*PLEASE READ: Peninsula Clean Energy and Silicon Valley Clean Energy have developed this model for CALGreen code amendments. Amendments to the base code are underlined for additions or ~~stricken-through~~ for deletions.*

*Where cities adopt CALGreen EV Code amendments, PCE and SVCE recommend this statement be included in the City Findings when adopting and ultimately filing with the Building Standards Commission: “The proposed Electric Vehicle Reach Code ensures that new buildings can charge a greater number of electric vehicles beyond state code requirements and reduce greenhouse gas emissions.”*

*Immediately below is the revision history, and below that are the code revisions.*

**Revision History**

|  |  |
| --- | --- |
| June 13, 2019 | Original version |
| July 10, 2019 | 1. A $4,500 per dwelling unit parking space utility cost exemption threshold for multifamily dwellings was added to address the potential cost of the electric vehicle model reach code triggering additional on-site transformer(s) or utility service. This exemption is in alignment with the existing and proposed 2019 statewide CALGreen multifamily code (Part 11, Chapter 4, section 4.106.4). 2. Minor clarification addressing construction documents in the definition of EV Capable; 3. Clarifications in the Good Design Practices sections between Level 1 and Level 2. |
| November 14, 2019 | 1. ALMS definition added and language changed to reflect new definition and enable ALMS for Multifamily and Office 2. Notation added throughout (underline, strikethrough, etc) for easier city implementation 3. Affordable Housing definition added 4. CALGreen parking space size requirement removed in favor of local AHJ parking space size requirements 5. Added recommended statement to include in the City Findings. |
| January 2, 2020 | 1. ALMS definition expanded to include Level 1 chargers 2. Changed “EV Ready Circuit” to “EV Ready Space” and modified EVCS definition to specify EVSE is connected to the associated circuit 3. Changed EVCS definition to 30 amp “capacity” to allow load management 4. Included reference to existing 2019 CALGreen section covering hotels. 5. Exception added for automated mechanical car parking systems 6. Updated and generalized notes to California Building Code accessible EVCS requirements. |
| October 1, 2020 | 1. Added an exemption for multifamily building projects that have already received entitlement to install EV infrastructure according to already percentages required in the baseline state code. 2. Relocated exemptions to improve clarity. 3. Corrected references to sections previously stricken through. |
| December 14, 2020 | 1. Updated EVCS definition to reference Electrical Code 2. Clarified ADU exemption 3. Revised multifamily requirements to be more continuous across building sizes, inclusive of the option for ALMS, and provide an option for port-sharing across dwelling units. |
| February, 19 2021 | 1) Updated ALMS definition to include minimum amperage requirement  2) Removed exceptions for mechanical car parking.  3) Revised comments for cost-reduction options. |
| May 10, 2021 | 1) Broadened the applicability of multifamily entitlements exemption  2) Simplified nonresidential requirements by eliminating L1 option, broadening DCFC swap application, and encouraging ALMS to meet base code requirements.  2) Clarified references to Building Code Chapter 11A and 11B requirements. |
| July 1, 2021 | 1) Clarified prioritization of DCFC when integrated with ALMS. |

**Section 2 Definitions:**

**EV Capable:**  A parking space linked to a listed electrical panel with sufficient capacity to provide at least 110/120 volts and 20 amperes to the parking space. Raceways linking the electrical panel and parking space only need to be installed in spaces that will be inaccessible in the future, either trenched underground or where penetrations to walls, floors, or other partitions would otherwise be required for future installation of branch circuits. Raceways must be at least 1” in diameter and may be sized for multiple circuits as allowed by the California Electrical Code. The panel circuit directory shall identify the overcurrent protective device space(s) reserved for EV charging as “EV CAPABLE.” Construction documents shall indicate future completion of raceway from the panel to the parking space, via the installed inaccessible raceways. The parking space shall contain signage with at least a ½” font adjacent to the parking space indicating the space is designated as EV Capable for future connection of infrastructure at the designed voltage and amperage levels.

**Level 1 EV Ready Space:** A parking space served by a complete electric circuit with a minimum of 110/120 volt, 20-ampere capacity including electrical panel capacity, overprotection device, a minimum 1” diameter raceway that may include multiple circuits as allowed by the California Electrical Code, wiring, and either a) a receptacle labelled “Electric Vehicle Outlet” with at least a ½” font adjacent to the parking space, or b) electric vehicle supply equipment (EVSE).

**Level 2 EV Ready Space:** A parking space served by a complete electric circuit with 208/240 volt, 40-ampere capacity including electrical panel capacity, overprotection device, a minimum 1” diameter raceway that may include multiple circuits as allowed by the California Electrical Code, wiring, and either a) a receptacle labelled “Electric Vehicle Outlet” with at least a ½” font adjacent to the parking space, or b) electric vehicle supply equipment (EVSE) with a minimum output of 30 amperes.

**Electric Vehicle Charging Station (EVCS):** A parking space that includes installation of electric vehicle supply equipment (EVSE) with a minimum capacity of 30 amperes connected to a circuit serving a Level 2 EV Ready Space. EVCS installation may be used to satisfy a Level 2 EV Ready Space requirement. Electric vehicle supply equipment (EVSE) shall be installed in accordance with the California Electrical Code, Article 625.

**Automatic Load Management Systems (ALMS)**: A control system which allows multiple EV chargers or EV-Ready electric vehicle outlets to share a circuit or panel and automatically reduce power at each charger, providing the opportunity to reduce electrical infrastructure costs and/or provide demand response capability. ALMS systems must be designed to deliver a minimum of 8-amperes and not less than 1.4-kiloWatts at the provided voltage, to each EV Capable, EV Ready or EVCS space served by the ALMS, and meet the requirements of California Electrical Code Article 625. The connected amperage on-site shall not be lower than the required connected amperage per Part 11, 2019 California Green Building Code for the relevant building types.

**Affordable Housing:** Residential buildings that entirely consist of units below market rate and whose rents or sales prices are governed by local agencies to be affordable based on area median income.

**SECTION 4**

**RESIDENTIAL MANDATORY MEASURES**

**4.106.4 Electric vehicle (EV) charging for new construction**. New construction shall comply with Sections 4.106.4.1, 4.106.4.2, or 4.106.4.3 to facilitate future installation and use of EV chargers. ~~Electric vehicle supply equipment (EVSE) shall be installed in accordance with the California Electrical Code, Article 625.~~

**Exceptions:**

1. ~~On a case-by-case basis, where the local enforcing agency has determined EV charging and infra- structure are not feasible based upon one or more of the following conditions:~~
2. Where there is no commercial power supply
   1. ~~Where there is evidence substantiating that meeting the requirements will alter the local utility infra- structure design requirements on the utility side of the meter so as to increase the utility side cost to the homeowner or the developer by more than $400.00 per dwelling unit.~~
3. Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without additional parking facilities and without electrical panel upgrade or new panel installation. ADUs and JADUs without additional parking but with electrical panel upgrades or new panels must have reserved breakers and electrical capacity according to the requirements of 4.106.4.1.
4. Multifamily residential building projects with valid entitlements granted by the City that have not otherwise expired before the effective date of this ordinance shall provide at least ten (10) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, with Level 2 EV Ready Circuits. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.
5. Local jurisdictions may consider allowing exceptions through their local process, on a case by case basis, if a building permit applicant provides documentation detailing that the increased cost of utility service or on-site transformer capacity would exceed an average of $4,500 among parking spaces with Level 2 EV Ready Spaces and Level 1 EV Ready Spaces. If costs are found to exceed this level, the applicant shall provide EV infrastructure up to a level that would not exceed this cost for utility service or on-site transformer capacity.

**4.106.4.1 New one- and two-family dwellings and town- houses with attached private garages.**

For each dwelling unit, install a Level 2 EV Ready Space and Level 1 EV Ready Space. ~~listed raceway to accommodate a dedicated 208/240-volt branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or~~ ~~subpanel~~ ~~and~~ ~~shall terminate into a listed cabinet, box or other enclosure in close proximity to the proposed location of an EV char- ger. Raceways are required to be continuous at enclosed, inaccessible or concealed areas and spaces. The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device.~~

**Exception:** For each dwelling unit with only one parking space, install a Level 2 EV Ready Space.

**4.106.4.1.1 Identification.** ~~The service panel or sub- panel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging as “Level 2 EV CAPABLE”.~~ The raceway termination location shall be permanently and visibly marked as ~~“EV CAPABLE”.~~ “Level 2 EV-Ready”.

**4.106.4.2** **New multifamily dwellings.** ~~If residential parking is available, ten (10) present in total number of parking spaces on a building site, provided for all types of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future EVSE. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.~~  The following requirements apply to all new multifamily dwellings.

1. For multifamily buildings with less than or equal to 20 dwelling units, one parking space per dwelling unit with parking shall be provided with a Level 2 EV Ready Space.
2. When more than 20 multifamily dwelling units are constructed on a building site:
3. Install one Level 2 EV Ready Space in the first 20 dwelling unit parking spaces.
4. For each additional dwelling unit over 20, 25% of the dwelling units with parking space(s) shall be provided with at least one Level 2 EV Ready Space. Calculations for the required minimum number of Level 2 EV Ready spaces shall be rounded up to the nearest whole number.
5. In addition, each remaining dwelling unit with parking space(s) shall be provided with at least a Level 1 EV Ready Space.

**Exception:** For all multifamily Affordable housing, 10% of dwelling units with parking space(s) shall be provided with at least one Level 2 EV Ready Space. Calculations for the required minimum number of Level 2 EV Ready spaces shall be rounded up to the nearest whole number. The remaining dwelling units with parking space(s) shall each be provided with at least a Level 1 EV Ready Space.

**Notes:**

1. ~~Construction documents are intended to demonstrate the project’s capability and capacity for facilitating future EV charging.~~
2. ~~There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.~~
3. Installation of Level 2 EV Ready Spaces above the minimum number required level may offset the minimum number Level 1 EV Ready Spaces required on a 1:1 basis.
4. The requirements apply to multifamily buildings with parking spaces including: a) assigned or leased to individual dwelling units, and b) unassigned residential parking.
5. In order to adhere to accessibility requirements in accordance with California Building Code Chapters 11A and/or 11B, it is recommended that all accessible parking spaces for covered newly constructed multifamily dwellings are provided with Level 1 or Level 2 EV Ready Spaces.

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**4.106.4.2.1.1 Electric vehicle charging stations (EVCS).** When EV chargers are installed, EV spaces required by Section 4.106.4.2.2, Item 3, shall comply with at least one of the following options:

1. The EV space shall be located adjacent to an accessible parking space meeting the requirements of the *California Building Code*, Chapter 11A, to allow use of the EV charger from the accessible parking space.
2. The EV space shall be located on an accessible route, as defined in the *California Building Code*, Chapter 2, to the building.

**Exception:** Electric vehicle charging stations designed and constructed in compliance with the California Building Code, Chapter 11B, are not required to comply with Section 4.106.4.2.1.1. and Section 4.106.4.2.2, Item 3.

**Note**: Electric vehicle charging stations serving public housing are required to comply with the *California Building Code*, Chapter 11 B.

**4.106.4.2.2**  **Electric vehicle charging space (EV space) dimensions**. The EV spaces shall be designed to comply with the following:

1. The minimum length of each EV space shall be 18 feet (5486 mm).
2. The minimum width of each EV space shall be 9 feet (2743 mm).
3. One in every 25 EV spaces, but not less than one, shall also have an 8-foot (2438 mm) wide minimum aisle. A 5-foot (1524 mm) wide minimum aisle shall be permitted provided the minimum width of the EV space is 12 feet (3658 mm).
   1. Surface slope for this EV space and the aisle shall not exceed 1 unit vertical in 48 units horizontal (2.083 percent slope) in any direction.

**Exception:** Where the City’s Municipal Code permits parking space dimensions that are less than the minimum requirements stated in this section 4.106.4.2.2, and the compliance with which would be infeasible due to particular circumstances of a project, an exception may be granted while remaining in compliance with 2019 California Building Code Section Table 11B-228.3.2.1 and 11B-812, as applicable.

**4.106.4.2.3** **Automated Load Management Systems**.

* 1. As defined in Section 2, ALMS shall be allowed to meet the requirements of 4.106.4.2.
  2. Where ALMS serve Direct Current Fast Charging stations, the power demand from the Direct Current Fast Charging station shall be prioritized above Level 1 and Level 2 spaces.

**~~Single EV space required.~~** ~~Install a listed raceway capable of accommodating a 208/240-volt dedicated branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or enclosure in close proximity to the proposed location of the EV spaces. Construction documents shall identify the raceway termination point. The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit over- current protective device.~~

**~~4.106.4.2.4 Multiple EV spaces required~~**~~. Construction raceway termination point and proposed location of future EV spaces and EV chargers Construction documents shall also pro- vide information on amperage of future EVSE, raceway method(s), wiring schematics and electrical load calculations to verify that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at the full rated amperage of the EVSE. Plan design shall be based upon a 40-ampere minimum branch circuit. Raceways and related components that are planned to be installed underground, enclosed, inaccessible or in concealed areas and spaces shall be installed at the time of original construction.~~

**~~4.106.4.2.5 Identification.~~** ~~The service panel or sub- panel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging purposes as “EV CAPABLE” in accordance with the California Electrical Code.~~

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**SECTION 5**

**NONRESIDENTIAL MANDATORY MEASURES**

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**5.106.5.3**  **Electric vehicle (EV) charging. [N]** New construction shall comply with Section 5.106.5.3.1 or Section 5.106.5.3.2 to facilitate future installation of electric vehicle supply equipment (EVSE). When EVSE(s) is/are installed, it shall be in accordance with the *California Building Code,* the *California Electrical Code* and as follows:

**Exceptions**:

1. Where there is no commercial power supply.
2. Installation of each Direct Current Fast Charger with the capacity to provide at least 80 kW output may substitute for 11 Level 2 EVCS spaces after a minimum of 11 Level 2 EVCS spaces are installed.

**5.106.5.3.1 Office buildings**: In nonresidential new construction buildings designated primarily for office use with parking:

1. When 10 or more parking spaces are constructed, 20% of the available parking spaces on site shall be equipped with Level 2 EVCS;
2. An additional 30% shall be at least EV Capable.

Calculations for the required minimum number of spaces equipped with Level 2 EVCS spaces and EV Capable spaces shall all be rounded up to the nearest whole number.

Construction plans and specifications shall demonstrate that all raceways shall be a minimum of 1” and sufficient for installation of EVCS at all required EV Capable spaces; Electrical calculations shall substantiate the design of the electrical system to include the rating of equipment and any on-site distribution transformers, and have sufficient capacity to simultaneously charge EVs at all required EV spaces including EV Capable spaces; and service panel or subpanel(s) shall have sufficient capacity to accommodate the required number of dedicated branch circuit(s) for the future installation of the EVSE.

**5.106.5.3.2 Other nonresidential buildings**: In nonresidential new construction buildings that are not designated primarily for office use, such as retail or institutional uses:

1. When 10 or more parking spaces are constructed, 10% of the available parking spaces on site shall be equipped with Level 2 EVCS;
2. Calculations for the required minimum number of spaces equipped with Level 2 EVCS shall be rounded up to the nearest whole number

**5.106.5.3.3 Clean Air Vehicle Parking Designation.** EVCS qualify as designated parking as described in Section 5.106.5.2 Designated parking for clean air vehicles.

**Notes:**

1. The California Department of Transportation adopts and publishes the California Manual on Uniform Traffic Control Devices (California MUTCD) to provide uniform standards and specifications for all official traffic control devices in California. Zero Emission Vehicle Signs and Pavement Markings can be found in the New Policies & Directives number 13-01. www.dot.ca.gov/hq/traffops/policy/13-01.pdf.
2. See Vehicle Code Section 22511 for EV charging spaces signage in off-street parking facilities and for use of EV charging spaces.
3. The Governor’s Office of Planning and Research published a Zero-Emission Vehicle Community Readiness Guidebook which provides helpful information for local governments, residents and businesses. www.opr.ca.gov/ docs/ZEV\_Guidebook.pdf.
4. Section 11B-812 of the California Building Code requires that a facility providing EVCS for public and common use also provide one or more accessible EVCS as specified in Table 11B-228.3.2.1.
5. It is encouraged that EV Ready parking spaces are designated as “EV preferred.”

**~~5.106.5.3.1 Single charging space requirements. [~~**~~N] When only a single charging space is required per Table 5.106.5.3.3, a raceway is required to be installed at the time of construction and shall be installed in accordance with the California Electrical Code. Construction plans and specifications shall include, but are not limited to, the following:~~

1. ~~The type and location of the EVSE.~~
2. ~~A listed raceway capable of accommodating a 208/240-volt dedicated branch circuit.~~
3. ~~The raceway shall not be less than trade size 1.”~~
4. ~~The raceway shall originate at a service panel or a subpanel serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and into a listed suitable cabinet, box, enclosure or equivalent.~~
5. ~~The service panel or subpanel shall have sufficient capacity to accommodate a minimum 40- ampere dedicated branch circuit for the future installation of the EVSE.~~

**~~5.106.5.3.2 Multiple charging space requirements.~~**

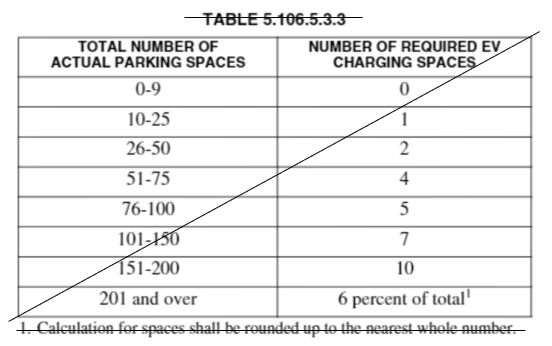
~~When multiple charging spaces are required per Table 5.106.5.3.3 raceway(s) is/are required to be installed at the time of construction and shall be installed in accordance with the California Electrical Code. Construction plans and specifications shall include, but are not limited to, the following:~~

1. ~~The type and location of the EVSE.~~
2. ~~The raceway(s) 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 charging equipment and into listed suitable cabinet(s), box(es), enclosure(s) or equivalent.~~
3. ~~Plan design shall be based upon 40-ampere mini- mum branch circuits.~~
4. ~~Electrical calculations shall substantiate the design of the electrical system, to include the rating of equipment and any on-site distribution~~
5. ~~transformers and have sufficient capacity to simultaneously charge all required EVs at its full rated amperage.~~
6. ~~The service panel or subpanel(s) shall have sufficient capacity to accommodate the required number of dedicated branch circuit(s) for the future installation of the EVSE.~~

**~~5.106.5.3.3~~** ~~EV~~ **~~charging space calculation.~~** ~~[N] Table 5.106.5.3.3 shall be used to determine if single or multiple charging space requirements apply for the future installation of EVSE.~~

~~Exceptions: On a case-by-case basis where the local enforcing agency has determined EV charging and infrastructure is not feasible based upon one or more of the following conditions:~~

1. ~~Where there is insufficient electrical supply~~
2. ~~Where there is evidence suitable to the local enforcing 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.~~



**5.106.5.3.4** **[N] Identification.** ~~The service panel or subpanel(s) circuit directory shall identify the reserved overcurrent protective device space(s) for future EV charging as “EV CAPABLE”.~~ The raceway termination location shall be permanently and visibly marked as “EV ~~CAPABLE~~ Ready”.

**5.106.5.3.5 Automated Load Management Systems**.

1. As defined in Section 2, ALMS shall be allowed to meet the requirements of 5.106.5.3.1 and 5.106.5.3.2.
2. Where ALMS serve Direct Current Fast Charging stations, the power demand from the Direct Current Fast Charging station shall be prioritized above Level 1 and Level 2 spaces.

**~~5.106.5.3.5 [N]~~** ~~Future charging spaces qualify as designated parking as described in Section 5.106.5.2 Designated parking for clean air vehicles.~~