DATE: March 3, 2020

TO: Mayor and City Council

FROM: Director of Public Works
Development Services Director

SUBJECT: Electrification Reach Codes: Adopt a Resolution and Introduce an Ordinance to Adopt Electrification Reach Codes for the 2019 California Energy Code and California Green Building Standards Code

RECOMMENDATION

That Council adopts a resolution (Attachment II) and introduces an ordinance (Attachment III) to adopt electrification reach codes for the 2019 California Energy Code and California Green Building Standards Code.

SUMMARY

This report presents an ordinance to address the electrification of buildings and vehicles related to new construction. Every three years, the California Building Code undergoes a full update and the 2019 Code became effective on January 1, 2020. Local jurisdictions can implement codes that are more stringent than the State Code. These are known as "Reach Codes" and can address the electrification of buildings and vehicles at the time of construction of new buildings.

The proposed Reach Codes would modify Part 6 (California Energy Code) and Part 11 (California Green Building Standards Code, aka CALGreen) of the California Building Code (Title 24 of the California Code of Regulations). This report includes an overview of the Statewide cost-effectiveness study, details findings, and provides recommended reach codes for the 2019 building cycle.

The Council Sustainability Committee reviewed this item at several Committee meetings including the September 17, 2019 and October 30, 2019 meetings, and recommended draft ordinances that would require:

- New low-rise residential (single-family and multi-family up to three stories) buildings be constructed as all-electric (with no natural gas plumbing);

- Non-residential and high-rise residential buildings be either all-electric or be constructed as mixed-fuel, but with extra energy efficiency, solar, and battery storage; and
- Additional electric vehicle (EV) charging infrastructure in all new buildings.

BACKGROUND

All-electric buildings are one of the key strategies to decarbonizing the state's building stock. The state's electric system is rapidly becoming cleaner, driven by escalating renewable portfolio standards and cleaner product offerings by the utilities and community choice energy programs, including East Bay Community Energy (EBCE). In addition, advances in electric heat pumps and other electrical equipment are yielding much higher overall efficiencies than their natural gas counterparts. Electric heat pumps, unlike traditional electric resistance heaters, do not generate heat, but concentrate and transfer it for end uses such as space conditioning/heating and water heating. This process uses less primary energy and emits much less carbon, particularly when it is powered by renewable energy. Induction cooktops are also gaining popularity and are significantly more efficient than gas stoves.

Figure 1. Example of a Commercial Induction Cooktop

Figure 2. Example of a Residential Heat Pump Water Heater

According to EBCE, on a BTU basis, electricity is approximately three times more expensive than natural gas. However, some heat pump equipment is approximately three times more efficient than similar natural gas-powered equipment. A heat pump water heater is more expensive than a natural gas water heater, but over the life of the equipment, the overall cost is similar. More significant cost savings associated with building electrification come from the avoided infrastructure and plumbing needed to serve a new building with natural gas.

Reach Code Adoption Process

Every three years, the State of California adopts new building standards that are organized in Title 24 of the California Code of Regulations, referred to as the California Building Standards Code. This regular update is referred to as a "code cycle." The last code cycle was adopted in 2016 and was effective as of January 1, 2017. The 2019 code was adopted in 2019 and became effective January 1, 2020. Cities and counties can adopt reach codes that require items that are above minimum state code requirements. However, these reach codes must be filed with the State.

In addition, the California Energy Commission (CEC) requires that a cost-effectiveness study be conducted and filed in the case of local amendments to the Energy Code (Title 24, Part 6). It is required that the City demonstrate to the CEC, using a cost-effectiveness study, that the amendments to the code are financially responsible and do not represent an unreasonable burden to non-residential and residential applicants. A cost-effectiveness study is not required for amendments to the Green Building Code (Title 24, Part 11).

Funded by the California investor-owned utilities, the California Statewide Codes and Standards Program led the development of a cost-effectiveness study[1] for Energy Code reach codes that examined different performance-based approaches for new construction of low-rise residential (single-family and multi-family up to 3 stories) and non-residential building types. Staff has worked closely with EBCE's consultants to interpret the study's results and infer what options may or may not be cost-effective for the building types that are prevalent in Hayward.

EBCE has also provided consultant support to assist cities in understanding the cost-effectiveness study results and adopting reach codes. The proposed reach codes meet the requirements of the CEC for cost-effectiveness, and are also a cost-effective approach for constituents, contractors, and developers pursuing new construction with the city limits. In addition, the analysis results show that all-electric buildings are typically less expensive to construct. Costs include incremental capital costs, and, in some cases, higher energy costs. In general, the first costs of an all-electric building are lower than a mixed-fuel building due to the lack of gas plumbing. More detail about the cost-effectiveness of the proposed reach code is included in the Economic Impact section of this report and in Attachment IV.

Sustainability Committee Meetings

The Committee has considered several reports on building and vehicle electrification. All reports are available on the City's website[2].

On July 16, 2018, the Committee considered a report titled *Building Electrification & Reducing Natural Gas Use*[3]. The Committee recommended supporting and encouraging East Bay Community Energy (EBCE) to address electrification of existing buildings. The Committee

[1] https://localenergycodes.com/content/2019-local-energy-ordinances/
[2] https://www.hayward-ca.gov/reach-code
[3] Report is available at https://hayward.legistar.com/LegislationDetail.aspx?ID=3551018&GUID=718DCC1C-13F6-41D0-8833-C72B0B86DCE5&Options=&Search=

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 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*[4], 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*[5] that 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 was in favor of an electric-only requirement for low-rise residential construction and noted that the codes are necessary to help meet the State's goal of carbon neutrality by 2045.

On October 30, 2019, the Committee considered a report titled *Revised Draft Electrification Reach Codes for 2019 California Energy Code and California Green Building Standards Code*. One community member spoke and asked about the electrical grid's potential threats from hacking and earthquakes. The Chair of the Committee, Councilmember Mendall, responded that these issues are being addressed on several fronts and that the City will continue to consider and discuss these issues with EBCE and the California Public Utilities Commission (CPUC). The Committee asked about electrifying existing buildings and staff indicated this issue would be addressed at a later date. The Committee noted that new buildings need to be all electric in order to meet Hayward's and the state's long term GHG reduction goals.

Since the Committee meeting on October 30, 2019, staff made several changes to the draft codes:

[4] Report is available at https://hayward.legistar.com/LegislationDetail.aspx?ID=3834310&GUID=B84DE7FD-6A5A-43D6-A042-26992FFF031C&Options=&Search=
[5] Report is available at https://hayward.legistar.com/LegislationDetail.aspx?ID=3946057&GUID=61EEA528-55E8-4C6D-BAD3-24211EC64ABA&Options=&Search=

- Added exemptions in the Energy Code amendments for unusual circumstances where an applicant can show that due to exceptional characteristics of the structure, property, or business involved, a literal enforcement of the code will result in practical infeasibility.
- Added exemptions in the Green Building Standards amendments for cases where an applicant provides documentation detailing that the increased cost of utility service or on-site transformer capacity would exceed an average of $4,500 among parking spaces with Level 2 EV Ready Spaces.
- Provided for the use of automatic load management systems, which allow multiple EV chargers or EV-Ready electric vehicle outlets 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.
- Replaced the term "natural gas" with "fuel gas." Fuel Gas is defined in the California Mechanical and Plumbing Codes to include both natural gas and propane.
- Added language to specifically allow the use of outdoor cooking appliances or backup power generation fueled by a free-standing Fuel Gas tank.

Reach Codes in Other Cities

As of February 13, 2020, a total of 27 local jurisdictions throughout California have adopted electrification reach codes. On July 16, 2019, the City of Berkeley adopted a ban on the installation of natural gas infrastructure in new buildings. The ban, effective January 1, 2020, is not an amendment of the Energy Code, but is incorporated into the city's health and safety code and will be implemented as conditions of approval during the planning approval process. Because some development proposals do not require formal planning approval prior to submittal of a building permit application, the City of Berkeley also adopted a reach code, which will apply to projects that do not require a planning permit or a zoning certificate. In November 2019, the California Restaurant Association sued the City of Berkeley claiming that Berkeley's gas ban "imposes irreparable harm," that certain foods can only be prepared using gas, and that the ban will increase operational costs for restaurants. The Association also argues that the City of Berkeley doesn't have the authority to impose the ban.

The cities of San Jose, San Mateo, Menlo Park, and some cities outside of the Bay Area have adopted reach codes that became effective January 1, 2020. On October 16, 2019, the Town of Windsor adopted a reach code requiring low-rise residential buildings to have only electric appliances and mechanical systems. As described in Attachments V and VI, on November 19, 2019, a lawsuit was filed against both the Town of Windsor and the town council claiming that an environmental impact report (EIR) should be prepared to satisfy the requirements of the California Environmental Quality Act (CEQA). Of all the cities that have adopted reach codes, none have prepared an EIR.

The City of Berkeley is currently the only city in Alameda County with a reach code, which bans natural gas. Staff is working with EBCE and the other cities in Alameda County to develop similar reach codes. Some cities expect to have reach codes take effect during the first quarter of 2020 and some will be later in 2020. Following is a brief summary of activities in neighboring cities:

- Albany – Developing an ordinance similar to Berkeley's gas ban. City Council consideration is tentatively scheduled for December 2020.
- Berkeley – Reach Codes adopted on December 3, 2019.
- Emeryville – City Council held a study session on November 19, 2019.
- Fremont – Sustainability Commission discussed reach codes in September and October 2019. Staff expects to present to City Council in January or February 2020.
- Livermore – Exploring idea of reach codes during update of climate action plan.
- Oakland – Staff is expecting to present reach codes to City Council in the near future.

DISCUSSION

For multiple reasons, including health, safety, economics, and environmental benefits, there is growing interest in all-electric new construction, or "building electrification," which means that the buildings would not have any fossil fuel services. All-electric buildings have electric appliances for space heating, water heating, clothes-drying, and cooking. A major reason to encourage building electrification stems from the fact that EBCE is providing carbon-free electricity and eliminating the use of natural gas can greatly reduce greenhouse gas emissions from the building sector.

The proposed codes are similar to those being considered by other local governments and are based on a model ordinance developed through a collaborative effort involving the CEC, the State's major utilities, several community choice aggregators including EBCE, and representatives from local governments.

Recommended reach code requirements for newly constructed buildings are:

Single-family Residential
- All new single-family homes must be all-electric and meet the basic requirements of the state's 2019 Code, which includes some solar photovoltaics.
- Free-standing accessory dwelling units less than 400 square feet are exempt, which means they can include natural gas appliances for water heating, space heating, etc.[6]

Multi-family Residential (up to 3 stories)
- All new low-rise multi-family buildings must be all-electric and meet the basic requirements of the state's 2019 Code.

Non-residential (including high-rise residential)
- An all-electric building must meet the basic requirements of the state's 2019 Code.
- Mixed-fuel buildings must:

[6] A home of this size may not have the space needed for a heat pump water heater and may be connected to the main panel of the primary dwelling, which may have capacity constraints.

- Install solar panels on the entire Solar Zone[7]; and
- Meet a minimum compliance margin of 10% (or 15% for office and retail) better than the calculated energy budget; or
- Comply with a prescriptive list of energy efficiency requirements.

For non-residential buildings, staff feels it is important to allow the flexibility that the mixed-fuel option provides. There are certain commercial and industrial building types that would be very challenging or infeasible to build as all-electric. For residential construction (single-family and multi-family up to three stories), all-electric construction is a practice already demonstrated in several completed projects across California and will be incorporated in some projects already approved in Hayward. The full text of the recommended amendments to the Energy Code (California Building Code, Title 24, Part 6) is included in Attachment III.

Reach Code for Electric Vehicle Charging Infrastructure

Local residents are showing a significant interest in electric vehicles. It is widely known that availability of EV charging infrastructure is a critical component to EV adoption. Meanwhile, it is significantly more expensive to install charging infrastructure as a retrofit than it is during new construction. As such, ensuring that newly constructed residential and non-residential parking has ample EV charging capability will reduce long-term costs of EV infrastructure installation, while helping to increase EV adoption and decrease transportation-related greenhouse gas emissions. While California's new minimum requirements are a step forward, it is unlikely that the requirements are enough to keep pace with expected EV growth looking towards 2030.

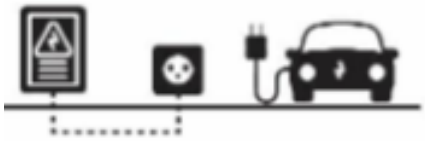
Unlike amendments to the Energy Code, a cost-effectiveness study is not required for amendments to Title 24, Part 11, or the Green Building Code "CALGreen" which covers items such as electric vehicle (EV) charging infrastructure.

Electric Vehicle (EV) charging requirements in California can generally be broken into three categories:

Table 1. EV Charging Infrastructure

EV Capable:		Conduit is installed to parking space, and building electrical system has ample capacity to serve future load. An electrician would be required to complete the circuit before charging is possible.

[7] *Solar Zone* – The Energy Code defines the solar zone 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.

EV Ready:		Parking space is provided with all power supply and associated outlet, such that a charging station can be plugged in and a vehicle can charge.
EV Charger Installed:		All supply equipment is installed at a parking space, such that an EV can charge without additional equipment. (Staff does not recommend installation of charging equipment. EVs and EV charger technologies are evolving rapidly and unused installations could become outdated quickly.)

EV charging capacity and speed can be summarized as three categories:

- Level 1: Capable of charging at 120V, 20A. This is equivalent to a standard home outlet and can provide approximately 5 miles of Range Per Hour (RPH) of charging. (Staff is not recommending requirements for Level 1 chargers as they are not expected to be useful as technology advances. In the near future, EVs are expected to have larger capacity batteries, which will take a very long time to charge using a Level 1 charger.

- Level 2: Capable of charging at 240V, 30-40A. This is the service capacity typically used for larger appliance loads in homes and can provide 12 to 25 miles of RPH.

- Level 3 (Direct Current or DC Fast Charging): Capable of charging at 480V and can provide 100 miles or more of RPH. This is the type of charger used for Tesla Superchargers and DC Fast Chargers at some shopping centers (There are two at the City Hall parking structure and two at the Target store parking lot along West A Street.)

The 2019 California Green Building Code Update (Title 24, Part 11) increases requirements for electric vehicle charging infrastructure in new construction, including:

- New one- and two-family dwellings and townhouses with attached private garages: must be Level 2 EV-capable
- Multi-family dwellings: 10% of parking spaces must be Level 2 EV-capable
- Non-residential: 6% of parking spaces must be Level 2 EV-capable

Recommended reach code requirements for EV infrastructure are:

Residential

- Single Family Dwelling: For each dwelling unit, install two dedicated Level 2 EV Ready circuits.

    - Exception: For each dwelling unit with only one parking space, install one Level 2 EV Ready circuit
- Multi-Unit Dwelling, <20 units: Per unit, a single Level 2 EV Ready circuit
    - Exception: Not required for units without parking
- Multi-Unit Dwelling, >20 units: 75% of the units, a single Level 2 EV Ready circuit per unit; 25% of the units, a single Level 2 EV Capable circuit per unit
    - Exception: Not required for units without parking

Non-Residential Office

- When 10 or more parking spaces are constructed, 20% of the parking spaces must have a Level 2 EV Ready circuit
- An additional 30% of the parking spaces must be EV Capable at the "pinch points" utilizing at least Level 2-sized conduit with panel capacity sufficient to accommodate the required number of EV capable parking spaces. Pinch points are defined as the areas where conduit should be installed at the time of new construction so that future installations do not require walls to be opened or asphalt dug up.

Non-Residential, Non-Office

- When 10 or more parking spaces are constructed, 15% of the parking spaces must have a Level 2 EV Ready circuit
- For parking lots with more than 100 spaces, after a minimum of 15 Level 2 EV Ready spaces are installed, a single DC fast charger (Level 3) may be installed to substitute for the next 15 Level 2 EV Ready spaces.

The full text of the recommended amendments to CALGreen (California Building Code, Title 24, Part 11) is included in Attachment III.

Grid Resiliency – 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. The letter stated that gas appliances are beneficial during grid outages. However, those in favor of electrification codes point out that some 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.

EBCE and other community choice energy programs are working to help residents and businesses be more resilient to grid interruptions. On November 5, 2019, EBCE, along with Peninsula Clean Energy, Silicon Valley Power, and Silicon Valley Clean Energy released a request for proposals to install more than 30 megawatts of battery storage. The program will provide solar power combined with battery storage to approximately 6,000 homes and hundreds of businesses in Alameda, San Mateo, and Santa Clara counties, including those affected by the recent Pacific Gas & Electric (PG&E) power shutoffs. The new battery systems

on homes and businesses, which may be combined with new or existing solar systems, will lower energy bills, increase reliability, and help stabilize the power supply for local customers.

Environmental Review

Adoption of the proposed Reach Codes is not a project under the requirements of the California Environmental Quality Act, together with related State CEQA Guidelines (collectively, "CEQA"), because it has no potential for resulting in a physical change to the environment. In the event that this Ordinance is found to be a project under CEQA, it is subject to the CEQA exemption contained in CEQA Guidelines section 15061(b)(3) because it can be seen with certainty to have no possibility that the action approved may have a significant effect on the environment. CEQA applies only to actions that have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA. In this circumstance, the proposed action would have no or only a de minimis effect on the environment. The Ordinance is also exempt from CEQA under CEQA Guidelines section 15308, because it is a regulatory action for the protection of the environment.

ECONOMIC IMPACT

A reach code may only be adopted if it is determined that the proposed requirements are cost-effective. Cost-effectiveness is measured considering lifecycle costs using a 30-year timeframe. Generally, electric appliances are not more expensive compared to those fueled by natural gas. When considering the avoided cost of installing gas infrastructure (piping), in most cases, all-electric construction is cost-effective. The CEC requires that the cost-effectiveness analysis incorporate the time-dependent valuation (TDV) of energy so that the costs for the construction and operation of the building can be accurately calculated[8]. In addition to TDV, the studies also present cost-effectiveness in terms of the on-bill customer lifecycle benefit-to-cost ratio. The on-bill method shows that a new all-electric single-family home is not cost-effective when meeting the minimum 2019 state code requirements. This is because the study assumed appliances that meet minimum federal efficiency standards. In most cases, more efficient appliances are installed, which would cause the project to be cost-effective.

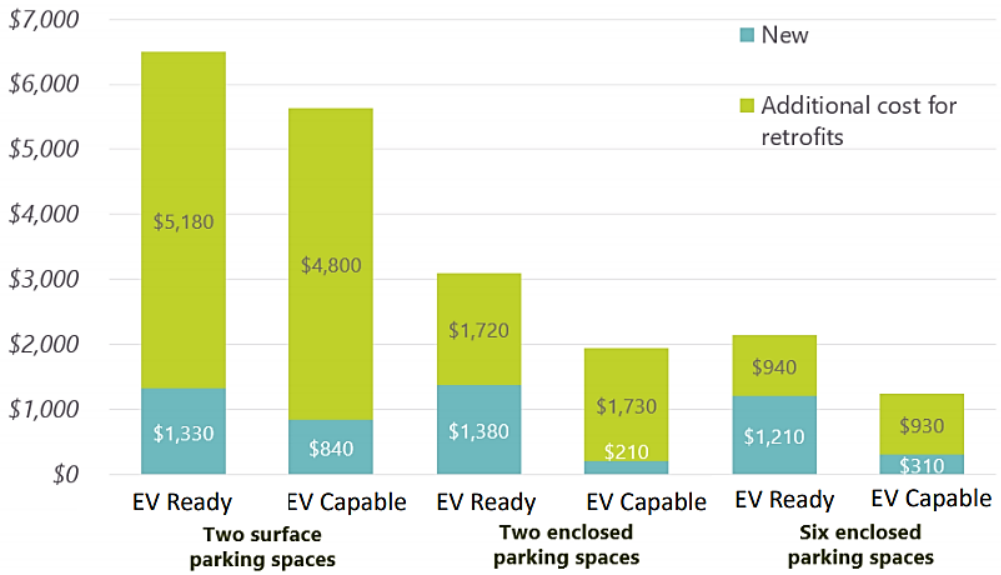
Two studies were completed; one for single-family and low-rise residential and one for non-residential construction. In general, the studies found that all-electric construction is cost effective for new construction for several building prototypes including: single-family homes; low-rise multi-family building; medium office; and medium retail. The complete cost

[8] As defined in the cost-effectiveness studies, the TDV calculation is "intended to capture the "societal value or cost" of energy use including long-term projected costs such as the cost of providing energy during peak periods of demand and other societal costs such as projected costs for carbon emissions, as well as grid transmission and distribution impacts. This metric values energy use differently depending on the fuel source (gas, electricity, and propane), time of day, and season. Electricity used (or saved) during peak periods has a much higher value than electricity used (or saved) during off-peak periods (Horii et al., 2014). This is the methodology used by the Energy Commission in evaluating cost-effectiveness for efficiency measures in Title 24, Part 6."

effectiveness studies are available on the California Energy Codes and Standards program website[9] and are summarized in Attachment IV.

The requirements for EV charging infrastructure will increase the cost of construction, but 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. Figure 3 below illustrations the typical costs of EV Capable and EV Ready circuits.

Figure 3. EV Charging: Cost of New vs. Retrofit



While the recommended draft code does not require installation of actual charging equipment, the following cost ranges are provided for reference:

- Level 2 charger (non-networked) – $3,500-$5,000 per unit
- Level 2 charger (networked) – $4,500 to $9,000 per unit
- DC Fast Charger – $40,000 to $100,000 per unit depending on site conditions

Networked chargers may be installed in multifamily or non-residential settings and allow the owner to manage access and rates charged and can include smart power management to share electrical capacity, avoiding expensive infrastructure upgrades. These costs are dependent on variables such as: whether or not electrical panel or transformer upgrades are needed; whether or not physical site upgrades are necessary to meet accessibility requirements; or trenching distance from the panel to the stations. A non-networked charger may be more typical for a single-family home.

[9] https://localenergycodes.com/content/2019-local-energy-ordinances/

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.

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 1, Part 1.a: Ban natural gas in new residential buildings
Project 1, Part 1.b: Require EV charging infrastructure in new construction

SUSTAINABILITY FEATURES

In 2018, the Intergovernmental Panel on Climate Change (IPCC) released a special report titled *Global Warming of 1.5°C*[10] detailing the impacts of global warming of 1.5°C above pre-industrial levels. The report states that:

- Climate change is already affecting people, ecosystems and livelihoods all around the world.
- Limiting warming to 1.5°C is not physically impossible but would require unprecedented transitions in all aspects of society.
- There are clear benefits to keeping warming to 1.5°C compared 2°C or higher. Every bit of warming matters.
- Limiting warming to 1.5°C can go hand in hand with reaching other world goals such as achieving sustainable development and eradicating poverty.

In 2019, the Science Advisory Group to the United Nations Climate Action Summit 2019 released a report titled *United in Science*[11]. The report states that current carbon emissions reductions need to be roughly tripled to be in line with the 2°C goal and increased fivefold for the 1.5°C goal.

California's Senate Bill 32 (Pavley), signed into law on September 8, 2016, states that "continuing to reduce greenhouse gas emissions is critical for the protection of all areas of the state, but especially for the state's most disadvantaged communities, as those communities are affected first, and, most frequently, by the adverse impacts of climate change, including an

[10] https://www.ipcc.ch/sr15/
[11] https://public.wmo.int/en/resources/united_in_science

increased frequency of extreme weather events, such as drought, heat, and flooding." SB 32 calls for statewide GHG emissions to be reduced by at least 40 percent below 1990 levels by 2030. In addition, on September 10, 2018, Governor Jerry Brown issued executive order B-55-18, establishing a statewide goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter."

The cost-effectiveness study mentioned above and summarized in Attachment IV estimates the GHG emissions for both mixed-fuel and all-electric single-family homes. Assuming that each home meets the minimum requirements of the 2019 building code, the mixed-fuel home will have emissions of 1.8 pounds of carbon dioxide equivalent/square foot of floor area, where an all-electric home's emissions will be 1.0 pound of carbon dioxide equivalent / square foot of floor area. In Hayward, because the City Council elected to make EBCE's Brilliant 100 (100% carbon free electricity) the default product for Hayward's electric customers, the potential for GHG savings is even greater.

To help meet the state's GHG reduction goals, in January of 2018, Governor Jerry Brown issued executive order B-48-18 to "boost the supply of zero-emission vehicles and charging and refueling stations in California." The Executive Order directs state government to meet a series of milestones toward a long-term target of 1.5 million ZEVs on California's roadways by 2025 and 5 million by 2030. The proposed amendments to CalGreen are necessary to accomplish the state's goals.

Furthermore, a reach code that encourages and requires all-electric construction is consistent with the following General Plan policies:

- **Natural Resources Policy 2.2: New Development.** The City shall review proposed development applications to ensure projects incorporate feasible measures that reduce construction and operational emissions for reactive organic gases (ROG), nitrogen oxides (NOX), and particulate matter (PM10 and PM2.5) through project location and design.
- **Natural Resources Policy 2.4: Community Greenhouse Gas Reduction.** The City shall work with the community to reduce community-based GHG emissions by 20 percent below 2005 baseline levels by 2020 and strive to reduce community emissions by 61.7 percent and 82.5 percent by 2040 and 2050, respectively.
- **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.
- **Natural Resources Policy 4.3: Efficient Construction and Development Practices.** The City shall encourage construction and building development practices that maximize the use of renewable resources and minimize the use of non-renewable resources throughout the life-cycle of a structure.
- **Natural Resources Policy 4.11: Green Building Standards.** The City shall require newly constructed or renovated public and private buildings and structures to meet

energy efficiency design and operations standards with the intent of meeting or exceeding the State's zero net energy goals by 2020.

- **Mobility Policy 9.9 Alternative Fuel Vehicle Parking.** The City shall require new private parking lots to grant low-carbon vehicles access to preferred parking spaces and shall require new private parking lots to provide electric vehicle charging facilities. The City shall provide electric vehicle charging facilities in public parking lots.
- **Mobility Policy 9.11 Multifamily Charging Stations.** The City shall consider requiring electric vehicle charging stations in new multifamily development projects.

PUBLIC CONTACT

East Bay Community Energy is coordinating the preparation of draft reach codes and stakeholder engagement for its member agencies. EBCE has developed a website[12] with information and resources. On April 23 and 24, EBCE held four meetings in Fremont and Berkeley. Each location had one meeting for city staff and one for community members and stakeholders. In total, more than 100 people attended, including city staff from at least seven EBCE jurisdictions. On May 3, 2019, staff met with the Chamber of Commerce's Government Relations Council where staff from EBCE presented an overview of the need for and the benefits of a reach code. Comments received at the April and May meetings were summarized in the report presented to the Committee on May 13, 2019.

On August 26, 2019, staff partnered with BayREN to offer a workshop to local plumbing contractors to provide code compliance information related to heat pump water heaters. During the meeting, staff informed attendees that the City is developing a reach code, which could require heat pump water heaters in new construction. Staff created a webpage dedicated to the reach code effort. It includes links to previous Committee reports as well as links to external resources. In September 2019, staff mailed and emailed letters to hundreds of developers and contractors with information about the reach code development, including information about the September 17 Committee meeting.

On September 24, 2019, an article about the Reach Code was published 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 VII).

In response to the Leaflet article, one resident submitted comments expressing opposition to 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

[12] https://ebce.org/reach/

buildings will become cleaner over time and benefits from the lower emissions will continue for decades to come.

An email from another resident supported the efforts to reduce carbon emissions but was 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 Hayward "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." Propane is not widely used as an internally plumbed fuel gas in Hayward's residential buildings. However, propane is commonly used for backyard barbeques and in some cases for backup power generation. As noted above, staff has added language in the draft codes to specifically allow the use of outdoor cooking appliances and backup power generation fueled by a free-standing propane fuel tank.

NEXT STEPS

If Council approves the attached resolution, a second reading of the ordinance will be scheduled for a subsequent meeting. If the ordinance is adopted, the CalGreen Code (regarding EV charging) would be effective in 30 days. The Energy Code reach code would become effective upon approval by the CEC, which is expected to be completed by the end of May 2020. The codes will only apply to new building permits that are submitted after the effective date. Staff will work with EBCE to provide educational materials about the reach codes to contractors, developers, and building designers.

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