



CITY OF HAYWARD

Hayward City Hall
777 B Street
Hayward, CA 94541
www.Hayward-CA.gov

File #: ACT 19-191

DATE: October 30, 2019

TO: Council Sustainability Committee

FROM: Director of Public Works

SUBJECT

Revised Draft Electrification Reach Codes for 2019 California Energy Code and California Green Building Standards Code

RECOMMENDATION

That the Committee reviews and comments on this report and recommends to Council adoption of the draft Reach Codes.

SUMMARY

This report presents revised versions of the draft ordinances that were presented to the Committee on September 17, 2019 to address the electrification of buildings and vehicles in new construction. The proposed Reach Codes would modify Part 6 (California Energy Code) to require or encourage all-electric construction and Part 11 (California Green Building Standards Code, aka CALGreen) of the California Building Code (Title 24 of the California Code of Regulations) to increase the requirements for electric vehicle (EV) charging equipment.

The draft ordinances have been revised to remove mixed fuel as an option for new low-rise residential (single-family and multi-family up to three stories) buildings as well as a few other minor changes. The report also presents requirements for existing buildings which were considered but are not recommended.

ATTACHMENTS

Attachment I	Staff Report
Attachment II	Draft Reach Code
Attachment III	Draft EV-Reach Code
Attachment IV	Comments Received

File #: ACT 19-191



DATE: October 30, 2019

TO: Council Sustainability Committee

FROM: Director of Public Works

SUBJECT: Revised Draft Electrification Reach Codes for 2019 California Energy Code and California Green Building Standards Code

RECOMMENDATION

That the Committee reviews and comments on this report and recommends to Council adoption of the draft Reach Codes.

SUMMARY

This report presents revised versions of the draft ordinances that were presented to the Committee on September 17, 2019 to address the electrification of buildings and vehicles in new construction. The proposed Reach Codes would modify Part 6 (California Energy Code) to require or encourage all-electric construction and Part 11 (California Green Building Standards Code, aka CALGreen) of the California Building Code (Title 24 of the California Code of Regulations) to increase the requirements for electric vehicle (EV) charging equipment.

The draft ordinances have been revised to remove mixed fuel as an option for new low-rise residential (single-family and multi-family up to three stories) buildings as well as a few other minor changes. The report also presents requirements for existing buildings which were considered but are not recommended.

BACKGROUND

The Committee has considered several reports on building and vehicle electrification. All reports are available on the City's website¹.

On July 16, 2018, the Committee considered a report titled **Building Electrification & Reducing Natural Gas Use**. The Committee recommended supporting and encouraging East Bay Community Energy (EBCE) to address electrification of existing buildings. The Committee also expressed support for phasing out the use of natural gas in new construction and, eventually, no longer permitting new natural gas lines for new construction. The Committee noted that heat pump water heaters in new construction may be a good place to

¹ <https://www.hayward-ca.gov/reach-code>

start and that any new regulations should come with sufficient advance notice to developers and builders.

On January 14, 2019, the Committee considered a report titled *Natural Gas Use in New Construction*, which described the current regional effort to develop a reach code that would encourage all-electric construction. The Committee supported the idea of a reach code and asked staff to engage with local builders and developers and noted that a reach code would be most effective if all cities in the area would adopt the same requirements.

On May 13, 2019, the Committee considered a report titled *Update on Possible Reach Code for Building and Vehicle Electrification* which included a summary of the cost-effectiveness studies prepared by the California Energy Codes and Standards program. The Committee indicated support for not allowing natural gas in new single-family and low-rise (up to three stories) multi-family homes. For non-residential, the Committee prefers that buildings be all-electric, but mixed fuel buildings should be allowed where flexibility is needed for certain building types. The Committee also supported requiring electric vehicle (EV) charging infrastructure in new construction.

On September 17, 2019, the Committee considered a report titled *Draft Electrification Reach Codes for 2019 California Energy Code and California Green Building Standards Code*. The Committee supported the proposed reach codes noting that they are necessary to help meet the State's goal of carbon neutrality by 2045. The Committee was in favor of an electric-only requirement for residential construction and asked if the code would allow for variances. Staff indicated that a draft code for existing buildings may be forthcoming and that staff would continue to collect feedback from stakeholders.

DISCUSSION

Attached to this report are revised drafts of the reach codes for newly constructed buildings with changes made in response to comments from the Committee as well as stakeholder input.

Reach Code for Energy Code – The full text of the revised staff recommended amendments to the Energy Code (California Building Code, Title 24, Part 6) is included as Attachment II. Changes made to the draft reach code are:

1. Low-Rise Residential (Single-family and Multi-family Buildings up to 3 Stories)
 - The draft code has been revised to require all new low-rise residential buildings to be all-electric. (The option to design and build a mixed-fuel building has been removed.)
2. Non-residential (Includes office, retail, hotel/motel, and high-rise residential)
 - The draft code still favors all-electric construction and includes extra requirements for a mixed-fuel building.

- In response to a concern raised by a local industrial property owner, the requirement to install solar on a mixed-fuel building has been revised. In cases where installation of solar on the entire solar zone may exceed the building's needs, the PV system size may be reduced if the system is sized to generate annual electrical output equal to the building's modelled annual electric load.

In response to the question from the Committee during the September 17 meeting regarding a possible variance provision in the code, building codes and reach codes are not well suited to allowing for discretionary review. Exceptions are included in the codes for specific situations, but there are no exceptions proposed that would allow for a mix-fuel low-rise residential building.

Reach Code for CalGreen – The full text of the recommended amendments to CALGreen (California Building Code, Title 24, Part 11) is included as Attachment III. Changes made to the draft reach code are:

1. Changed the definition of “EV Capable” to require a minimum of 240 volts and 40 amperes rather than 120-volt/20-amp service so that all EV Capable spaces will be for a Level 2 EV charger rather than a Level 1.
2. The previous version specified a minimum of Level 2 for EV Capable and EV Ready parking spaces and that has not changed. Staff also made minor clean-up edits to remove references to Level 1 requirements, as such chargers are impractical for all electric vehicles.

Existing Buildings – While it will be necessary to address Hayward's stock of existing buildings in order to meet our long term GHG reduction goals, staff is not recommending a reach code for existing buildings at this time. While some electrification upgrades are cost-effective over the life of the project, the upfront cost associated with the improvements would be burdensome – especially on lower income households. EBCE analyzed potential requirements for electric heat pump equipment for heat pump water heating and space heating and recommended the following:

Electric Panel – For a panel replacement in a single-family home, the new panel must have a minimum 200-amp service with additional dedicated breakers to accommodate existing and future common electric loads. A 240-volt breaker shall be allocated for each of the following loads: heat pump clothes dryer, electric vehicle (EV), heat pump space heater, heat pump water heater, electric induction range and solar PV system.

Space Heating – For replacing an existing air conditioner or when installing a new air conditioner, a heat pump shall be required to be installed. Heat pump installation is not required if a furnace is being replaced when there is an existing air conditioner. (Offices would require a minimum 9.0 kW PV system to make the project cost-effective, or cities may choose to exempt offices.)

EBCE's analysis shows that to replace a gas water heater with a heat pump water heater, the project would require a solar PV installation to be cost effective. As heat pump water heaters become more common and cost effective, EBCE will re-evaluate this as an option for an existing building reach code. It is possible that electrification of existing buildings can be addressed in the next code cycle in three years.

Other Cities – The cities of San Jose, San Mateo, Menlo Park and some cities outside of the Bay Area have adopted reach codes that, pending approval by the CEC, will be effective January 1, 2020. The cities of Fremont, Oakland, Berkeley, and Albany are also developing reach codes. Staff's presentation for this report will include an update regarding the timing and code requirements being considered by other cities in Alameda County.

ECONOMIC IMPACT

A reach code for the Energy Code must be approved by the CEC and will only be approved if the code requirements are found to be cost-effective. The cost-effectiveness studies prepared by the California Energy Codes and Standards program found that all-electric construction is cost effective for new construction for several building prototypes including: single-family home, low-rise multi-family building, medium office, and medium retail. Most of the savings associated with all-electric construction comes from the avoided cost of installing gas infrastructure (piping). The complete cost effectiveness studies are available on the California Energy Codes and Standards program website² and are summarized in the September 17, 2019 report to the Committee.

The reach code for the California Green Building Standards Code related to EV charging infrastructure is not subject to CEC approval nor the state's cost-effectiveness criteria. Installation of EV charging equipment will increase the cost of construction, however, investing in EV charging infrastructure during new construction is estimated to save 40% to 400% compared to the cost of a retrofit.

FISCAL IMPACT

The proposed energy performance amendments parallel the structure and terms of the State code and as such any incremental plan check and inspection time should be minimal. The electric readiness provisions will require plan checkers and inspectors to apply additional check lists to mixed-fuel buildings. These items are not expected to require very much additional staff time. Any incremental costs of administering these requirements will be covered through existing permit fees.

East Bay Community Energy (EBCE) is assisting its member jurisdictions with community outreach and development of local ordinances. EBCE will provide a grant of \$10,000 to each city that presents and ordinance to its council as compensation for the staff time spent on the effort. Before a reach code is adopted, staff will evaluate the potential impacts that implementation would have on the General Fund.

² <https://localenergycodes.com/content/2019-local-energy-ordinances/>

STRATEGIC INITIATIVES

This agenda item does not directly relate to one of Council's three Strategic Initiatives.

SUSTAINABILITY FEATURES

Meeting the City's long-term GHG reduction goal of 82.5% by 2050 will require that the use of natural gas be significantly curtailed throughout the community. Eliminating the use of natural gas in new construction would be a step toward meeting this goal. Furthermore, a reach code that encourages all-electric construction is consistent with the following General Plan policy:

Natural Resources Policy 2.6: Greenhouse Gas Reduction in New Development
The City shall reduce potential greenhouse gas emissions by discouraging new development that is primarily dependent on the private automobile; promoting infill development and/or new development that is compact, mixed use, pedestrian friendly, and transit oriented; promoting energy-efficient building design and site planning; and improving the regional jobs/housing balance ratio.

PUBLIC CONTACT

Since the September 17 Committee meeting, an announcement about the draft reach codes was included in the Leaflet, which is the City's environmental newsletter distributed every other month to approximately 3,000 people. Staff communicated with one industrial property owner regarding the requirements for the installation of solar panels on mixed fuel buildings and staff received two emails from residents and a letter from the Western Propane Gas Association (see Attachment IV).

One resident disagrees with the idea of limiting natural gas plumbing in new construction. They state that the majority of California's electricity is not carbon free and that, due to the nature of the grid, Hayward is not receiving 100% carbon-free electricity. Staff acknowledges that the electricity Hayward receives through the grid includes sources that are beyond our local control, however, the state's energy mix is getting cleaner every year. The renewable portfolio standard requires that all of California's electricity come from carbon-free sources by 2045. The buildings built today will be around for 100 years or more, so new all-electric buildings will become cleaner over time and benefits from the lower emissions will continue for decades to come.

The other resident supports the efforts to reduce carbon emissions but is concerned with the safety and security of the electrical grid. While PG&E is responsible for maintaining the grid, EBCE also has a vested interest in ensuring electricity is delivered in a safe and reliable manner and is in communication with the California Public Utilities Commission to that end.

Proponents of propane gas are also against all electric buildings. The Western Propane Gas Association suggests that building electrification efforts are "misguided" and that "Propane provides affordable, clean energy for low income communities as well as a vital back-up

power...". While staff does not have data on the number of Hayward homes that use propane for uses beyond barbeques, it is typically used in rural areas where natural gas is not available. The Association also asks that we "look to the example that the City of San Luis Obispo is setting with the development of their Reach Codes...". San Luis Obispo included several exemptions in their reach code including "Gas line connections used exclusively for emergency generators." Given that propane is not widely used in Hayward's residential buildings and the recommended draft code allows for a gas connection in non-residential buildings, staff does not recommend any changes to the draft code.

Finally, a recent letter to the editor in a Bay Area newspaper argued that PG&E's Public Safety Power Shutoffs (PSPS) are reason for local governments to reconsider building electrification efforts. It is important to note that many gas appliances cannot be operated during a grid outage. For safety and performance reasons, newer furnaces and water heaters that run on natural gas also require electricity to operate. The one appliance that can be operated without electricity is a gas range if lit manually. An outdoor propane grill or cooktop for emergency use can serve a similar function. For an all-electric home to be fully prepared for a power outage, a battery backup would need to be installed.

NEXT STEPS

Upon a recommendation from the Committee, staff may present the draft reach codes to Council in October or November. Additional steps would be as follows:

November 19	Council Meeting (Public Hearing and First Reading of Ordinance)
December 3	Council Meeting (Second Reading and Adoption of Ordinance)
January 2020	Submit Reach Code to CEC for Approval
March 2020	Anticipated Effective Date for Reach Codes

The reach codes would become effective upon approval by the CEC. The CEC currently requires a 60-day public review period. Effective January 1, 2020, the review period will be only 15 days. Staff intends to submit the reach codes in January after the shorter review period is in effect.

Prepared by: Erik Pearson, Environmental Services Manager

Recommended by: Alex Ameri, Director of Public Works

Approved by:



Kelly McAdoo, City Manager

SECTION 1. Recitals. The City Council finds and determines the preceding recitals to be true and correct and an integral part of the Council's decision, and hereby adopts and incorporates them into this Ordinance.

SECTION 2. California Environmental Quality Act. This ordinance is exempt from the California Environmental Quality Act (CEQA) pursuant to Section 15308 of the CEQA Guidelines, Actions by Regulatory Agencies for the Protection of the Environment.

SECTION 3: Purpose and Intent. It is the purpose and intent of this Ordinance to expressly enact local amendments to Sections 100.0, 100.1, 140.0, 140.1 and 150.1 of the 2019 California Building Code applicable to new construction to provide standards for new buildings to improve community health and safety while reducing greenhouse gas emissions.

SECTION 4. Enactment of Local Amendments to The California Building Code, Title 24, Part 6 (Amendments to Chapter ____ of the _____ Municipal Code). The local amendments to Sections 100.0, 100.1, 140.0, 140.1 and 150.1 of the 2019 California Building Code, Title 24, Part 6, are hereby enacted. The local amendments being enacted amend _____ Municipal Code Chapter _____ to add Sections _____ through _____ as follows (additions are shown in double underline and deletions are shown as ~~strikethrough~~):

Section 100.0 is modified to add a new section (i) as follows:

(i) Energy Reach Code - Purpose and Intent.

In addition to all requirements of the California Energy Code applicable to new construction, the following shall apply:

1. New low-rise residential buildings, other than accessory dwelling units that are no greater than 400 square feet, shall be an All-Electric Building as defined in Section 100.1(b).
2. New nonresidential buildings that are designed to utilize mixed-fuel (natural gas or propane in addition to electricity) shall be required to install solar panels on the entire Solar Zone, as defined in Section 110.10, and comply with either the prescriptive requirements of Section 140.2, as amended herein, or have compliance margins, as defined in Section 140.1, that meet or exceed the Standard Design Building by the amounts below:
 - A. Office and retail occupancies: 15%
 - B. Hotel/Motel and High-Rise Residential occupancies: 10%

- C. All other occupancies in buildings with both indoor lighting and mechanical systems: 10%
- D. All other occupancies in buildings with indoor lighting or mechanical systems but not both: 10%
- 3. If a Certified Energy Analyst prepares the Certificate of Compliance, the design shall be credited with one (1) EDR point or one (1) percent of compliance margin, to the extent that the resultant energy budget is no greater than the energy budget for the Standard Building Design.

Section 100.1 (b) is modified by adding the following definitions:

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, cooking, and clothes drying appliances. An All-Electric Building may include solar thermal collectors.

CERTIFIED ENERGY ANALYST is a person registered as a Certified Energy Analyst with the California Association of Building Energy Consultants as of the date of submission of a Certificate of Compliance as required under Section 10-103.

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, cooking, and/or clothes drying appliances.

Section 150.1 (b) is modified 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 additionally reach an Energy Design Rating margin above the Standard Design in order to comply with performance standards.

Sections 150.1 (b) 1 and 2 are modified 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.

- A. An All-Electric Building or a Free Standing Accessory Dwelling Unit no greater than 400 square feet complies with the performance standards 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 Design Building.
- B. A Mixed-Fuel Building complies with the performance standards if:
- i. The Energy Efficiency Design Rating of the Proposed Building is no greater than the Energy Efficiency Design Rating for the Standard Design Building; and
 - ii. The Total Energy Design Rating for the Proposed Building is at least 10 points less than the Total Energy Design Rating for the Standard Design Building.

EXCEPTION 1 to Section 150.1(b)1.B.ii. If the Certificate of Compliance is prepared and signed by a Certified Energy Analyst and the Total Energy Design Rating of the Proposed Design is no greater than the Standard Design Building, the Total Energy Rating of the Proposed Building complies with this section if it is at least nine (9) points less than the Total Energy Design Rating for the Standard Design Building.

EXCEPTION 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.

The first paragraph of Section 150.1(c) is modified as follows:

Prescriptive Standards/Component Package. Buildings that comply with the prescriptive standards shall be designed, constructed, and equipped to meet all of the requirements for the appropriate Climate Zone shown in TABLE 150.1-A or B, as well as all of the requirements of Sections 150.1(c)15 and 16, whichever are more stringent. In TABLE 150.1-A and TABLE 150.1-B, a NA (not allowed) means that feature is not permitted in a particular Climate Zone and a NR (no requirement) means that there is no prescriptive requirement for that feature in a particular Climate Zone. Installed components shall meet the following requirements:

Nonresidential and High-Rise Residential Buildings

Mandatory Measures

SECTION 140.0(b) is modified as follows:

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

1. The entire solar zone, as specified in Section 110.10, shall have a solar PV system installed that meets the minimum qualification requirements as specified in Joint Appendix JA11, subject to the exceptions in Section 110.10.

EXCEPTION to 140.0(b)1. The PV system may be sized to cover less than the entire Solar Zone provided that the system is sized to generate annual electrical output equal to the building's modelled annual electric load.

SECTION 140.1 is modified as follows:

SECTION 140.1 – PERFORMANCE APPROACH: ENERGY BUDGETS

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

<u>Occupancy Type</u>	<u>Compliance Margins</u>
<u>Office/Retail</u>	<u>15%</u>
<u>Hotel/Motel and High-Rise Residential</u>	<u>10%</u>
<u>All other occupancies in buildings with both indoor lighting and mechanical systems</u>	<u>10%</u>
<u>All other occupancies in buildings with indoor lighting or mechanical systems but not both</u>	<u>10%</u>

- (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 to Section 140.1. For newly constructed buildings, if the Certificate of Compliance is prepared and signed by a Certified Energy Analyst and the energy budget for the Proposed Design is no greater than the Standard Design Building, the required compliance margin is reduced by 1%.

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, 25402.5, 25402.8, and 25943, Public Resources Code.

SECTION 140.2 is modified as follows:

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 remaining prescriptive requirements:

(a) Mixed-Fuel Buildings of Hotel, Motels or High-Rise Multifamily Occupancies

1. Install fenestration with a solar heat gain coefficient no less than 0.45 in both common spaces and guest rooms.
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 \geq 33,000 Btu/h.
4. Reduce the lighting power density (Watts/ft²) by ten percent (10%) from that required from Table 140.6-C.
5. In common areas, improve lighting without claiming any Power Adjustment Factor credits:
 - A. Control to daylight dimming plus off per Section 140.6(a)2.H; and
 - B. Perform Institutional Tuning per Section 140.6(a)2.J
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 Nonresidential Mixed-Fuel Buildings

1. Install fenestration with a 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 where VAV systems are installed.
4. Include economizers and staged fan control in air handlers with a mechanical cooling capacity \geq 33,000 Btu/h.
5. Reduce the 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. Perform Institutional Tuning per Section 140.6(a)2.J, and
 - B. In office spaces, control to daylight dimming plus off per Section 140.6(a)2.H, and
 - C. Install Occupant Sensing Controls in Large Open Plan Offices per Section 140.6(a)2.I.

Section 5: Violations

Violation of the requirements of this Chapter shall be considered an infraction of the _____ Municipal Code, punishable by all the sanctions prescribed in [cite local reference to infractions].

SECTION 5. Severability. The provisions of this Ordinance are severable, and if any clause, sentence, paragraph, provision, or part of this Ordinance, or the application of this Ordinance to any person, is held to be invalid or preempted by state or federal law, such holding shall not impair or invalidate the remainder of this Ordinance. If any provision of this Ordinance is held to be inapplicable, the provisions of this Ordinance shall nonetheless continue to apply with respect to all other covered development projects and applicants. It is hereby declared to be the legislative intent of the City Council that this Ordinance would have been adopted had such provisions not been included or such persons or circumstances been expressly excluded from its coverage.

SECTION 6. Effective and Operative Dates. This Ordinance shall become effective on and after its adoption by sufficient affirmative votes of the Council of the City of _____, as provided in the Charter of the City of _____, Section _____. This Ordinance shall take effect and be in full force on and after _____, 2020. The Ordinance shall not apply to building/construction related permits already issued and not yet expired.

SECTION 7. Directions to the Building Official. Upon final passage of this Ordinance, the Building Official is hereby directed to transmit this Ordinance, along with the companion

Resolution, to the State Building Standards Commission pursuant to the applicable provisions of State law.

Definitions:

EV Capable: A parking space linked to a listed electrical panel with sufficient capacity to provide at least 208/240 volts and 40 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.

SECTION 4 RESIDENTIAL MANDATORY MEASURES

4.106.4 Electric vehicle (EV) charging for new construction. New construction shall comply with Sections 4.106.4.1 and 4.106.4.2 to facilitate future installation and use of EV chargers.

Exceptions:

1. Where there is no commercial power supply.
2. Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without additional parking facilities, unless the electrical panel is upgraded, or a new panel is installed in which case only the electrical capacity requirements apply.

Electric Vehicle Infrastructure 2019 Reach Code Language
CALGreen Format

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

For each dwelling unit, install two Level 2 EV Ready Circuits .

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

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 Circuit.
2. When more than 20 multifamily dwelling units are constructed on a building site:
 - a. 75% of the dwelling units with parking space(s) shall be provided with at least one Level 2 EV Ready Circuit. Calculations for the required minimum number of Level 2 EV Ready spaces shall be rounded up to the nearest whole number.
 - b. In addition, each remaining dwelling unit with parking space(s) shall be provided with at least a Level 2 EV Capable 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. The requirements apply to multifamily buildings with parking spaces including: a) assigned or leased to individual dwelling units, and b) unassigned residential parking.

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

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

Electric Vehicle Infrastructure 2019 Reach Code Language CALGreen Format

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.

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

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

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

Electric Vehicle Infrastructure 2019 Reach Code Language CALGreen Format

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.

SECTION 5 NONRESIDENTIAL MANDATORY MEASURES

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.

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

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

Calculations for the required minimum number of spaces equipped with EVCS and EV Capable spaces shall 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 2 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 2 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.

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, 15% of the available parking spaces on site shall be equipped with Level 2 EV Ready;

Electric Vehicle Infrastructure 2019 Reach Code Language CALGreen Format

Calculations for the required minimum number of spaces equipped with Level 2 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 15 EV Ready spaces after a minimum of 15 Level 2 EV Ready spaces are installed.

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 2 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.

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:

1. The California Department of Transportation adopts and publishes the California Manual on Uniform Traffic Control Devices (California MUTCD) to provide uniform standards and specifications for all official traffic control devices in California. Zero Emission Vehicle Signs and Pavement Markings can be found in the New Policies & Directives number 13-01. www.dot.ca.gov/hq/traffops/policy/13-01.pdf.
2. See Vehicle Code Section 22511 for EV charging spaces signage in off-street parking facilities and for use of EV charging spaces.
3. The Governor's Office of Planning and Research published a Zero-Emission Vehicle Community Readiness Guidebook which provides helpful information for local governments, residents and businesses. www.opr.ca.gov/docs/ZEV_Guidebook.pdf.
4. Section 11B-812 of the 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-

Electric Vehicle Infrastructure 2019 Reach Code Language
CALGreen Format

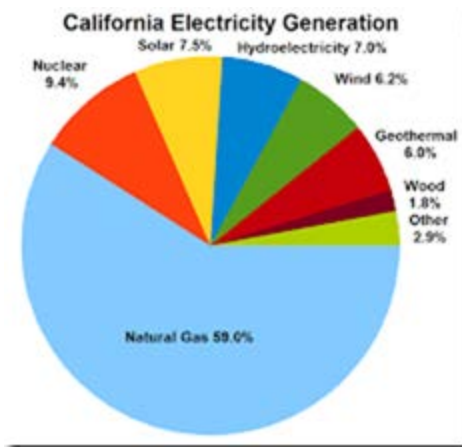
unit vertical in 48 units horizontal (2.083 percent slope) in any direction at the time of new building construction or renovation. Section 11B-812.5 contains accessible route requirements.

Comments Received

From: [Loren Long](#)
To: [Environment](#)
Subject: No Gas Is Bad Idea
Date: Thursday, October 3, 2019 4:41:37 PM
Attachments: [untitledf11.png](#)

CAUTION: This is an external email. Do not click on links or open attachments unless you know the content is safe.

The proposed “reach code”, to not plumb gas to new construction is ridiculous. Bad decision to follow Berkeley’s radical lead. They are the laughing stock of the nation.



The majority of California electricity production is NOT “carbon free”. A very large portion of CA electricity is produced at power generation facilities which burn fossil fuels. All electricity feeds into the grid, so to say that “most residents and business owners receive 100% carbon-free electricity” in Hayward is NOT true. Yes some electric energy comes for solar, wind and hydro, but more comes from burning fossil fuels and once it is comingled with the electricity generated form fossil fuel it is all the same and the source is indistinguishable. Hayward is NOT receiving electricity for a 100% carbon-free sole source as stated by the city.

Also, what is the end plan for all the spent solar panels, batteries and wind mills. I guess it is not convenient to think about that now. We will deal with that when it too becomes a major problem.

It would be refreshing if Hayward would try to be an example of innovation and put forth a common sense approach to solving it’s problems instead of following the rest of the sheep.

I have lived in Hayward for most of my 66 years and am sad to say that I want very much to move away from this city and out California, as they have an uncontrollable obsession to control every possible thing. By doing so you are stealing our freedom of choice.

Feel free to respond if you wish.

Loren Long

[REDACTED]

Hayward, CA 94542

[REDACTED]

From: [Rudell O'Neal](#)
To: [Erik Pearson](#)
Subject: Hayward's Plans for Electric Reach Codes
Date: Saturday, October 5, 2019 8:55:50 AM

CAUTION: This is an external email. Do not click on links or open attachments unless you know the content is safe.

Hello Mr. Pearson,

I received your name from Nicole Grucky as a referral for questions I have about Hayward's interest in electric reach codes.

First, let me say in general I am in favor of reduced carbon emissions, smaller impact footprints and more cost effective energy. Got the Prius and solar panels on my home to back that up.

My concerns deal with safety precautions that are planned for, when and how (not if) Hayward moves in the direction of electric reach codes.

Specifically, what is Hayward (and Alameda County) thinking of doing to guard against damage to our electrical grid in the event of an earthquake along the Hayward fault or a digital attack on that grid? Are we adequately prepared to handle such devastation? Or is it too early to expose ourselves to such vulnerable conditions, even if it will help our carbon footprint?

Nicole's response to those questions was, "that's PG&E's responsibility". I don't take comfort in hearing that as the final answer. So, I'm asking you:

- What plans has Hayward considered to ward against these very possible disruptions?
- To the extent PG&E does play a role in these plans, what review of the companies "disaster plans" has the City done and what did we think of those plans?

Finally, given this increase in reliance on electricity, what impact will this changeover have on taxes, and other City services?

I plan to attend the meeting on the 30th of Oct., but I do hope to hear back from you before then.

Rudelle O'Neal



October 15, 2019

Barbara Halliday, Mayor
City of Hayward
Attn: Hayward City Council
777 B Street
Hayward, CA 94541
Barbara.Halliday@hayward-ca.gov

SUBMITTED VIA EMAIL

RE: City of Hayward Development of Reach Codes

Dear Mayor Barbara Halliday:

Thank you for the opportunity to comment on the City of Hayward's proposed Reach Codes aimed at reducing greenhouse gas emissions in the building sector. The Western Propane Gas Association (WPGA) seeks to be a valuable contributor in both the development of these codes and the policies and procedures that may emerge as a result of these discussions.

While we applaud efforts for building decarbonization, WPGA believes that Reach Codes disincentivizing propane as a complementary fuel source to electric are fundamentally misguided. WPGA hopes that regulators will look to the example that the City of San Luis Obispo is setting with the development of their Reach Codes and recognize the value that propane provides on a number of levels.

Propane provides affordable, clean energy for low income communities as well as a vital back-up power for solar powered homes when battery power is low. Disincentivizing propane as a complementary power to solar has an unintended consequence to make solar homes more expensive and less reliable when power generation is not at peak levels.

Furthermore, there has been numerous discussions throughout California regarding planned power outages and safety black-outs. In a recent article published by Politico ([PG&E begins massive power shut-off in California to avoid wildfires](#)) it is noted that the Public Safety Power Shutoff could affect 2.4 million electricity users. Propane delivers energy resiliency for communities facing safety black-outs which can be critical for those powering life-sustaining equipment. Vulnerable citizens such as people on dialysis or simply the many individuals using electric powered wheelchairs can use propane energy for reliable power.

When looking towards the future, our industry is investing in renewable propane, derived from sustainable sources like beef tallow or vegetable oil. We hope that regulators take a more holistic view of the complementary role propane plays alongside decarbonization efforts including solar, wind and other renewable fuels.

The Western Propane Gas Association appreciates your work in this area and looks forward to working with you as the City of Hayward and the State strive to reduce greenhouse gas emissions through comprehensive clean energy solutions.

Sincerely,

Ben Granholm
Regulatory Affairs Specialist

cc: Kelly McAdoo, City Manager