BUSINESS OF THE COUNCIL OF THE CITY OF HALF MOON BAY

AGENDA REPORT

For meeting of: **February 2, 2021**

TO: Honorable Mayor and City Council

VIA: Bob Nisbet, City Manager

FROM: John Doughty, Public Works Director
Veronika Vostinak, Sustainability Analyst

TITLE: **REACH CODE STUDY SESSION**

RECOMMENDATION:
It is recommended that the City Council conduct a study session and provide staff direction to draft a reach code ordinance to increase energy efficiency and reduce greenhouse gas (GHG) emissions by limiting natural gas usage in buildings.

FISCAL IMPACT:
There is no fiscal impact associated with this study session. The cost of any future ordinance work will be borne by the operating budgets of Community Development and Public Works as this work product is a collaborative effort of the two departments.

STRATEGIC ELEMENT:
This action supports the *Infrastructure and Environment* and *Healthy Communities and Public Safety* Elements of the Strategic Plan.

OVERVIEW:
California continues to lead the fight against climate change. The effort to fight climate change is delegated to State agencies, regional planning/transportation agencies and local governments like Half Moon Bay and San Mateo County.

The State legislature and Governor(s) have created legislation, rules and executive orders to create a framework for ambitious statewide greenhouse gas (GHG) reductions. The following is a list of some of the more prominent guiding policy documents:

- Assembly Bill 32 (AB 32) - established the goal of reducing GHG emissions to 1990 levels by 2020
- Senate Bill 32 (SB 32) - established the goal of reducing GHG emissions 40% below 1990 levels by 2030

- Executive Order (EO) B-55-18 - established the goal of achieving carbon neutrality by 2045 at the latest and maintaining net negative net emissions from that point forward
- Senate Bill 100 (SB 100) - requires a 100% clean electric grid by 2045
- EO N-79-20 - requires all new cars and passenger trucks sold in California be zero emission by 2035

The City is currently in the process of preparing its first Climate Action and Adaptation Plan (CAAP). This plan will provide an inventory of emissions, estimates of future unmitigated emissions and policies/implementation measures to reduce GHG into the future. Notably, energy represents the greatest amount of GHG emissions in Half Moon Bay; approximately 49% of all GHG emissions.

Local jurisdictions may assist in the reduction of statewide GHG emissions by adopting the Statewide Building Code combined with more stringent local policies. The City Council has previously indicated a desire to proceed with adoption of a local ordinance that goes beyond statewide standards, also known as a "Reach Code". This report addresses the pros and cons of a range of regulatory actions that "reach" beyond the State Building Codes.

BACKGROUND:

Every three years, the State of California develops and adopts revisions to the State model building and related codes. In January 2020, the City Council adopted the most recent State Model Code (dated 2019). The California model codes continue to integrate energy savings improvements. The 2019 building standards include some of the most energy efficient in the country, achieving efficiency similar to those of national green standards (LEED Silver). The 2019 code is focused on energy efficiency assuming various energy sources (including natural gas and propane) and electric. The State has provided local jurisdictions the authority to adopt energy code amendments, or reach codes, that exceed Statewide standards. Many California jurisdictions have adopted revisions (Reach Codes) to varying degrees.

In 2016, San Mateo County and all 20 of its cities and towns voted unanimously to form Peninsula Clean Energy (PCE), a community-controlled, not-for-profit, joint powers agency. The formation of PCE has provided the City with a cheaper and convenient way to move away from fossil fuel powered electricity. As of January 2021, PCE is able to provide GHG-free energy to all customers through wind, solar, and hydropower sources. PCE's ability to provide clean energy to all customers has led many jurisdictions within their service area to adopt measures to increase energy efficiency and reduce reliance on natural gas and other fossil fuels. With this cleaner electricity generation, the replacement of natural gas and propane appliances with electric alternatives has the potential to significantly reduce building energy related GHG emissions.

Drafting Reach Codes for City Council consideration is listed as a key policy action for FY 20-21 in the City's Sustainability Implementation Plan adopted in September 2020.

DISCUSSION:

A Reach Code is a local building energy code that "reaches" beyond the State minimum requirements for energy use in buildings, creating opportunities for local governments to lead the way on achieving their goals around clean air, climate change, and renewable energy. Reach codes can help improve energy efficiency and therefore lower energy costs, improve indoor air quality, and reduce GHG emissions. Some opportunities and examples for various types of reach codes that may demonstrate increased energy efficiency and the reduction of GHG emissions within the City are outlined in the sections below.

A. Solar Photovoltaic (PV) System/Electric Vehicle (EV) Charging Installation

City Council has previously expressed a desire to adopt Reach Codes that include requirements to increase the installation PV and EV infrastructure with any new construction beyond what is required by the 2019 building codes.

1. PV Systems (solar panels): The current energy code requires PV installation on new construction of single-family and multi-family homes up to three stories high, based on square footage. Given the limited amount of new construction in Half Moon Bay, expanding the PV requirements to include larger buildings, remodels and new attached ADUs would provide greater local GHG free energy. Additionally, these PV systems may be connected with a back-up battery to allow for clean self-generation, storage, and resiliency during planned and unplanned power outages. Installing PV systems at the time of construction is likely to decrease the overall costs compared to retrofit after-the-fact along with energy cost savings derived monthly.

2. EV Charging: 35% of the community GHG emissions (2017) were generated by gas-powered automobiles and trucks. The State of California has established the goal to require all new cars and passenger trucks sold in California be zero emission by 2035. The EV charging infrastructure needs will greatly increase as more individuals switch to EVs. Access to charging infrastructure is one of the main barriers behind price preventing individuals from purchasing an EV. A market research survey conducted by PCE in 2020, found that 36% of those surveyed did not have access to a convenient charging location near their home, work or school. Adding requirements to install new EV infrastructure in new buildings and at certain specified facilities at the time of construction is an opportunity to expand EV access.

B. Building Decarbonization for New Construction and Major Remodels

Building decarbonization means to increase energy efficiency and to decrease the amount of GHG emissions produced by a building. Reach Codes that focus on building decarbonization can help to reduce carbon emissions, reduce costs in new construction, and improve indoor air quality and building safety.

39% of the community GHG emissions in 2017 were produced by natural gas usage in buildings. Adopting a reach code that increases building energy efficiency and/or disincentivizes new

natural gas or propane plumbing would support Half Moon Bay's efforts to reduce GHG emissions in line with the State goals outlined above. Natural gas and propane are typically used for space and water heating as well as for cooking and clothes drying. In commercial and industrial applications, natural gas or propane is commonly used in more specialized functions such as for pool/spa heating, emergency services, laboratory use, and process heating. Staff will be evaluating the usage of natural gas in the hotel sector should the City Council direct building retrofits as part of its reach code. It is important to also recognize that not all-natural gas usage can be eliminated immediately and/or without new technology or extensive public investment. For example, the Sewer Authority Mid-Coast (SAM) sewer treatment plant utilizes natural gas in various ways to treat effluent and protect the marine environment. The authority will need to evaluate possible alternatives, but this effort will take some time. The plant represents a very small percentage of the emissions footprint (0.01%).

Building decarbonization codes do not regulate propane use for portable appliances that are used outside of the building envelope such as those appliances used for outdoor cooking (grills, smokers, etc.) or portable outdoor heating thus providing limited means for local regulation. These tend to represent a very small percentage of the GHG inventory and are not recommended to be included. Technology and Statewide regulations are likely to address these in the coming years.

Throughout California, there are three types of reach codes focused on building decarbonization for new construction that have been adopted by various jurisdictions:

1. All-electric preferred with mixed-fuel option (example City of San Mateo)
2. All-electric required with exceptions (examples City of Menlo Park, the County of San Mateo)
3. All-electric only which prohibits gas hookups (example City of Berkeley, City of Oakland)

1. *All-electric preferred with mixed-fuel option:* An all-electric with mixed-fuel option type of policy is considered a good first step in moving away from reliance on natural gas and propane. These policies allow for some new buildings and large remodels to install new natural gas or propane hookups. Any buildings that are built electric-only will need only to meet the state efficiency standards at the time of construction. However, in the case a builder chooses a mixed-fuel option, they must demonstrate that the building *exceeds* these standards by a certain percentage, usually 10% or more. Additionally, they must provide for the option of electrical appliances throughout including for stoves, furnaces, water heaters and clothes dryers. This is generally added to these policies since wiring for electric appliances is least expensive at the time of construction. This policy allows for flexibility in the cases where it may be more efficient or economically preferred to provide power from mixed fuel sources. Some iterations of this policy only allow mixed fuel in certain building types (multi-family residences) or may have additional requirements (100% affordable units). An example of this type of policy from the City of San Mateo is included as Attachment 1.

Pros: These types of policies require new buildings and large remodels that utilize natural gas or propane to be more energy efficient than an all-electric equivalent, thus leading to reduced GHG emissions. All-electric with mixed-fuel options allows for added flexibility for certain buildings that may prefer the use of natural gas or propane for some uses. These types of policies are likely to have less pushback from the community due to the fact they offer of a choice of natural gas or propane. Requiring pre-wiring for electric appliances at the time of new construction allows for future, more wide-ranging policies to be adopted and implemented as Statewide (and possibly local) regulations evolve over time. Without generators or battery back-ups, those with natural gas have a distinct advantage in power outages whether planned or unplanned.

Cons: Some consider these policies too lenient and believe that adding new gas connections could delay or complicate more comprehensive policies.

2. *All-electric with limited exceptions*: All-electric with limited exceptions policies require most new buildings and large remodels to be constructed as all-electric but allow for some types of natural gas or propane applications for very specific uses. These exceptions can vary widely from jurisdiction to jurisdiction and can be tailored to specific local needs. Some common examples of exceptions include: gas stoves (commercial and/or residential), fireplaces, grills, firepits, spa/pool heating, emergency services, and life-science labs. These codes typically require pre-wiring for electrification should technology change, regulations change, or a future occupant chooses to electrify.

Generally, 80% of a building's GHG emissions are the result of space heating and water heating. The exception codes are designed to focus on the largest (80%) contributor while allowing time for the remaining 20% to evolve. An example of this type of policy from the County of San Mateo is included as Attachment 2.

Pros: These types of policies target the biggest contributors of GHG emissions, but allows for some accommodation for specialized local needs and desires. Similar to the mixed-fuel option, these types of policies are likely to have less pushback from the community. Requiring pre-wiring for electric appliances at the time of new construction allows for future, more wide-ranging policies to be adopted in future years with less financial impact on building owners.

Cons: Similar to the mixed-fuel type policies, some consider these policies to be too lenient and adding any new gas-hookups could delay or complicate more comprehensive policies. There is the probability that some individuals may choose to illegally install gas appliances without the benefit of permit and safety inspections (this occurs today as well).

3. *All-electric only:* An all-electric only Reach Code would prohibit the installation of new natural gas and propane infrastructure and would require all new buildings and large remodels to be constructed as all-electric. As of late 2020, several California jurisdictions

have banned the use of natural gas in new building construction, including Oakland, San Francisco, San Jose, Berkeley and Richmond. Some policies exclude ADUs from these requirements or require that only new detached ADUs be constructed as all-electric. Staff is aware of three lawsuits challenging the adoption of all-electric codes. The California Restaurant Association filed suit in federal court alleging that the City of Berkeley's ordinance is preempted by state and federal law. The City has moved to dismiss the suit and we expect a ruling on the motion sometime in March. Local builders filed CEQA suits challenging ordinances adopted by Windsor and Santa Rosa. Windsor is settling its suit and the Santa Rosa suit has not been resolved. An example of this type of policy from the City of Oakland is included as Attachment 3.

Pros: All-electric policies are the most far-reaching option to reduce GHG emissions from natural gas and propane usage and are likely to reduce GHG emissions from buildings faster than the policies above. New gas hookups are expensive and electric-only buildings are generally less expensive upfront to build. New electric appliances are usually more efficient than gas equivalents and are likely to reduce monthly energy costs for building owners and tenants.

Cons: Gas bans are relatively new and could open City up to legal challenges. Many people prefer using gas appliances to electric and these policies are likely to receive increased community pushback from building owners, contractors, and business owners. In some commercial and industrial applications, there may not currently be an electric-only application appropriate for their operations. Should these requirements be extended to retrofits (discussed below) of existing structures, there is a substantial cost to electrification.

C. Building Decarbonization for Existing Buildings (Mandated Retrofits)

Reach Codes initially focused on new construction, but over time, jurisdictions have chosen to expand the regulations to retrofit of existing buildings and uses. Staff is seeking policy direction on whether to expand regulation to existing buildings and uses and under what conditions would retrofit be required. These issues are discussed further in this section.

We are not aware of any local jurisdictions who have adopted requirements for decarbonization of existing buildings, though a number of them are considering such action. Berkeley, for example, is in the process of developing a plan for decarbonizing existing development. Local jurisdictions are generally considering two options:

1. Burnout ordinance
2. All-electric retrofit requirement for existing buildings

1. *Burnout Ordinance:* A burnout ordinance would allow gas or propane appliances that are currently installed to continue to be used until the end of their useful life (defined by either changeout for remodel or wearing out). At the time of replacement, those gas

appliances would be required to be replaced with an electric alternative. If desired, other triggers for replacement options are available including point of sale, change of ownership, or change of tenancy of a rental unit. These ordinances could focus on all gas appliances or only focus on the appliances that contribute to the most GHG emissions. For example, switching to a heat pump water heater can reduce household GHG emissions by up to 70% annually, and switching from a gas furnace to a high-efficiency air-source heat pump can reduce household GHG emissions by up to 54% annually.[1]

Pros: A burnout ordinance can be a very effective way to electrify current buildings and reduce GHG emissions. This approach allows for some phasing so building owners can replace their appliances at the end of their useful life, thus receiving more value from their investment in the gas appliance.

Cons: New, more efficient electric appliances will likely continue to cost consumers more money upfront, especially in older buildings. For example, an efficient electric heat pump water heater may cost $2,200-$4,400 to purchase and install compared to $1,100 -$1,400 to purchase and install a gas alternative. Older buildings may need electrical panel upgrades, further increasing the cost to replace gas appliances with electric alternatives at the time of burnout. The added upfront cost is a barrier for many building owners. Depending on the policy chosen, there will be cost to the City for increased oversight and enforcement.

2. *All electric retrofit requirement for existing buildings:* An all-electric retrofit requirement would prohibit the use of natural gas and propane in all buildings within Half Moon Bay by a certain date. By the date specified, all gas-powered and mixed-fuel buildings would be required to retrofit to electric-only. This approach is very conceptual and there are no current examples of this type of policy enacted today. Some municipalities, like Berkeley, are looking into options to ban natural gas from existing buildings but specific plans have not yet been presented.

Pros: Natural gas usage in buildings was the largest contributor of GHG emissions in the City's 2017 community GHG inventory. Electrifying all new and existing buildings would effectively eliminate these types of emissions.

Cons: This approach is likely not practical at this point in time. More research needs to be done regarding any legal ramifications or liability issues that may result from this type of policy. Additionally, capping and replacing all natural-gas and propane use within the City by a certain date is likely to be very expensive and burdensome to building owners. Equity considerations will need to be carefully assessed and accounted for. This option would require substantial investment by the City in compliance efforts.

[1] https://www.nrdc.org/experts/pierre-delforge/electric-heat-pumps-can-slash-emissions-california-homes

D. Concluding Considerations for All Building Decarbonization Measures

While building decarbonization measures can have a large impact on the City's GHG emissions and the health and safety of the Half Moon Bay community, there are some obstacles that must be considered and/or mitigated. Any reach code should be equitable and should not disproportionately impact more vulnerable populations, financially or otherwise. Electricity is about 3x more expensive than natural gas and while new electric appliances are more efficient, older electric appliances may cost more to operate than their gas equivalents. New electric appliances are more expensive than gas-powered appliances so financial incentives should be considered in conjunction with the ordinance, particularly if the more far-reaching policy options are chosen. Future incentives to assist with building decarbonization are expected to become available from PCE and other public agencies as soon as this year.

With aging infrastructure and proximity to high-fire risk areas, Half Moon Bay is more susceptible to power-reliability issues with frequent power-outages and extended public safety power shutoff (PSPS) events. During the City's CAAP Outreach in 2019 and 2020, many community members expressed concern in switching to all-electric buildings due to the lack of power-reliability. Many individuals relied on their gas stoves and water-heaters during these outages. It is important to note that most new gas appliances need electricity to start and will not be more reliable in a future power outage or PSPS event. It is likely these individuals would still need a gas or propane powered generator or solar powered back-up battery to use these appliances in the event of an electrical grid outage.

Finally, community preference, lack of familiarity, and the need for behavior change should all be considered with all iterations of these building decarbonization policies. For example, many contractors are not familiar with electric heat pump water heaters and will need additional training or guidance. Additionally, many individuals and businesses prefer gas stoves over electric due to past experience with electric stovetops. New induction-style stovetops are increasing in popularity due to their safety and efficiency. Induction stovetops offer more control than electric stovetops with a heating element; however, there is a learning curve and lack of exposure for the general consumer. Most cookware made from copper, aluminum, or ceramic may not function and will need to be replaced in order to use an induction cooktop. Some cultural cooking methods and commercial uses do not translate well to using electric or induction stovetops.

E. Next Steps

This study session is intended to provide the opportunity for community and Council input and policy direction. The draft ordinance will be made available to the community in advance of scheduling for formal action by the City Council. As with any ordinance, there are required two noticed hearings/meeting prior to enactment.

Reach codes are considered amendments to the State Code and notice of adoption must be filed with the California Building Standards Commission (CBSC) and approved by the California Energy Commission (CEC) to become affective within a local jurisdiction. As part of the approval by the CEC, each jurisdiction must demonstrate that the amendments to the code are cost effective and do not represent an unreasonable burden to builders and the building's occupants. A cost-effectiveness study is not required for amendments to the Green Building Standards Code for increased amounts of EV infrastructure.

ATTACHMENTS:

1. Reach Code Ordinance (City of San Mateo, 2020)
2. Reach Code Ordinance (County of San Mateo, 2020)
3. Building Electrification of New Construction Ordinance (City of Oakland, 2020)