



EV Infrastructure Assessment: Proposition 30

October 11, 2022

Disclaimer

This is a brief summary of the assessment of the additional EV infrastructure California could achieve with additional investment. E3's Scope of Work was limited to conducting an EV infrastructure analysis to understand the potential magnitude and locational impacts additional funding could have. E3 takes no stance of support or advocacy for Proposition 30.

Scope

E3 modeled the impacts of the proposed Proposition 30 in California (for the November 8, 2022 consolidated general election) based on assumptions provided by the Clean Air California Coalition.¹

E3 modeled EV charging infrastructure in California under two EV adoption scenarios:

- 1) A business-as-usual scenario, which was developed in line with the EV adoption potential outlined in the study *Driving California's Transportation Emissions to Zero*², funded through The Budget Act of 2019 (AB 74) and administered by the California Environmental Protection Agency. This scenario exceeds historical trends into the future.
- 2) A Prop 30 scenario, assumed to have EV adoption consistent with the 100% zero emission vehicle (ZEV) sales target by 2035.³ The EV infrastructure build out was also forced to align with the goals

¹ CACC sourced from California state agency reports

² <https://www.ucits.org/research-project/2179/>

³ This adoption forecast is consistent with the Prop 30 EV adoption forecast provided by Clean Air California which models the impacts of the electric vehicle funding portion of Prop 30

of Prop 30, including modeling roughly half of infrastructure build in disadvantaged and low-income communities in the state as defined by the CalEnviroScreen 4.0.⁴

E3 assessed Prop 30's ability to fill in the gap between the EV infrastructure required to support the business-as-usual scenario and that required to support California's climate goals, modeled as EV adoption in line with Executive Order N79-20 which calls for 100% ZEV adoption by 2035. A separate Economic Assessment was done to assess sufficiency of funding and benchmark current and existing funding streams against required investments (see Economic Assessment section).

E3 collaborated with Integral Analytics to utilize its Forecasting Anywhere tool to assess the geospatial allocation of EV chargers added between 2023 and 2042 in each scenario. Forecasting Anywhere uses today's adoption and trends, combined with scenario assumptions of the future, and leverages machine learning to build a distribution forecast of EV charging infrastructure. Forecasting Anywhere inputs statewide levels of EV charger buildout and allocates charger additions at the census level based on the technical potential given where chargers could be installed and historic and forecasted trends in EV vehicle and charger adoption. Forecasted trends are scenario-specific and can be adjusted, for example, to have more charger buildout occur in disadvantaged communities to align with policy objectives.

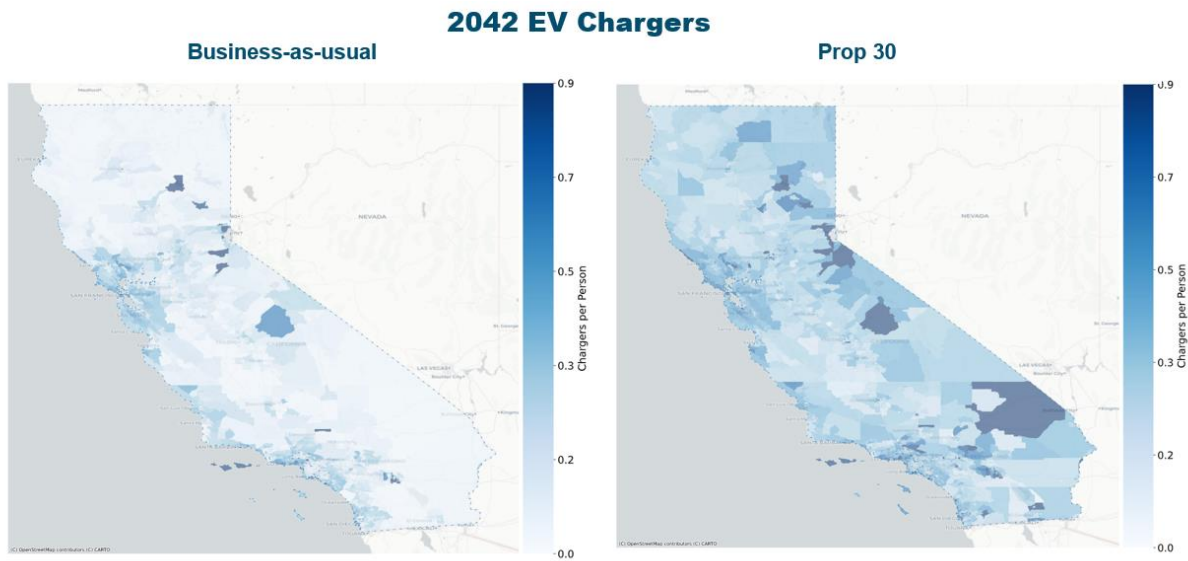
E3 did not conduct an adoption forecast for electric vehicles, but leveraged a forecasts derived from California state agencies and data provided by the Clean Air California Coalition.

EV Charging Infrastructure Magnitude and Locational Impacts

As modeled, Prop 30 from 2023-2042 would support an additional 7.4 million EV chargers throughout California, measured incremental to the business-as-usual scenario of 9.1 million EV chargers by 2042. The map below shows the number of EV chargers per person at the county level in the business-as-usual and Prop 30 scenarios.

⁴ <https://calepa.ca.gov/envjustice/ghginvest/>

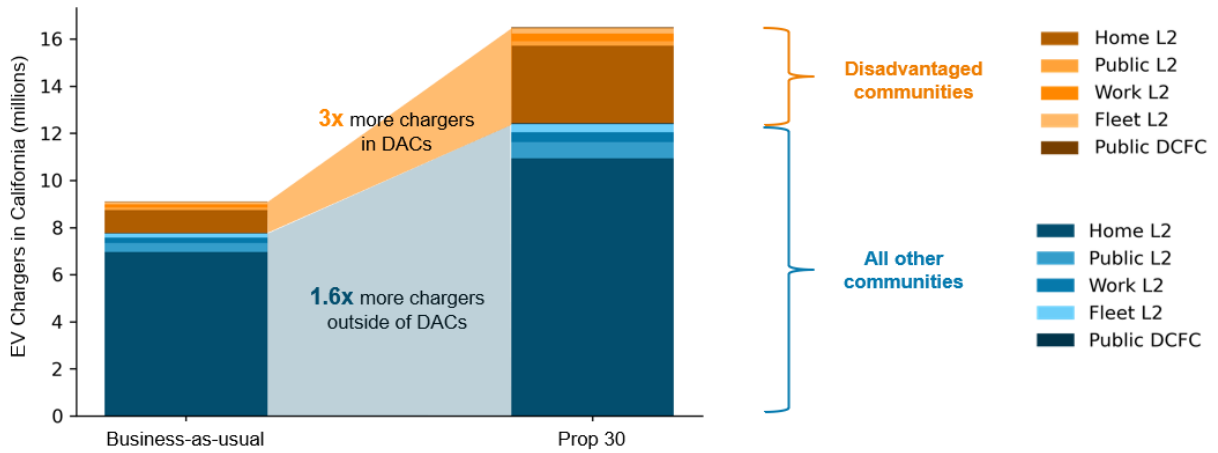
Figure 1: 2042 EV Charging Infrastructure Concentrations per Person by Census Tract



Other key findings from the E3 analysis include:

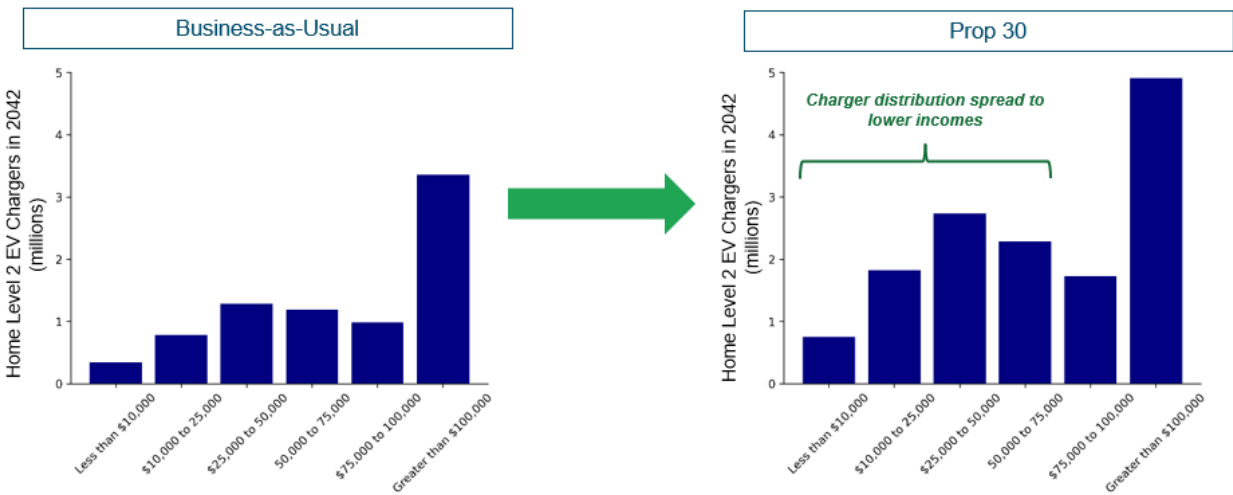
- ✦ The expected EV charging infrastructure buildout in a business-as-usual scenario does not support the amount of EVs needed to meet California’s emissions reduction goals. Prop 30 funding, as modeled, will add enough EV infrastructure to support the incremental number of EVs needed to meet California’s goal of 100% ZEV sales by 2035.
- ✦ Prop 30 can help the state meet 100% of home charging needs, with EV chargers installed in each home that can support a charger
- ✦ One-third of home Level 2 chargers added from Prop 30 would be added in multi-family homes, which will help to fill in the charger gap that is likely to persist into the future given current trends
- ✦ By targeting EV charger additions that will benefit low-income residents and disadvantaged communities, Prop 30 would lead to 3x as many EV chargers installed in disadvantaged communities by 2042 than in a business-as-usual scenario

Figure 2: Charging Infrastructure Investments in 2042 in DAC vs Other Communities



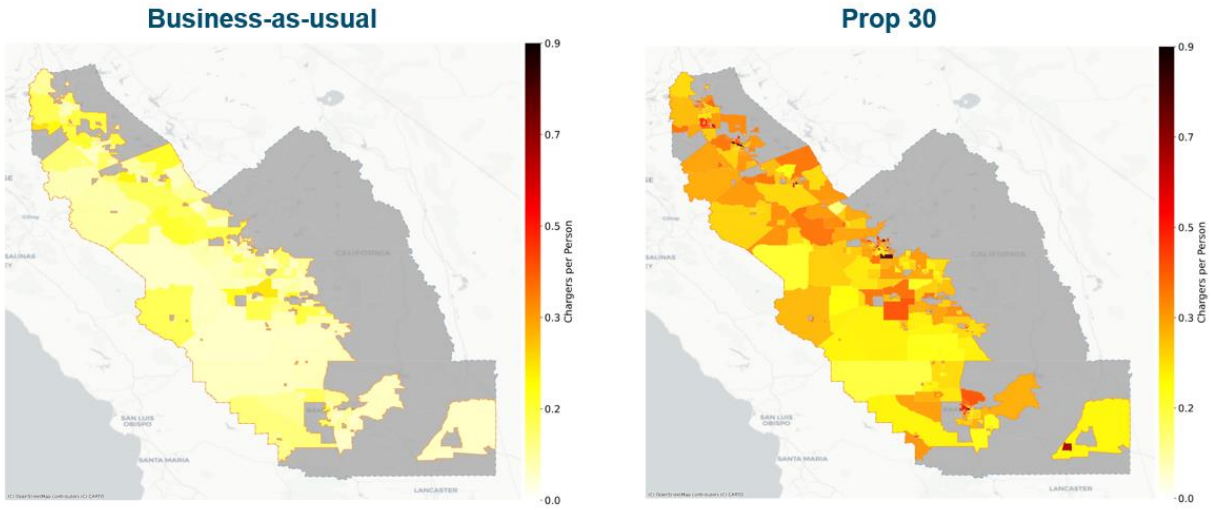
+ Prop 30 can help correct the trend of EV charger installations being concentrated in higher-income homes and can spread EV charger buildout into lower-income households

Figure 3: Home Level 2 Charging Infrastructure Investments in 2042 by Income Bracket



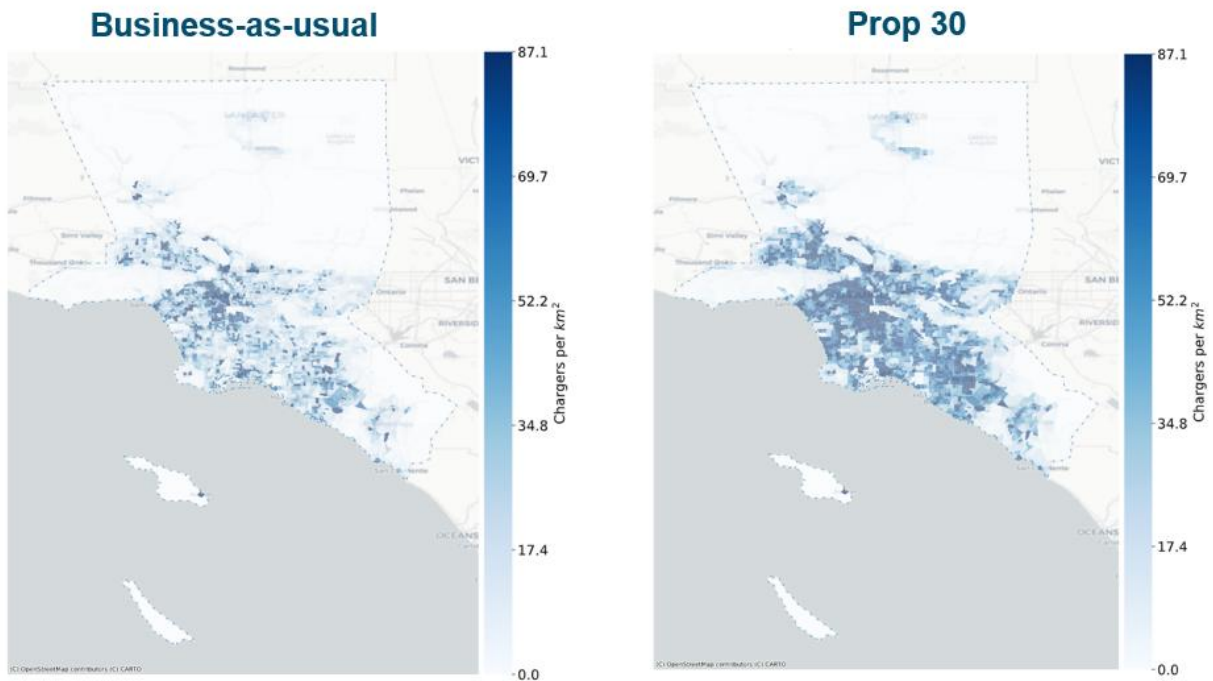
Prop 30 can also help fill in charger deserts that are likely to emerge and persist in the business-as-usual scenario. The maps below show the example of the San Joaquin Valley, where Prop 30 can help fill in the charger desert that is otherwise likely to persist through 2042 in the business-as-usual scenario.

Figure 4: San Joaquin Valley Chargers per Person in 2042



In addition, Prop 30 will add EV chargers to metro areas throughout the state. Shown below is the public charger buildout in the business-as-usual and Prop 30 scenarios in Los Angeles.

Figure 5: Los Angeles Chargers per Square Kilometer in 2042



Key findings for California's metro areas include:

- ✦ Los Angeles will see an additional 2.5 million EV chargers with Prop 30, with 2.7x as many chargers in disadvantaged communities compared to a business-as-usual scenario
- ✦ San Francisco will see an additional 70,800 EV chargers with Prop 30, with 2x as many chargers in disadvantaged communities compared to a business-as-usual scenario
- ✦ Oakland will see an additional 270,000 EV chargers with Prop 30, with 2.6x as many chargers in disadvantaged communities compared to a business-as-usual scenario
- ✦ San Jose will see an additional 244,000 EV chargers with Prop 30, with 2.5x as many chargers in disadvantaged communities compared to a business-as-usual scenario
- ✦ The Bay Area as a whole will see an additional 1.1 million EV chargers with Prop 30, with 2.6x as many chargers in disadvantaged communities compared to a business-as-usual scenario
- ✦ San Diego will see an additional 673,000 EV chargers with Prop 30, with 3x as many chargers in disadvantaged communities compared to a business-as-usual scenario
- ✦ Sacramento will see an additional 505,000 EV chargers with Prop 30, with 5.2x as many chargers in disadvantaged communities compared to a business-as-usual scenario
- ✦ Fresno will see an additional 215,000 EV chargers with Prop 30, with 3.9x as many chargers in disadvantaged communities compared to a business-as-usual scenario
- ✦ The Inland Empire will see an additional 924,000 EV chargers with Prop 30, with 3.5x as many chargers in disadvantaged communities compared to a business-as-usual scenario
- ✦ San Joaquin Valley will see an additional 919,000 EV chargers with Prop 30, with 3.6x as many chargers in disadvantaged communities compared to a business-as-usual scenario

Economic Assessment

The scenarios described above are predicated on EV adoption forecasts. Below is a description of the economic analysis conducted to assess Prop 30 funding sufficiency, and a description of how various funding streams could support California’s climate goals. These were simple analyses meant as a sense check that do not include detailed representations of the future, inflation, or discounting.

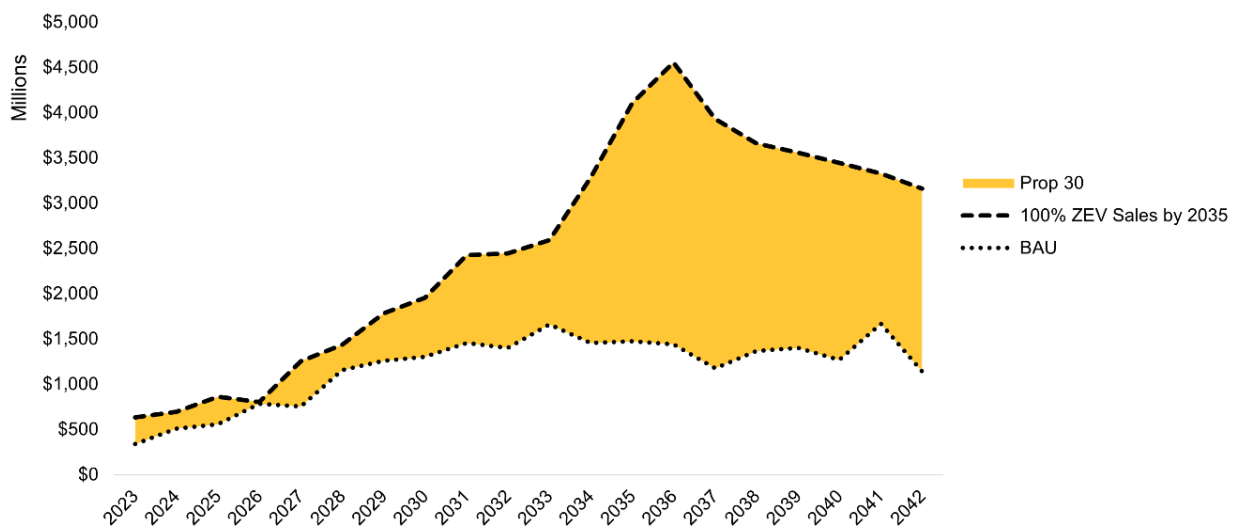
Scenario Assessment

E3 determined that Prop 30 funding would support enough charging infrastructure to meet the incremental need between the business-as-usual scenario and that required to support California’s goal of 100% ZEVs by 2035. EV charging infrastructure costs were sourced from the California Electric Vehicle

Infrastructure Project (CALeVIP) cost data⁵ and the California Energy Commission *Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment* of 2021.⁶ Costs include charger capital costs and electric panel upgrade costs.

E3 modeled Prop 30 funding, estimated to be \$1.5 billion per year, according to the Clean Air California Coalition via analysis of Prop 30 done by California’s Legislative Analyst’s Office, with the ability to roll over to future years if not fully deployed in a given year up to a maximum of \$30 billion over the life of the Proposition. Based on the varying annual need for incremental EV charging infrastructure relative to the business-as-usual scenario, some years require less than \$1.5 billion in EV charging funding while some years require greater than \$1.5 billion in EV charging funding. E3’s modeled Prop 30 spending does not exceed more than the total amount available, \$30 billion, over the 20 funded years. Prop 30 spending as modeled by E3 is shown below. In this assessment, E3 does not make a judgement as to the sources of funding supporting the business-as-usual (BAU) scenario.

Figure 6: Prop 30 Sufficiency to Meet Incremental EV Infrastructure Investment



Existing Funding Assessment

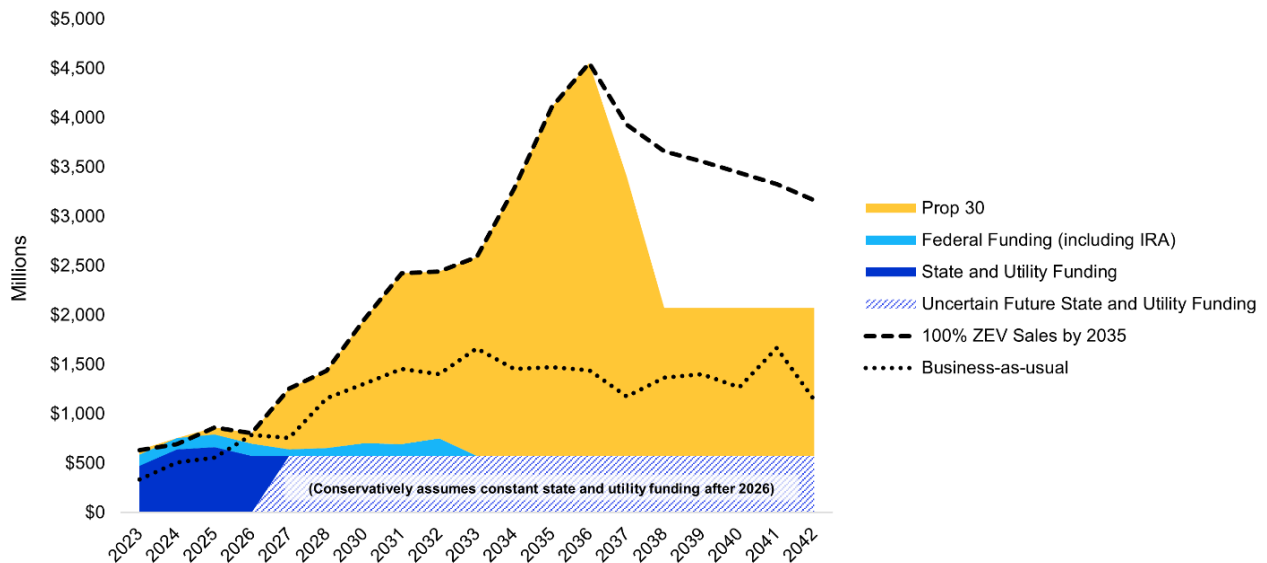
Separate and apart from the scenarios and the EV charging infrastructure magnitude and locational impacts assessment, E3 conducted an assessment of existing funding streams, required funding under the different scenarios, and funding provided by Proposition 30. In this economic analysis, E3 modeled the

⁵ <https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program/california-electric-vehicle>

⁶ <https://www.energy.ca.gov/programs-and-topics/programs/electric-vehicle-charging-infrastructure-assessment-ab-2127>

rolling \$30 billion⁷ available from Prop 30 along with existing federal (Infrastructure Investment & Jobs Act⁸ and Inflation Reduction Act (IRA)⁹), state, and utility funding sources.¹⁰ State and utility funding sources are assumed to remain constant post 2026 and federal funding rolls off in 2026 (IIJA) and 2032 (IRA). As shown in the chart below, E3 found that existing funding sources and Prop 30 do not provide sufficient funding to meet California’s 100% ZEV goal, with funding sufficiency failing by 2037. However, combined, these sources of funding do substantially exceed the amount of funding required to support the business-as-usual scenario.

Figure 7: Existing Federal and State Funding, Prop 30 Funding, and Infrastructure Investment Requirements for BAU and 100% ZEV Sales by 2035



⁷ Note that the rolling nature of Proposition 30 should allow for an annual return on funds rolled over from prior years that was not included in this analysis but could increase the overall magnitude of Proposition 30 funding

⁸ Assumed to be depleted after 2026

⁹ Funding available in California from the Inflation Reduction Act Alternative Fuel Vehicle Refueling Property Credit was estimated by applying the 30% tax credit to EV chargers built in the business-as-usual scenario in disadvantaged communities and outside of major metro areas (as a proxy for rural areas). Funding was assumed available for all EV chargers built from 2023 through 2032.

¹⁰ Estimates of state, federal, utility, and LCFS funding included are consistent with the California Energy Commission’s Draft Zero-Emission Vehicle Infrastructure Plan (ZIP). (<https://www.energy.ca.gov/sites/default/files/2022-04/CEC-600-2022-054.pdf>). These levels assume utilities implement their approved investments; federal funds are disbursed as expected; and the state’s Public Utilities Commission (CPUC) approves filings on the Low Carbon Fuel Standard (LCFS), near-term priorities, and Pacific Gas and Electric’s new EV Charge 2 proposal. The funding level from these existing sources (minus federal) was assumed constant after 2026.