



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 an 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.

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Approved by:



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