Recommended statement to include in the City Findings: “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.”

**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

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1 The model reach code multifamily $4,500 per unit-parking space utility cost exemption is based on extrapolating the CALGreen 2019 exemption (and associated charging infrastructure requirements) to that of the model reach code charging infrastructure requirements. Specifically, the CALGreen 2019 code includes a $400 per dwelling unit exception and an associated 10% EV capable per parking space requirement. The model reach code has a 100% EV ready requirement per dwelling unit parking space (essentially ten times that of the CALGreen code) equating to a $4,000 per impacted parking space. Further, the $4,000 figure was adjusted to $4,500 to more accurately represent construction costs in San Mateo and Santa Clara Counties as compared to the California average (https://lao.ca.gov/reports/2015/finance/housing-costs/housing-costs.aspx). Finally, the exception was also broadened to address any on-site transformer costs.
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.

**Level 1 EV Ready Circuit:** 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 Circuit:** 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 output of 30 amperes connected to a Level 2 EV Ready Circuit. EVCS installation may be used to satisfy a Level 2 EV Ready Circuit requirement.

**Automatic Load Management Systems (ALMS):** (ALMS) A control system which allows multiple Level 2 EV chargers 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 is only allowed for Level 2 EVCS, Level 2 EV Ready, and Level 1 EV Ready Circuits. ALMS systems must be designed to deliver at least 1.4kW per charger. 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 my 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 and 4.106.4.2 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
directory are not feasible based upon one or more of the following conditions:
1.1. Where there is no commercial power supply
1.2. Where there is evidence substantiating that meeting the requirements will alter the local
utility infrastructure 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.
2. Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without
additional parking facilities, unless the electrical panel is upgraded, or a new panel is
installed in which case only the electrical capacity requirements apply.

4.106.4.1 New one- and two-family dwellings and townhouses with attached
private garages.
For each dwelling unit, install a Level 2 EV Ready Circuit and Level 1 EV Ready Circuit,
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 charger. 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 Circuit.

4.106.4.1.1 Identification. The service panel or subpanel 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 EV charging. 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 Circuit.
2. When more than 20 multifamily dwelling units are constructed on a building site
   a. 25% of the dwelling units with parking space(s) shall be provided with at
least one Level 2 EV Ready Circuit. Calculations for the required
minimum number of Level 2 EV Ready spaces shall be rounded up to the nearest whole number.

b. In addition, each remaining dwelling unit with parking space(s) shall be provided with at least a Level 1 EV Ready Circuit.

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 Circuit. 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 Circuit.

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. ALMS may be installed to decrease electrical service and transformer costs associated with EV Charging Equipment subject to review of the authority having jurisdiction.
4. Installation of Level 2 EV Ready Circuits above the minimum number required level may offset the minimum number Level 1 EV Ready Circuits required on a 1:1 basis.
5. The requirements apply to multifamily buildings with parking spaces including: a) assigned or leased to individual dwelling units, and b) unassigned residential parking.
6. 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 Circuits and Level 1 EV Ready Circuits. 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.
7. 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 Circuits.

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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 11B.

### 4.106.4.2.2 Electric vehicle charging space (EV space) dimensions

Refer to local authority having jurisdiction for parking dimension requirements. 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).

   a) 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.

### 4.106.4.2.3 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 provide 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 and use of EV chargers 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: Exception: Where there is no commercial power supply.

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, 10% of the available parking spaces on site shall be equipped with Level 2 EVCS;
   2. An additional 10% shall be provided with at least Level 1 EV Ready Circuits; and
   3. An additional 30% shall be at least EV Capable.

Calculations for the required minimum number of spaces equipped with Level 2 EVCS, Level 1 EV Ready 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 Level 1 EV Ready and 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 Level 1 EV Ready and 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.

Notes:
1. ALMS may be installed to increase the number of EV chargers or the amperage or voltage beyond the minimum requirements in this code. The option does not allow for installing less electrical panel capacity than would be required without ALMS.

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, 6% of the available parking spaces on site shall be equipped with Level 2 EVCS;
   2. An additional 5% shall be at least Level 1 EV Ready.

Calculations for the required minimum number of spaces equipped with Level 2 EVCS and Level 1 EV Ready spaces shall be rounded up to the nearest whole number.

Exception: Installation of each Direct Current Fast Charger with the capacity to provide at least 80 kW output may substitute for 6 Level 2 EVCS and 5 EV Ready spaces after a minimum of 6 Level 2 EVCS and 5 Level 1 EV Ready spaces are installed.

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:
2. See Vehicle Code Section 22511 for EV charging spaces signage in off-street parking facilities and for use of EV charging spaces.
4. Section 11B-812 of the 2016 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. Chapter 11B applies to certain facilities including, but not limited to, public accommodations and publicly funded housing (see section 1.9 of Part 2 of the California Building Code). Section 11B-812 requires that “Parking spaces, access aisles and vehicular routes serving them shall provide a vertical clearance of 98 inches (2489 mm) minimum.” It also requires that parking spaces and access aisles meet maximum slope requirements of 1 unit vertical in 48 units horizontal (2.083 percent slope) in any direction at the time of new building construction or renovation. Section 11B-812.5 contains accessible route requirements.

5. It is encouraged that shared parking, EV Ready are designated as “EV preferred.”

5.106.5.3.1 Single charging space requirements. 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 minimum branch circuits.
4. 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 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.

![Table 5.106.5.3.3](image)

**TABLE 5.106.5.3.3**

<table>
<thead>
<tr>
<th>Total Number of Actual Parking Spaces</th>
<th>Number of Required EV Charging Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9</td>
<td>0</td>
</tr>
<tr>
<td>10-25</td>
<td>1</td>
</tr>
<tr>
<td>26-50</td>
<td>2</td>
</tr>
<tr>
<td>51-75</td>
<td>4</td>
</tr>
<tr>
<td>76-100</td>
<td>5</td>
</tr>
<tr>
<td>101-150</td>
<td>7</td>
</tr>
<tr>
<td>151-200</td>
<td>10</td>
</tr>
<tr>
<td>201 and over</td>
<td>6 percent of total¹</td>
</tr>
</tbody>
</table>

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

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