

**CALIFORNIA BUILDING STANDARDS COMMISSION
& DIVISION OF THE STATE ARCHITECT**

**September 22, 2022
CALGREEN EV WORKSHOP
Agenda Items 2g, 2h, & 2i**

**DRAFT EXPRESS TERMS
CALIFORNIA GREEN BUILDING STANDARDS CODE,
(CALGreen), PART 11,
CALIFORNIA BUILDING STANDARDS CODE,
TITLE 24, CALIFORNIA CODE OF REGULATIONS**

If using assistive technology, please adjust your settings to recognize underline, strikeout and ellipsis.

LEGEND for EXPRESS TERMS

- Existing amendments appear upright
- Amendments appear underlined
- Repealed California language appears ~~upright and in strikeout~~

[Proposed amendments for Electric Vehicle regulations shown underlined below. Open for discussion]

SECTION 5.106, SITE DEVELOPMENT

...

5.106.5.3 Electric vehicle (EV) charging. [N] Construction to provide electric vehicle infrastructure and facilitate electric vehicle charging shall comply with Section 5.106.5.3.1 and shall be provided in accordance with regulations in the *California Building Code* and the *California Electrical Code*. EVCS shall comply with Section 5.106.5.3.2 or 5.106.5.3.6.

Exceptions:

1. On a case-by-case basis where the local enforcing agency has determined compliance with this section is not feasible based upon one of the following conditions:
 - a. Where there is no local utility power supply.
 - b. Where the local utility is unable to supply adequate power.
 - c. Where there is evidence suitable to the local enforcement agency substantiating that additional local utility infrastructure design requirements, directly related to the implementation of Section 5.106.5.3, may adversely impact the construction cost of the project.
2. Parking spaces accessible only by automated mechanical car parking systems are not required to comply with this code section.

[Existing code language shown for context. No changes proposed]

5.106.5.3.1 EV capable spaces. [N] EV capable spaces shall be provided in accordance with Table 5.106.5.3.1 and the following requirements:

1. Raceways complying with the *California Electrical Code* and no less than 1-inch (25 mm) diameter shall be provided and shall originate at a service panel or a subpanel(s) serving the area, and shall terminate in close proximity to the proposed location of the EV capable space and into a suitable listed cabinet, box, enclosure or equivalent. A common raceway may be used to serve multiple EV capable spaces.
2. A service panel or subpanel(s) shall be provided with panel space and electrical load capacity for a dedicated 208/240 volt, 40-ampere minimum branch circuit for each EV capable space, with delivery of 30-ampere minimum to an installed EVSE at each EVCS.
3. The electrical system and any on-site distribution transformers shall have sufficient capacity to supply full rated amperage at each EV capable space.
4. The service panel or subpanel circuit directory shall identify the reserved overcurrent protective device space(s) as “EV CAPABLE”. The raceway termination location shall be permanently and visibly marked as “EV CAPABLE.”

Note: A parking space served by electric vehicle supply equipment or designed as a future EV charging space shall count as at least one standard automobile parking space only for the purpose of complying with any applicable minimum parking space requirements established by an enforcement agency. See Vehicle Code Section 22511.2 for further details.

TABLE 5.106.5.3.1

TOTAL NUMBER OF ACTUAL PARKING SPACES	NUMBER OF REQUIRED EV CAPABLE SPACES	NUMBER OF EVCS (EV CAPABLE SPACES PROVIDED WITH EVSE) ²
0–9	0	0
10–25	4	0
26–50	8	2
51–75	13	3
76–100	17	4
101–150	25	6
151–200	35	9
201 and over	20 percent of total ¹	25 percent of EV capable spaces ¹

1. Calculation for spaces shall be rounded up to the nearest whole number.

2. The number of required EVCS (EV capable spaces provided with EVSE) in column 3 count toward the total number of required EV capable spaces shown in column 2.

AGENDA ITEM 2g

Rationale: BSC-CG and DSA are proposing to amend code Section 5.106.5.3.2 Electric vehicle charging stations (EVCS) and related subsections to allow the use of 1 DCFC to be substituted for 5 Level 2 EVSE. Currently 1 DCFC is allowed to be substituted for 5 EV capable spaces without EVSE. The new proposal would allow for DCFCs to be substituted on a 1 to 5 ratio for both EV capable spaces (already allowed) and Level 2 EVSEs. This proposal allows more flexibility to install DCFCs in certain occupancies with short dwell times where DCFC chargers may be better suited to provide adequate customer EV charging.

The proposed changes to the building standards with statewide application will lead to substantial environmental benefits through reduction in energy use, GHG emissions, criteria pollutants, and fossil fuel dependency, leading to improved public health, and potentially result in significant cost savings (avoided costs) associated with future installation of EV charging stations at nonresidential buildings.

This measure will protect public health and safety, the environment, and the general welfare of California residents.

[Proposed amendments for Electric Vehicle regulations shown underlined below. Open for discussion]

5.106.5.3.2 Electric vehicle charging stations (EVCS). EV capable spaces shall be provided with electric vehicle supply equipment (EVSE) to create EVCS in the number indicated in Table 5.106.5.3.1. The EVCS required by Table 5.106.5.3.1 ~~may shall~~ be provided with Level 2 EVSE or DCFC as permitted below, ~~in any combination of Level 2 and Direct Current Fast Charging (DCFC), except that at least one Level 2 EVSE shall be provided.~~ At least one Level 2 EVSE shall be provided.

[Relocate this paragraph to the bottom of this code section above Section 5.106.5.3.3. See below.]

One EV charger with multiple connectors ...supplied to the EV charger.

The installation of each DCFC EVSE shall be permitted to reduce the minimum number of required EV capable spaces without EVSE and EVCS with Level 2 EVSE by five and reduce proportionally the required electrical load capacity to the service panel or subpanel.

AGENDA ITEM 2h

Rationale: BSC-CG is proposing to amend code Section 5.106.5.3.2 Electric vehicle charging stations (EVCS) and related subsections to add the allowed use of Low Power Level 2 EVCS to be substituted for EV capable spaces without EVSE.

Two Low Power Level 2 EVCS shall be permitted to reduce the minimum number of required EV capable spaces without EVSE by one.

These new proposed changes along with the proposed changes in Item 2g above would

allow greater flexibility to use lower power EVSEs or DCFCs to comply with the EV capable space requirements along with the allowed use of DCFCs to comply with the Level 2 EVSE.

These new proposals are aimed at addressing comments heard at the December 2021 Commission hearing from the EV Access for All Coalition and others to allowed use of low power level charging and to consider dwell times.

[Proposed amendments for Electric Vehicle regulations shown underlined below. Open for discussion]

[BSC] The installation of two Low Power Level 2 EV charging receptacles shall be permitted to reduce the minimum number of required EV capable spaces without EVSE in Table 5.106.5.3.1 by one and reduce proportionally the required electrical load capacity to the service panel or subpanel.

[Relocated paragraph from above]

One EV charger with multiple connectors capable of charging multiple EVs simultaneously shall be permitted if the electrical load capacity required by Section 5.106.5.3.1 for each EV capable space is accumulatively supplied to the EV charger.

5.106.5.3.3 Use of automatic load management systems (ALMS). ALMS shall be permitted...multiple EVs. *[No change to text.]*

Rationale: BSC and DSA are proposing editorial changes to Section 5.106.5.3.4 title and a new code Section 5.106.5.3.5 Electric Vehicle Charging Station Signage has been added to replace the “Note” for EVCS signs.

5.106.5.3.4 Accessible Electric Vehicle Charging Station (EVCS). When EVSE is installed, accessible EVCS shall be provided in accordance with the California Building Code Chapter 11B Section 11B-228.3.

Note: ~~For EVCS signs, refer to Caltrans Traffic Operations Policy Directive 13-01 (Zero Emission Vehicle Signs and Pavement Markings) or its successor(s)~~

5.106.5.3.5 Electric Vehicle Charging Station Signage. Electric vehicles charging stations shall be identified by signage or pavement markings in compliance with Caltrans Traffic Operations Policy Directive 13-01 (Zero Emission Vehicle Signs and Pavement Markings) or its successor(s).

TABLE 5.106.5.3.1

TOTAL NUMBER OF ACTUAL PARKING SPACES	NUMBER OF REQUIRED EV CAPABLE SPACES	NUMBER OF EVCS (EV CAPABLE SPACES PROVIDED WITH EVSE) ^{2 & 3}
0-9	0	0
10-25	4	0
26-50	8	2
51-75	13	3
76-100	17	4
101-150	25	6
151-200	35	9
201 and over	20 percent of total ¹	25 percent of EV capable spaces ¹

1. Calculation for spaces shall be rounded up to the nearest whole number.
2. The number of required EVCS (EV capable spaces provided with EVSE) in column 3 count toward the total number of required EV capable spaces shown in column 2.
3. At least one Level 2 EVSE shall be provided.

AGENDA ITEM 2i

Rationale: BSC-CG and DSA are proposing to add a new code Section 5.106.5.3.6 Electric vehicle charging stations (EVCS) alternate compliance option and related new Table 5.106.5.3.6. This new proposed option, which is solely based on power in KVA is meant to be used in lieu of the EVCS requirements in Section 5.106.5.3.2. This new proposed alternative was crafted using the required power allocation in amps for the EV capable spaces from Tables 5.106.5.3.1. The new Table 5.106.5.3.6 shows the required EV capable spaces converted into KVA using 40-amps per space which equates to 9.6 KVA. Column 3 shows the requirement for a minimum of one Level 2 EVSE @ 9.6 KVA. Footnote number 4 in column 2 and 4 indicates the allowed KVA to be utilized for EV capable spaces set at 85% maximum. This allowance is to align with the 20% (net 15%) required in table 5.106.5.3.1 to provide consistency between the two tables.

This new proposed alternative option would allow complete flexibility to use any KVA combination of EV capable, Level 1 (DSA), Low Power Level 2 (BSC-CG), Level 2 or DCFC EVSEs. This alternate compliance option also addresses concerns of dwell times since the owner in coordination with the equipment suppliers and utility companies can decide what is best for their specific project. Additionally, this proposal allows for the build-out of all EV capable spaces. Furthermore, when installed, Level 1 and Low Power Level 2 provide supplemental EV charging for EV car owners that may not have

adequate access to charging at home or at multi-family, apartments, and condos and for public schools and community students and staff.

[Proposed amendments for Electric Vehicle regulations shown underlined below. Open for discussion]

5.106.5.3.6 Electric vehicle charging stations (EVCS)- Power allocation method.

Use Table 5.106.5.3.6 to determine the total power in KVA required based on the total number of actual parking spaces.

Power allocation method shall include the following:

1. [BSC] Use any KVA combination of EV capable, Low Power Level 2, Level 2 or DCFC EVSE.
2. [DSA] Use any KVA combination of Level 1, Low Power Level 2, Level 2 EVSE.
3. At least one Level 2 EVSE shall be provided.
4. EV capable spaces shall meet the requirements of Section 5.106.5.3.1.

TABLE 5.106.5.3.6

<u>TOTAL NUMBER OF ACTUAL PARKING SPACES</u>	<u>MINIMUM KVA PER EV CAPABLE SPACES⁴ @ 9.6 KVA</u>	<u>MINIMUM KVA FOR LEVEL 2 EVSE @ 9.6 KVA (1 min)^{2, 3}</u>	<u>TOTAL KVA REQUIRED IN ANY COMBINATION OF EV CAPABLE⁴, LEVEL 1, LOW POWER LEVEL 2, LEVEL 2, OR DCFC</u>
<u>0-9</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>10-25</u>	<u>38.4</u>	<u>1 min</u>	<u>38.4</u>
<u>26-50</u>	<u>76.8</u>	<u>1 min</u>	<u>76.8</u>
<u>51-75</u>	<u>124.8</u>	<u>1 min</u>	<u>124.8</u>
<u>76-100</u>	<u>163.2</u>	<u>1 min</u>	<u>163.2</u>
<u>101-150</u>	<u>240</u>	<u>1 min</u>	<u>240</u>
<u>151-200</u>	<u>336</u>	<u>1 min</u>	<u>336</u>
<u>201 and over</u>	<u>20 percent of total¹</u>	<u>9.6 KVA min</u>	<u>Total KVA</u>

1. Calculation for spaces shall be rounded up to the nearest whole number.
2. Level 2 EVSE @ 9.6 KVA minimum.
3. [BSC] At least one Level 2 EVSE shall be provided.
4. Maximum allowed KVA to be utilized for EV capable spaces is 85%.