



July 1, 2024

GREEN Code Advisory Committee  
California Building Standards Commission  
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Submitted via email: [cbsc@dgs.ca.gov](mailto:cbsc@dgs.ca.gov) & [Title24@hcd.ca.gov](mailto:Title24@hcd.ca.gov)

## **Re: PowerFlex's Comments on the BSC and HCD's 45-Day Public Comment Period**

PowerFlex is a leading installer and operator of electric vehicle supply equipment (EVSE) and Automated Load Management systems (ALMS). We have installed and operate more than 10,000 level 2 (L2) EVSE in California, each equipped with and providing ALMS, giving us unique insight into the benefits, challenges, and opportunities of ALMS. We appreciate the efforts of the Department of Housing and Community (HCD) and the Building Standards Commission (BSC) to revise building codes to accommodate increased electric vehicle (EV) adoption.

Accordingly, PowerFlex comments on the following proposed changes within the HCD and BSC's proposals:

- ALMS Changes
- L2 charger eligibility in place of low-power L2 chargers
- Additional exemptions for receptacle power source for receptacles
- Junction box termination for EV spaces at Hotels and Motels
- Additions to existing buildings
- EV Capable Sized to 3.3 kW

PowerFlex provides red-lined edits to the HCD and BSC's proposals in Appendix A.

### **ALMS Changes**

PowerFlex strongly supports the HCD's proposal to allow ALMS to reduce the maximum required electrical capacity to 3.3 kW. In using ALMS, PowerFlex has found significant customer benefits and cost savings in reducing the amount of infrastructure needed to support EV charging. Multi-unit dwellings (MUDs) often have long vehicle dwell times, providing great flexibility in managing load without disturbing driver charging needs or requiring drivers to shift their vehicles between charging and non-charging spaces. ALMS at MUDs can significantly reduce onsite infrastructure costs for the customer and reduce or eliminate the need for utility-side infrastructure upgrades, accelerating project deployment timelines and reducing the costs of EV charging for residents.

### **L2 Charger Eligibility in Place of Low-Power L2 Chargers**

During CalGreen workshops, HCD and BSC staff have stated that L2 chargers can be used in place of Low-Power Level 2 receptacles given that sites are allowed to go beyond the minimum when meeting code requirements. However, since this is not explicitly stated in the code, this might not be obvious to everyone. PowerFlex's concern is that some jurisdictions might not interpret L2 chargers as meeting the low-power L2 requirements. Therefore, we ask that the

BSC and HCD codes state that L2 chargers can substitute low-power L2 anywhere throughout the code. As customer needs differ across sites, allowing optionality will result in the best outcome for each site.

### **Additional Exemptions to Receptacle Power Source**

Existing code requires that EV charging receptacles “shall be provided with a dedicated branch circuit connected to the dwelling unit’s electrical panel.”<sup>1</sup> While PowerFlex agrees that a dedicated branch circuit connected to a dwelling unit’s electrical panel could be beneficial for certain sites and customers, this might not be the best configuration for all sites, especially those providing load management. To allow for greater flexibility for sites providing load management, there should be additional exemptions to this rule that allow additional options of providing power to individual receptacles. EV charging receptacles should be permitted to be supplied from the common load panel, or house meter, as long as individual usage is sub-metered and data for each receptacle is made available to the respective dwelling units to which the receptacles are assigned. The Public Utilities Commission has already adopted a protocol that allows individual EV charging stations to be sub-metered and billed separately,<sup>2</sup> so multi-unit dwelling tenants would still be able to be billed as though the receptacle were physically tied directly to their meter. This would allow greater flexibility when installing and operating EVSE, especially when using load management at sites that would be cost-prohibitive to tie each EVSE to a unit’s electrical panel.

Additionally, this proposed change was supported by Advisory Committee members during the March 18-19, 2024 Code Advisory Committee Meeting. However, because this was not a formal agenda item, the Advisory Committee could not officially vote on this recommendation. Nevertheless, the HCD could still implement this code change.

### **Junction box termination for EV spaces at Hotels and Motels**

As proposed by HCD, hotels and motels will be required to equip 40% of the total number of parking spaces with low power Level 2 EV charging receptacles. However, PowerFlex contends that it is overly prescriptive to require EV parking spaces at hotels and motels to terminate in a receptacle. Like non-residential sites, hotels and motels provide services to customers that do not live at the site. Therefore, PowerFlex recommends that hotels and motels have similar requirements as non-residential sites in the BSC’s code and allow for termination in a junction box rather than terminating in receptacles only. This would provide each business the ability to choose how they will build out their EV charging infrastructure.

Additionally, during the Code Advisory Committee held on March 18-19, 2024, the Advisory Committee members voted to approve this code change to allow hotels and motels to end in junction boxes. HCD has disagreed with this recommendation, but PowerFlex urges the HCD to revise its position and allow for this code change.

### **Additions to existing buildings**

As proposed by HCD, “when existing parking facilities are altered or new parking spaces are added to existing parking facilities, and the work requires a building permit, each parking

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<sup>1</sup> Section 4.106.4.2.2 part 1.d. “Receptacle Power Source”

<sup>2</sup> *Decision Adopting Plug-In Electric Vehicle Submetering Protocol and Electric Vehicle Supply Equipment Communication Protocols*, August 4, 2022.

space added or altered shall have access to either a low power Level 2 EV charging receptacle or Level 2 EV charger, unless determined as infeasible by the project builder or designer and subject to concurrence of the local enforcing agency.”<sup>3</sup> PowerFlex strongly supports this requirement as it will promote the installation of EVSE when there is already construction occurring at that parking space and incremental costs are lower. This will lower overall costs of installing EVSE, and therefore PowerFlex supports the HCD implementing this change.

### **“EV Capable” Designation Sized to 3.3 kW**

As currently allowed by the BSC and proposed by the HCD, sites that use ALMS on installed EVSE may reduce the maximum required electrical capacity to each space served by the ALMS. BSC and HCD propose that the electrical system and any on-site distribution transformers have sufficient capacity to deliver at least 3.3 kW simultaneously to each EV charging station (EVCS) served by the ALMS. However, EV capable spaces must have enough transformer capacity to deliver 6.6 kW to the EVSE, even if the EVSE to be installed in the future will provide ALMS. This requirement results in sites that will use ALMS in the future installing too much capacity to serve the EV charging stations.

To reduce over buildout of infrastructure, PowerFlex proposes that EV Capable parking spaces that will use ALMS when the EVSE is installed in the future have enough onsite capacity to provide a minimum of 3.3 kW. This would keep the EV Capable requirement consistent with the EV Ready designation when using ALMS. PowerFlex has many sites in California that are installing EV Capable spaces that will need only 3.3 kW for each EVSE because they will be using ALMS when the EVSE are installed. However, we must oversize the transformer and onsite distribution infrastructure capacity at 6.6 kW to meet current EV Capable rules. Thus, this rule change would reduce the costs of EV Capable spaces that will be using ALMS.

A potential concern with this approach is that a site sizes to 3.3 kW for each EV Capable space but then does not want to use ALMS and therefore does not have enough capacity for non-ALMS spaces. In these situations, these sites would either need to upgrade onsite infrastructure to provide a minimum of 6.6 kW to all non-ALMS EVSE, or the customer would be required to use ALMS.

PowerFlex appreciates the opportunity to provide these comments and supports the agencies as they seek to incorporate EV charging into CALGreen building codes.



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<sup>3</sup> Section 4.106.4.3 “Electric vehicle charging for additions and alterations of parking facilities serving existing multifamily buildings, hotels, and motels.”

## Appendix A – Redlined Edits

### HCD Proposed Changes:

#### 4.106.4.2.2 Multifamily dwellings, ~~hotels and motels.~~

##### 1. EV Ready Parking Spaces with Receptacles.

a. ~~Hotels and Motels.~~ Forty (40) percent of the total number of parking spaces shall be equipped with low power Level 2 EV charging receptacles.

~~b.~~ a. Multifamily Parking Facilities, with Assigned Parking. Forty (40) percent of the total number of parking spaces shall be equipped with low power Level 2 EV charging receptacles. EV charging receptacles required by this section shall be located in at least one assigned parking space per dwelling unit where assigned parking is provided but need not exceed forty (40) percent of the total number of assigned parking spaces provided on the site. Where dwelling units are provided with assigned parking spaces equal to or greater than the number of dwelling units, at least one low power Level 2 EV charging receptacle shall be provided at an assigned parking space for each dwelling unit.

1. Where the total number of dwelling units exceeds the number of assigned parking spaces, all assigned parking spaces shall be provided with one low power Level 2 EV charging receptacle.

**Exception:** Areas of parking facilities served by parking lifts, including but not limited to, automated mechanical-access open parking garages as defined in the California Building Code; or parking facilities otherwise incapable of supporting electric vehicle charging.

b. Multifamily Parking Facilities with Unassigned Parking. Where dwelling units are provided with unassigned parking spaces equal to or greater than the number of dwelling units, at least one low power Level 2 EV charging receptacle shall be provided at an unassigned parking space for each dwelling unit.

1. Where the total number of dwelling units exceeds the number of unassigned parking spaces, all unassigned parking spaces shall be provided with one low power Level 2 EV charging receptacle.

**Exception:** Areas of parking facilities served by parking lifts, including but not limited to, automated mechanical-access open parking garages as defined in the California Building Code; or parking facilities otherwise incapable of supporting electric vehicle charging.

**c. Multifamily Parking Facilities with Assigned and Unassigned Parking.** Where multifamily buildings are provided with both assigned and unassigned parking spaces equal to or greater than the number of dwelling units, at least one low power Level 2 EV charging receptacle shall be provided for each dwelling unit at either the assigned or unassigned parking space, but not both.

**d. Receptacle Power Source.** EV charging receptacles in multifamily parking facilities at assigned parking spaces shall be provided with a dedicated branch circuit connected to the dwelling unit's electrical panel, unless determined as infeasible by the project builder or designer and subject to concurrence of the local enforcing agency.

**Exception:** Areas of parking facilities served by parking lifts, including but not limited to automated mechanical-access open parking garages as defined in the California Building Code; or parking facilities otherwise incapable of supporting electric vehicle charging.

**Exception:** EV Charging receptacles shall be permitted to be supplied from the house meter, as long as individual usage data for each receptacle is made available to the respective dwelling units that the receptacles are assigned to.

**e. Receptacle Configurations.** 208/240V EV charging receptacles shall comply with one of the following configurations:

1. For 20- ampere receptacles, NEMA 6-20R
2. For 30- ampere receptacles, NEMA 14-30R
3. For 50- ampere receptacles, NEMA 14-50R

**Exception.** Level 2 EV chargers may be installed in place of low power Level 2 EV charging receptacles.

#### **4.106.4.2.6 Hotels and motels.**

##### **1. EV Ready Parking Spaces ~~with Receptacles~~.**

a. **Hotels and Motels.** Forty (40) percent of the total number of parking spaces shall be equipped with low power Level 2 EV charging receptacles or terminate in a junction box.

**Exception:** Areas of parking facilities served by parking lifts, including but not limited to automated mechanical-access open parking garages as defined in the California Building Code; or

parking facilities otherwise incapable of supporting electric vehicle charging.

b. **Receptacle Configurations.** 208/240V EV charging receptacles shall comply with one of the following configurations:

4. For 20- ampere receptacles, NEMA 6-20R
5. For 30- ampere receptacles, NEMA 14-30R
6. For 50- ampere receptacles, NEMA 14-50R

**Exception.** Level 2 EV chargers may be installed in place of low power Level 2 EV charging receptacles.

### **BSC Proposed Changes:**

**5.106.5.3.1 EV capable spaces.** 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. EV Capable spaces using ALMS in the future may follow section 5.106.5.3.3 sizing rules.
3. The electrical system and any on-site distribution transformers shall have sufficient capacity to supply full rated amperage at each EV capable space. EV Capable spaces using ALMS in the future may follow section 5.106.5.3.3 sizing rules.

The service panel or subpanel circuit directory shall identify the reserved overcurrent protective device space(s) as "EV CAPABLE".