**SENATE COMMITTEE ON HOUSING**
**Senator Scott Wiener, Chair**
**2021 - 2022 Regular**

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| **Bill No:** | SB 1482 | **Hearing Date:** | 3/24/2022 |
| **Author:** | Allen | | |
| **Version:** | 2/18/2022 Introduced | | |
| **Urgency:** | No | **Fiscal:** | Yes |
| **Consultant:** | Andrew Dawson | | |

**SUBJECT:** Building standards: electric vehicle charging infrastructure

**DIGEST:** This bill requires access to an electric vehicle (EV) charging infrastructure for each dwelling unit with access to a parking space in a multifamily dwelling.

**ANALYSIS:**

*Existing law:*

1) Establishes the California Buildings Standards Commission (CBSC) and requires any standards adopted or proposed by state agencies to be submitted to, and approved by, the CBSC.

2) Requires the California Department of Housing and Community Development (HCD) to propose adoption, amendment, or repeal of building standards to CBSC for residential buildings.

3) Requires HCD and CBSC to actively consult with interested parties, including, but not limited to, investor-owned utilities, municipal utilities, manufacturers, local building officials, commercial building and apartment owners, and the building industry when proposing and adopting standards related to EV charging infrastructure.

4) Requires CBSC to publish the California Green Building Standards Code (CALGreen) it its entirety every three years along with supplement pages 18 months after each three year revision.

**This bill:**

1) Requires HCD to propose mandatory building standards for the installation of electric vehicle charging infrastructure for parking spaces in all multifamily dwellings to the CBSC.

2) Requires the proposed standards to include, at a minimum, the following:

   a) Access to a 208/240 volt branch circuit of at least 20 amperes (A), terminating in a receptacle, for use to charge a plug in electric vehicle for each multifamily dwelling unit that has access to a parking space.
   b) "EV Ready" signage at each parking spot equipped with EV charging infrastructure.
   c) Electrical wiring design options for installing the electric vehicle charging circuit.

3) Requires HCD to consult with CALGreen and additional interested parties, which include: the building industry, multifamily dwelling residents, and electric vehicle equity advocate groups.

**COMMENTS:**

1) *Author's Statement.* "SB 1482 requires newly built multifamily residences in California to provide Electric Vehicle (EV) Ready charging access for every unit that is allocated a parking space. Vehicle manufacturing and consumer choices continue trending toward EV adoption. Retrofits are extremely difficult and far more expensive than preparing for EV Ready charging at the time of new construction. The additional upfront cost of adding EV Ready charging access for all new units represents only 0.03% of a typical building cost – and only 10% the cost of installing the same access later as a retrofit. SB 1482 updates California's residential building code to better align with the state's climate, equity, and environmental justice values; minimizes cost and complexity for builders, apartment, and condo managers; and maximizes accessibility for EV drivers of all income levels."

2) *Building Codes in Statute.* The California Building Standards Code (Title 24) serves as the basis for the design and construction of buildings in the state. California's building codes are published in their entirety every three years; intervening code adoption cycles produce supplement pages halfway (18 months) into each triennial period. Amendments to California's building standards are subject to a lengthy and transparent public participation process throughout each code adoption cycle. Through this process, relevant state

agencies propose amendments to building codes, which the CBSC must then adopt, modify, or reject. HCD is the relevant state agency for residential building codes.

HCD has an open, public process in proposing building codes to CBSC. They use public focus group meetings, relevant state agencies, stakeholder groups, building officials, local government agencies, construction industry representatives, environmental community representatives, building product manufacturer representatives, and others for gathering input for the proposed building standards. This bill directs HCD to propose building codes with specific, minimum restrictions to CBSC. The sponsors, *EV Charging for All*, submitted alternative compliance pathways to HCD and CBSC for consideration, but the agencies did not have enough time to thoroughly review the pathways.

3) *California ZEV Mandates and Goals.* Pursuant to Executive order B-48-18, issued by Governor Brown in 2018, also referred to as the "ZEV Mandate," California aims to achieve five million zero-emission vehicles (ZEV) on the road by 2030 and 250,000 charging stations by 2025. Additionally, 15% of new cars sold in California must be ZEV or near-ZEV, according to the ZEV mandate. Pursuant to Executive Order N-79-20, the state has a goal to phase out the sale of new internal combustion engine vehicles by 2035. According to the California Energy Commission[1], in order to achieve this goal, California will require a total of 1.2 million EV chargers to support the transition.

4) *Where are we in achieving our goals?* According to the California Energy Commission[2], there were about 650,000 light-duty ZEVs at the end of 2020, of which the vast majority are battery electric vehicles (BEV) or plug-in hybrids. ZEV sales share is about 12.5% of all car sales, but the majority of these sales are attributed to Tesla, which only produces battery electric vehicles. Presently, there are 79,000 electric vehicle chargers in California, about 55% percent of them are private chargers.

5) *How does this bill help in getting to our goals?* One major limitation for the switch from gas-powered cars to EVs is the availability of charging. Their price has decreased over time with some new EVs costing less than $40,000. Their range is now up to 200 miles, which is very reasonable for commuters. However, charging stations are difficult to come by, and most people charge

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[1] Alexander, Matt, Noel Crisostomo, Wendell Krell, Jeffrey Lu, and Raja Ramesh. May 2021. *Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment: Analyzing Charging Needs to Support Zero-Emission Vehicles in 2030 – Revised Staff Report.* California Energy Commission. Publication Number: CEC-600-2021-001-REV.
[2] California Energy Commission. *Vehicle Population in California dashboard.* https://www.energy.ca.gov/data-reports/energy-insights/zero-emission-vehicle-and-infrastructure-statistics/vehicle-population

their cars at home. This bill helps bring charging capability to people's home. This bill may make adoption more appealing because charging would become more widely available. Research from UC Davis' National Center for Sustainable Transportation suggests that access to charging does have a positive effect on ZEV's, even though they could not tease out quantitative information.[3]

6) *Charging and installation types.* According to the Federal Department of Energy[4], most owners charge their EVs in their home. There are three different levels for charging electric vehicles. Level 1 charging uses a common household outlet, but is very slow. Level 1 charging works well for plug-in hybrids, but not for BEVs because their battery packs are much bigger. Level 2 charging infrastructure can charge a BEV from empty to full overnight, and it uses an outlet similar to an outlet for a dryer for a home. Level 3 chargers are for fast charging with few residential locations because they are very expensive and require large voltages. Charging at a level 3 station would cost more than the charging one's vehicle at home, but it is faster. Fast charging is a new technology and it remains to be seen whether home charging or fast charging stations are preferred by consumers. Consumers may prefer "filling up their tank" at a station than charging at home even if it is more expensive.

   There are three categories of installation. "EV Capable" means that the space can be an EV charging port (everything but the outlet). "EV ready" means that there is an outlet for level 2 charging. "EV Installed" means that there is a charging station for level 2 charging versus an outlet. This bill requires the infrastructure for "EV ready" outlets.

   The Federal Department of Energy estimates the cost to be $1,000-$20,000 for a level 2 charger. The cost ranges vary wildly depending on the output and amount of work needed for the infrastructure (conduits, site improvements, upgrading electrical service, etc.). The higher end numbers would be for complete retrofits and construction.

7) *CALGreen Requirements.* As of now[5], new one and two family dwellings and townhouses with attached private garages must have infrastructure capability for 40 A 208/240 V charging, or "EV capable" installation. For new multifamily dwellings, 10% of the total number of parking spaces must be EV

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[3] Chakraborty, Debapriya, David S. Bunch, Bingzheng Xu, Gil Tal, David Brownstone (2021) Brief: Exposure to Electric Vehicle Technology at Home and Work Can Fuel Market Growth. Institute of Transportation Studies, University of California, Davis, Brief UCD-ITS-RR-21-70

[4] U.S. Department of Energy: Energy Efficiency & Renewable Energy. *Alternative Fuels Data Center, Charging Plug-In Electric Vehicles at Home.* https://afdc.energy.gov/fuels/electricity_charging_home.html

[5] California Building Standards Commission. *2019 California Green Building Standards Code, Title 24, Part 11 with July 2021 Supplement*. https://codes.iccsafe.org/content/CAGBC2019JUL21S/cover

charging spaces with ability for installation of electric vehicle supply equipment (EVSE). By 2023, 10% must have EV Capable installation, 25% EV Ready installation, and 5% must have EV chargers installed for multifamily projects with 20 or more units. For projects with fewer than 20 units, 20% of parking spots must have EV Capable installation and 25% must have EV Ready installation. The table below summarizes the requirements.

| * all level 2 | **Other** | **EV Capable (everything but outlet)** | **EV Ready (outlet)** | **EV Installed (charging station)** |
|---|---|---|---|---|
| **Current law** | 10% of spaces in MDU able to have equipment | 100% one and two family dwellings and townhomes with attached private garage | | |
| **2023 (>20 units)** | | 10% | 25% | 5% |
| **2023 (<20 units)** | | 20% | 25% | |
| **SB 1482** | | | 100% of dwellings with access to a parking spot | |

8) *Amperage.* This bill sets a minimum charging amperage at 20 A. In the CALGreen building codes, the amperage set for installations in multifamily units is 40 A. At 20 A, a vehicle will be charging at about 15 miles per hour. A home's electrical capacity is around 150-200 A. More cars can be charged at a time using 20 A than 40 A, but vehicle charging will require a lot of electricity which might require work on electrical panels. To a certain extent, smart chargers can help with balancing energy output.

9) *Free standing chargers?* It is relatively easy to imagine what getting this infrastructure installed looks like when cars are parked near a wall. Wiring can easily be installed in the wall with access to an electrical panel, and an outlet can be installed through the wall.

It is more difficult when cars are parked away from a wall or outdoors. This would require wiring through an outdoor parking lot or installation of charging ports between parking spaces. A port with two chargers is about 1'x 1'x 4', depending on the brand. Although they are small, these installations can take up a lot of space otherwise available for other things. For example, nine stations would be the width of a parking space. This is not including any protective barrier for the expensive equipment, which can be hundreds to thousands of dollars. The space taken up by the installation may impact the amount of parking for the building, especially if the parking is not near a curb.

10) *Who pays?* Single family homes have their own electrical system and personal chargers, which makes it easier for people who use their home for EV charging to pay the bills for the electricity usage and maintenance. In multifamily dwellings, it is less clear who is responsible for the cost because the facility is shared. Now, because there are not many electric vehicles, multifamily dwellings can distribute the cost of charging and maintenance to all the residents. As more EV's get on the road, understanding the best way to distribute the cost is important. Equity issues might be of concern for residents who do not own a car, use different methods of transportation (biking, busing, etc.), or own a gas-powered car. If one is able to connect specific dwellings to a parking spot, some of these issues are mitigated.

11) *Opposition.* Those writing in opposition state this bill will place cost-prohibitive standards with not much flexibility in changing them because the building code will be in statute. They note the current standards took effect in 2015 and have been updated every 18 months through the administrative building standards adoption process and stringency has increased.

12) *Double-Referral.* This bill is also referred to the Senate Transportation Committee.

**RELATED LEGISLATION:**

**AB 965 (Levine, 2021) —** requires HCD to propose mandatory building standards. CBSC would have to research, develop, and propose for adoption codes for electric vehicle charging infrastructure for existing nonresidential development. Originally had multifamily dwellings as a part of the bill. *This bill is currently on the Senate inactive file.*

**AB 684 (Levine, 2019) —** would have required HCD and CBSC to research, develop, and propose building standards for electric vehicle charging infrastructure

for existing multifamily dwellings and nonresidential development. *This bill was vetoed by the Governor*.

**AB 1239 (Holden, 2017) —** would have required HCD and CBSC to Research, develop, and propose building standards for electric vehicle parking spaces for existing parking structures located adjacent to, or associated with, multifamily dwellings and nonresidential buildings. *This bill was vetoed by the Governor*.

**AB 1092 (Levine, Chapter 410, Statutes of 2013) —** required HCD and CBSC to adopt, approve, codify, and publish mandatory building standards for installation of future electric vehicle charging infrastructure for parking spaces in multifamily dwellings and nonresidential development.

**FISCAL EFFECT:** Appropriation: No Fiscal Com.: Yes Local: No

**POSITIONS: (Communicated to the committee before noon on Thursday, March 17, 2022.)**

**SUPPORT:**

EV Charging for All coalition (Co-sponsor)
Acterra (Co-sponsor)
Plug In America (Co-sponsor)
350 Bay Area
350 Bay Area Action
350 Butte County
350 Petaluma
350 Sonoma
350 Ventura County Climate Hub
Atmos Financial, PBC
Carbon Free Palo Alto
Center for Biological Diversity
Center for Community Action and Environmental Justice
Civicwell
Clean Coalition
Climate 911
ClimatePlan
Climate Reality Project, San Fernando Valley
Coltura
Common Sense Design
Cool the Earth / Drive Clean Bay Area
Electric Auto Association San Joaquin Valley

Electric Vehicle Association
EV Association of San Diego
EVSplusSOLAR.org
Greenbank Associates
Inland Empire Electric Vehicle Association
Menlo Spark
Milestone Consulting LLC
Mothers Out Front Silicon Valley
Peninsula Interfaith Climate Action (PICA)
Redwood Energy
Sacramento Electric Vehicle Association
SF Bay Physicians for Social Responsibility
Sustainable Silicon Valley
Sustainable Transportation Solutions
The Climate Center
Union of Concerned Scientists

**OPPOSITION:**

Apartment Association of Greater Los Angeles
Building Owners and Managers Association of California
California Apartment Association
California Association of Realtors
California Building Industry Association (CBIA)
California Building Officials
California Business Properties Association
California Business Roundtable
Institute of Real Estate Management (IREM)
International Council of Shopping Centers
Western Manufactured Housing Communities Association

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