File #: ACT 22-026

DATE: March 14, 2022

TO: Council Sustainability Committee

FROM: Director of Public Works

SUBJECT

Considerations for the 2023 Reach Code - Information and Discussion

RECOMMENDATION

That the Council Sustainability Committee (CSC) reviews and comments on this report and provides direction to staff.

SUMMARY

Hayward's current Reach Code will expire on December 31, 2022. To continue the current requirements that prohibit or limit the use of natural gas in new buildings and to continue to require electric vehicle charging infrastructure beyond what is required in the state building code, a new ordinance will need to be adopted. This report presents considerations for these two key components as well as other potential elements that may be included in a new Reach Code.

Staff has conducted some initial outreach for this first discussion on the 2023 Reach Code. Upon direction from the CSC, staff will continue to communicate with and seek input from development and business stakeholders. Specifically, staff intends to engage with the Chamber of Commerce and industrial property developers before returning to the CSC with more refined recommendations.

ATTACHMENTS

Attachment I Staff Report
Attachment II EV Charging Requirements

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BACKGROUND

On March 3, 2020[1], Council adopted a local amendment to the 2019 California Building Code known as a Reach Code. The Reach Code ordinance as well as checklists for builders and developers are available on the City's website[2]. Following is a summary of Hayward's current Reach Code requirements for new buildings:

Single-family and Multi-family Residential

- New single-family homes and new low-rise multi-family buildings (up to 3 stories) must be designed and constructed as all-electric, meaning no natural gas appliances or natural gas plumbing.

[1] https://hayward.legistar.com/LegislationDetail.aspx?ID=4345454&GUID=25134FC7-B7A3-4060-955A-F7A30A27567A&Options=&Search=
[2] https://www.hayward-ca.gov/reach-code

Non-residential and High-rise Residential

- Buildings can be designed to be either all-electric or mixed fuel.
- Mixed-fuel buildings can include natural gas plumbing and equipment and must:
    - Install solar panels on the entire Solar Zone[3]; and
    - Meet a minimum compliance margin of 10% (or 15% for office and retail) better than the calculated energy budget[4]; or
    - Comply with a prescriptive list of energy efficiency requirements.

Hayward's current Reach Code requirements for Electric Vehicle (EV) charging are summarized in Attachment II.

When Hayward's Reach Code was adopted in March 2020, there were already twenty-eight such codes adopted by local jurisdictions throughout California. In December 2021, Contra Costa County became the 54th local jurisdiction to adopt an electrification reach code. On July 12, 2021[5], staff presented to the CSC a report on the first year of implementation of Hayward's Reach Code.

DISCUSSION

The California Building Code is updated every three years. The 2019 California Building Code and Hayward's Reach Code will both expire on December 31, 2022. The 2022 CalGreen Code will take effect on January 1, 2023. Some requirements that are new in the 2022 California Building Code:

- Solar and battery storage will be required for new non-residential and highrise residential buildings. Previously solar was only required for single-family and low-rise multi-family Residential.
- Buildings constructed as mixed-fuel will also be required to have panel capacity and wiring that will enable a future retrofit to make the building all-electric.
- Energy Efficiency - Heat Pump technology is now the standard for energy code compliance for space heating and water heating in new buildings.

In order to continue Hayward's current Reach Code requirements, a new Reach Code must be adopted this year to be effective along with the 2022 California Building Code in January 2023. In 2019/2020, staff worked closely with East Bay Community Energy (EBCE) and their consultants to prepare Hayward's Reach Code. This year, staff is working again with the same consultants through a regional collaboration led by EBCE, Peninsula Clean Energy (PCE), and Silicon Valley Clean Energy (SVCE). The working group created a website[6] with model codes and resources. Following are key elements of possible new Reach Code and staff's recommendation for each:

[3] Solar Zone is defined by the Energy Code as an allocated space that is unshaded, unpenetrated, and free of obstructions. It serves as a suitable place that solar panels can be installed at a future date.
[4] The "energy budget" is the building's predicted annual energy consumption for heating, cooling and water heating as required by the Energy Code.
[5] https://hayward.legistar.com/LegislationDetail.aspx?ID=5026497&GUID=6437B11F-586C-44D4-8933-ECE116DE1A91&Options=&Search=
[6] https://bayareareachcodes.org/

1. *New Residential Buildings* – Staff recommends maintaining the current requirements so that all new single-family homes and all new low-rise multi-family buildings (up to 3 stories) must be designed and constructed as all-electric.

2. *New Non-Residential and High-rise Residential Buildings* – As noted above, the current Reach Code allows non-residential and high-rise residential buildings to be either all-electric or mixed-fuel. Of the permits applied for since the Reach Code went into effect, none have opted for the mixed-fuel approach as the all-electric approach is simpler and cheaper to design and build. Staff recommends eliminating the mixed-fuel option that is in the current Reach Code. However, a complete ban on the use of gas may necessitate having certain exceptions in the Reach Code, which can be difficult to enforce. A simpler approach that would not require exceptions would be to ban the use of gas for water heating and space heating. This would allow the use of gas for cooking and industrial purposes. Staff seeks the CSC's direction and intends to continue to collect input from developers and EBCE's consultants to develop requirements for new non-residential and high-rise residential buildings.

3. *New Accessory Dwelling Units* – The current reach code exempts Accessory Dwelling Units (ADUs) less than 400 square feet, which means they can include natural gas appliances for water heating, space heating, etc. As recommended by the model code, staff recommends requiring all new detached ADUs to be all-electric.

4. *Existing Buildings (Residential and Non-Residential)* – Staff is exploring the possibility of including a provision that would prohibit the extension of any existing fuel gas infrastructure to any system or device within a building. Such a prohibition could be subject to certain exceptions that could include industrial processes.

5. *End of Flow* – One example of a Bay Area city taking a unique approach to addressing existing buildings is the City of Half Moon Bay. On February 15, 2022, the City of Half Moon Bay[7] adopted an ordinance that includes the following language: "No later than January 1, 2045, all buildings within Half Moon Bay shall be All-Electric Buildings or All-Electric Conversions and all Fuel Gas plumbing lines shall be capped and/or decommissioned." This ordinance language will address appliances that are not replaced after the BAAQMD and/or CARB rules go into effect. Staff recommends this provision or something similar be considered for Hayward's next Reach Code. In the meantime, staff can track the exceptions requested for certain industrial and commercial uses. If Hayward were to adopt such policy language in 2025, it would give building owners 20 years to prepare for compliance.

6. *Existing Residential* – While the provision listed above (#4) would limit the expansion of gas infrastructure in existing homes, it would not require replacement of existing gas appliances with electric models. Decarbonizing existing homes is necessary to reach our long-term greenhouse gas reduction goals, but it is very complicated and requires a thoughtful approach. Considerations include:
    - Equity
    - Financing and incentive programs

[7] https://www.half-moon-bay.ca.us/761/Building-Electrification

- Coordination with state and regional agencies.
- Outreach and education strategy
- Supplier and workforce availability.
- Code language.

Staff is currently working with the Rocky Mountain Institute and their Equitable Building Decarbonization California learning cohort. Staff is partnering with the Local Clean Energy Alliance and eight other California jurisdictions to learn about equitable building electrification retrofits with a goal of preparing an equitable electrification strategy by the end of 2022.

Staff will continue to work with the Bay Area working group to explore the following potential policies to decarbonize existing homes:

Air Conditioning – Staff is working with the Bay Area working group to explore a potential requirement tied to the installation of air conditioning in existing homes, which would require replacement of a gas-fired furnace with a heat pump model.

Upgrade at Time of Major Renovation – Some jurisdictions have required appliance upgrades or related energy efficiency improvements that are triggered by major renovations to the home. Such requirements could significantly increase the cost of a remodel and could result in removal/disposal of equipment that has not reached the end of its useful life.

Upgrades at Time of Equipment Replacement – Some jurisdictions have considered requiring specific appliance upgrades that are triggered by appliance replacement at or near the end of its useful life. Staff is recommending this approach not be included in this years' Reach Code for the following reasons:

- The Bay Area Air Quality Management District (BAAQMD) regulates natural gas-fired space and water heating appliances (furnaces and water heaters) on a point-of-sale basis within the Bay Area. The regulations are based on nitrogen oxides (NOx) emissions, which are a precursor to ozone and secondary particulate matter (PM) formation. BAAQMD has drafted amendments that would effectively require electric space heating and water heating[8]. The draft rules, which could be considered for adoption in 2022, include:
    - Effective January 1, 2027, a zero NOx standard for residential water heaters (with a heat input capacity less than 75,000 BTU/hr).
    - Effective January 1, 2031, a zero NOx standard for commercial water heaters/boilers (with a heat input capacity of between 75,000 BTU/hr and 2 million BTU/hr).
    - Effective January 1, 2029, a zero NOx standard for all residential and commercial natural gas fired furnaces.
- The California Air Resources Board staff released a draft State Implementation Plan (SIP)[9] on January 31, 2022. The draft SIP includes a zero-emission standard,

[8] https://www.baaqmd.gov/rules-and-compliance/rule-development/building-appliances
[9] https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy#:~:text=The%202022%20State%20SIP%20Strategy,all%20nonattainment%20areas%20across%20California.

which could go into effect in 2030, for furnaces and heaters. The SIP is scheduled to be considered by the Board in the summer of 2022.

7. *EV Charging* – Staff's recommended requirements for EV charging, along with existing requirements and definitions, are in Attachment II. Hayward's current reach code for multi-family buildings requires significant EV charging infrastructure. It requires all residential units to have some level of EV readiness - 75% of units must have a Level 2 EV Ready space; and 25% of units must have one Level 2 EV Capable space. The requirements have been especially difficult for developers of affordable housing. In the last two years, developers of two affordable housing projects requested exceptions to the EV charging requirements. The exceptions were approved as concessions allowed per the state's density bonus law. This year staff reached out to several affordable housing developers and received the following comments:

    - One developer is designing a project for low-income seniors, and they do not expect many to have cars, let alone electric cars. The project is planned to have eighty dwelling units and thirty parking spaces.
    - One developer builds mostly smaller projects and has not experienced significant challenges with Hayward's EV charging requirements.
    - One developer commented that the EV charging requirements have been very difficult and that they have not had much demand from tenants for charging. However, they do understand the need for future capacity and would support requirements for EV capable parking spaces. The developed felt the current requirements are excessive and will result in un-used infrastructure.

Peninsula Clean Energy compiled information[10] regarding EV charging needs for multi-family properties. They found that in residential settings, cars are typically parked for more than twelve hours. Given the average commute for a Bay Area resident is approximately 25 – 35 miles per day, charging needs can often be satisfied with a Level 1 charger (dedicated 120V 20-amp circuit), avoiding more expensive electrical capacity upgrades.

While the new CalGreen code will require 40% of spaces to have Level 2 readiness, the recommended model code requires the remaining 60% of spaces to be Level 1 EV Ready. For affordable housing projects, the model code recommends 15% of parking spaces have high power Level 2 chargers, 25% have low power Level 2 EV Ready spaces and 60% Level 1 EV Ready. While a typical Level 2 charger requires a 40-amp circuit, a low power Level 2 charger requires a 20-amp circuit, which saves on panel capacity and cost. Staff is seeking the CSC's input and will also seek input from developers and continue to research best practices.

FISCAL IMPACT

Development of this years' Reach Code will not impact the City's General Fund. Time spent on research and writing of the Code will be completed by existing, budgeted staff. Enforcement of Hayward's current Reach Code has not resulted in significant costs/impacts to staff; however, the changes being considered for the new Reach Code may make it simpler and easier to enforce.

[10] https://www.peninsulacleanenergy.com/ev-technical-resources/

ECONOMIC IMPACT

Local amendments to the California Energy Code require documentation to ensure the proposed requirements are cost-effective. This this years' Reach Code could be adopted as a stand-alone ordinance and not an amendment to the Energy Code if it does not address energy efficiency. This approach would not require a cost-effectiveness study; however, the Statewide Codes & Standards Reach Codes team is preparing a study that may be used by local jurisdictions. The cost-effectiveness study completed in 2019 found that, generally, electric appliances are not more expensive compared to those fueled by natural gas. When considering the avoided cost of installing gas infrastructure (plumbing), in most cases, all-electric construction is cost-effective over a 30-year period.

The requirements for EV charging infrastructure will increase the cost of construction; however, future residents or employees can benefit from the cost savings of operating an EV compared to a gasoline vehicle. In addition, significant savings can be realized when installing EV Capable and EV Ready circuits at the time of new construction as compared with the retrofit of an existing building or existing parking lot.

A study prepared for the Bay Area working group found that the cost to install charging required by the 2022 CalGreen Code will cost approximately $127,000 for a 100-unit multi-family building. It also estimates that compliance with the recommended model reach code would cost approximately $167,000, and that the recommended model reach code for affordable housing projects would cost approximately $128,000 for a 100-unit building. The key to keeping costs low is the installation of Automatic Load Management Systems (ALMS), which manage electrical loads across one or more electric vehicle chargers, circuits, or panels, and share electrical capacity and/or automatically manage power at each connection point. It is important to note that the costs noted above are just for panels, conduit, wiring and chargers and do not include costs for transformers or service upgrades as the need for such improvements will vary from site to site.

STRATEGIC ROADMAP

This agenda item supports the Strategic Priority of Combat Climate Change. Specifically, this item relates to the implementation of the following projects:

Project 1a	Ban natural gas in new residential buildings (Completed with the March 2020 adoption of the Reach Code.)
Project 1b	Require EV charging infrastructure in new construction (Completed with the March 2020 adoption of the Reach Code.)
Project 1c	Explore feasibility of banning natural gas in non-residential (commercial) buildings

SUSTAINABILITY FEATURES

The use of electric appliances in homes and businesses avoids indoor air pollution associated with the burning of natural gas. Ending the use of natural gas and providing the

infrastructure needed for a transition to electric vehicles are both necessary to meet the City's long term GHG reduction goals, which include:

- 30% below 2005 levels by 2025
- 55% below 2005 levels by 2030
- work with the community to develop a plan that may result in the reduction of community-based GHG emissions to achieve carbon neutrality by 2045

PUBLIC CONTACT

The Bay Area working group hosted two workshops for building industry stakeholders and community members on February 15 and 16, 2022. Staff sent an email to 658 builders and developers to let them know about these workshops and the March 14 CSC meeting. At the February workshops, attendees were generally supportive of reach codes. Specific comments included:

- Automatic Load Management (for EV charging) is critical and still new, and more education is needed.
- Multi-family property owners said they do not want to be in the EV charging business. They requested that EV charging be required such that it is on the utility's side of the electric meter.

In addition, staff reached out to six representatives of affordable housing developers and had phone conversations with three to review existing and potential EV charging requirements. Staff has conducted some initial outreach for this first discussion on the 2023 Reach Code. Upon direction from the CSC, staff will continue to communicate with and seek input from development and business stakeholders. Specifically, staff intends to engage with the Chamber of Commerce and industrial property developers before returning to the CSC with more refined recommendations.

NEXT STEPS

Upon direction from the CSC, staff will continue to work with the Bay Area working group and stakeholders to prepare a draft reach code ordinance for Council's consideration. Following is a tentative timeline:

May 2022	Present refined/updated recommendations to the CSC
June 2022	Present to draft Reach Code to the Planning Commission
June 2022	Council Work Session to consider draft Reach Code
July 2022	Present draft Reach Code Ordinance to CSC
October 2020	Council considers adoption
November 2020	File Reach Code with the California Building Standards Commission
January 2023	Reach Code takes effect along with the 2022 CA Building Code

Prepared by: Erik Pearson, Environmental Services Manager

Recommended by: Alex Ameri, Director of Public Works

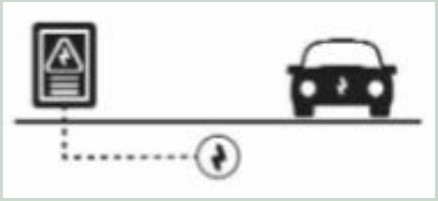
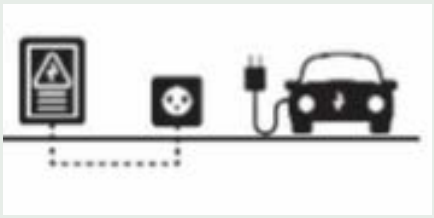
Approved by:

Kelly McAdoo, City Manager

Electric Vehicle Charger Types

Level 1		15-20 Amp, 120 Volt (standard household outlet) Driving Distance provided: 3-4 miles/hour
Low Power Level 2		20 Amp, 208/240 Volt Driving Distance provided: 10-15 miles/hour
High Power Level 2		40+ Amp, 208/240 Volt Driving Distance provided: 25-30 miles/hour
DC Fast Charge		80-400 Amp, 200-600 Volt DC (direct current) Driving Distance provided: 125-1000 miles/hour

EV Charging Infrastructure

EV Capable		Raceway (conduit), electrical capacity (breaker space)
EV Ready		EV Capable + overcurrent protection devices, wiring and outlet (i.e. full circuit)
EVCI (electric vehicle charger installed)		All equipment to deliver electricity to EV (aka EVSE = electric vehicle supply equipment)

Existing & Potential EV Charging Requirements

	2019 CalGreen	**Hayward's Current Reach Code (% of dwelling units)**	**2022 CalGreen (% of parking spaces)**	***Model Reach Code (potential requirements)***
Multi-Family ≤20 dwelling units	10% of units must have one Level 2 EV Capable space	100% Level 2 EV Ready space	10% Level 2 EV Capable 25% low power Level 2 EV Ready (35% total)	40% high power Level 2 EVSE 60% Level 1 EV Ready (100% total)
Multi-Family >20 dwelling units	10% of units must have one Level 2 EV Capable space	75% Level 2 EV Ready space; and 25% Level 2 EV Capable space	10% Level 2 EV Capable 25% low power Level 2 EV Ready 5% high power Level 2 EVSE (40% total)	40% high power Level 2 EVSE; and 60% Level 1 EV Ready (100% total)
Multi-Family Affordable Housing	NA	NA	NA	15% high power Level 2 EVSE; 25% low power Level 2 EV Ready 60% Level 1 EV Ready (100% total)
Hotel/ Motel	NA	NA	NA	5% Level 2 EVSE; and 25% low power Level 2 EV Ready

Existing and Potential EV Charging Requirements

	2019 CalGreen	Hayward's Current Reach Code	2022 CalGreen	*Model Reach Code (potential requirements)*
Single Family & Townhome	One Level 2 EV Capable for one parking space per dwelling unit	Two Level 2 EV Ready spaces per dwelling unit	No changes	One Level 2 EV Ready space One Level 1 EV Ready space
Non-Res Office	6% Level 2 EV Capable (for buildings with at least 10 parking spaces)	20% Level 2 EV Charger Installed (for buildings with at least 10 parking spaces); and 30% of spaces must be EV Capable	5% Level 2 EVCS; and 10% Level 2 EV Capable (for buildings with at least 10 parking spaces)????	20% Level 2 EV Charger Installed; and 30% of spaces must be Level 2 EV Capable
Non-Res Non-Office		15% Level 2 EV Charger Installed (for buildings with at least 10 parking spaces)		10% Level 2 EV Charger Installed; and 10% of spaces must be Level 2 EV Capable