37] City of San Diego, Climate Action Plan Consistency Checklist Introduction, June 2017. Available online at https://www.sandiego.gov/sites/default/files/city_of_san_diego_cap_checklist.pdf.

City	Item/Identifier	Description
	Strategy 3: Bicycling, Walking, Transit& Land Use Q3. Electric Vehicle Charging	provided with a listed cabinet, box or enclosure connected to a conduit linking the parking spaces with the electrical service, in a manner approved by the building and safety official, to allow for the future installation of electric vehicle supply equipment to provide electric vehicle charging stations at such time as it is needed for use by residents?
		• Multiple-family projects of more than 17 dwelling units: Of the total required listed cabinets, boxes or enclosures, would 50% have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use by residents?
		• Non-residential projects: Of the total required listed cabinets, boxes or enclosures, would 50% have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use?
San Marcos[38]	T-6: Low Carbon / Alternative Fuel Vehicles	• Does the project provide or exceed the minimum number of plug-in electric vehicle recharge stations identified in the Municipal Code?
County of San Diego[39]	1a. Reducing Miles Traveled	• Non-Residential: For non-residential projects with anticipated tenant occupants of 25 or more, will the project achieve a 15% reduction in emissions from commute vehicle miles traveled (VMT), and commit to monitoring and reporting results to demonstrate on-going compliance? VMT reduction may be achieved through a combination of Transportation Demand Management (TDM) and parking strategies, as long as the 15% reduction can be substantiated. • Shared and reduced parking strategies may include, but are not limited to: Electric Vehicle-only parking space
	2a. Shared and Reduced Parking	• Non-Residential: For non-residential projects with anticipated tenant occupants of 24 or less, will the project implement shared and reduced parking strategies that achieves a 10% reduction in emissions from commute VMT? • Shared and reduced parking strategies may include, but are not limited to: Electric Vehicle-only parking space

The City of Escondido has a checklist,[40] however, it includes checklist items related to the Neighborhood Electric Vehicles (NEVs).

[38] City of San Marcos CAP, Appendix E.1 CAP Consistency Worksheet. Available online at http://www.san-marcos.net/home/showdocument?id=9924.

[39] County of San Diego, Appendix A: Final Climate Action Plan Consistency Review Checklist, https://www.sandiegocounty.gov/content/dam/sdc/pds/advance/cap/publicreviewdocuments/CAPfilespublicreview/Draft%20CAP%20Consistency%20Review%20Checklist.pdf.

[40] City of Escondido, Greenhouse Gas Emissions: Adopted CEQA Thresholds and Screening Tables. Available online at https://www.escondido.org/Data/Sites/1/media/PDFs/Planning/ClimateActionPlan/CEQAThresholdsAndScreeningTables.pdf.

5. Policy Considerations for Program Development

Based on a review of the multiple policies in place to support EVs, ICF highlights the following key policy considerations during the development of SANDAG's EV Charging Infrastructure Program.

EV Charging Infrastructure as a Critical Infrastructure Asset. Given the myriad of initiatives underway to support EV charging infrastructure deployment in San Diego—including investments by SDG&E, Electrify America, and others—it is important to recognize that regional EV charging infrastructure is a critical infrastructure asset that needs to be developed, maintained, and strengthened. The explicit recognition of EV charging infrastructure as a critical asset through policy will help enable improved mobility, support EV adoption, and deliver GHG emission reductions. As various initiatives advance, gaps in publicly available charging infrastructure will emerge, and a regional agency like SANDAG is poised to help fill those gaps.

Despite significant investment in EV charging infrastructure in the San Diego region, and the anticipation of more in the near-term future, there will inevitably be aspects of the EV charging market that require more attention. For instance, SDG&E's pilot programs and Electrify America are under intense pressure to deploy significant levels of EV charging infrastructure over accelerated time frames. This pressure tends to narrow the focus of program participants or site hosts. And as a result, there may be potential program participants that are interested, but simply get lost in the shuffle, or overlooked for one reason or another. This is not necessarily a failing of these programs, but a reality of the rapidly evolving EV charging market and the investments by private actors. The question then becomes: Who is going to step in and support the demand for EV charging infrastructure that is not included in existing initiatives? SANDAG is positioned to help ensure that a broad range of market participants have access to EV charging infrastructure through its charging program.

Incorporating Equity into Program Design. It is increasingly clear from both utility- and state-funded programs that more needs to be done to ensure that there is equitable access to EVs and EV charging infrastructure. Low-income communities and communities of color are disproportionately impacted by pollution from mobile sources like light-duty vehicles. As such, it is important that programs deploying EVs and EV charging infrastructure should include a focus on underserved communities—this has been operationalized in utility programs by defining minimum deployment commitments in disadvantaged communities and in the state-funded CALeVIP via program carve outs for and higher incentive levels in disadvantaged communities. SANDAG should be considering ways to incorporate equity into its regional EV charging infrastructure program.

Maintain Neutral Approach to EV Technology. Both PHEVs and BEVs are eligible for federal and state purchase incentives. Generally, BEVs qualify for higher incentive amounts (e.g., the state rebate is higher for BEVs; the federal tax credit is tied to the battery size). San Diego's EV market is about 40% PHEVs compared to 60% BEVs.[41] It is important for SANDAG to ensure that as many EVs as possible can access the EV charging infrastructure to be deployed as part of the program. There are some stakeholders that are focused on making investments in DC fast charging equipment; however, these EV charging stations cannot be accessed by PHEVs. This is not to say that SANDAG should exclude DC fast charging

[41] Based on ICF analysis if IHS Markit data.

equipment from consideration as market needs evolve over time. Rather, SANDAG should continue to focus on developing a program that serves as many EV drivers as is feasible.

Coordinate and Maintain Consistency with Other Policies. As highlighted throughout this report, there are many inter-connected policies that impact EV and EV charging infrastructure deployment. It is important for SANDAG to continue to fulfill its role through regional coordination, which will help to ensure that the EV charging infrastructure program maintains consistency with and explicitly advances the various policies in place. One area of focus could be in the continued support of permit streamlining education and outreach to local governments and contractors. It is also important to recognize that the expectations of this coordination role extend beyond EV policies. SANDAG should also seek to ensure that the EV charging infrastructure program is aligned with policies that promote distributed energy resource solutions like the co-location of solar photovoltaics and energy storage.

Recognize and Maximize Revenue from LCFS Program. As noted previously, EVs have played a minor role in the LCFS program to date. However, with EV adoption increasing and expected to accelerate over the next several years, the credit-generating potential of EVs charging at non-residential charging stations will also increase. Credits from the LCFS program could be used to reduce the costs of owning and operating an EV or to reduce the costs of owning and operating EV charging infrastructure. On an individual site basis, the number of credits generated can be small—this is primarily dependent on the utilization of the station. Even stations with high utilization, however, will likely generate a modest number of credits, and will face challenges to participating in the LCFS market based on low credit generation and the potential for regulatory burden. In aggregate, however, the number of credits generated by the Regional EV Charging Infrastructure program may be significant. SANDAG should investigate the potential opportunity to aggregate LCFS credits in the development of the program, and identify ways to maximize the potential revenue from the LCFS program.

Support Workforce Development for EV Charger Installers. As the EV market continues to expand, EV charging infrastructure installations will grow and steps could be taken to support continuing education for licensed electricians. SANDAG/APCD are seeking to collaborate with organizations and local community colleges to expand EV-related training available to electrical contractors in San Diego County. One such program is the Electric Vehicle Infrastructure Training Program (EVITP).