

Date of Hearing: April 24, 2024

ASSEMBLY COMMITTEE ON UTILITIES AND ENERGY

Cottie Petrie-Norris, Chair

AB 2697 (Irwin) – As Amended April 9, 2024

SUBJECT: Transportation electrification: electric vehicle charging infrastructure

SUMMARY: Requires the California Energy Commission (CEC) to develop network roaming requirements for state-funded electric vehicle (EV) chargers and charging station networks by January 1, 2026 and to develop uptime recordkeeping and reporting standards for stations installed between January 1, 2018 and January 1, 2024.

Specifically, **this bill:**

- 1) Defines “charging network provider” as including, but not limited to, an investor-owned utility (IOU), a local publicly owned electric utility (POU), or a private EV charging infrastructure developer.
- 2) Requires the CEC to develop network roaming requirements for EV chargers and charging station networks that received state or ratepayer funding by January 1, 2026. Specifically, requires the network roaming requirements to:
 - a. Ensure drivers have access to a secure and standard set of data to help locate and use a publicly available EV charging station, regardless of the network they use; and
 - b. Require network roaming agreements between charging network providers create a more seamless and positive experience for customers.
- 3) Requires the CEC, when developing network roaming requirements, to consider federal definitions and rulings to ensure consistency between standards and to prioritize addressing consumer needs to reduce barriers to EV adoption.
- 4) Repeals the provisions regarding network roaming requirements on January 1, 2035.
- 5) Applies uptime recordkeeping and reporting standards applicable to EV chargers and charging stations installed after January 1, 2024 and that received state or ratepayer funding to EV chargers and charging stations installed after January 1, 2024 and that were installed with moneys from the consent decrees among the California State Air Resources Board (CARB), Volkswagen AG, et al. (VW), and the United States Department of Justice (DOJ) in the United States of America v. Volkswagen AG, et al., Case No. 16-cv-295 (N.D. Cal.) (VW Settlement Consent Decrees).
- 6) Requires the CEC, in consultation with the California Public Utilities Commission (CPUC), to develop additional uptime recordkeeping and reporting standards for EV chargers and charging stations installed between January 1, 2018 and January 1, 2024, and that either (i) received state or ratepayer funding or (ii) were installed with moneys from VW Settlement Consent Decrees, by January 1, 2026. Applies these uptime

recordkeeping and reporting standards to applicable EV chargers and charging stations for a minimum of six years.

- 7) Requires the CEC, in developing the additional uptime recordkeeping and reporting standards, to consider the technological capability of stations, the potential of the standards to result in station closure if unable to report required information, the likelihood of near-term station replacement, and other factors the commission considers appropriate.

EXISTING LAW:

- 1) Creates the Clean Transportation Program (CTP), administered by the CEC, to provide competitive grants, loans, or other funding to various entities to develop and deploy technologies that transform California's fuel and vehicle types to help attain the state's climate change policies. (Health and Safety Code § 44272)
- 2) Requires the CEC, working with the CARB and the CPUC, to prepare a statewide assessment of EV charging infrastructure needed to support the levels of EV adoption required for the state to meet its goals of putting at least 5 million zero-emission vehicles (ZEVs) on California roads by 2030, and of reducing emission of greenhouse gases (GHGs) to 40% below 1990 levels by 2030. (Public Resources Code § 25229)
- 3) Requires the CEC, in consultation with the CPUC, to develop uptime recordkeeping and reporting standards for EV chargers and charging stations installed on or after January 1, 2024 and received an incentive from a state agency or through a charge on ratepayers, by January 1, 2024. Applies these standards to applicable EV chargers and charging stations for a minimum of six years. (Public Resources Code § 25231.5)
- 4) Creates the Alternative and Renewable Fuel and Vehicle Technology Fund to be administered by the CEC to implement the CTP. Requires the CEC to include in the biennial integrated energy policy report (IEPR): a list of projects funded, the expected benefit in terms of specified characteristics, the overall contribution of the funded projects towards specified goals, key obstacles and challenges to meeting the goals, and recommendations for future actions. (Public Resources Code § 44273)
- 5) Prohibits the charging of a subscription fee or the conditional requiring of membership in any club, association, or organization, on persons desiring to use an EV charging station. Also requires disclosure to the public of total actual charges for the use of an EV charging station, including any additional network roaming charges for nonmembers, at the point of sale. Requires an EV charging station that requires payment of a fee to allow payment via credit card or mobile technology, or both. (Health and Safety Code § 44268.2)

FISCAL EFFECT: Unknown. This bill is keyed fiscal and will be referred to the Committee on Appropriations for its review.

BACKGROUND:

California zero-emission vehicle (ZEV) goals – California's transportation sector is currently the largest source of GHG emissions in the state. In the interest of meeting the state's emissions

reduction targets, California has set a goal that 100% of new passenger vehicle sales will be ZEVs by 2035.¹ Meeting the state’s ZEV goals will require a significant increase in the number of light-, medium-, and heavy-duty ZEVs on the road and a drastic increase in the infrastructure to support these vehicles. Cumulative sales of ZEVs, which include EVs, in California reached 1.8 million in the fourth quarter of 2023, with ZEVs accounting for 25% of new car sales.²

To support the rapid deployment of ZEVs, in 2018, the governor set a goal of having 250,000 chargers, including 10,000 direct current fast chargers (DCFCs), operating in California by 2025.³ Subsequently, the Legislature enacted AB 2127 (Ting, Chapter 365, Statutes of 2018), requiring the CEC to conduct an assessment every two years of the EV charging infrastructure, and associated workforce, needed to meet California’s ZEV deployment goals. In the most recent report published in 2024, the CEC projects over 1 million public and shared private chargers are needed to support 7 million light-duty EVs in 2030, and more than 2 million chargers are needed to support 15 million ZEVs anticipated under Executive Order N-79-20.⁴ An additional 157,000 chargers are needed to support 180,000 medium- and heavy-duty vehicles anticipated for 2030. At present, California has approximately 105,000 public and shared private chargers, including more than 11,000 DCFCs.⁵ This represents an order of magnitude difference between how many chargers are currently operating in California versus how many are needed by 2030.

Roaming agreements – To help locate charging stations, there are a number of dedicated EV charging smartphone apps that provide information such as station locations, charger types at a given location, and real-time usage status (available or in use). Most charging provider companies have proprietary apps designed to help users locate a charging station within the charging provider’s network and pay for charging. Some charging network providers have entered into mutual roaming agreements to enable drivers to use a single app and payment method to access charging stations from different networks. However, roaming agreements are not universal and therefore have done little yet to assuage frustrations from EV drivers who report having to download more than a handful of apps, each of which may require their own account and outstanding balance to use.^{6,7}

Reliability of EV chargers – In the last year, Californians bought nearly 470,000 EVs, a record number up 29% from 2022.⁸ As EV adoption has drastically increased and the charging sector has grown, early adopters of EVs have begun to experience hiccups in the charging experience. In their 2023 survey, Plug In America found that, despite EVs scoring well in driver satisfaction, unreliable or non-functional public chargers have increased in severity and become a major concern or a deal-breaker for drivers who own or are considering owning an EV.⁹ Corroborating

¹ Executive Order N-79-20

² CEC; “New ZEV Sales in California”; <https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics/new-zev-sales>.

³ Executive Order B-48-18

⁴ CEC; *Assembly Bill 2127 Second Electric Vehicle Charging Infrastructure Assessment*; February 2024.

⁵ CEC; “Electric Vehicle Chargers in California”; <https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics/electric-vehicle>.

⁶ ABC News; “Electric vehicle drivers get candid about charging: ‘Logistical nightmare’”; February 2023; <https://abcnews.go.com/Business/broken-machines-long-waits-reality-charging-electric-vehicle/story?id=97389275>.

⁷ Axios; “Exclusive: EV charging providers to allow roaming across their networks”; June 2021; <https://www.axios.com/2021/06/24/electric-vehicle-charging-roaming-networks>.

⁸ Veloz; “Q4 2023 data shows a 29% year-over-year increase in EV sales in California, with over 1.2 million EVs sold nationally”; February 2024.

⁹ Plug In America; “2023 EV Driver Insights”; <https://pluginamerica.org/survey/2023-ev-driver-survey/>.

anecdotal stories from EV owners, a 2022 field study led by UC Berkeley found 28% of public DCFC chargers in the Bay Area were not functional or accessible for a variety of reasons as shown in Table 1.¹⁰

Table 1. Functional states of 657 DCFC EV chargers in the Bay Area.⁹

	N	%
Functioning		
Charged for 2 minutes	375	57.1%
Occupied by EV and charging	101	15.4%
Total	476	72.5%
Not Functioning		
Connector broken	6	0.9%
Blank or non-responsive screen	23	3.5%
Error message on screen ¹	24	3.7%
Connection error ²	7	1.1%
Payment system failure ³	47	7.2%
Charge initiation failure ⁴	42	6.4%
Total	149	22.7%
Station Design Failure		
Cable would not reach ⁵	32	4.9%

¹ Charger error, unavailable, under maintenance, etc.

² Connection, network, communication error, etc.

³ 12 of these were evaluated with 2 credit cards but not an app or membership card

⁴ Short session failure

⁵ At 3 EVSEs the space was too small to safely back into

Commonly used as a metric for reliability, uptime is the percentage of time that a charger is functional. Definitions of uptime vary, as do categories of excluded “downtime,” or periods when a charger is not functional but are not counted in uptime statistics. The National Electric Vehicle Infrastructure (NEVI) Formula Program considers a charging port “up” when its hardware and software are both online and available for use, or in use, and the charging port successfully dispenses electricity in accordance with requirements for minimum power level.¹¹ NEVI also specified that downtime due to electric service interruptions, failure to initiate a charge at the expected power level due to the fault of the vehicle, scheduled maintenance, vandalism, or natural disasters is excluded from the uptime calculation. NEVI mandates a 97% uptime requirement annually for five years.

In 2022, the Legislature passed AB 2061 (Ting, Chapter 345, Statutes of 2022), directing the CEC to define “uptime” for reliability and develop uptime recordkeeping and reporting standards for EV chargers and charging stations installed on or after January 1, 2024 and that received state or ratepayer funding. The CEC has aligned with the definitions for uptime and downtime with NEVI, and adopted requirements for chargers installed on or after January 1, 2024 to meet 97% uptime.¹² Despite alignment, the CEC has acknowledged that NEVI’s uptime statistics may not capture many situations where a charger is considered “up,” but drivers are still unable to charge their vehicles successfully. For example, a payment system fault may leave a driver unable to pay and authorize charging at an “up” charger.¹³ Also, a definition of downtime that excludes vandalism may leave drivers unable to charge at damaged chargers. The CEC has partnered with

¹⁰ UC Berkeley, Cool the Earth, SLAC National Accelerator Laboratory; “Reliability of Open Public Electric Vehicle Direct Current Fast Chargers”; March 2022.

¹¹ US Department of Transportation, Federal Highway Administration. *National Electric Vehicle Infrastructure Standards and Requirements*; February 2023.

¹² CEC; “Second Draft Staff Report Tracking and Improving Reliability of California’s Electric Vehicle Chargers”; April 2024.

¹³ General Motors; “GM Comments on CEC Reliability Workshop”; November 2022; <https://efiling.energy.ca.gov/GetDocument.aspx?tn=247428&DocumentContentId=81809>.

the University of California, Davis Institute of Transportation Studies to investigate the charging reliability experience in different communities and identify potential solutions for providers to maximize the reliability of chargers.¹⁴

COMMENTS:

- 1) *Author's statement.* According to the author, “In light of recent publicity around the poor EV charging experience, it is clear that increased accountability is necessary. A January story by the LA Times followed a potential EV buyer as he backed out of his decision to purchase an EV due to concerns about inoperable public chargers. As driver dissatisfaction with EV charging increases, California risks its transition to electrification in the transportation sector. EV drivers must have several different charging applications on their phones just to locate a charger that may not even be functional. Instead, roaming agreements provide drivers with secure and accurate data such as: charger location, station operator, station status, hours of operation, type of charger, pricing, and timestamps for individual stations. Providing drivers with live station data using roaming agreements will measurably improve the worsening EV driver experience.”
- 2) *Getting ahead of the curve.* Supporting the 2 million EV chargers that the CEC projects are needed by 2035 to bolster California’s ambitious climate goals necessitates updating and expanding the state’s distribution and transmission systems. But years-long permitting processes across multiple agencies, community opposition, and high costs mean it may take a decade to build new electric utility infrastructure. Thus, it may be prudent to look in all directions for ways, including network roaming and uptime requirements, to improve the state’s existing EV charger system and support the continued adoption of EVs, rather than be reliant on new EV charging installations to adjust to market needs. This bill appropriately focuses on both new and existing EV charger installations, seeking to improve overall EV user experience in the state and support the continued adoption of EVs.
- 3) *Related legislation.*

AB 2815 (Petrie-Norris) would require the CEC to provide funding for repair or replacement of a non-operational EV charging station through a new or existing program under the CTP, of which at least 50% of the funds would be allocated to low-income or disadvantaged communities. Status: *set for hearing* on April 22nd, 2024 in the Assembly Committee on Natural Resources. This bill passed the Assembly Committee on Transportation on April 12th, 2024 with a 15-0-0 vote.

- 4) *Prior legislation.*

AB 126 (Reyes and Gonzalez) reauthorized fees that fund the Air Quality Improvement Program, the Clean Transportation Program, and the Enhanced Fleet Modernization Program. Among other changes, required the CEC to, with regards to EVCS installed on or after January 1, 2024 that received state funding or ratepayer money, to adopt tools to increase uptime and recordkeeping at those stations and to set standards for how those

¹⁴ UC Davis Institute of Transportation Studies; “Measuring Charging Infrastructure Reliability in California”; <https://ev.ucdavis.edu/project/measuring-charging-infrastructure-reliability-california>.

stations shall notify customers about their availability and accessibility. Status: Chapter 319, Statutes of 2023.

SB 123 (Committee on Budget and Fiscal Review) required EV chargers that are newly installed and publicly available to offer specified payment methods for level 2 and fast chargers. Authorized the CEC to modify those requirements in consideration of changing technologies, and vested authority to the CEC to implement and enforce those requirements. Status: Chapter 52, Statutes of 2023.

AB 1349 (Irwin) would have required owners or operators of EV charging stations for which the owner or operator was awarded a state grant on or after January 1, 2024 to support the EV charging station, including related infrastructure, to make available specified data on the owners' or operators' entire network of EV charging stations in California, free of charge, to third-party software developers. Status: Held in Senate Committee on Energy, Utilities, and Communications.

AB 126 (Reyes) required the CEC to set standards for how EV charging stations notify customers about the availability and accessibility of publicly available charging infrastructure, and required the CEC to adopt tools to increase uptime at charging stations. Status: Chapter 319, Statutes of 2023.

AB 2061 (Ting and Reyes) required the CEC to develop uptime recordkeeping and reporting standards for EVCS that received state funding or ratepayer money and are installed on or after January 1, 2024. Status: Chapter 345, Statutes of 2022.

AB 2127 (Ting) required the CEC to conduct a statewide assessment every two years of EV charging infrastructure needed to support the levels of EV adoption required for the state to meet its goals of putting at least five million zero-emission vehicles (ZEVs) on the road and reducing greenhouse gas (GHG) emissions 40% below 1990 levels by 2030. Status: Chapter 364, Statutes of 2018.

SB 454 (Corbett) prohibited charging a subscription fee on persons desiring to use an EV charging station and required the total actual charges for the use of an EV charging station to be disclosed to the public at the point of sale. Status: Chapter 418, Statutes of 2023.

- 5) *Double referral*. This bill was previously heard in the Assembly Committee on Transportation on April 15th, 2024, where it passed 14-0-1.

REGISTERED SUPPORT / OPPOSITION:

Support

Midpen Housing Corporation
Plug In America
Union of Concerned Scientists

Support If Amended

California Electric Transportation Coalition

Opposition

Electric America, LLC

Oppose Unless Amended

Electric Vehicle Charging Association
EV Charging Solutions, Inc.

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