CITY OF SAN MATEO

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330 W. 20th Avenue
San Mateo CA 94403
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Agenda Report

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TO: City Council

FROM: Drew Corbett, City Manager

PREPARED BY: City Manager's Office

MEETING DATE: September 19, 2022

SUBJECT:
Sustainability-Related Amendments to the 2022 Building Code

RECOMMENDATION:
Provide feedback on potential amendments to the 2022 Building Code for new construction and existing buildings related to building electrification and electric vehicle charging infrastructure.

BACKGROUND:
Transportation accounts for 50% of greenhouse gas emissions in San Mateo, followed by electricity and fossil gas (also known as natural gas) use in buildings that accounts for 34% of emissions. The City's Climate Action Plan identifies encouraging adoption of electric vehicles (EV) and electrification of new and existing buildings as key focus areas to meet greenhouse gas emission reduction goals. Furthermore, the City Council directed staff to establish policies to decarbonize and electrify existing buildings and eliminate fossil gas use by 2030.

The California Building Standards Code (Building Code) contains regulations that govern the structural safety and sustainability of buildings in California. Local governments can adopt amendments to the Building Code to require more sustainable development and address emissions from the transportation and building sectors. Reach codes, which can be included as part of a local building code adoption cycle, are local building energy and green building codes that "reach" beyond minimum State requirements for building design and construction. Reach codes are typically evaluated every three years in line with the State's triennial building code cycle. The last Building Code was adopted in 2019 and went into effect on January 1, 2020. The 2022 Building Code will be adopted this fall and be effective January 1, 2023 through December 31, 2025.

Peninsula Clean Energy (PCE) is a joint powers agency established in 2016 to provide clean electricity in San Mateo County. In the previous code cycle, PCE supported jurisdictions in the adoption of reach codes to advance renewable energy, building electrification and EV readiness. PCE provided cost-effectiveness studies, model ordinances and technical support to city staff. This year, PCE is leading the newly formed Bay Area Reach Codes group that includes East Bay Clean Energy (EBCE) and Silicon Valley Clean Energy (SVCE) and providing this same type of support to local governments. The Bay Area Reach Codes team developed model codes for building electrification and EV readiness for new construction and existing buildings. It is important to note that reach codes for solar and battery storage are not a focus since the 2022 State Energy Code now requires solar and battery storage for all types of new construction.

Staff presented reach code options for new construction and existing buildings at the Sustainability Infrastructure Commission (SIC) meetings on April 13, 2022 and July 13, 2022. Staff hosted a virtual community meeting on the proposed reach code options for existing buildings on August 30, 2022 and launched an online survey on August 31, 2022. This report provides an overview of the importance of building electrification and EV infrastructure, summarizes the City's

current reach codes, and introduces options for new reach codes addressing building electrification and EV readiness in new construction for the 2022 Building Code. This report also introduces reach code options to address building electrification in existing buildings for the 2022 Building Code and includes discussion of other policy approaches to decarbonize the existing building stock. SIC and community feedback is also summarized in this report.

BUILDING ELECTRIFICATION AND EV READINESS BACKGROUND

Building electrification refers to the transition from gas equipment to electric equipment for space and water heating, clothes drying, cooking and more. PCE provides electricity that is 50% renewable and virtually 100% carbon free and PCE is committed to delivering 100% renewable and carbon free electricity by 2025. While electricity has become cleaner, fossil gas is a fossil fuel producing significant emissions. The primary component of fossil gas is methane, which contributes emissions with a very high global warming potential. Leakage from fossil gas infrastructure adds to emissions as gas leakage occurs during production, transmission, and even at the building level. There are also health and safety concerns associated with the transmission and use of fossil gas in homes.

Bolstering EV charging infrastructure is an important priority in the Climate Action Plan and critical to reducing greenhouse gas emissions in the transportation sector. The State established ambitious goals around electrifying vehicles and by 2035, the sale of all new passenger cars and trucks will be zero-emission. The sale of electric vehicles in San Mateo County has grown rapidly over the past ten years, and last year 20% of new vehicle sales were electric. To meet the State's aggressive climate goals, millions of more charging ports will need to be installed throughout the state. The availability of home charging is specifically important because the lack of at-home charging is considered the primary barrier to EV adoption. The California Energy Commission estimates that 70% of people need access to at-home charging to enable an all-electric fleet.

NEW CONSTRUCTION – ALL-ELECTRIC REACH CODE

Currently, the City of San Mateo's building electrification reach code requires the new construction of all residential buildings and office buildings be all-electric. The Bay Area Reach Code team building electrification model ordinance for new construction requires that new construction of all building types be all-electric. The model ordinance allows for commercial kitchens and hotels/motels laundry machines to use fossil gas and includes pre-wiring requirements if combustion equipment is installed to enable future electrification. These specific end uses are allowed to use fossil gas because of the potential increase in utility bills compared to gas equipment and challenges with electric industrial laundry technology.

At the July 13, 2022 SIC meeting, all Commissioners supported the Bay Area Reach Code model ordinance requiring all new construction to be all-electric with exceptions for commercial kitchens and hotels/motels laundry machines. Some Commissioners also supported adding an exemption for space conditioning for buildings with biotechnology use. Additional discussion is included in Attachment 1.

Staff recommends adoption of the Bay Area Reach Codes model ordinance requiring all new construction be all-electric and adding an exemption for space conditioning for buildings with biotechnology use.

NEW CONSTRUCTION – ELECTRIC VEHICLE CHARGING

Currently, the City of San Mateo's reach code requires enhanced EV charging infrastructure for single family and two-family townhomes, multifamily and nonresidential buildings. The Bay Area Reach Codes model ordinance for EV infrastructure for new construction is summarized in Table 1.

Table 1: Proposed Reach Codes for New Construction EV Charging

Impacted buildings	Proposed reach code requirement	
Single Family Homes and Two-Family Townhomes	One Level 2 EV Ready per dwelling unit; One Level 1 EV Ready space if second space provided	
Multifamily Buildings	***OPTION A*** 40% Level 2 EVCS 60% Level 1 Ready Total: 100% of dwelling units with spaces ***OPTION B*** 15% Level 2 EVCS 85% Level 2 Ready (low-power) Total: 100% of dwelling units with spaces	<u>Affordable Housing</u> 15% Level 2 EVCS 25% Level 2 Ready (low-power) 60% Level 1 EV Ready Total: 100% of dwelling units with spaces
Non Residential	<u>Office Use</u> 20% Level 2 EVCS 30% Level 2 EV Capable Total: 50% of spaces	<u>All Other Uses</u> 10% Level 2 EVCS 10% Level 2 EV Capable Total: 20% of spaces

At the April 13, 2022 SIC meeting, all commissioners supported the Bay Area Reach Code model ordinance requiring enhanced requirements for EV infrastructure. Commissioners emphasized the importance of using the model code for consistency across the region. Some commissioners expressed concerns about relying on Level 1 charging in multifamily and recommended requiring Level 2 charging because of the charging speed.

In July 2022, the Bay Area Reach Code model ordinance was updated to include an alternate option (Option B in Table 1) for multifamily buildings requiring Level 2 (low-power) instead of Level 1 charging. PCE staff drafted this alternate reach code after receiving feedback from different cities expressing preference for Level 2 charging over Level 1. The SIC did not have the opportunity to provide feedback on Option B. Attachment 1 includes a comparison of the City's current EV reach codes and additional supportive analysis for staff's recommendation aligning with the Bay Area Reach Codes model ordinance for EV infrastructure.

Staff recommends the adoption of the Bay Area Reach Codes model ordinance requiring enhanced EV charging infrastructure for single family and two-family townhomes and nonresidential buildings. Staff does not have a recommendation between the reach code options for multifamily buildings and seeks City Council feedback and direction.

EXISTING BUILDINGS

The City of San Mateo has a strong history of applying reach codes to new construction, but new construction represents a small fraction of the built environment in San Mateo. Developing reach codes to decarbonize existing buildings is very challenging but key to reaching the City's ambitious climate goals. When developing reach codes for existing buildings, the City must consider a variety of factors.

Staff considered the greenhouse gas emission impact for each of the proposed reach code options. A typical San Mateo residence has the following breakdown of fossil gas usage per appliance: 55% for water heating, 36% for space heating, 6% for cooking, and 3% for clothes drying. The proposed reach codes focus on the highest fossil gas use in a home: water heating and space conditioning. Reach code options also focus on electric-readiness where requiring electric equipment replacement is not yet cost-effective compared to the gas option. Staff also reviewed best practices in other cities.

Requiring electrification through reach codes is a relatively new approach and only a few California cities have reach code requirements for electrification in home renovations.

It is also important to consider potential challenges with enforcement. The proposed reach code options are enforced when a permit is issued from the City and the City relies on the building permit and inspection processes to ensure gas and electric equipment are installed safely to protect the health and safety of the community. If reach codes impose restrictions that community members or contractors find too challenging or costly to comply with, this might result in improvements being done without permits.

Finally, staff also evaluated the costs to the property owner and the equity impacts of the policy. Requiring electric equipment may increase upfront project costs and may also have a long-term impact on operational/utility costs. Upfront costs to convert to new technology and electric equipment are often the primary barrier for electrification in underserved communities. Someone who faces energy insecurity (the inability to pay for energy bills without a significant trade-off) is not able to prioritize electrification. The City will need to be thoughtful about reach code requirements to prevent negative impacts to underserved communities. Additionally, there is a very high cost of living in San Mateo and homeowners of varying income levels are challenged with housing costs and lack the discretionary income for increased costs of equipment replacement and ongoing increases on monthly utility bills.

Proposed Reach Code Options

Currently, the City does not have any reach codes in place for existing buildings. In February 2022, staff began collaborating with PCE to explore reach code options for existing buildings that would be effective during the upcoming building code cycle January 1, 2023 through December 31, 2025. PCE provided technical support to City staff in the drafting and development of the proposed reach code options.

The proposed reach code options would be enforced at the time of permit application and issuance, in other words, they are triggered when someone is coming to the City to get a permit for a project. The proposed reach code options focus on reducing the use of fossil gas and encouraging building electrification in single family homes, duplexes, and residential buildings. Table 2 summarizes the proposed reach code options for Council consideration and Attachment 2 includes more detailed analysis and discussion. City Council could recommend the adoption of all five reach code options or a subset of the options. When evaluating Reach Code Options 4A and 4B, City Council should select one of the two reach code options.

Table 2: Proposed Reach Codes for Existing Buildings

Reach code option	Impacted buildings	Proposed reach code requirement
1) Electric-readiness: panel capacity	Residential buildings	Requires panel replacement and panel upgrade projects to include panel capacity/breaker space for future electrification
2) Electric-readiness: outlets installed	Single family homes and duplexes	Requires all residential kitchen and laundry renovations include installation of an outlet to allow for the use of electric appliances in the future
3) Heat pump air conditioning	Single family homes and duplexes	Requires installation of heat pump air conditioning when new air conditioning is installed or replaced, in conjunction with furnace replacement
4) Pools and outdoor equipment	Residential buildings	4A) Requires new pools to use electric or solar pool heating at residences 4B) Prohibits the extension of fuel gas infrastructure into the backyard for uses such as fire pits, grills, and pools
5) Heat pump water heaters	Single family homes and duplexes	Requires heat pump water heater installation during addition and alteration projects that include water heater replacement

At the July 13, 2022 SIC meeting, all commissioners supported adoption of Reach Code Options 1, 2, and both 4A and 4B. Commissioners also supported adoption of Reach Code Option 3 with some commissioners emphasizing the importance of providing rebates for heat pumps. Commissioners provided mixed feedback on Reach Code Option 5. While two commissioners voiced support for Reach Code Option 5, two commissioners expressed concerns about requiring heat pump water heaters and the increased costs of the equipment.

Staff recommends adoption of Reach Code Options 1, 2, 3, 4B and 5. Supportive analysis for staff's recommendation is provided in Attachment 2.

Bay Area Reach Codes: Existing Building Decarbonization Ordinance

In July 2022, the Bay Area Reach Codes team published the Existing Building Decarbonization Ordinance (Decarbonization Ordinance), included as Attachment 3. The Decarbonization Ordinance is not a building amendment and is not tied to the Building Code. It instead relies on the police powers of a city. The Decarbonization Ordinance contains four main elements: 1) establishes a date to require electric appliances upon appliance replacement; 2) requires electric-readiness during appliance replacements; 3) requires fossil fuel disclosure during sale of property; and 4) establishes a date for termination of fuel gas infrastructure.

Unlike the new construction reach codes, PCE has stated that the Decarbonization Ordinance is meant to serve as a menu of regulatory options for jurisdictions to consider. PCE is not recommending that jurisdictions adopt every element. Furthermore, the template contains blanks spots for cities to specify the effective date of requiring electric appliance replacements for each type of gas equipment (i.e., water heaters, furnaces, stoves, and clothes dryers).

To select an appropriate effective date, PCE recommends that cities analyze the gas equipment replacement costs and ongoing/utility costs across building types and likely select nuanced dates depending on the equipment and building type; similar to the analysis that was presented for the proposed reach codes. PCE has not completed this analysis on behalf of

cities. PCE recommends that each jurisdiction will need to carefully consider its unique circumstances, demographics, resources, and capabilities before adopting the Decarbonization Ordinance. In addition, PCE recommends that jurisdictions should consider the costs of complying with requirements and the availability of resources to achieve code compliance and ensure that their code produces equitable and just outcomes. Staff has not yet completed this recommended analysis and requires the assistance of technical experts. To date, no other cities have adopted the Decarbonization Ordinance.

The advocacy group San Mateo Climate Action Team has petitioned for the immediate adoption of the Decarbonization Ordinance. In their public comment to the SIC, the group recommended January 1, 2026 as the effective date for all appliance replacements to be electric and recommended January 1, 2030 as the effective date for the termination of gas in the City of San Mateo. In a recent email to City Council, the group updated their proposal to require all appliance replacements be electric beginning January 1, 2025. As discussed above, careful evaluation is needed to consider the impact of such a policy on all building types, electric technology, contractor readiness, and costs to the property owner to determine a meaningful and feasible effective start date for the policy. Staff does not have a recommendation for or against the advocacy group's proposal, but staff does recommend that technical analysis be completed before Council consideration of adoption. In addition, staff recommends doing both community and contractor engagement on these proposed policies.

In the immediate term, staff has focused on working with PCE on reach codes to leverage the building code cycle and implement measures that would go into effect January 1, 2023. The Decarbonization Ordinance requires further evaluation and will be included as part of the City's decarbonization strategy. In line with the City Council priority to decarbonize existing buildings, staff will develop a strategic roadmap to decarbonize our community and evaluate and establish an "End of Flow" target date for the termination of fuel gas infrastructure. Work on this effort is scheduled to begin later this fiscal year after staff completes work on the adoption of the proposed reach codes. Staff plans to contract with a technical consultant to evaluate the City's building stock and analyze other building decarbonization approaches. These approaches include financing and rebates for electrification, home energy assessment requirements, commercial energy building performance standards, carbon neutrality policies and electric appliance upgrade requirements (e.g., Decarbonization Ordinance). Additionally, staff will pursue partnerships with agencies such as PCE to implement programs that focus on funding electrification in low-income households.

The proposed decarbonization strategy will evaluate the proposed approach recommended by the advocacy group San Mateo Climate Action Team. Since this approach is not tied to the building code, there is no concern about the triennial code cycle update and this approach could be adopted at any time. The Decarbonization Ordinance will be evaluated and vetted with the community and stakeholders later this fiscal year, and can be potentially enacted with the group's proposed time frames.

Community Feedback

On August 30, 2022, staff hosted a virtual Community Meeting on the Proposed Reach Code options, 35 people attended the meeting. Staff and PCE presented background information on climate action and building electrification and an overview of the proposed reach code options for home renovations. Staff responded to questions from meeting attendees and used the Zoom poll feature to collect feedback at the end of the meeting (see Attachment 4 for poll results). Overall, most poll respondents expressed strong support for adoption of all 5 of the reach code options. Most poll respondents (60%) thought reach code options do not go far enough, while 25% of poll respondents thought the reach code options help reduce greenhouse gas emissions, and 15% of poll respondents thought reach codes options go too far. Many attendees provided verbal comment to express support for adoption of the Decarbonization Ordinance using the dates recommended by the San Mateo Climate Action Team advocacy group.

Staff encouraged those who could not attend the August 30 community meeting to email staff directly; emailed comments are included with the public comment as Attachment 6. Most of the emailed comments express support for the Decarbonization Ordinance using the dates selected by the advocacy group.

Additionally, staff launched an online survey to allow community members to provide feedback on the proposed reach codes at their convenience. The survey was open August 31 through September 13 and results are included as Attachment

5. Even though it is not a statistically significant survey, it is an important tool to engage the community and those who have an interest in this topic or are unable to attend public meetings. Analysis on the survey results was not possible before the publishing of the agenda, however, staff will verbally present the survey results at the City Council meeting.

REGIONAL, STATE AND FEDERAL DECARBONIZATION EFFORTS

Decarbonization is a priority at the regional and state levels. The Bay Area Air Quality Management District (BAAQMD) is investigating the role that ultra-low or zero-NOx (nitrogen oxides) appliance standards can play in helping them achieve Clean Air Act requirements. BAAQMD regulates gas furnaces and water heaters and has developed draft rules that would reduce emissions from nitrogen oxides from residential and commercial furnaces and water heaters in buildings in the Bay Area. In summary the rules would:

- Prohibit the sale and installation of residential gas water heaters after January 1, 2027,
- Prohibit the sale and installation of residential/commercial gas furnaces after January 1, 2029, and
- Prohibit the sale and installation of commercial gas water heaters/boilers after January 1, 2031.

The draft rules were slated to be considered for adoption this year but the BAAQMD rulemaking was delayed due to additional CEQA analysis. The draft rules will be considered for adoption in January 2023.

California has established greenhouse gas reduction goals and several state agencies are working on building decarbonization. For example, the California Energy Commission (CEC) has been working to incorporate building decarbonization goals into development of the California Building and Appliance Efficiency Standards. The California Public Utilities Commission is considering gas and electric rate structures as well as various programs through its Building Decarbonization Proceeding such as the implementation of the TECH and BUILD programs. The California Air Resources Board included a recommendation in the Climate Change Scoping Plan for 2022 that 100% of appliance sales be electric by 2035.

In August 2022, President Biden signed the Inflation Reduction Act (IRA) into law providing direct financial support for electrification. The IRA includes two important building electrification incentives. Firstly, the IRA established a tax credit for up to 30% of the installed cost of heat pump space heaters or heat pump water heaters, maximum $2,000 per household per year. This tax credit is immediately available under the “Energy Efficient Home Improvement credit.” To take advantage of this tax credit, you would not be able to use the standard deduction.

Secondly, the IRA includes a rebate program offering up to $14,000 per household that will be administered at the state-level. It will take time for the State to develop and administer this new rebate program so funding will not immediately be available to constituents. The timeline for funding availability has not been made public. The credit should pay for 100% of upgrades to low-income (<80% AMI [Area Median Income]) households and up to 50% of upgrades for moderate-income (80-150% AMI) households. Staff anticipates this funding source to be highly competitive and that there will be more interest for the rebates than there is funding available. The ability to access the rebate funding will therefore be subject to funding availability.

Peninsula Clean Energy has announced new incentives for heat pumps including $3,500 for heat pump space heaters and $3,000 for heat pump water heaters. The aim of these incentives is to cover the incremental cost of electrification at the time of replacement or installation. These incentives will be available before January 1, 2023.

Rebate and incentive funding will help make electrification more cost-effective for San Mateo property owners. These regional, state and federal actions provide helpful context as the City evaluates reach codes and decarbonization policies in the future.

NEXT STEPS

It is critical that new construction reach codes be adopted by the end of the year in conjunction with the new Building Code to prevent a lapse in the City’s current new construction reach code requirements. Reach codes can be adopted at any time, however, it is optimal for a reach code to be adopted at the beginning of the Building Code cycle to maximize the amount of time the policy is in place. Addressing electrification in existing buildings is new for San Mateo and developing

thoughtful policies for existing buildings is complex. Reach codes for existing buildings could be adopted separately from the new construction reach codes if more time is needed for analysis and public input. Since the City does not currently have a reach code impacting existing buildings, there is no concern about a lapse in requirements.

Staff will incorporate City Council feedback before returning to City Council for reach code ordinance introduction and adoption in October or November. Proposed reach codes would go into effect with the 2022 Building Code on January 1, 2023.

BUDGET IMPACT:
There is no budget impact.

ENVIRONMENTAL DETERMINATION:
This informational report is not a project subject to CEQA, because it can be seen with certainty that it will not cause a physical change in the environment. (Public Resources Code Section 21065.)

NOTICE PROVIDED

All meeting noticing requirements were met.

ATTACHMENTS

Att 1 – Proposed Reach Codes for New Construction
Att 2 – Proposed Reach Codes for Existing Buildings
Att 3 – Decarbonization Ordinance
Att 4 – Community Meeting Poll Results
Att 5 – Online Survey Results
Att 6 – Public Comments

STAFF CONTACT

Andrea Chow, Sustainability Analyst
achow@cityofsanmateo.org
(650) 522-7007