CALIFORNIA BUILDING STANDARDS COMMISSION & DIVISION OF THE STATE ARCHITECT

August 18, 2022
CALGREEN EV WORKSHOP
Agenda Items 5g, 5h, 5i & 5j

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 <u>underlined</u>
- Repealed California language appears ~~upright and in strikeout~~

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

SECTION 5.106, SITE DEVELOPMENT

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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.*

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.

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.

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

AGENDA ITEM 5g
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.

5.106.5.3.2 Electric vehicle charging stations (EVCS). EV capable spaces shall be provided with ~~EVSE~~ electric vehicle supply equipment 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.~~

[*relocate to bottom of this code section*] One EV charger…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 except that at least one Level 2 EVSE shall be provided and reduce proportionally the required electrical load capacity to the service panel or subpanel.

AGENDA ITEM 5h & 5i
Rationale: BSC-CG and DSA are proposing to amend code Section 5.106.53.2 Electric vehicle charging stations (EVCS) and related subsections to allow the use of Level 1 EVCS or Low Power Level 2 EVCS to be substituted for capable spaces without EVSE as follows:
For DSA, four Level 1 EVCS shall be permitted to reduce the minimum number of required EV capable spaces without EVSE by one.
For BSC-CG, 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 5g 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.

[DSA] The installation of four Level 1 EV Charging receptacles shall be permitted to reduce the minimum number of required EV capable spaces without EVSE by one and reduce proportionally the required electrical load capacity to the service panel or subpanel. A maximum of 10% Level 1 spaces be provided.

[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 by one and reduce proportionally the required electrical load capacity to the service panel or subpanel. A maximum of 10% Low Power Level 2 spaces may be provided.

[relocated from top of this code section] 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.

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 Signs. For EVCS signs, refer to 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 5j

Rationale: BSC-CG and DSA are proposing to add a new code Section 5.106.5.3.6 Electric vehicle charging stations (EVCS) alternative compliance option and related new Table 5.106.5.3.6. This new proposed option, which is solely based on power in KWs, is meant to be used in lieu of the 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 required EV capable spaces @ 40-amps per space were converted into KWs using the 40-amps equating to 9.6 KWs. The new table was created using the required KWs based on spaces at 40-amps each. Additionally, a column was added to the new table to show the requirement for a minimum of one Level 2 EVSE @ 9.6 KW.

This new proposed alternative option would allow complete flexibility to use any KW combination of EV capable, Level 1 (DSA), Low Power Level 2 (BSC-CG), Level 2 or DCFC EVSEs. And 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, 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.

Alternative EV compliance option:

5.106.5.3.6 Electric vehicle charging stations (EVCS) alternative compliance option. Use Table 5.106.5.3.6 to determine the total power in KWs required based on the total number of actual parking spaces.

Alternative compliance shall include the following:

1. Use any KW combination of EV capable, Level 1, Low Power Level 2, Level 2 or DCFC EVSE.
2. At least one Level 2 EVSE shall be provided.
3. A maximum of 10% Level 1 spaces each @ 2.4 Kw may be provided [DSA].

TABLE 5.106.5.3.6

TOTAL NUMBER OF ACTUAL PARKING SPACES	MINIMUM KW PER EV CAPABLE SPACES @9.6 KW	MINIMUM KW FOR LEVEL 2 EVSE @9.6 KW (1 min) [2 & 3]	TOTAL KW REQUIRED IN ANY COMBINATION OF EV CAPABLE, LEVEL 1, LOW POWER LEVEL 2, LEVEL 2, OR DCFC
0-9	0		0
10-25	4s=38.4	1 min	38.4
26-50	8s=76.8	1 min	76.8
51-75	13s=124.8	1 min	124.8
76-100	17s=163.2	1 min	163.2
101-150	25s=240	1 min	240
151-200	35s=336	1 min	336
201 and over	20 percent of total[1]	1 min	

1. Calculation for spaces shall be rounded up to the nearest whole number.
2. Level 2 EVSE @ 9.6 kw minimum.
3. At least one Level 2 EVSE shall be provided.

[Note to user: 4 spaces= represents the equivalent EV capable spaces in Table 5.106.5.3.1 and is for reference and discussion purposes only.]