

**DOCKETED**

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<b>Filer:</b>	Danuta Drozdowicz
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## STAFF REPORT

To the Honorable Mayor and City Council  
From the City Manager

**DATE:** September 21, 2020

### SUBJECT

Adoption of All-Electric Reach Code Ordinance [to reduce greenhouse gas emissions \(GHGs\) through new building construction requirements](#)

### RECOMMENDATION

1. Hold Public Hearing and receive public comment; and
2. Waive second reading and adopt an Ordinance of the City of Redwood City Adding Article XV of Chapter 9 of the Redwood City Code to Adopt Local Amendments to the 2019 Edition of the California Energy Code and Green Building Standards Codes, Together with Certain Amendments, Exceptions, Modifications and Additions Thereto.

### STRATEGIC PLAN GUIDING PRINCIPLE

Sustainability

### BACKGROUND

Reach Codes are amendments to the Energy and Green Buildings Standards Codes with the goal of reducing greenhouse gas emissions (GHGs). Reach Codes aim to reduce GHGs by reducing reliance on natural gas and gasoline and refocusing energy consumption towards electrification in buildings. The City has considered adopting Reach Codes since last year and has discussed the adoption during the following meetings:

- October 28, 2019 by the City Council,
- December 9, 2019 by the Board of Building Review,

- January 13, 2020 by the City Council, and
- September 14, 2020 by the City Council.

During the January 13, 2020 City Council meeting, staff presented draft All-Electric Reach Codes with exceptions to the City Council. After receiving public comment, City Council directed staff to conduct additional community and stakeholder outreach.

Staff met with the Chamber of Commerce's Economic Development Committee and the Neighborhood Association Leadership Council. The City also posted a survey to the City's website seeking feedback on Reach Codes and possible exceptions. Between June 24<sup>th</sup> and July 31<sup>st</sup>, 210 individuals responded to the survey, prioritizing the reduction of greenhouse gas emissions has the highest importance.

A more in-depth discussion on Reach Codes outreach and exceptions is included in the staff report for September 14, 2020 (Attachment B). Staff recommended eight exceptions, City Council approved those eight exceptions and scheduled a public hearing on the adoption of Reach Codes for September 21, 2020.

### ANALYSIS

At the September 14, 2020 City Council meeting, the Council discussed the goals of reducing GHGs through all-electric building requirements in consideration of other policy goals, including encouraging affordable housing. Reach Codes will help the City reach its planned Draft 2030 Climate Action Plan goals by helping to reduce GHGs. The City recognizes the importance of reducing natural gas consumption through energy usage in buildings. The ordinance advances the City's sustainability goals by requiring all-electric construction in new buildings with limited exceptions.

In developing the Reach Codes, staff conducted outreach to residents and businesses, reviewed comparable cities in the Bay Area that have adopted Reach Codes, and met with energy code technical consultants. Following the outreach, staff examined the average number of permit applications received for new construction to understand the impact of Reach Codes.

On September 14, 2020, City Council unanimously voted to approve Reach Codes language with staff-recommended exceptions, including a revision to Exception 7, regarding Accessory Dwelling Units (ADUs) and Junior Accessory Dwelling Units (JADUs). The original language for Exception 7 read as:

*All-Electric Building requirements shall not apply to Accessory Dwelling Units, as defined by Section 37.2 of the Redwood City Zoning Ordinance, or to Junior Accessory Dwelling Units as defined by Government Code Section 65852.22, so long as the Accessory Dwelling Unit or Junior Accessory Unit is created through the conversion of existing space. Accessory Dwelling Units created through new construction shall comply with all electric building requirements.*

Staff revised the above exception to delete language narrowing the situations for which the exception may apply, and to clarify that newly constructed ADUs and JADUs are not required to be all-electric. The revised Exception 7 now reads:

*All-electric building requirements shall not apply to Accessory Dwelling Units, as defined by Section 37.2 of the Redwood City Zoning Ordinance, or to Junior Accessory Dwelling Units, as defined by Government Code Section 65852.22.*

Should City Council adopt the proposed ordinance, staff plans to provide City Council with an update by the end of 2021 regarding advancements in all-electric technology or design methods, initiatives encouraging all-electric design, the number of all electric buildings beginning construction, and the number of exceptions granted.

Below are the 8 exceptions to Reach Codes and a brief background on why the exceptions were recommended:

All-Electric Reach Code Exceptions		
#	Reach Code Exceptions	Staff Recommendation
1	Non-electric space conditioning, water heating, and process load systems may be allowed in Hospitals	Hospitals have unique requirements when compared to other non-residential uses such as retail or office space and natural gas may be necessary to provide a high standard of care and maintain a safe environment.
2	Non-electric space conditioning/water heating systems may be allowed - scientific laboratory areas	Enables medical and/or biotech companies to conduct experiments or continue processes in controlled environments where gas may be necessary for space conditioning and water heating.
3	Restaurants/kitchens may contain non-electric cooking appliances - non-residential Buildings	Electric appliances on the market are not yet readily available or equivalent which could place a burden on new restaurants or kitchens.
4	F or H Occupancies, and scientific laboratory areas may have gas piping for use in manufacturing, research, and development	Factories and hazardous materials facilities use highly specialized equipment to operate or manufacture goods and require gas piping in the processes.
5	All-electric requirements shall not apply to projects with planning entitlements approved prior to the adoption of the Reach Codes	Due to significant time and monetary investment necessary to obtain planning entitlements, imposing additional building requirements after initial project design introduces additional project costs. Projects that receive entitlements after the effective date of this ordinance, would need to comply with all-electric reach codes.
6	All-electric requirements shall not apply to 100% affordable housing developments for persons earning 80% or less of the area median income	The Bay Area continues to face an ever-worsening affordable housing crisis. Creating housing, particularly affordable housing, is a City Council priority.
7	All-electric requirements shall not apply to ADUs or JADUs	The state has sought to reduce barriers and streamline development of ADUs/JADUs to help increase the housing supply. Design and technical resources are readily available for applicants interested in ADU all-electric construction.

All-Electric Reach Code Exceptions		
#	Reach Code Exceptions	Staff Recommendation
8	An applicant may request an exception for technical infeasibility for consideration.	In certain cases, energy efficiency measures take up significant space due to the need for extra electrical transformers, water storage or other equipment. The applicant is required to demonstrate why the all-electric requirements are infeasible. Requests would be reviewed by a third party, with final determination by the City.

**Next Steps**

Should Reach Codes be adopted pursuant to a second reading of the ordinance, staff will submit the approved ordinance to the California Energy Commission (CEC) for approval. The CEC requires a period of approximately 15 days for public comment. After the CEC’s approval, staff will file the Reach Codes with the Building Standards Commission. The application approval process is usually approved between 30 to 60 days.

**FISCAL IMPACT**

Staff does not anticipate a significant fiscal impact to the City associated with the adoption of the Reach Codes. Reach Codes will be administered by the City’s Building Division and will require additional staff training and development of communication materials, both of which can likely be accommodated within the Division’s existing budget. All staff will need additional training to understand how the new requirements apply to building permit plan submittal, plan review and inspections. The Reach Codes will not require additional staffing.

**ENVIRONMENTAL REVIEW**

This activity is not a project under California Environmental Quality Act (CEQA) as defined in CEQA Guidelines, section 15378, because it has no potential for resulting in either a direct or reasonably foreseeable indirect physical change in the environment.

**PUBLIC NOTICE**

The notice of the public hearing was published once a week for a period of two successive weeks in a newspaper of general circulation in Redwood City in accordance with California Government Code § 6066. Copies of the state code being adopted by reference were made available to the public for review through the Office of the City Clerk.

**ALTERNATIVES**

1. Do not adopt All-Electric Reach Codes.
2. Waive first reading and introduce a All-Electric Reach Code Ordinance that modifies the ordinance introduced on September 14, 2020.
3. Direct staff to further revisit All-Electric Reach Codes including different exceptions for a new first reading at a later meeting.

**ATTACHMENTS**

Attachment A – All-Electric Reach Code Ordinance

Attachment B – September 14, 2020 Reach Code Staff Report

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**ORDINANCE NO. \_\_\_\_\_**

**AN ORDINANCE OF THE CITY OF REDWOOD CITY ADDING ARTICLE XV 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 has adopted 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**, Public Resources Code Section 25402.1 (h) 2 and Section 10-106 of the Building Energy Efficiency Standards (Standards) establish a process which allows local adoption of energy standards that are more stringent than the statewide Standards, provided that such local standards are cost-effective and the California Energy Commission finds that the standards will require buildings to be designed to consume no more energy than permitted by the California Energy Code; and

**WHEREAS**, the City, through the Statewide Codes & Standards Program, has performed a cost-effectiveness analysis as required by the California Energy Commission for the local amendments to the California Energy Code contained in this ordinance which memo is hereby incorporated by reference; 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 will require buildings to consume no more energy than permitted by the California Energy Code; 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.

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

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

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

**Sec. 9.249. - SECTION 100.0(e) (2) A OF THE ENERGY CODE AMENDED:**

Section 100.0(e) (2) A of the Energy Code is amended to read as follows:

(e) Sections applicable to particular buildings. TABLE 100.0-A and this subsection list the provisions of Part 6 that are applicable to different types of buildings covered by Section 100.0(a).

2. Newly constructed buildings.

A. All newly constructed buildings. Sections 110.0 through 110.12 apply to all newly constructed buildings within the scope of Section 100.0(a). In addition, newly constructed buildings shall meet the requirements of Subsections B, C, D or E, as applicable; and shall be an All-Electric Building, as defined in Section 9.250.

Exception 1: Non-residential buildings that will be constructed to Office of Statewide Health Planning and Development (OSHPD) Hospital standards [“OSHPD 1” as described in California Building Code Vol. 1, section 1224] or Clinic standards [“OSHPD 3” as described in California Building Code Vol. 1, section 1226] may contain non-electric space-conditioning, water-heating, and process load systems.

Exception 2: Buildings containing a Scientific Laboratory Area may contain non-electric space-conditioning and water-heating systems.

Exception 3: Non-Residential Buildings containing a kitchen may contain non-electric cooking appliances, including but not limited to stoves, ovens, cooking ranges, and broilers.

Exception 4: Non-Residential Buildings containing F or H occupancies, as defined in the California Building Code, or Scientific Laboratory Areas may have gas piping installed for use of natural gas in manufacturing, research, and development.

Exception 5: All-Electric Building requirements shall not apply to projects with planning entitlements approved by the City prior to the effective date of this ordinance.

Exception 6: All-Electric Building requirements shall not apply to new residential structures that designate 100% of the dwelling units to be affordable, excluding any onsite manager unit(s), for persons earning 80% or less of the Area Median Income (AMI), as evidenced by instruments recorded against the property that restrict the units as affordable for a period of at least 55 years.

Exception 7: All-Electric Building requirements shall not apply to Accessory Dwelling Units, as defined by Section 37.2 of the Redwood City Zoning Ordinance, or to Junior Accessory Dwelling Units, as defined by Government Code Section 65852.22.

Exception 8: If an applicant maintains that circumstances exist that make it infeasible for their building to be an all-electric building, the applicant may request an exception in writing. In requesting an exception, the burden is on the applicant to identify why the requirements for an All-Electric Building are infeasible and must submit any information, as requested by the Building Official or their designee, substantiating the infeasibility. All costs associated with the City's review of the infeasibility request will be charged to the applicant. The final determination of infeasibility shall be made by the Building Official or their designee. If the exception is granted, the Building Official or their designee shall document their findings in the files of the Building Division.

Note 1: Standby Power Systems, as defined in the California Building Code and Fire Code are not covered under the California Energy Code Section 110.2 through 110.5, which are for space-conditioning equipment; water-heating systems and equipment; pool and spa systems and equipment; furnaces, cooking equipment, pool and spa heaters, and fireplaces: pilot lights prohibited.

Note 2: A building required to be brought into conformity with standards for new construction pursuant to Redwood City Code Section 9.43 shall not be considered a newly constructed building for the purposes of Redwood City Code Section 9.249.

**Sec. 9.250. - 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" "Scientific Laboratory Area", and "Shading", 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-conditioning, water-heating (including pools and spas), cooking appliances, and clothes drying appliances. All-Electric Buildings may include solar thermal pool heating.

SCIENTIFIC LABORATORY AREA is a room or area where research, experiments, and measurement in medical, physical and life sciences are performed requiring examination of fine details. The area may include workbenches, countertops, scientific instruments, and supporting offices. Scientific laboratory does not refer to film, computer, and other laboratories where scientific experiments are not performed.

SHADING is the protection from heat gains because of direct solar radiation by permanently attached exterior devices of building elements, interior shading devices, glazing material, or adherent materials, including items located outside the building footprint such as trees or high rise buildings that may affect shading.

**Sec. 9.251. - SECTION 110.2 "Certification by manufacturers" OF THE ENERGY CODE AMENDED:**

Section 110.2 "Certification by manufacturers" of the Energy Code is amended to read as follows:

**SECTION 110.2 – MANDATORY REQUIREMENTS FOR SPACE-CONDITIONING EQUIPMENT**

Certification by manufacturers. Any space-conditioning equipment listed in this section that meets the requirements of section 100.0(e) 2A may be installed only if the manufacturer has certified to the Commission that the equipment complies with all the applicable requirements of this section.

**Sec. 9.252. - SECTION 110.3(a) OF THE ENERGY CODE AMENDED:**

Section 110.3(a) of the Energy Code is amended to read as follows:

**SECTION 110.3 – MANDATORY REQUIREMENTS FOR SERVICE WATER-HEATING SYSTEMS AND EQUIPMENT**

(a) Certification by Manufacturers. Any service water-heating system or equipment that meets the requirements of section 100.0(e) 2A may be installed only if the manufacturer has certified that the system or equipment complies with all the requirements of this subsection for that system or equipment.

**Sec. 9.253. - SECTION 110.4(a) OF THE ENERGY CODE AMENDED:**

Section 110.4(a) of the Energy Code is amended to read as follows:

**SECTION 110.4(a) – MANDATORY REQUIREMENTS FOR POOL AND SPA SYSTEMS AND EQUIPMENT**

(a) Certification by Manufacturers. Any pool or spa heating system or equipment that meets the requirements of section 100.0(e)2A may be installed only if the manufacturer has certified that the system or equipment has all of the following:

**Sec. 9.254. - SECTION 110.5 OF THE ENERGY CODE AMENDED:**

Section 110.5 of the Energy Code is amended to read as follows:

**SECTION 110.5 – NATURAL GAS CENTRAL FURNACES, COOKING EQUIPMENT, POOL AND SPA HEATERS, AND FIREPLACES: PILOT LIGHTS PROHIBITED**

Any natural gas system or equipment in a building listed below that falls within one of the exceptions to Section 100.0(e) 2A, as amended by this Code, may be installed only if it does not have a continuously burning pilot light:

- (a) Fan-type central furnaces.
- (b) Household cooking appliances.

Exception to Section 110.5(b): Household cooking appliances without an electrical supply voltage connection and in which each pilot consumes less than 150 Btu/hr.

- (c) Pool heaters.
- (d) Spa heaters.
- (e) Indoor and outdoor fireplaces.

Note: Authority: Sections 25213, 25218, 25218.5, 25402 and 25402.1, Public Resources Code. Reference: Sections 25007, 25008, 25218.5, 25310, 25402, 25402.1, 25402.4, 25402.8, and 25943, Public Resources Code.

**Sec. 9.255. - SECTION 110.10 OF THE ENERGY CODE AMENDED:**

Section 110.10 of the Energy Code is amended to read as follows:

**SECTION 110.10 – MANDATORY REQUIREMENTS FOR SOLAR READY BUILDINGS**

(a) Covered Occupancies.

1. Single-family residences. Single family residences located in subdivisions with ten or more single family residences and where the application for a tentative subdivision map for the residences has been deemed complete or approved by the enforcement agency, which do not have a photovoltaic system installed, shall comply with the requirements of Section 110.10(b) through 110.10(e).
2. Low-rise multifamily buildings. Low-rise multifamily buildings that do not have a photovoltaic system installed shall comply with the requirements of Section 110.10(b) through 110.10(d).
3. Hotel/motel occupancies and high-rise multifamily buildings. Hotel/motel occupancies and high-rise multifamily buildings with ten habitable stories or fewer shall comply with the requirements of Section 110.10(b) through 110.10(d) and Table 2.
4. Nonresidential buildings. Nonresidential buildings with three habitable stories or fewer, other than healthcare facilities, shall comply with the requirements of Section 110.10(b) through 110.10(d) and Table 2.

Table 2	
Square Footage of Building	Size of System
Less than 10,000 sq. ft.	Minimum of 3-kilowatt photovoltaic systems
Greater than or equal to 10,000 sq. ft.	Minimum of 5-kilowatt photovoltaic systems
EXCEPTION: As an alternative to a solar photovoltaic system, the building may provide a solar hot water system (solar thermal) with a minimum 40 square feet of solar thermal panels, additional to any other solar thermal equipment otherwise required for compliance with Part 6.	
EXCEPTION: As an alternative to a solar photovoltaic system, the building may have 25% or more of the roof area covered with vegetation.	

(b) Solar Zone.

1. Minimum Solar Zone Area. The solar zone shall have a minimum total area as described below. The solar zone shall comply with access, pathway, smoke ventilation, and spacing requirements as specified in Title 24, Part 9 or other Parts of Title 24 or in any requirements adopted by a local jurisdiction. The solar zone total area shall be comprised of areas that have no dimension less than five feet and are no less than 80 square feet each for buildings with roof areas less than or equal to 10,000 square feet or no less than 160 square feet each for buildings with roof areas greater than 10,000 square feet.

A. Single Family Residences. The solar zone shall be located on the roof or overhang of the building and have a total area no less than 250 square feet.

EXCEPTION 1 to Section 110.10(b) 1A: Single-family residences with a permanently installed domestic solar water-heating system meeting the installation criteria specified in the Reference Residential Appendix RA4 and with a minimum solar savings fraction of 0.50.

EXCEPTION 2 to Section 110.10(b)1A: Single family residences with three habitable stories or more and with a total floor area less than or equal to 2000 square feet and having a solar zone total area no less than 150 square feet.

EXCEPTION 3 to Section 110.10(b)1A: Single family residences located in the Wildland-Urban Interface Fire Area as defined in Title 24, Part 2 and having a whole house fan and having a solar zone total area no less than 150 square feet.

EXCEPTION 4 to Section 110.10(b)1A: Buildings with a designated solar zone area that is no less than 50 percent of the potential solar zone area. The potential solar zone area is the total area of any low-sloped roofs where the annual solar access is 70 percent or greater and any steep-sloped roofs oriented between 90 degrees and 300 degrees of true north where the annual solar access is 70 percent or greater. Solar access is the ratio of solar insolation including shade to the solar insolation without shade. Shading from obstructions located on the roof or any other part of the building shall not be included in the determination of annual solar access.

EXCEPTION 5 to Section 110.10(b)1A: Single family residences having a solar zone total area no less than 150 square feet and where all thermostats are demand responsive controls and comply with Section 110.12(a), and are capable of receiving and responding to Demand Response Signals prior to granting of an occupancy permit by the enforcing agency.

EXCEPTION 6 to Section 110.10(b) 1A: Single-family residences meeting the following conditions:

A. All thermostats are demand responsive controls that comply with Section 110.12(a), and are capable of receiving and responding to Demand Response Signals prior to granting of an occupancy permit by the enforcing agency.

B. Comply with one of the following measures:

- i. Install a dishwasher that meets or exceeds the ENERGY STAR Program requirements with a refrigerator that meets or exceeds the ENERGY STAR Program requirements, a whole house fan driven by an electronically commutated motor, or an SAE J1772 Level 2 Electric Vehicle Supply Equipment (EVSE or EV Charger) with a minimum of 40 amperes; or
- ii. Install a home automation system capable of, at a minimum, controlling the appliances and lighting of the dwelling and responding to demand response signals; or
- iii. Install alternative plumbing piping to permit the discharge from the clothes washer and all showers and bathtubs to be used for an irrigation system in compliance with the California Plumbing Code and any applicable local ordinances; or
- iv. Install a rainwater catchment system designed to comply with the California Plumbing Code and any applicable local ordinances, and that uses rainwater flowing from at least 65 percent of the available roof area.

B. Low-rise and high-rise multifamily buildings, hotel/motel occupancies, and nonresidential buildings. The solar zone shall be located on the roof or overhang of the building or on the roof or overhang of another structure located within 250 feet of the building or on covered parking installed with the building project, and shall have a total area no less than 15 percent of the total roof area of the building excluding any skylight area. The solar zone requirement is applicable to the entire building, including mixed occupancy.

EXCEPTION 1 to Section 110.10(b) 1B: High-rise multifamily buildings, hotel/motel Occupancies, and Nonresidential Buildings with a permanently installed domestic solar electric system having a nameplate DC power rating, measured under Standard Test Conditions, of no less than one watt per square foot of roof area.

EXCEPTION 2 to Section 110.10(b)1B: High-rise multifamily buildings, hotel/motel occupancies with a permanently installed domestic solar water-heating system complying with Section 150.1(c) 8Biii and having an

additional 40 square feet of solar thermal panels.

EXCEPTION 3 to Section 110.10(b) 1B: Buildings with a designated solar zone area that is no less than 50 percent of the potential solar zone area. The potential solar zone area is the total area of any low-sloped roofs where the annual solar access is 70 percent or greater and any steep-sloped roofs oriented between 90 degrees and 300 degrees of true north where the annual solar access is 70 percent or greater. Solar access is the ratio of solar insolation including shade to the solar insolation without shade. Shading from obstructions located on the roof or any other part of the building shall not be included in the determination of annual solar access.

EXCEPTION 4: Low-rise and high-rise multifamily buildings with all thermostats in each dwelling unit are demand response controls that comply with Section 110.12(a), and are capable of receiving and responding to Demand Response Signals prior to granting of an occupancy permit by the enforcing agency. In addition, either A or B below:

A. In each dwelling unit, comply with one of the following measures:

- i. Install a dishwasher that meets or exceeds the ENERGY STAR Program requirements with either a refrigerator that meets or exceeds the ENERGY STAR Program requirements or a whole house fan driven by an electronically commutated motor; or
- ii. Install a home automation system that complies with Section 110.12(a) and is capable of, at a minimum, controlling the appliances and lighting of the dwelling and responding to demand response signals; or
- iii. Install alternative plumbing piping to permit the discharge from the clothes washer and all showers and bathtubs to be used for an irrigation system in compliance with the California Plumbing Code and any applicable local ordinances; or
- iv. Install a rainwater catchment system designed to comply with the California Plumbing Code and any applicable local ordinances, and that uses rainwater flowing from at least 65 percent of the available roof area.

B. Meet the Title 24, Part 11, Section A4.106.8.2 requirements for electric vehicle charging spaces.

EXCEPTION 5 to Section 110.10(b) 1B: Buildings where the roof is designed and approved to be used for vehicular traffic or parking or for a heliport.

EXCEPTION 6 to section 110.10(b) 1B: Performance equivalency approved

by the Building Official.

2. Azimuth. All sections of the solar zone located on steep-sloped roofs shall be oriented between 90 degrees and 300 degrees of true north.
3. Shading.
  - A. No obstructions, including but not limited to, vents, chimneys, architectural features, and roof mounted equipment, shall be located in the solar zone.
  - B. Any obstruction, located on the roof or any other part of the building that projects above a solar zone shall be located at least twice the distance, measured in the horizontal plane, of the height difference between the highest point of the obstruction and the horizontal projection of the nearest point of the solar zone, measured in the vertical plane.

EXCEPTION to Section 110.10(b) 3: Any roof obstruction, located on the roof or any other part of the building that is oriented north of all points on the solar zone.

- C. The solar zone needs to account for Shading from obstructions that may impact the area required in 110.10(b) 1B. When determined by the Building Official that conditions exist where excessive Shading occurs and solar zones cannot be met, a performance equivalency approved by the Building Official may be used as an alternative.
4. Structural design loads on construction documents. For areas of the roof designated as solar zone, the structural design loads for roof dead load and roof live load shall be clearly indicated on the construction documents.

NOTE: Section 110.10(b) 4 does not require the inclusion of any collateral loads for future solar energy systems.

(c) Interconnection Pathways.

- A. The construction documents shall indicate a location reserved for inverters and metering equipment and a pathway reserved for routing of conduit from the solar zone to the point of interconnection with the electrical service.
- B. For single-family residences and central water-heating systems, the construction documents shall indicate a pathway for routing of plumbing from the solar zone to the water-heating system.

(d) Documentation. A copy of the construction documents or a comparable document indicating the information from Sections 110.10(b) through 110.10(c) shall be provided to the occupant.

(e) Main Electrical Service Panel.

1. The main electrical service panel shall have a minimum busbar rating of 200 amps.
2. The main electrical service panel shall have a reserved space to allow for the installation of a double pole circuit breaker for a future solar electric installation. The reserved space shall be permanently marked as "For Future Solar Electric".

**Sec. 9.256. - SECTION 202 OF THE GREEN BUILDING STANDARDS CODE AMENDED:**

SECTION 202 of the Green Building Standards Code is amended to add definitions for "Affordable Housing", "Automatic Load Management Systems (ALMS)", "EV Capable", "Level 1 EV Ready Space", "Level 2 EV Ready Space", and "Electric Vehicle Charging Station (EVCS)" to read as follows:

**AFFORDABLE HOUSING:** Residential buildings that consist entirely of housing that costs no more than 30 percent of gross household income. Housing costs include rent or mortgage payments, utilities, taxes, insurance, homeowner association fees, and other related costs.

**AUTOMATIC LOAD MANAGEMENT SYSTEMS (ALMS):** A control system which allows multiple electric vehicle chargers or electric vehicle ready 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 Electrical Vehicle Charging Stations (EVCS), Level 2 EV Ready Spaces, and Level 1 EV Ready Spaces. ALMS systems must be designed to deliver at least 1.4kW to each EVCS, Level 2 EV Ready Spaces, and Level 1 EV Ready Spaces. 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.

**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 Space. EVCS installation may be used to satisfy a Level 2 EV Ready Space requirement.

**ELECTRIC VEHICLE (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 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.

**Sec. 9.257. - 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, 4.106.4.2 or 4.106.4.3, to facilitate future installation and use of EV chargers.

EXCEPTION 1: On a case-by-case basis, where the local enforcing agency has determined EV charging and infrastructure 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.

EXCEPTION 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 either the ADU, JADU, or single-family dwelling located on the same lot, in which case only the electrical capacity requirements apply.

EXCEPTION 3: Parking spaces accessible only by automated mechanical car parking systems.

**Sec. 9.258. - SECTION 4.106.4.1 OF THE GREEN BUILDING STANDARDS CODE AMENDED:**

ATTY/ORD.522/CC ORD ALL ELECTRIC REACH CODES  
REV: 09-16-2020 RL

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 Space and Level 1 EV Ready Space.

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

4.106.4.1.1 Identification. The raceway termination location shall be permanently and visibly marked as "Electric Vehicle Outlet."

**Sec. 9.259. - SECTION 4.106.4.2 OF THE GREEN BUILDING STANDARDS CODE AMENDED:**

4.106.4.2 New multifamily dwellings. 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:
  - A. 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.
  - B. 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. ALMS may be installed to decrease electrical service and transformer costs associated with EV Charging Equipment subject to review of the City.
2. 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.

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. 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 newly constructed multifamily dwellings are provided with Level 1 or Level 2 EV Ready Spaces.

4.106.4.2.1 Electric vehicle charging space (EV space) locations. Construction documents shall indicate the location of proposed EV spaces. Where common use parking is provided at least one EV space shall be located in the common use parking area and shall be available for use by all residents.

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 space.
2. The EV space shall be located adjacent 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.

**Sec. 9.260. - 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. EV spaces shall be designed to comply with Redwood City Zoning Ordinance Section 30.6.A.

**Sec. 9.261. - 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. [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.

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 Spaces; and
3. An additional 30% shall be at least EV Capable.

EXCEPTION: Parking spaces accessible only by automated mechanical car parking systems are exempt from providing EV charging infrastructure.

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.

Note: 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; and
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:

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](http://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](http://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. EV Ready Spaces may be designated as "EV Space Preferred."

5.106.5.3.4 [N] Identification. The raceway termination location shall be permanently and visibly marked as "EV Ready".

**SECTION 2.** If any section, paragraph, sentence or word of this ordinance or of the Code hereby adopted should for any reason, be found invalid, it is intended that all other portions of this ordinance independent of any such portion as may be declared invalid shall be valid.

**SECTION 3.** This adoption of this ordinance is exempt from CEQA pursuant to Section 15061(b) (3) because it can be seen with certainty that adoption of this ordinance will not have a significant adverse effect on the environment.

**SECTION 4.** This ordinance shall take effect upon approval by the California Energy Commission.

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## STAFF REPORT

To the Honorable Mayor and City Council  
From the City Manager

DATE: September 14, 2020

### SUBJECT

Consideration of All-Electric Reach Codes (Reach Codes) to reduce greenhouse gas emissions (GHGs) through new building construction requirements

### RECOMMENDATION

1. Waive first reading and introduce Ordinance of the City of Redwood City Adding Article XIV of Chapter 9 of the Redwood City Code to Adopt Local Amendments to the 2019 Edition of the California Energy Code and Green Building Standards Codes, Together with Certain Amendments, Exceptions, Modifications and Additions Thereto; and
2. Set a public hearing on the adoption of these ordinances for September 21, 2020, commencing at 7:00 p.m. (or as soon thereafter as can be heard).

### STRATEGIC PLAN GUIDING PRINCIPLE

Sustainability

### BACKGROUND

Staff recommends adoption of All-Electric Reach Codes (Reach Codes) to reduce greenhouse gas emissions (GHGs) through new building construction requirements. Reach Codes are amendments to the Energy and Green Buildings Standards Codes, which aim to reduce GHGs by reducing reliance on natural gas and emphasizing building electrification. Building electrification is a key strategy in the City's draft Climate Action Plan, which is expected to be considered later this year. In the course of considering Reach Codes over the last year, the City has evaluated whether certain types of new construction should be exempt from these codes, as described further in the report. The proposed Reach Codes include eight exceptions recommended by staff out of a list of eleven exceptions originally considered.

The City's GHG Inventory, annually conducted from regional and state provided data, notes that electricity and natural gas usage in Redwood City buildings accounts for 45% of the GHGs generated in the city. Additionally, the GHG Inventory shows:

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- Natural gas accounts for approximately 4% of total energy consumption in buildings, and generates approximately 68% of emissions from buildings.
- Electricity accounts for approximately 96% of total energy consumption in buildings, and generates 32% of GHGs from buildings

Although the large difference in emissions between natural gas and electric sources is due in part to older and less energy efficient natural gas appliances, electric appliances can be significantly more energy efficient and generate lower emissions compared to natural gas appliances.

The City Council and the Board of Building Review (BOBR) have reviewed proposed Reach Codes as detailed below:

- October 28, 2019 – City Council considered introducing ordinances amending the California Building Codes and Fire Codes, and received a presentation on mixed-fuel reach codes. Mixed-fuel reach codes encouraged all-electric construction, but still allowed all buildings to use natural gas and electricity as energy sources. However, the City Council instead directed staff to develop alternative All-Electric Reach Codes for City Council consideration.
- December 9, 2019 – BOBR discussed Reach Codes, with certain exceptions. The BOBR recommended minor changes. Attendees included residents, contractors, Peninsula Clean Energy (PCE), and local developers. PCE is a not-for-profit alternative clean energy provider and has assisted staff with developing the City’s Reach Codes. Public comment indicated general support for requiring electrification, with some members of the public expressing concern about the feasibility and costs of implementation in high-rise residential buildings and hospitals. BOBR members asked for more clarity on the cost-effectiveness of all-electric central water heating in high-rise multifamily buildings, which is further detailed under the Analysis. Since the December 9, 2019 meeting, there has been a cost-effectiveness study for four to seven story residential buildings and a cost-effectiveness study for residential buildings eight stories and above is underway.
- January 13, 2020 – Staff presented draft Reach Codes with exceptions, further described under Analysis<sup>1</sup>. City Council reviewed the Reach Codes and then directed staff to conduct additional community and stakeholder outreach. Council also discussed whether Reach Codes could be reviewed annually or phased in. Since state mandated building code updates occur in three-year cycles, staff recommend adopting Reach Codes without phasing since the state is likely to develop stricter energy efficiency standards consistent with California Energy Commission’s (CEC) goal of 100% clean energy. Additionally, staff anticipates providing an update on Reach Codes implementation during the next adoption of the California Building Codes in late 2022.
- August 20, 2020 – Staff presented the results of the additional community and stakeholder outreach to the Environmental Initiatives Ad Hoc Committee. As will be discussed further, staff developed two new possible exceptions for City Council consideration based on community feedback. The two new exceptions are for affordable housing and accessory dwelling units (ADUs). The Committee reviewed the proposed exceptions from the January 13, 2020 meeting and the two new exceptions that arose out of community feedback.

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<sup>1</sup> For more information on All-Electric Reach Codes and proposed exceptions, please visit [www.redwoodcity.org/reachcodes](http://www.redwoodcity.org/reachcodes). An initial analysis of proposed exceptions is included in the January 13, 2020 staff report available on the Reach Codes webpage.

## ANALYSIS

Staff have evaluated Reach Codes within the context of sustainability goals and constructability. Additionally, staff worked to develop Reach Codes appropriate for Redwood City. Over the past year, staff have navigated through cost, cost effectiveness, and energy efficiency considerations. As will be discussed below, cost and cost effectiveness, while related, are different. In terms of adoption of Reach Codes, the state only requires that the energy efficiency measure, or Reach Code requirement, be cost effective and not result in an increase in energy usage.

Reach Codes go beyond the goal of energy efficiency and seek to reduce GHGs by eliminating reliance on natural gas in newly constructed buildings. This is done by requiring all new construction:

- 1) Be built to utilize only electric appliances.
- 2) Include some level of electrical vehicle charging capability.

In certain instances, the availability of electric appliances is limited or implementation of all-electric infrastructure may be difficult. Examples include commercial restaurant equipment or central heat pump water heating for affordable housing developments. The staff recommended Reach Codes include possible exceptions to allow for mixed-fuel buildings in cases where the lack of available equipment or site infeasibility issues could make all-electric construction prohibitive. Staff reviewed the number of new construction applications over the past three years and found that up to 58 new buildings could be made all-electric annually. On average, the City receives 58 new building applications, including 37 applications for ADUs each year.

At the January 13, 2020 meeting City Council reviewed nine exceptions to the Reach Codes. After conducting more outreach, staff developed two additional exceptions, for a total of 11, based on public feedback. The two new exceptions included an exception for 100% affordable housing developments and another for ADU's. After evaluating 11 Reach Code exceptions, staff now recommends eight exceptions, which will be further detailed under Reach Code Exceptions – Staff Recommendations.

### Cost and Cost Effectiveness

In order to adopt the local code amendments, the additional requirements must be cost effective pursuant to Public Resources Code 25402. There is not a requirement that the upfront costs of an energy efficiency measure be less costly than the alternative. The CEC considers an energy efficiency measure cost effective if the total utility savings over the estimated useful life of the energy efficiency measure exceeds the difference of costs between the measure and the base line measure of mixed-fuel energy usage. For example, requiring all-electric space conditioning in single-family homes would be considered cost effective, if the total utility savings over 30 years exceeds the additional cost of the all-electric equipment when compared to the cost of a natural gas powered space conditioner.

In developing the Reach Codes, staff relied on publically accessible cost effectiveness studies. The studies were prepared for the Southern California Edison Company in coordination with Pacific Gas & Electric and other California based utilities for utility users throughout the state. These studies have been cited by other local cities adopting Reach Codes. In addition to these studies, staff worked with PCE, members of the Statewide Codes & Standards Program, and the Bay Area Regional Energy Network (BayREN) to interpret the study results. The Statewide Codes & Standards Program is funded by California utilities such as Pacific Gas & Electric and Southern California Edison to develop recommendations for energy standards

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and reach codes. BayREN is a collaboration between nine Bay Area counties whose work includes increasing energy efficiency in buildings.

For future and ongoing technical support, PCE has collaborated with TRC, a construction and engineering firm, to provide free technical assistance to design professionals, architects, contractors, and other consultants to incorporate Reach Code requirements in their projects. This assistance includes online and in-person discussions on building electrification. Interested parties may sign up for assistance at [www.allelectricdesign.org](http://www.allelectricdesign.org). TRC will help developers explore building electrification and resolve complex design challenges.

### Community Outreach

In addition to the City Council and BOBR meetings discussing Reach Codes, PCE hosted workshops and stakeholder meetings throughout San Mateo County, including in Redwood City. During the January 13, 2020 meeting, the City Council directed staff to conduct further community and stakeholder outreach regarding Reach Codes exceptions.

#### *Community & Stakeholder Meetings*

Since the January 13, 2020 meeting, staff has met with the Redwood City Chamber of Commerce, the Neighborhood Association Leadership Council, created a website, published a community survey, and issued social media posts to seek additional feedback. Additionally, the City also received stakeholder letters from the Chamber of Commerce, Fossil Free Mid-Peninsula, Menlo Spark, and Peninsula Builders Exchange. The following discussion summarizes the community engagement efforts:

- February 4, 2020 – Staff presented to the Chamber of Commerce’s Economic Development Committee. Attendees were generally supportive, but overall desired certainty to know which requirements would apply. Some attendees noted difficulty of certain requirements for high-rise residential construction or office buildings greater than 52,000 square feet due to the lack of a comprehensive cost effectiveness study establishing cost effectiveness for central heat pump water heating. Increased equipment and design costs was another concern.
- February 27, 2020 – Staff presented to the Neighborhood Association Leadership. Attendees were generally supportive but expressed interest in an ADU exception.

#### *Community & Stakeholder Survey*

Staff developed and posted a Reach Codes survey on the City website to seek feedback on the Reach Codes and possible exceptions. PCE and a representative with the Statewide Codes & Standards Program assisted in survey development. Between June 24 and July 31, 2020, 210 people responded. The respondents included Redwood City residents, business owners, individuals working in Redwood City, developers, licensed contractors, environmental advocates, and individuals interested in becoming Redwood City residents or business owners. Table 1, shows the proportion of residents to non-residents:

**Table 1**

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Survey Respondents	Survey Respondents	Percentage
Redwood City Residents	134	64%
Non-Redwood City Residents	76	36%

The survey asked respondents to provide a weighted rank identifying what was important to consider when adopting Reach Codes (Table 2). The most highly weighted priority in adopting Reach Codes is to reduce GHGs.

**Table 2**

Ranked Priorities	Ranking
Importance of Reducing Greenhouse Gas Emissions	1
Importance of Preserving/Incentivizing Affordable Housing	2
Importance of Availability of Cost Competitive Equipment	3
Importance of Cost of Construction	4
Importance of Cost of Changing Business Practices	5

While reducing GHGs ranked as the most important consideration, as Table 3 shows, the respondents seemed to rely on a wider range of considerations in deciding which exceptions should be allowed. For example, respondents appeared to generally favor exceptions if Reach Codes requirements could impact certain business' fiscal operations. Additionally, Table 3 shows respondents were generally not in favor of exempting affordable housing developments, even though preserving and incentivizing affordable housing was the second ranked priority, as shown in Table 2.

**Table 3**

Survey Results on Possible Reach Code Exceptions						
#	Supported Exceptions	Percent Approve		#	Non-Supported Exceptions	Percent Reject
1	Space Conditioning/Water Heating - Hospitals	57%		5	Projects with Planning Entitlements	60%
2	Space Conditioning/Water Heating - Scientific Laboratory Areas	54%		6	Affordable Housing Developments	51%
3	Restaurants/Kitchens - Non-residential Buildings	57%		11	Cooking Appliances/Fireplaces - Residential Buildings	54%

Survey Results on Possible Reach Code Exceptions						
#	Supported Exceptions	Percent Approve		#	Non-Supported Exceptions	Percent Reject
4	F or H Occupancies or Scientific Laboratory Areas <sup>2</sup>	66%		10	Water Heating - High-rise Residential Buildings	67%
8	Technical Infeasibility	66%		7	ADUs	69%
9	Emergency Centers	64%				

Following the community outreach, staff analyzed the number of new construction buildings permitted from 2017 to 2019. The data provided insight on the number of buildings that would likely be subject to the Reach Codes annually. Redwood City received an average of 58 building applications annually for the last three years.

**Reach Codes Exceptions – Staff Recommendations**

Below are eleven Reach Code exceptions evaluated by staff. The following section is separated into two categories: exceptions staff recommends (8 exceptions) and exceptions staff does not recommend (3 exceptions).

Staff has examined cities that have adopted similar exceptions. During the review, staff noted cities’ reach codes were not always equivalent. For example, in some cases, cities adopted all-electric and mixed-fuel reach codes which establish requirements if a developer chose one form of construction (all-electric or mixed-fuel) over another. In these instances, staff included these as exceptions to an all-electric reach code requirement in addition to examples of explicit exceptions. Table 4 shows which cities have adopted all-electric reach codes only or all-electric and mixed-fuel reach codes. The cities that have adopted all-electric reach codes may also have explicit exceptions.

**Update: Staff is in the process of revising Table 4 and the specific community examples for each proposed exception and will present updated comparable community data at the September 14, 2020 City Council meeting. The specific staff recommendations will remain unchanged.**

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<sup>2</sup> An F occupancy is a building or structure that has a factory oriented building use such as assembling, fabricating, manufacturing, repair or packaging. An H occupancy is a building or structure that generates or stores hazardous materials. Scientific Laboratory Areas are rooms or areas where research or experiments are conducted.

Table 4

Status	All-Electric Only		Status	All-Electric and Mixed-Fuel
Approved	Burlingame		Approved	Berkeley <sup>3</sup>
Evaluating	Campbell		Adopted	Hayward
Approved	Menlo Park		Adopted	Los Gatos
Approved	Morgan Hill		Adopted	Palo Alto
Approved	Mountain View		Adopted	San Jose
Approved	Pacifica		Adopted	San Mateo
Approved	San Mateo County			
Approved	Santa Cruz			

*Exceptions - Recommended by Staff*

**Exception 1** – Non-Residential Buildings that will be constructed to Office of Statewide Health Planning and Development (OSHPD) 1 Hospital Standards or OSHPD 3 Clinic Standards, may contain non-electric space-conditioning, water-heating systems, and process load systems.

- The largest use of energy in buildings is from space conditioning; an alternative to gas-powered space conditioning is the use of electric heat pumps. The concern for using all-electric space conditioning equipment relates to whether the systems can maintain constant temperatures necessary for experiments and/or health care.
- Burlingame, Campbell, Los Gatos, Palo Alto, San Jose, and San Mateo have adopted similar exceptions.
- Staff recommends adopting Exception 1 to enable health facilities to use natural gas for space conditioning and to heat greater than normal amounts of water. Hospitals may have unique requirements when compared to other non-residential uses such as retail or office space. Natural gas may be necessary to provide a high standard of care and maintain a safe environment.

**Exception 2** – Buildings containing a Scientific Laboratory Area may contain non-electric space-conditioning and water-heating systems.

- This exception is included for businesses that rely on consistent temperatures and/or high temperature water for sterilization through use of natural gas appliances.
- A total of 23 laboratory building permits were issued between 2017 and 2019, however, these were alteration permits – not for new construction.
- Brisbane, Burlingame, Campbell, Los Gatos, Mountain View Menlo Park, Palo Alto, San Jose, and San Mateo have adopted similar exceptions.
- Staff recommends adopting Exception 2 to enable medical and/or biotech companies to conduct

<sup>3</sup> While the City of Berkeley has adopted a gas ban on infrastructure, it has also adopted mixed-fuel reach codes. How the two regulations may be implemented is not yet clear to staff.

experiments or continue processes in controlled environments where gas may be necessary for space conditioning and/or water heating. Due to the sensitive nature of experiments, maintenance of test subjects, and requirements for sterilization of testing equipment, gas for space conditioning and water heating is a necessity for Scientific Laboratory Areas as electric equivalents are not able to keep up with the high demand.

Note:

Staff also propose Exception 4, discussed below, which takes into account how gas pipes may be necessary for specific business processes. Exception 4 is different than Exception 2 in that Exception 2 considers the specific appliances necessary for maintaining a controlled environment or conditions. Exception 4 focuses on the need for gas piping in manufacturing, repair, or fabrication.

**Exception 3** – Non-Residential Buildings containing a kitchen may contain non-electric cooking appliances.

- This exception would include buildings containing a restaurant or catering kitchen serving the public or employees.
- Staff received feedback from restaurant industry professionals indicating comparable all-electric equipment that can produce the same heat as gas-powered equipment is limited. Additionally, restaurateurs and chefs have expressed concern with higher electricity costs of all-electric kitchens. This industry also has been significantly impacted by Covid-19 economic impacts.
- Brisbane, Burlingame, Campbell, Cupertino, Hayward, Los Gatos, Menlo Park, Mountain View, Pacifica, Palo Alto, San Jose, San Mateo, Santa Cruz, and Saratoga have similar exceptions for commercial kitchens.
- Staff recommends adopting Exception 3 since certain natural gas cooking appliances can be central to non-residential kitchens. Additionally, electric appliances on the market are not yet readily available or equivalent which could place a burden on new restaurants or kitchens.

**Exception 4** – Non-residential buildings containing F and H occupancies, as defined in the California Building Code, or Scientific Laboratory Areas may have gas piping installed for use of natural gas in manufacturing, research, and development.

- Certain manufacturing processes require natural gas for products such as fertilizers. Research and medical labs may also have highly specialized applications such as high-volume sterilization and other needs.
- An F occupancy is a building or structure that has a factory oriented building use such as assembling, fabricating, manufacturing, repair or packaging. An H occupancy is a building or structure that generates or stores hazardous materials.
- Recent Redwood City projects with F or H occupancies include Sims Metal Management and Carbon, Inc. in Redwood City.
- Campbell, Cupertino, Los Gatos, Mountain View, Pacifica, Palo Alto, San Jose, and San Mateo County have similar exceptions for F and H occupancies.
- Staff recommends adopting Exception 4 for buildings that require gas piping in their processes; factories and hazardous materials facilities use highly specialized equipment to operate or manufacture goods. This equipment has been designed and installed with natural gas as the primary fuel source.

**Exception 5** – All-Electric Building requirements shall not apply to projects with planning entitlements approved by the City prior to the effective date of this ordinance.

- An entitled project is one that has received its discretionary land use permit but not its building permit.

- Burlingame, Campbell, Palo Alto, and San Jose included a similar exception.
- Staff recommends adopting Exception 5 as the Planning entitlement process can take multiple years, particularly for large-scale projects that also require CEQA review. Due to significant time and monetary investment necessary to obtain planning entitlements, imposing additional building requirements after initial project design introduces additional project costs.

Note:

Projects entitled after Reach Codes adoption would be subject to all-electric requirements so the window for this exception would be relatively small.

**Exception 6** – All-Electric building requirements shall not apply to new residential structures that designate 100% of the dwelling units to be affordable, excluding any onsite manager unit(s), for persons earning 80% or less of the Area Median Income (AMI), as evidenced by instruments recorded against the property that restrict the units as affordable for a period of at least 55 years.

- Affordable housing developments that are seeking tax credits and potentially other funding source are subject to a maximum allowable cost per unit. The cost of constructing certain Reach Codes requirements could potentially make projects ineligible to receive tax credits and other funding, in turn making the project financially infeasible.
- The City's Affordable Housing Ordinance requires ownership developments to provide 15% of total units as affordable units for moderate income households (120% of AMI). For rental developments, 20% of total units must be provided as affordable - 5% for very-low income (50% of AMI), 5% for low income (80% of AMI) and 10% for moderate income (120% of AMI). However, developers can also propose alternative compliance options which have included developing 100% affordable, standalone buildings in order to meet the Affordable Housing Ordinance requirements. By establishing the exception for 100% affordable projects that provide units at 80% AMI or below, this would encourage developers to exceed the City's Affordable Housing Ordinance requirements and provide units at deeper affordability levels.
- Having an exception for affordable housing may not preclude all-electric affordable housing developments as affordable housing developers have expressed support for all-electric construction where feasible. Affordable housing developers would be encouraged to meet with TRC, or similar design consultants, to address building electrification and design/cost issues.
- Exception 6 would be unique to Redwood City. Other cities, such as San Jose, have an exception for buildings containing low or very low income units, but the exception specifically applies to relaxed EV charging requirements.
- Staff recommends adopting Exception 6. The Bay Area continues to face an ever-worsening affordable housing crisis. Creating housing, particularly affordable housing, is the City Council's top strategic priority. This exception would help ensure that affordable housing projects supporting the City's lowest income residents are not discouraged. While not a guarantee, affordable housing developers have expressed interest in constructing all-electric buildings when possible.

**Exception 7** – All-electric building requirements would not apply to Accessory Dwelling Units (ADUs) or Junior Accessory Dwelling Units (JADUs) as long as they are created through the conversion of existing space. The requirements will apply to ADUs and JADUs that are created through new construction.

- An ADU/JADU is typically a second smaller residential dwelling unit that is constructed on the same property as a primary larger residence.
- Requiring all-electric ADUs/JADUs within an existing space may require the existing residential electrical service to be upgraded and is estimated to cost approximately \$3,000. In addition, all-

electric appliances would need to be installed. For context, the cost to construct an ADU in Redwood City ranges between \$40,000 and \$300,000.

- Over the past few years, the state has sought to reduce barriers and streamline development of ADUs/JADUs to help increase the housing supply. Additionally, state regulations governing ADUs and JADUs continue to evolve and it is unclear if the state may make revisions to the Energy Code relaxing certain requirements. For example, prior to the Covid-19 pandemic, the Assembly had considered exempting ADUs/JADUs from the Energy Code requirement to install solar energy panels.
- Campbell, Cupertino, Hayward, Pacifica, Palo Alto, and Santa Cruz have adopted similar exceptions.
- Resources are readily available for applicants interested in all-electric construction. In addition to PCE's free technical assistance, the Housing Endowment and Regional Trust of San Mateo County has created the Green and Livable Accessory Dwelling Unit Resource (GLADUR). GLADUR offers free designs for green all-electric ADU designs. Information on GLADUR's free designs is available at [www.heartofsmcadu.org](http://www.heartofsmcadu.org)
- Staff recommends adopting Exception 7 to encourage the construction of ADUs/JADUs towards relieving the housing shortage. Though all-electric ADUs/JADUs may not be a requirement there are significant resources, such as free designs or technical assistance, supporting all-electric construction. Staff believe these resources will help incentivize construction of all-electric ADUs/JADUs.

**Exception 8** –If an applicant maintains that circumstances exist that make it infeasible for their building to be an all-electric building, the applicant may request an exception in writing. In requesting an exception, the burden is on the applicant to identify why the requirements for an all-electric building are infeasible and must submit any information, as requested by the Building Official or their designee, substantiating the infeasibility. All costs associated with the City's review of the infeasibility request will be charged to the applicant. The final determination of infeasibility shall be made by the Building Official or their Designee. If the exception is granted, the Building Official or their designee shall document their findings in the files of the Building Division.

- An all-electric requirement may be considered infeasible if the energy efficiency measure is not physically possible due to specific site constraints.
- Should this exception be adopted, staff will develop a process whereby infeasibility exceptions are evaluated by a qualified third party reviewer, and then submitted to the Building Official or their designee for final determination.
- Berkeley, Burlingame, Cupertino, Hayward, Los Gatos, and Morgan Hill have this exception. Mountain View has a similar exception allowed through their existing Building Codes.
- Staff recommends Exception 8 if there are physical constraints of the building site making the project infeasible. In certain cases, energy efficiency measures take up significant space due to the need for extra electrical transformers, water storage or other equipment. This exception would allow for natural gas alternatives.

*Exceptions - Not Recommended by Staff*

Though the Reach Code requirements may not be preferred by property owners for the following construction situations, staff found that there was available and comparable equipment, the main purpose of a building would not be impacted, or the energy efficiency measure was cost-effective as defined by the statewide cost-effectiveness studies. Additionally, in consulting PCE and BayREN, staff felt comfortable that design strategies and technologies would improve over time.

**Exception 9** – Emergency Centers are not required to be All-Electric Buildings.

- Gas may serve as a back-up energy source to power certain appliances in the event of emergencies. This is beneficial to emergency centers in the event of power failure during an emergency. Emergency centers are buildings or structures used in the case of natural disaster or other emergencies.
- Burlingame, Campbell, Los Gatos, Menlo Park, Pacifica, San Mateo, Santa Cruz, and Saratoga have adopted this exception.
- Staff does not recommend adopting Exception 9. There are alternative backup energy sources such as solar panels and battery storage that could assist in providing energy. Additionally, the Reach Codes do not prohibit utilization of exterior gas generators to provide backup energy.

**Exception 10** – High-Rise Residential Buildings may contain non-electric water-heating systems.

- Staff received feedback from contractors and designers regarding the difficulty of designing and constructing an all-electric central water heating system. They indicate natural gas powered systems are preferred as the systems take up less space, are easier to maintain, and have more reliable backup mechanisms.
- Hayward, Los Gatos, San Jose, and San Mateo have exempted electric water-heating systems as their Reach Codes allow for mixed-fuel construction in high-rise residential buildings.
- Staff does not recommend adopting Exception 10. Much of the concern for requiring all-electric water heating in high-rise residential buildings is due to central heat pump water heating and the cost-effectiveness study having only evaluated high-rise residential buildings of four to seven stories. The concern is for high-rise buildings eight stories and above. Central heat pump water heating was initially found to be not cost effective due to the energy required for the pump system and the cost of the system evaluated. While this is true, the Statewide CASE Team, the body responsible for developing recommendations on energy standards to the CEC, is currently developing a cost-effectiveness study of central heat pump water heating systems for residential buildings eight stories and above which will be released later this year. This study will also evaluate other central heat pump water systems which are less expensive.
- There is also another all-electric alternative which was found to be cost effective: clustered water heating. Clustered water heating is a system of multiple water heaters with each water heater serving a certain number of units. This was evaluated for buildings four to seven stories, but can also be applied to buildings eight stories and above. This can be a possible alternative since it does not have the same issues as central heat pump water systems.
- Of Redwood City's current residential developments under review, approved, or under construction, only one project is eight stories (Greystar IV), though there are other proposed projects that could meet or exceed eight stories. It is anticipated though that the all-electric requirement for water heating will have minimal impact on future high-rise residential multifamily buildings.

**Exception 11** – Residential Buildings may contain non-electric fireplaces and cooking appliances, including but not limited to stoves, ovens, cooking ranges, and broilers.

- This exception would apply to new single-family homes, duplexes, and all multi-family units. However, single family homes and residential structures under four stories will be required to be electric capable, which means the location of the gas appliance must also be prewired for future electric appliance installation.
- Campbell, Hayward, Menlo Park, Pacifica, Palo Alto, and Saratoga have adopted similar exceptions for both non-electric cooking appliances and fireplaces.

- Staff does not recommend adopting Exception 11 since comparable all-electric home appliances are readily available. Additionally, it is not anticipated that this requirement would place an undue burden on new market-rate residential homeowners.

### Ongoing Legal Implications

Staff is aware of at least three lawsuits that have been filed against two local agencies due to Reach Codes and other similar energy regulations.

- The Town of Windsor adopted Reach Codes in October of 2019 that require all newly constructed low-rise residential buildings be all-electric. The lawsuits claim Windsor violated the California Environmental Quality Act by finding the ordinance exempt. The lawsuits further claim Windsor violated the California Energy Code's requirement that locally adopted energy standards be supported by an analysis that the standards will be cost-effective by relying on a statewide cost-effectiveness study instead of a more local study regarding electricity rates in the Bay Area.
- The City of Berkeley adopted a ban on natural gas infrastructure in certain newly constructed buildings in July 2019. Berkeley did so under its constitutional police powers, rather than as Reach Codes amendments to the California Energy Code. The California Restaurant Association has filed a lawsuit in U.S. District Court, Northern District, alleging the ban violates state and federal law because the ordinance attempts to regulate energy efficiency and building standards that are already regulated by the state and federal governments. The lawsuit also alleges that Berkeley could not use its police power to regulate energy standards. Berkeley also adopted Reach Codes in December of 2019, but they are mixed-fuel Reach Codes and are not being challenged by the lawsuit.

These cases are in their early stages, and there has been no substantial progress on them since staff last presented the Reach Codes to Council for consideration. Staff will continue to monitor these cases as they progress.

### Next Steps

Should Reach Codes be adopted pursuant to a second reading of the ordinance, staff will submit the approved ordinance to the California Energy Commission (CEC) for approval. The CEC requires a period up to 60 days for public comment prior to issuing approval of the City's Reach Code. After the CEC's approval, staff will file the Reach Codes with the Building Standards Commission.

### FISCAL IMPACT

Staff does not anticipate a significant fiscal impact to the City associated with the adoption of the Reach Codes. Reach Codes will be administered by the Building Division and will require additional staff training and development of communication materials, both of which can likely be accommodated within the Division's existing budget. All staff will need additional training to understand how the new requirements apply to building permit plan submittal, plan review and inspections. The Reach Codes as proposed will not add any additional staffing requirement. The recommended exceptions are intended to provide both

clarity to property owners and to limit staff time required to review plans for compliance. Staff considered, but does not recommend, *only* an infeasibility exception instead of the specified exceptions as this approach would likely increase the situations requiring staff review and therefore increase workload without any offsetting resources.

#### **ENVIRONMENTAL REVIEW**

This activity is not a project under California Environmental Quality Act (CEQA) as defined in CEQA Guidelines, section 15378, because it has no potential for resulting in either a direct or reasonably foreseeable indirect physical change in the environment.

#### **PUBLIC NOTICE**

Public notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

#### **ALTERNATIVES**

1. Adopt All-Electric Reach Codes with no exceptions.
2. Adopt All-Electric Reach Codes including certain exceptions as directed by Council.

#### **ATTACHMENTS**

Attachment A – Draft ordinance

Attachment B – Statewide Reach Code Residential Cost Effectiveness Study

Attachment C – Statewide Reach Code Nonresidential Cost Effectiveness Study

Attachment D – PG&E Letter

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