

May 15, 2023

Mia Marvelli  
Executive Director  
California Building Standards Commission

Emily Withers  
Deputy Director, Codes and Standards  
California Department of Housing and Community Development

## **Re: 45-day Comments on California Green Building Code, 2022 Intervening Cycle**

Tesla<sup>1</sup> respectfully submits the following comments regarding both the Department of Housing and Community Development (HCD) and the Building Standards Commission's (BSC) proposed California Green Building Standards Code (CALGreen) amendments for electric vehicle (EV) charging, as outlined in the 45-Day Express Terms for the 2022 Intervening Code Adoption Cycle.

Overall, we are generally supportive of HCD and BSC's proposed 45-Day Express Terms. These code updates build on the foundation laid by prior code cycles by accelerating adoption of EVs in California and reducing the cost of EV charging in new residential and nonresidential buildings. We offer the following comments and proposed code changes for both new residential and nonresidential buildings.

### **HCD's Proposed 45-Day Express Terms for Residential Buildings**

#### **I. We support increased EV readiness requirements for hotels, motels, and multifamily buildings.**

Tesla strongly supports HCD's proposal to increase EV parking spaces with receptacles and EV chargers at new hotels, motels, and multifamily buildings and raise voluntary Tier I and II percentages for Options A and B respectively. Raising both the mandatory and voluntary measures will facilitate adoption of local stretch codes by cities who have identified a need to go beyond the CALGreen minimum and set a precedent for future state codes. These code proposals are particularly essential for multi-family housing, where vehicles are parked overnight for many hours at a time and where retrofitting existing parking spots to provide EV charging can be challenging. The ability to charge an EV overnight is additionally important for multi-family tenants who are rural, low-income, or in disadvantaged communities, who typically have longer commutes and drive older EVs with shorter ranges.

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<sup>1</sup> Tesla is an American manufacturer of advanced electric vehicles and battery energy storage systems with the mission to accelerate the world's transition to sustainable energy.

**II. We recommend revisions to clarify that Low Power Level 2 is the minimum and not the recommended ceiling for EV Ready requirements.**

We recommend additional clarification be added in Item 4, Chapter 4 Residential Mandatory Measures, Section 4.106.4.2. and Appendix A4 Residential Voluntary Measures, Section A4.106.8.2. to ensure that the requirement for Low Power Level 2 EV charging receptacles is a “minimum” requirement, and thus provision of standard power Level 2 EVSE would not be prohibited. Although builders and local jurisdictions should allow for Level 2 EV charging receptacles since it exceeds the minimum compliance requirement, we are concerned that some builders or local jurisdictions may not understand that Level 2 EV charging receptacles exceeds Low Power Level 2 EVSE. Tesla proposes recommended language in the attached Appendix 1.

**III. We recommend closing a potential compliance loophole by adding limitations to the exemption if a parking facility deems itself incapable of supporting EV charging.**

In Item 5, Chapter 4 Residential Mandatory Measures, Section 4.106.4.2.2 for Multifamily, hotels, and motels with 20 or more dwelling units, HCD proposes a compliance exception for the receptacle power source requirements if compliance is determined as infeasible by the project builder or designer, and the local enforcing agency. This exemption is too broad and could be used to avoid compliance if a builder, for example, determines compliance is infeasible given other prioritized building obligations. As such, we recommend consideration of proposed language in the Appendix 2 to narrow the reasons for an exemption from the requirements.

**IV. We recommend that the requirement for EV Ready Parking Spaces equipped with Level 2 EV Chargers at hotels/motels and multifamily buildings be technology agnostic and remove the J1772 restriction.**

Tesla is very concerned about the unnecessary equipment restriction HCD proposes in Item 5, Chapter 5 Residential Mandatory Measures, Section 4.106.4.2.2, as well as in both Option A and Option B of Item 14 Appendix A4 Residential Voluntary Measures, Section A4.106.8.2. The code proposed would require at least 50% of the required Level 2 EV chargers to be equipped with J1772 connectors.

This requirement for a specific type of Level 2 EV charging equipment is inappropriate within CALGreen and would set inconsistent precedent in requiring a specific type of charging equipment to be installed instead of requiring the capabilities of the equipment (such as Level 2 or Low-Power Level 2). Builders and property owners should be allowed to select the technology provider and design approach that works best for their building needs while meeting minimum compliance obligations. As structured, the requirement for 50% J1772 wouldn't allow for flexibility in any future market changes in

Level 2 EV charging technology without having to change the code in a formal code process. Ensuring the code is technology and solution agnostic is prudent to allow for equipment and building design to be responsive to consumer demand. We recommend the J1772 restriction be removed from Section 4.106.4.2.2 and Section A4.106.8.2, as detailed in Appendix 3.

### **BSC's Proposed 45-Day Express Terms for Nonresidential Buildings**

#### **V. We strongly support clarification of the DCFC 5:1 compliance pathway option to encourage EV charging that matches dwell times.**

Tesla appreciates the important clarifications proposed by BSC in Item 5, Section 5.106.5.3.2 to clarify the code language to allow DCFC to be used in a 5-to-1 ratio for EV capable spaces and also for EVCS installed in new nonresidential buildings. This is an important code clarification to help building officials, building owners, and EV charging providers understand the code options in providing EV charging. Moreover, the proposed code change is necessary to ensure that the installed DCFC is a consistent compliance value regardless of if it is provided to meet the requirements for EV capable or for EVCS installed. This proposed revision will enable the flexibility necessary for nonresidential parking lots to install appropriate power levels of charging for the corresponding use types of the surrounding businesses. Importantly, this code clarification encourages going beyond the minimum EV capable requirements to install EVCS.

#### **VI. We appreciate the optionality provided through the proposed EVCS Power Allocation Method and recommend a similar code clarification to the 5:1 ratio that enables DCFC to count towards EV capable and EVSE installed requirements.**

BSC proposes in Item 5, Section 5.106 Site Development, Section 5.106.5.3.6, an alternative to the DCFC 5:1 compliance option. The EVCS Power Allocation Method allows for any kVa combination of EV capable spaces, Low Power Level 2, Level 2, or DCFC EVSE be utilized to meet compliance. Instead of valuing all DC fast chargers as equal in value compared to a Level 2 EVSE at 5:1, regardless of whether it is a 50kW or 250kW charger, this method would value a 50kW DCFC differently than a 250kW DCFC, requiring fewer 250kW chargers to be provided to meet the kVa requirements. Such as in the aforementioned code clarification in V. for the 5:1 DCFC compliance pathway, the Power Allocation Method should similarly allow DCFC or Level 2 EVSE to count towards EV capable requirements.

#### **VII. We recommend that signage and pavement markings be encouraged, not required, and ensure they are aligned with existing state-level standards.**

Tesla is concerned about the signage requirements proposed by BSC in Item 5, Section 5.106.5.3.5. for EV charging stations, as it conflicts with Section 22511 of the California Vehicle Code which already gives jurisdictions discretion to enforce signage and

pavement marking requirements for on- and off-street parking. Moreover, this would create inconsistency in the statewide requirements for signage and pavement markings between new and existing buildings, considering it is encouraged, but not required for existing buildings at this time. We recommend signage requirements and pavement markings be encouraged, not required, and ensure that they are aligned with existing state-level requirements and standards. Tesla proposes recommended language in the Appendix 4.

**VIII. We recommend adding clarification for how EVCS installed spaces count towards Clean Air Vehicle Space requirements.**

Many local jurisdictions have existing parking facilities with Clean Air Vehicle Spaces due to past or current compliance requirements. Tesla has experienced some local jurisdictions who are unclear regarding if installing an EVCS in the Clean Air Vehicle Space counts towards the Clean Air Vehicle compliance obligations. We think it is important to provide clarity that installed EVCS can count towards Clean Air Vehicle Space requirements. An EVCS space encourages greater clean air vehicle adoption and enablement than solely a dedicated Clean Air Vehicle Space. In Item 17, Chapter A5, Section A5.106, BSC proposes a clarification that future EV charging spaces can qualify as Clean Air Vehicle Spaces. Tesla appreciates this clarification and proposes additional language in Appendix 5 which adds that installed EVCS also count towards Clean Air Vehicle Spaces.

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Thank you for the opportunity to provide comments on the 45-Day Express Terms for the California Green Building Code, 2022 Intervening Cycle.

Sincerely,

Tessa Sanchez  
Senior Policy Advisor  
Business Development and Public Policy  
Tesla, Inc.

Noelani Derrickson  
Senior Policy Advisor  
Business Development and Public Policy  
Tesla, Inc.

## APPENDIX 1

Language to be added is underlined. Language to be removed is ~~struck~~.

**ITEM 5**

**Chapter 4 Residential Mandatory Measures, Section 4.106.4.2.2 Multifamily development projects with 20 or more dwelling units, hotels and motels with 20 or more sleeping units or guest rooms.** HCD proposes to continue adoption of the above referenced section with amendments as follows:

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

- a. Hotels and Motels. Twenty-five (25) ~~Forty (40)~~ percent of the total number of parking spaces shall be equipped with a minimum of low power Level 2 EV charging receptacles.
- b. Multifamily Parking Facilities. For multifamily parking facilities, no more than one receptacle is required per dwelling unit when more than one parking space is provided for use by a single dwelling unit. ~~Forty (40)~~ percent of the total number of parking spaces shall be equipped with a minimum of 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.

**ITEM 14**

**Appendix A4 Residential Voluntary Measures, Section A4.106.8.2 New multifamily development projects and hotels and motels.** HCD proposes to continue adoption of the above referenced section with amendments as follows:

Tier 1. Tier 1 consists of Option A and Option B. One or both may be adopted as voluntary measures.

Option A for New multifamily dwellings, hotels and motels.

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

- a. Hotels and Motels. Fifty (50) percent of the total number of parking spaces shall be equipped with a minimum of low power Level 2 EV charging receptacles.
- b. Multifamily Parking Facilities. Fifty (50) percent of the total number of parking spaces shall be equipped with a minimum of 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

fifty (50) percent of the total number of assigned parking spaces provided on the site.

Tier 2. Tier 2 consists of Option A and Option B. One or both may be adopted as voluntary measures.

Option A for New multifamily dwellings, hotels and motels.

1. EV Ready Parking Spaces with Receptacles.
  - a. Hotels and Motels. Fifty-five (55) percent of the total number of parking spaces shall be equipped with **a minimum of** low power Level 2 EV charging receptacles.
  - b. Multifamily Parking Facilities. Fifty-five (55) percent of the total number of parking spaces shall be equipped with **a minimum of** 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 fifty-five (55) percent of the total number of assigned parking spaces provided on the site.

## APPENDIX 2

Language to be added is **underlined**. Language to be removed is ~~struck~~.

**ITEM 5**

**Chapter 4 Residential Mandatory Measures, Section 4.106.4.2.2 Multifamily development projects with 20 or more dwelling units, hotels and motels with 20 or more sleeping units or guest rooms.**

**4.106.4.2.2 Multifamily dwellings.****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. Multifamily Parking Facilities. 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.  
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. Receptacle Power Source. EV charging receptacles in multifamily parking facilities 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.~~

Exceptions:

1. **A builder or property owner may apply to the local department of buildings or similar entity for a waiver of requirements, which may be granted on a case-by-case basis if the owner can demonstrate that the parking garage is incapable of complying with the requirements due to limitations of the local utility provider.**
2. 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.

## APPENDIX 3

Language to be added is underlined. Language to be removed is ~~struck~~.

**ITEM 5**

**Chapter 4 Residential Mandatory Measures, Section 4.106.4.2.2 Multifamily development projects with 20 or more dwelling units, hotels and motels with 20 or more sleeping units or guest rooms.**

**2. EV Ready Parking Spaces with EV Chargers.**

- a. **Hotels and Motels.** Ten (10) percent of the total number of parking spaces shall be equipped with Level 2 EV chargers. ~~At least fifty (50) percent of the required EV chargers shall be equipped with J1772 connectors.~~
- b. **Multifamily Parking Facilities.** Ten (10) percent of the total number of parking spaces shall be equipped with Level 2 EV chargers. ~~At least fifty (50) percent of the required EV chargers shall be equipped with J1772 connectors.~~ Where common use parking or unassigned parking is provided, EV chargers shall be located in common use or unassigned parking areas and shall be available for use by all residents or guests.

Where low power Level 2 EV charging receptacles or Level 2 EV chargers are installed beyond the minimum required, an automatic load management system (ALMS) may be used to reduce the maximum required electrical capacity to each space served by the ALMS. The electrical system and any on-site distribution transformers shall have sufficient capacity to deliver at least 3.3 kW simultaneously to each EV charging station (EVCS) served by the ALMS. The branch circuit shall have a minimum capacity of 40 amperes, and installed EV chargers shall have a capacity of not less than 30 amperes.

**ITEM 14**

**Appendix A4 Residential Voluntary Measures, Section A4.106.8.2 New multifamily development projects and hotels and motels.**

**Tier 1.** Tier 1 consists of Option A and Option B. One or both may be adopted as voluntary measures.

**Option A for New multifamily dwellings, hotels and motels.****1. EV Ready Parking Spaces with Receptacles.**

- a. **Hotels and Motels.** Fifty (50) percent of the total number of parking spaces shall be equipped with low power Level 2 EV charging receptacles.
- b. **Multifamily Parking Facilities.** Fifty (50) 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 fifty (50) percent of the total number of assigned parking spaces provided on the site.

**Exceptions:**

1. 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.
2. Hotels and motels may substitute Level 2 EV chargers for some or all of the required EV charging receptacles. ~~Where Level 2 EV chargers are installed in place of low power Level 2 receptacles, at least fifty (50) percent of the installed EV chargers shall be equipped with J1772 connectors.~~

**2. EV Ready Parking Spaces with EV Chargers.**

- a. **Hotels and Motels.** Fifteen (15) percent of the total number of parking spaces for hotels and motels shall be equipped with Level 2 EV chargers. ~~At least fifty (50) percent of the required EV chargers shall be equipped with J1772 connectors.~~
- b. **Multifamily Parking Facilities.** Fifteen (15) percent of the total number of parking spaces shall be equipped with Level 2 EV chargers. ~~At least fifty (50) percent of the required EV chargers shall be equipped with J1772 connectors.~~ Where common use parking or unassigned parking is provided, EV chargers shall be located in common use or unassigned parking areas and shall be available for use by all residents or guests.

**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.

An automatic load management system (ALMS) may be used to reduce the maximum required electrical capacity to each space served by the ALMS. The electrical system and any on-site distribution transformers shall have sufficient capacity to deliver at least 3.3 kW simultaneously to each EV charging station (EVCS) served by the ALMS. The branch circuit shall have a minimum capacity of 40 amperes, and installed EV chargers shall have a capacity of not less than 30 amperes.

**Option B Multifamily dwellings.**

1. **EV Ready Parking Spaces with Receptacles.** For multifamily parking facilities, install low power Level 2 EV charging receptacles in at least one parking space for each dwelling unit with assigned parking.

**Exceptions:**

1. 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.

2. Where the number of parking spaces available for residents is less than the total number of dwelling units.
2. **EV Ready Parking Spaces with EV Chargers.** Ten (10) percent, but not less than one, of common use parking spaces shall be equipped with Level 2 EV chargers for use by all residents or guests. ~~At least fifty (50) percent of the required EV chargers shall be equipped with J1772 connectors.~~

**Exceptions:**

1. 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.
2. Where no common use parking spaces are provided.

An automatic load management system (ALMS) may be used to reduce the maximum required electrical capacity to each space served by the ALMS. The electrical system and any on-site distribution transformers shall have sufficient capacity to deliver at least 3.3 kW simultaneously to each EV charging station (EVCS) served by the ALMS. The branch circuit shall have a minimum capacity of 40 amperes, and installed EV chargers shall have a capacity of not less than 30 amperes.

**Tier 2.** Tier 2 consists of Option A and Option B. One or both may be adopted as voluntary measures.

**Option A for New multifamily dwellings, hotels and motels.**

1. **EV Ready Parking Spaces with Receptacles.**
  - a. **Hotels and Motels.** Fifty-five (55) percent of the total number of parking spaces shall be equipped with low power Level 2 EV charging receptacles.
  - b. **Multifamily Parking Facilities.** Fifty-five (55) 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 fifty-five (55) percent of the total number of assigned parking spaces provided on the site.

**Exceptions:**

1. 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.
2. Hotels and motels may install Level 2 EV chargers instead of all or portions of the required percentage of low power Level 2 receptacles for EV charging. ~~Where Level 2 EV chargers are installed in place of low power Level 2 receptacles, at least fifty (50) percent of the installed EV chargers shall be equipped with J1772 connectors.~~
2. **EV Ready Parking Spaces with EV Chargers.**
  - a. **Hotels and Motels.** Twenty (20) percent of the total number of parking

spaces for hotels and motels shall be equipped with Level 2 EV chargers. ~~At least fifty (50) percent of the required EV chargers shall be equipped with J1772 connectors.~~

- b. **Multifamily Parking Facilities.** Twenty (20) percent of the total number of parking spaces shall be equipped with Level 2 EV chargers. ~~At least fifty (50) percent of the required EV chargers shall be equipped with J1772 connectors.~~ Where common use parking or unassigned parking is provided, EV chargers shall be located in the common use or unassigned parking areas and shall be available for use by all residents or guests.

**Exceptions:**

1. 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.
2. Where no common use parking spaces are provided.

An automatic load management system (ALMS) may be used to reduce the maximum required electrical capacity to each space served by the ALMS. The electrical system and any on-site distribution transformers shall have sufficient capacity to deliver at least 3.3 kW simultaneously to each EV charging station (EVCS) served by the ALMS. The branch circuit shall have a minimum capacity of 40 amperes, and installed EV chargers shall have a capacity of not less than 30 amperes.

**Option B Multifamily Developments.**

1. **EV Ready Parking Spaces with Receptacles.** Install one low power Level 2 EV charging receptacle for each parking space available for use by residents. **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.
2. **EV Ready Parking Spaces with EV Chargers.** Twenty (20) percent of parking available for nonresidents or guests shall be equipped with Level 2 EV chargers. ~~At least fifty (50) percent of the required EV chargers shall be equipped with J1772 connectors.~~ Where common use parking is provided, EV chargers shall be located in the common use parking area and shall be available for use by all residents or guests.

**Exceptions:**

1. 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.
2. Where no common use parking spaces are provided.

An automatic load management system (ALMS) may be used to reduce the maximum required electrical capacity to each space served by the ALMS. The electrical system and any on-site distribution transformers shall have sufficient capacity to deliver at least 3.3 kW simultaneously to each EV charging station



(EVCS) served by the ALMS. The branch circuit shall have a minimum capacity of 40 amperes, and installed EV chargers shall have a capacity of not less than 30 amperes.

## APPENDIX 4

Language to be added is **underlined**. Language to be removed is ~~struck~~.

**ITEM 5****Section 5.106 SITE DEVELOPMENT, Section 5.106.5.3**

**5.106.5.3.5 Electric vehicle charging station signage. If a builder or property owner elects to designate an electric vehicle charging station with signage or pavement markings, the ~~Electric vehicle charging stations shall be identified by signage or pavement markings~~ **shall be** in compliance with Caltrans Traffic Operations Policy Directive 13-01 (Zero Emission Vehicle Signs and Pavement Markings) or its successor(s).**

## APPENDIX 5

Language to be added is **underlined**. Language to be removed is ~~struck~~.

**ITEM 17****Chapter A5, DIVISION A5.106 PLANNING AND DESIGN, Section A5.106  
SITE DEVELOPMENT**

**A5.106.5.1.3 Future charging spaces.** Future EV charging spaces qualify as designated parking as described in Section A5.106.5.1 Designated parking for clean air vehicles.

**Note:** Future EV charging spaces **and spaces with EV charging installed, including DCFC,** shall count toward the total parking spaces required by the local enforcing agencies.