ORDINANCE NO.____

AN ORDINANCE OF THE CITY OF REDWOOD CITY ADDING ARTICLE XIV OF CHAPTER 9 OF THE REDWOOD CITY CODE TO ADOPT LOCAL AMENDMENTS TO 2019 EDITION OF THE CALIFORNIA ENERGY CODE AND GREEN BUILDING STANDARDS CODES, TOGETHER WITH CERTAIN AMENDMENTS, EXCEPTIONS, MODIFICATIONS AND ADDITIONS THERETO

WHEREAS, the City of Redwood City will be adopting the 2019 editions of the California Energy Code and Green Building Standards Codes; and

WHEREAS, pursuant to Sections 17922, 17958, 17958.5, 17958.7 and 18941.5 of the California Health and Safety Code, the City may adopt amendments, modifications, changes, and additions to the provisions of these codes, which are reasonably necessary to protect the health, welfare and safety of the citizens of Redwood City because of local climatic, geological and topographical conditions; and

WHEREAS, adoption of these local amendments is consistent with the goals of reducing greenhouse gas emissions as identified in the City’s Climate Action Plan; and

WHEREAS, the City has completed review of the proposed amendments and has determined that the requirements of the local amendments to the California Energy Code and Green Building Standards Code would contribute toward the reduction of greenhouse gas emissions in the City of Redwood City.

NOW THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF REDWOOD CITY:

SECTION 1. A new Article XIV of Chapter 9 of the Redwood City Code is hereby adopted to read as follows:

ARTICLE XIV. AMENDMENTS TO 2019 CALIFORNIA ENERGY CODE AND GREEN BUILDING STANDARDS CODE

Sec. 9.221. - SECTION 100.1(B) OF THE ENERGY CODE AMENDED:

Section 100.1(b) of the Energy Code is amended to add definitions for “All-Electric Building”, “Electrically Heated Mixed-Fuel Building”, “Free Standing Accessory Dwelling Unit”, and “Mixed-Fuel Building” to read as follows:

ALL-ELECTRIC BUILDING is a building that has no natural gas or propane plumbing installed within the building, and that uses electricity as the source of energy for its space heating, water heating (including pools and spas), cooking appliances, and clothes drying appliances.

ELECTRICALLY HEATED MIXED-FUEL BUILDING is a mixed-fuel building that uses electricity as the source of energy for its space heating and water heating (including pools and spas) appliances. Space heating and water heating
appliances that use electricity for displays or other purposes, but use gas or propane for heating fuel, are excluded.

FREE STANDING ACCESSORY DWELLING UNIT is a detached building that is not intended for sale separate from the primary residence, on a lot that is zoned for single-family or multifamily use, located on the same lot as an existing dwelling, and does not exceed 1,200 square feet of total floor area.

MIXED-FUEL BUILDING is a building that is plumbed for the use of natural gas or propane as fuel for space heating, water heating (including pools and spas), cooking appliances or clothes drying appliances.

Sec. 9.222. - SECTION 140.0 OF THE ENERGY CODE AMENDED:

Section 140.0 of the Energy Code is amended to read as follows:

SECTION 140.0. – PERFORMANCE AND PRESCRIPTIVE COMPLIANCE APPROACHES Nonresidential, high-rise residential and hotel/motel buildings shall comply with all of the following:

A. The requirements of Sections 100.0 through 110.12 applicable to the building project (mandatory measures for all buildings).

B. The requirements of Sections 120.0 through 130.5 (mandatory measures for nonresidential, high-rise residential and hotel/motel buildings) and:

1. Electric-Readiness. Mixed-fuel buildings shall include the following components for each gas terminal or stub out, based on the appliance it is designed to serve:

   a. Water Heating:
      i. A dedicated 208/240 volt 30-amp or greater electrical receptacle that is connected to the electric panel with conductors of adequate capacity, within 3 feet from the water heater and accessible to the water heater with no obstructions;
      ii. Both ends of the unused conductor shall be labeled with the words “For Future Electric Water Heater” and be electrically isolated;
      iii. Other electrical components, including conductors, receptacles, or blank covers, related to this section shall be installed in accordance with the California Electrical Code;
      iv. A condensate drain that is no more than 2 inches higher than the base of the installed water heater and allows natural draining without pump assistance.

   b. Clothes Drying
      i. A dedicated 208/240-volt, 40-amp or greater electrical receptacle that is connected to the electric panel with
conductors of adequate capacity, within 3 feet of the appliance and accessible with no obstructions;

ii. Both ends of the unused conductor shall be labeled with the words “For Future Electric Clothes Dryer” and be electrically isolated; and

iii. Other electrical components, including conductors, receptacles, or blank covers, related to this section shall be installed in accordance with the California Electrical Code.

c. Cooktop or Range

i. A dedicated 208/240-volt, 50-amp or greater electrical receptacle that is connected to the electric panel with conductors of adequate capacity, within 3 feet of the appliance and accessible with no obstructions;

ii. Both ends of the unused conductor shall be labeled with the words “For Future Electric Range” and be electrically isolated;

iii. A reserved double pole circuit breaker space in the electrical panel adjacent to the circuit breaker for the branch circuit and labeled with the words “For Future Electric Range” and

iv. Other electrical components, including conductors, receptacles, or blank covers, related to this section shall be installed in accordance with the California Electrical Code.

2. Solar Photovoltaic Systems. Solar photovoltaics shall be installed as follows:

a. New non-residential buildings with less than 10,000 square feet of gross floor area shall provide a minimum of a 3-kilowatt photovoltaic system.

b. New non-residential buildings greater than or equal to 10,000 square feet of gross floor area shall provide a minimum of a 5-kilowatt photovoltaic system.

EXCEPTION to Section 140.0 Infeasibility Exception: If an applicant for a covered project believes that circumstances exist that make it infeasible to meet the requirements of this chapter, the applicant may request an exemption. In applying for an exemption, the burden is on the applicant to show infeasibility. Whenever there are practical difficulties involved in carrying out provisions of the technical codes, the building official may grant modifications for individual cases. The design professional shall submit findings to the building official demonstrating a special and unique reason makes the strict letter of the technical code impractical, the modification is in conformity with the intent and purpose of the technical code, and that
such modification does not lessen health, life safety and fire safety requirements or any degree of structural integrity. The details of actions granting modifications shall be recorded and entered in the files of the building division.

EXCEPTION to Section 140.0(B) 2: As an alternative to a solar photovoltaic system, all of the building types listed above may provide a solar hot water system (solar thermal) with a minimum collector area of 40 square feet, additional to any other solar thermal equipment otherwise required for compliance with Part 6.

C. Either the performance compliance approach (energy budgets) specified in Section 140.1 or the prescriptive compliance approach specified in Section 140.2 for the Climate Zone in which the building will be located. Climate zones are shown in FIGURE 100.1-A.

Sec. 9.223. - SECTION 140.1 OF THE ENERGY CODE AMENDED:

Section 140.1. - of the Energy Code is amended to read as follows:

SECTION 140.1. - PERFORMANCE APPROACH: ENERGY BUDGETS

An addition to an existing building or a newly constructed All-Electric Building complies with the performance approach if the energy budget calculated for the Proposed Design Building under Subsection (b) is no greater than the energy budget calculated for the Standard Design Building under Subsection (a).

A newly constructed Mixed-Fuel Building complies with the performance approach if the energy budget calculated for the Proposed Design Building under Subsection (b) has a compliance margin, relative to the energy budget calculated for the Standard Design Building under Subsection (a), of at least the value specified for the corresponding occupancy type in Table 140.1-A below.

Table 140.1-A MIXED FUEL BUILDING COMPLIANCE MARGINS

<table>
<thead>
<tr>
<th>Occupancy Type</th>
<th>Compliance Margins</th>
</tr>
</thead>
<tbody>
<tr>
<td>All occupancies</td>
<td>10%</td>
</tr>
</tbody>
</table>

A. Energy Budget for the Standard Design Building. The energy budget for the Standard Design Building is determined by applying the mandatory and prescriptive requirements to the Proposed Design Building. The energy budget is the sum of the TDV energy for space-conditioning, indoor lighting, mechanical ventilation, service water heating, and covered process loads.

B. Energy Budget for the Proposed Design Building. The energy budget for a Proposed Design Building is determined by calculating the TDV energy for the Proposed Design Building. The energy budget is the sum of the TDV energy for space-conditioning, indoor lighting, mechanical ventilation and service water heating and covered process loads.
C. Calculation of Energy Budget. The TDV energy for both the Standard Design Building and the Proposed Design Building shall be computed by Compliance Software certified for this use by the Commission. The processes for Compliance Software approval by the Commission are documented in the ACM Approval Manual.

EXCEPTION 1 to Section 140.1. Infeasibility Exception: If an applicant for a covered project believes that circumstances exist that make it infeasible to meet the requirements of this chapter, the applicant may request an exemption. In applying for an exemption, the burden is on the applicant to show infeasibility. Whenever there are practical difficulties involved in carrying out provisions of the technical codes, the building official may grant modifications for individual cases. The design professional shall submit findings to the building official demonstrating a special and unique reason makes the strict letter of the technical code impractical, the modification is in conformity with the intent and purpose of the technical code, and that such modification does not lessen health, life safety and fire safety requirements or any degree of structural integrity. The details of actions granting modifications shall be recorded and entered in the files of the building division.

Sec. 9.224. - SECTION 140.2 OF THE ENERGY CODE AMENDED:

Section 140.2 of the Energy Code is amended to read as follows:

SECTION 140.2. – PRESCRIPTIVE APPROACH
To comply using the prescriptive approach, a building shall be designed with and shall have constructed and installed systems and components meeting the applicable requirements of Sections 140.3 through 140.9 and additionally the following measures as applicable intended to exceed the prescriptive requirements:

A. Mixed-Fuel Buildings of Hotel, Motel, and High-Rise Multifamily Occupancies

1. Install fenestration with a relative solar heat gain coefficient no greater than 0.22.
2. Design Variable Air Volume (VAV) box minimum airflows to be equal to the zone ventilation minimums.
3. Include economizers and staged fan control in air handlers with a mechanical cooling capacity ≥ 33,000 Btu/h
4. Reduce the total lighting power density (Watts/ft²) by ten percent (10%) from that required from Table 140.6-C.
5. In common areas, without claiming any Power Adjustment Factor credits, do the following:
   a. Control to daylight dimming plus off per Section 140.6(a)2H; and
   b. Perform Institutional Tuning per Section 140.6(a) 2J.
6. Install one drain water heat recovery device per every three guest rooms that is field verified as specified in the Reference Appendix RA3.6.9.
B. All Other Mixed-Fuel Nonresidential Buildings

1. Install fenestration with a relative solar heat gain coefficient no greater than 0.22.
2. Limit the fenestration area on east-facing and west-facing walls to one-half of the average amount of north-facing and south-facing fenestration.
3. Design Variable Air Volume (VAV) box minimum airflows to be equal to the zone ventilation minimums.
4. Include economizers and staged fan control in air handlers with a mechanical cooling capacity ≥ 33,000 Btu/h
5. Reduce the total lighting power density (Watts/ft²) by ten percent (10%) from that required from Table 140.6-C.
6. Improve lighting without claiming any Power Adjustment Factor credits:
   a. In office spaces, control to daylight dimming plus off per Section 140.6(a)2H;
   b. Install Occupant Sensing Controls in Large Open Plan Offices per Section 140.6(a)2I; and
   c. Perform Institutional Tuning per Section 140.6(a) 2J.

Sec. 9.225. - SECTION 150.0 OF THE ENERGY CODE AMENDED:

Section 150.0. - of the Energy Code is amended to read as follows:

SECTION 150.0. - MANDATORY FEATURES AND DEVICES
Low-rise residential buildings shall comply with the applicable requirements of Sections 150(a) through 150.0(s).

NOTE: The requirements of Sections 150.0(a) through 150.0(s) apply to newly constructed buildings. Sections 150.2(a) and 150.2(b) specify which requirements of Sections 150.0(a) through 150.0(s) also apply to additions or alterations.

SEC. 9.226. - SECTION 150.0(H) (5) OF THE ENERGY CODE ADDED:

Section 150.0(h) (5) of the Energy Code is added to read as follows:

(h) Space-Conditioning Equipment.

5. Systems using gas or propane space heating equipment shall include the following components:

   A. A designated exterior location for a future heat pump compressor unit with either a drain or natural drainage for condensate from possible future operation as cooling equipment.

   B. A dedicated 208/240 volt, 30-amp or greater electrical circuit that is connected to the electric panel with conductors of adequate capacity, terminating within 3 feet from the designated future location of the compressor unit with no obstructions. In addition, all of the following:

      a. Both ends of the unused conductor shall be labeled with the word “For Future Electric Space Heater” and be electrically isolated;
b. A double pole circuit breaker in the electrical panel labeled with the words “For Future Electric Space Heater;” and 

c. Other electrical components, including conductors, receptacles or blank covers, related to this section shall be installed in accordance with the California Electrical Code. 

EXCEPTION to Section 150.0(h) (5). If a 240-volt 30-amp or greater electrical circuit and compressor unit location exists for space cooling equipment.

Sec. 9.227. - SECTION 150.0(N) OF THE ENERGY CODE AMENDED:

Section 150.0(n) of the Energy Code is amended to read as follows:

(n) Water Heating System.

A. Systems using gas or propane water heaters to serve individual dwelling units shall include the following components:

1. A dedicated 125 volt, 20 -amp or greater electrical receptacle that is connected to the electric panel with a 120/240 volt 3 conductor, 10 AWG copper branch circuit, within 3 feet from the water heater and accessible to the water heater with no obstructions. In addition, all of the following:
   a. Both ends of the unused conductor shall be labeled with the word “Future_Electric Water Heater” and be electrically isolated; and 
   b. A reserved single pole circuit breaker space in the electrical panel adjacent to the circuit breaker for the branch circuit in A above and labeled with the words “For Future Electric Water Heater” and 
   c. Other electrical components, including conductors, receptacles or blank covers, related to this section shall be installed in accordance with the California Electrical Code.

2. A Category III or IV vent, or a Type B vent with straight pipe between the outside termination and the space where the water heater is installed; and

3. A condensate drain that is no more than 2 inches higher than the base of the installed water heater, and allows natural draining without pump assistance, and

4. A gas supply line with a capacity of at least 200,000 BTU/hr.

   EXCEPTION to Section 150.0(A) (1) (4) Free Standing Accessory Dwelling Units.

B. Water heating recirculation loops serving multiple dwelling units shall meet the requirements of Section 110.3(c) 5.

C. Solar water-heating systems and collectors shall be certified and rated by the Solar Rating and Certification Corporation (SRCC), the International Association of Plumbing and Mechanical Officials, Research and Testing (IAPMO R&T), or by a listing agency that is approved by the Executive Director.
D. Instantaneous water heaters with an input rating greater than 6.8 kBTU/hr (2kW) shall meet the requirements of Section 110.3(c) 7.

E. Systems using gas or propane water heaters to serve multiple dwelling units and/or common areas shall:
   1. Be located in a space that can accommodate a heat pump water heating system of equivalent capacity and performance; and
   2. Have a condensate drain that is no more than 2 inches higher than the base of the installed water heater, and allows natural draining without pump assistance; and
   3. Include designated raceways and reserved capacity on the main electrical panel and subpanels, if applicable, sufficient to power a heat pump hot water heater of equivalent capacity and performance. Plans shall include calculations and installations for equivalent capacity and performance, electrical power, conductors, raceway sizes and panel capacities in accordance with the California Electrical Code.

Sec. 9.228. - SECTION 150.0(S) OF THE ENERGY CODE ADDED:

Section 150.0 of the Energy Code is added to read as follows:

   (s) Clothes Drying and Cooking. Buildings plumbed for natural gas or propane clothes drying or cooking equipment shall include the following components for each gas terminal or stub out:

   A. Clothes Drying
      1. A dedicated 208/240-volt, 30-amp or greater electrical receptacle that is connected to the electric panel with conductors of adequate capacity, within 3 feet of the appliance and accessible with no obstructions;
      2. Both ends of the unused conductor shall be labeled with the words “For Future Electric Clothes Dryer” and be electrically isolated;
      3. A double pole circuit breaker in the electrical panel labeled with the words “For Future Electric Clothes Dryer;” and
      4. Other electrical components, including conductors, receptacles or blank covers, related to this section shall be installed in accordance with the California Electrical Code.

   B. Cooktop
      1. A dedicated 208/240-volt, 50-amp or greater electrical receptacle that is connected to the electric panel with conductors of adequate capacity, within 3 feet of the appliance and accessible with no obstructions;
      2. Both ends of the unused conductor shall be labeled with the words “For Future Electric Range” and be electrically isolated;
      3. A double pole circuit breaker in the electrical panel labeled with the words “For Future Electric Clothes Dryer;” and
      4. Other electrical components, including conductors, receptacles or blank covers, related to this section shall be installed in accordance with the California Electrical Code.
C. Stand Alone Cooking Oven
   1. A dedicated 208/240-volt, 20-amp or greater or greater receptacle within 3 feet of the appliance and accessible with no obstructions;
   2. Both ends of the unused conductor shall be labeled with the words “For Future Convection Oven” and be electrically isolated;
   3. A double pole circuit breaker in the electrical panel labeled with the words “For Future Electric Oven;” and
   4. Other electrical components, including conductors, receptacles or blank covers, related to this section shall be installed in accordance with the California Electrical Code.

Sec. 9.229. - SECTION 150.1(B) OF THE ENERGY CODE AMENDED:

Section 150.1(b) of the Energy Code is amended to read as follows:

(b) Performance Standards. A building complies with the performance standards if the energy consumption for the Proposed Design Building is no greater than the energy budget calculated for the Standard Design Building using Commission-certified compliance software as specified by the Alternative Calculation Methods Approval Manual. Mixed-Fuel Buildings must additional reach an EDR margin above the Standard Design in order to comply with performance standards.

Sec. 9.230. - SECTION 150.1(B) 1 OF THE ENERGY CODE AMENDED:

Section 150.1(b) 1 of the Energy Code is amended to read as follows:

1. Newly Constructed Buildings. The Energy Budget for newly constructed buildings is expressed in terms of the Energy Design Rating, which is based on TDV energy. The Energy Design Rating (EDR) has two components, the Energy Efficiency Design Rating, and the Solar Electric Generation and Demand Flexibility Design Rating. The Solar Electric Generation and Demand Flexibility Design Rating shall be subtracted from the Energy Efficiency Design Rating to determine the Total Energy Design Rating. The Proposed Building shall separately comply with the Energy Efficiency Design Rating and the Total Energy Design Rating in the following ways:

   A. All-Electric Building. All Electric Buildings comply if both the Total Energy Design Rating and the Energy Efficiency Design Rating for the Proposed Building are no greater than the corresponding Energy Design Ratings for the Standard (Baseline) Design Building.
   B. Free Standing Accessory Dwelling Unit. Free Standing Accessory Dwelling Units comply if both the Total Energy Design Rating and the Energy Efficiency Design Rating for the Proposed Building are no greater than the corresponding Energy Design Ratings for the Standard (Baseline) Design Building.
   C. Mixed-Fuel Buildings: A Mixed-fuel single-family or multifamily building complies with the performance standards if the Energy Efficiency Design Rating of the Proposed Building is no greater than the Energy Efficiency
Design Rating for the Standard Design Building and the energy consumption calculated for the Proposed Design Building is at least 10 EDR points less than the Total Energy Design Rating calculated for the Standard Design Building.

EXCEPTION 1 to Section 150.1(b) 1.C. Buildings with limited solar access are excepted if all of the following are true:
1. The Total Energy Design Rating for the Proposed Building is no greater than the Standard Design Building; and
2. A photovoltaic (PV) system(s) meeting the minimum qualification requirements as specified in California Energy Code 2019 Joint Appendix JA11 is installed on all available areas of 80 contiguous square feet or more with effective annual solar access. Effective annual solar access shall be 70 percent or greater of the output of an unshaded PV array on an annual basis, wherein shade is due to existing permanent natural or manmade barriers external to the dwelling, including but not limited to trees, hills, and adjacent structures; and
3. The Energy Efficiency Energy Design Rating for the Proposed Building is no greater than the respective value for the Standard Design Building by the EDR margin in Table 150.1(b) 1 below.

<table>
<thead>
<tr>
<th>Building Type</th>
<th>Energy Efficiency EDR Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family</td>
<td>2</td>
</tr>
<tr>
<td>Multifamily</td>
<td>0</td>
</tr>
</tbody>
</table>

EXCEPTION 1 to Section 150.1(b) 1 A community shared solar electric generation system, or other renewable electric generation system, and/or community shared battery storage system, which provides dedicated power, utility energy reduction credits, or payments for energy bill reductions, to the permitted building and is approved by the Energy Commission as specified in Title 24, Part 1, Section 10-115, may offset part or all of the solar electric generation system Energy Design Rating required to comply with the Standards, as calculated according to methods established by the Commission in the Residential ACM Reference Manual.

EXCEPTION 2 to Section 150.1(b) 1 Infeasibility Exception. If an applicant for a covered project believes that circumstances exist that make it infeasible to meet the requirements of this chapter, the applicant may request an exemption. In applying for an exemption, the burden is on the applicant to show infeasibility. Whenever there are practical difficulties involved in carrying out provisions of the technical codes, the building official
may grant modifications for individual cases. The design professional shall submit findings to the building official demonstrating a special and unique reason makes the strict letter of the technical code impractical, the modification is in conformity with the intent and purpose of the technical code, and that such modification does not lessen health, life safety and fire safety requirements or any degree of structural integrity. The details of actions granting modifications shall be recorded and entered in the files of the building division.

Sec. 9.231. - SECTION 150.1(B) 2 OF THE ENERGY CODE AMENDED:

Section 150.1(b) 2 of the Energy Code is amended to read as follows:

2. Additions and Alterations to Existing Buildings. The Energy Budget for additions and alterations is expressed in terms of TDV energy. A building complies with the performance standards if the energy consumption calculated for the Proposed Design Building is no greater than the energy budget calculated for the Standard (Baseline) Design Building.

Sec. 9.232. - SECTION 150.1(C) OF THE ENERGY CODE AMENDED:

Section 150.1(c) of the Energy Code is amended to add Section 150.1(c) 15 to read as follows:

   A. Mixed-Fuel Single Family
      1. Ducts shall comply with 2019 Reference Appendices RA3.1.4.1.3, which requires that all ductwork shall be located entirely in conditioned space and shall be confirmed to have less than or equal to 25 cfm leakage to outside when measured as specified by Section RA3.1.4.3.8.
      2. Slab floor perimeter insulation shall be installed with an R-value equal to or greater than R10. The minimum depth of concrete-slab floor perimeter insulation shall be 16 inches or the depth of the footing of the building, whichever is less.
      3. Design the hot water distribution system to meet minimum requirements for the basic compact hot water distribution credit according to the procedures outlined in the 2019 Reference Appendices RA4.4.6
      4. Central Fan Integrated Ventilation Systems. The duct distribution system shall be designed reduce external static pressure to meet a maximum fan efficacy equal to:
         Gas Furnaces: 0.35 Watts per cfm
         Heat Pumps: 0.45 Watts per cfm,
         according to the procedures outlined in the 2019 Reference Appendices RA 3.3.
      5. Include either:
         a. 5 kWh battery of battery storage, OR
         b. A solar water heating system with a minimum solar savings fraction of 0.20.
EXCEPTION to 150.1(c) 15.A.5 Electrically-Heated Mixed-Fuel buildings do not need to include battery or solar water heating.

B. Mixed-Fuel Multifamily
1. Slab floor perimeter insulation shall be installed with an R-value of equal to or greater than R10. The minimum depth of concrete-slab floor perimeter insulation shall be 16 inches or the depth of the footing of the building, whichever is less.
2. Design the hot water distribution system to meet minimum requirements for the basic compact hot water distribution credit according to the procedures outlined in the 2019 Reference Appendices RA4.4.6
3. Central Fan Integrated Ventilation Systems. Central forced air system fans used to provide outside air, shall have an air-handling unit fan efficacy less than or equal to 0.35 W/CFM. The airflow rate and fan efficacy requirements in this section shall be confirmed through field verification and diagnostic testing in accordance with all applicable procedures specified in Reference Residential Appendix RA3.3. Central Fan Integrated Ventilation Systems shall be certified to the Energy Commission as Intermittent Ventilation Systems as specified in Reference Residential Appendix RA3.7.4.2.
4. Include either:
   a. 2.75 kWh of battery storage per dwelling unit, or
   b. A solar water heating system with a minimum solar savings fraction of 0.20.

EXCEPTION to 150.1(c) 15.B.4 Electrically Heated Mixed-Fuel Buildings do not need to include battery or solar water heating.

Sec. 9.233. - SECTION 202 OF THE GREEN BUILDING STANDARDS CODE AMENDED:

SECTION 202 of the Green Building Standards Code is amended to add definitions for “EV Capable”, “Level 1 EV Ready Circuit”, “Level 2 EV Ready Circuit”, and “Electric Vehicle Charging Station (EVCS)” to read as follows:

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.

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.

Sec. 9.234. - SECTION 4.106.4 OF THE GREEN BUILDING STANDARDS CODE AMENDED:

Section 4.106.4 of the Green Building Standards Code is amended to read as follows:

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.

EXCEPTIONS to 4.106.4:

1. Where there is no commercial power supply.

2. Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without additional parking facilities.

Sec. 9.235. - SECTION 4.106.4.1 OF THE GREEN BUILDING STANDARDS CODE AMENDED:

Section 4.106.4.1 of the Green Building Standards Code is amended to read as follows:

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.

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

Sec. 9.236. - SECTION 4.106.4.2 OF THE GREEN BUILDING STANDARDS CODE AMENDED:

Section 4.106.4.2 of the Green Building Standards Code is amended to read as follows:
4.106.4.2 New multifamily dwellings. The following requirements apply to all new multifamily dwellings:

A. 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.

B. When more than 20 multifamily dwelling units are constructed on a building site:

1. 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.

2. 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. Load balancing systems may be installed to increase the number of EV chargers or the amperage or voltage beyond the minimum required. Load balancing does not allow installing less electrical panel capacity than would be required without load balancing.

2. 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.

3. The requirements apply to multifamily buildings with parking spaces including: a) assigned or leased to individual dwelling units, and b) unassigned residential parking.

4. 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.
Sec. 9.237. - SECTION 4.106.4.2.1.1 OF THE GREEN BUILDING STANDARDS CODE AMENDED:

Section 4.106.4.2.1.1 of the Green Building Standards Code is amended to read as follows:

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:

A. 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.

B. 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: The Division of the State Architect provides guidance on exemptions from Chapter 11B EV infrastructure accessibility requirements, such as buildings that are not subject to Chapter 11B and assigned parking spaces at buildings that are subject to Chapter 11B.

Sec. 9.237. - SECTION 4.106.4.2.2 OF THE GREEN BUILDING STANDARDS CODE AMENDED:

Section 4.106.4.2.2 of the Green Building Standards Code is amended to read as follows:

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

A. The minimum length of each EV space shall be 18 feet (5486 mm).

B. The minimum width of each EV space shall be 9 feet (2743 mm).

C. 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). Surface slope for this EV space and the aisle shall not exceed 1 unit vertical in 48 units.

Sec. 9.238. - SECTION 4.106.4.2.3 OF THE GREEN BUILDING STANDARDS CODE AMENDED:

Section 4.106.4.2.3 of the Green Building Standards Code is amended to read as follows:

4.106.4.2.3 Good Design Practices. For all projects subject to California Code of Regulations Title 24, Part 2, Chapter 11B, construction documents shall indicate how many accessible EVCS would be required as per Title 24, Chapter 11B to
convert all Level 2 EV Ready Circuits required under section 4.106.4 to EVCS. Construction documents shall also demonstrate that the facility is designed such that compliance with accessibility standards, including Chapter 11B accessible routes, will be feasible for the required accessible EVCS at the time of EVCS installation. Surface slope for any area designated for accessible EVCS shall meet slope requirements in Chapter 11B and vertical clearance requirements in Chapter 11B at the time of original building construction.¹

Note: Section 11B-812 of the 2016 California Building Code requires that a facility providing EVCS for public and common use also provides 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. In addition, Title 24 Part 11 Section 4.106.4.2 requires that developers meet certain aspects of accessibility requirements at the time of new construction for a limited number of parking spaces.

Sec. 9.239. - SECTION 5.106.5.3 OF THE GREEN BUILDING STANDARDS CODE AMENDED:

Section 5.106.5.3 of the Green Building Standards Code is amended to read as follows:

5.106.5.3 Electric vehicle (EV) charging. 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.

EXCEPTION: Where there is no commercial power supply.

Notes:

1. Load balancing systems 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 load balancing.

Sec. 9.240. - SECTION 5.106.5.3.1 OF THE GREEN BUILDING STANDARDS CODE AMENDED:

Section 5.106.5.3.1 of the Green Building Standards Code is amended to read as follows:

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

A. When 10 or more parking spaces are constructed, 10% of the available parking spaces on site shall be equipped with Level 2 EVCS;
B. An additional 10% shall be provided with at least Level 1 EV Ready Circuits; and

C. 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 V 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.

Sec. 9.241.- SECTION 5.106.5.3.2 OF THE GREEN BUILDING STANDARDS CODE AMENDED:

Section 5.106.5.3.2 of the Green Building Standards Code is amended to read as follows:

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:

A. When 10 or more parking spaces are constructed, 6% of the available parking spaces on site shall be equipped with Level 2 EVCS;

B. 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.

Sec. 9.242. - SECTION 5.106.5.3.3 OF THE GREEN BUILDING STANDARDS CODE AMENDED:

Section 5.106.5.3.3 of the Green Building Standards Code is amended to read as follows:

5.106.5.3.3 Good Design Practices. For all projects subject to Title 24, Part 2, Chapter 11B, construction documents shall indicate how many accessible EVCS would be required under the California Code of Regulations Title 24, Chapter 11B, if applicable, in order to convert Level 1 EV Ready infrastructure to EVCS.
Construction documents shall also demonstrate that the facility is designed such that compliance with accessibility standards, including Chapter 11B accessible routes, will be feasible for the required accessible EVCS at the time of EVCS installation. Surface slope for any area designated for accessible EVCS shall meet slope requirements in Chapter 11B and vertical clearance requirements in Chapter 11B at the time of original building construction.

Sec. 9.243. - SECTION 5.106.5.3.5 OF THE GREEN BUILDING STANDARDS CODE AMENDED:

Section 5.106.5.3.5 of the Green Building Standards Code is amended to read as follows:

5.106.5.3.5 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.

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