



Agenda Report

21-1108

Agenda Date: 9/28/2021

REPORT TO COUNCIL

SUBJECT

Action on the Introduction of an All-Electric Reach Code Ordinance, including Electric Vehicle (EV) Charging, that Amends Chapter 15.36 (Energy Code) and Chapter 15.38 (Green Building Code) of Title 15 (Buildings and Construction) of the Santa Clara Municipal Code

COUNCIL PILLAR

Promote Sustainability and Environmental Protection

EXECUTIVE SUMMARY

At the City Council Meeting on March 2, 2021, staff presented greenhouse gas (GHG) emissions trends and forecasts as part of the discussion around setting City Climate Action Plan (CAP) Update targets. During this study session, staff also requested Council direction on a “reach code” for building electrification and electric vehicle (EV) charging. Reach codes are local building code amendments that go beyond the State of California’s requirements for energy efficiency and green building standards. At this meeting, Council provided direction to proceed with development of an all-electric reach code that included electric vehicle (EV) charging requirements.

The consideration of reach codes was further reinforced at the July 13, 2021 CAP Update study session, confirming the Draft Climate Action Plan Update GHG targets as a key step to meeting emissions reduction goals. Additionally, Council directed staff to modify the EV charging requirement in the reach codes as follows:

Original: Implement proposed Reach Code to require all new multi-family projects (20 units or less) to install one Level 2 EV ready charging station per unit. Require all new multi-family projects (over 20 units) to install 25% of parking spaces Level 2 EV ready and 75% of parking spaces Level 1 EV ready.

New Council Directive: Require all new multi-family projects (over 20 units) to provide 25% of parking spaces with Level 2 EV ready spaces and 75% of parking spaces with Lite Level 2 EV ready spaces at 3.8 kW using an automatic load management software to balance the loads.

Per Council’s direction, staff have prepared an all-electric reach code with EV charging requirements for council consideration. The proposed ordinance factors in regional and State consistency and Santa Clara specific circumstances while setting a course to achieve critical decarbonization goals and meet EV charging demand.

BACKGROUND

In California, the building sector accounts for approximately 25% of GHG emissions Statewide.

Within the building sector, water and space heating account for approximately 85% of the natural gas use in residential buildings and nearly 70% in non-residential buildings. Additionally, the transportation sector represents nearly 40% of State-wide emissions, with almost 2/3 coming of that coming from passenger vehicles.

Building and transportation electrification are thus key strategies to achieve GHG emissions reductions and advance decarbonization efforts. Reach codes are local building code amendments that establish higher standards for energy efficiency and green building practices beyond the State of California's requirements. Recently municipalities have begun to adopt reach codes to locally increase energy efficiency, reduce GHG emissions and meet climate action goals.

Over 40 municipalities across California have now adopted reach codes, predominantly in the Bay Area and Central Coast regions. Municipalities across Santa Clara County have widely adopted some form of reach code with the all-electric option comprising many adopted ordinances. An all-electric reach code requires that buildings use electricity as the energy source for all appliances, including space heating, water heating, clothes-drying, and cooking. While not all reach codes have included EV infrastructure in their amendments, including EV infrastructure requirements in a reach code supports both State and local targets around the transition to cleaner transportation.

State and Local Policy Targets

Several State policies establish GHG reduction targets, including:

- Executive order B-55-18 (EO B-55-18), pledging that the California economy will be carbon neutral by 2045
- Assembly Bill 3232 (AB 3232) - requiring the California Energy Commission (CEC) to create a plan by 2021 to reduce building sector emissions by 40 percent below 1990 levels by 2030.
- Senate Bill 32 (SB 32) set mid-term and long-term goals of reducing GHG emissions 40% below baseline levels by 2030 and 80% by 2050.
- Executive order N-79-20 (EO N-79-20), setting a goal for 100% of all in-state sales of new passenger cars and trucks to be zero emission by 2035 and 100% of medium and heavy-duty vehicles be zero emissions by 2045.

With this context, there is a significant potential for future state emissions regulations that could impact the use of natural gas, including potential requirements that all new buildings be natural gas emissions-free, and possibly also requiring retrofit of existing buildings to eliminate the use of natural gas.

During the March 2, 2021 City Council meeting, staff requested direction on proceeding with establishment of an all-electric reach code to address building electrification and EV infrastructure. The City Council provided direction to proceed with preparing an all-electric reach code with EV charging requirements. Additionally, at the July 13, 2021 City Council CAP study session, the City Council confirmed the inclusion of an all-electric reach code with EV charging to be incorporated into the proposed CAP Update.

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. The most recent code cycle was adopted in 2019 with an effective date of January 1, 2020.

This code cycle is an opportunity for cities and counties to adopt optional local energy code amendments, known as reach codes, that exceed or enhance State code standards. Historically, jurisdictions have adopted reach codes to the California Energy Code (Title 24, Part 6) and the California Green Building Standards Code (CALGreen) (Title 24, Part 11), to meet local climate action goals.

While the requirements of the 2019 version of the code move in the direction of zero-net-energy performance, the City of Santa Clara has the opportunity to achieve greater energy savings and accelerate decarbonization through an all-electric reach code that also prepares the community for the transition to transportation electrification.

After ordinance adoption, these local amendments to the Energy Code must be approved by the California Energy Commission (CEC) and filed with the California Building Standards Commission (CBSC) for the amendments to take effect.

Community Outreach

The City of Santa Clara conducted community engagement efforts to involve the public in the process. This included seeking feedback on various reach code alternatives through four community and stakeholder meetings and written feedback. Outreach included a community survey, and community meetings throughout 2020 including meetings on February 3, June 10, and August 29, followed by a public City Council Study Session on March 2, 2021. The reach codes were also broadly brought to the public through the August-September 2021 CAP community feedback effort which included a community workshop, focus groups and CAP online public comment period.

DISCUSSION

For multiple reasons including health, safety, economics, and environmental benefits, there is recently considerable interest from environmental stakeholders and policy decision makers in mandating that new construction be all-electric and in phasing out the use of natural gas appliances in existing buildings, or “building electrification,” so that buildings would not have any fossil fuel services. Building electrification, phasing out the use of natural gas, will assist the City in achieving its goals for environmental leadership as set forth in the City’s General Plan, which incorporates the City’s Climate Action Plan, as well as expressed by the City Council at prior Council meetings.

The general scope of the all-electric ordinance being proposed was developed specific to the City of Santa Clara while keeping an overall regional consistency in approach for all-electric codes. An initial draft was developed based on the model ordinance prepared by Peninsula Clean Energy (PCE), Silicon Valley Clean Energy (SVCE), and the County of San Mateo Office of Sustainability. After following community outreach for this initial draft, which emphasized a performance-based approach, staff redrafted the ordinance in light of the actions of surrounding jurisdictions and direction provided by the City Council to take a prescriptive approach. With the exception of Gilroy, all other Santa Clara County jurisdictions have adopted some form of reach code, with many electing an all-electric code approach. In preparing the draft reach code for City Council consideration, City staff used the successfully adopted reach codes from the neighboring cities of Sunnyvale and San Jose as a model, while also incorporating the specific direction provided by the City Council at a study session in March of this year.

While many reach codes only address building electrification, the City Council has specifically

directed staff to include enhanced requirements for electric vehicle (EV) charging infrastructure in new construction as part of the reach code adoption. Staff have accordingly developed a draft ordinance for Council consideration that captures both the all-electric building requirement and an enhanced alternative to the EV infrastructure directive that takes into consideration forward thinking industry standard charging options to proactively prepare for future demand as transportation electrification expands.

Energy Code Amendments - All-Electric New Construction

The proposed ordinance calls for all new construction to be all-electric. All-electric is defined as a building or building design that has no natural gas or propane plumbing installed within the building, and that uses electricity as the source of energy for its space heating, water heating (including pools and spas), cooking appliances, and clothes drying appliances, not excluding any exemptions. The definition of “newly constructed buildings” is broadly defined to include additions and improvement to existing buildings where more than 50 percent of exterior walls are removed or 50 percent of the wall plate height is raised.

Exceptions to the All-Electric Code

As discussed at the March City Council study session and also seen in the reach codes adopted by other neighboring jurisdictions, the proposed reach code includes specific exceptions that may be granted by the Building Official or their designee. These exceptions address specific instances where technological or financial challenges or the lack of availability of electric appliances, may make near-term implementation of an all-electric code infeasible. Proposed Exceptions within the all-electric code include:

Exception 1: F (Factory Industrial), H (High Hazard), and L (Laboratory) Occupancies may utilize natural gas, provided that they provide installed rewiring for future use of electric appliances.

Exception 2: Exemption for public agency owned and operated emergency centers. To take advantage of this exception, an applicant must provide third party verification that the All-Electric space heating requirement is not cost effective and feasible.

Exception 3: Hotels with eighty or more guestrooms may utilize natural gas in on-site commercial laundry facilities only.

Exception 4: Non-residential kitchens may not utilize natural gas for cooking appliances unless the applicant establishes that there is not an all-electric option for the kitchen using commercially available technology. If the Building Official grants an exception, EnergySTAR-rated natural gas appliances shall be used.

Exception 5: If the applicant establishes that there is not an all-electric prescriptive compliance pathway for the building under the Energy Code, and that the building is not able to achieve the performance compliance standard applicable to the building under the Energy Code using commercially available technology and an approved calculation method or if it is demonstrated that there is equivalent greenhouse gas reduction, then the Building Official may grant an exception.

Exception Process:

- a. Granting of Exception. If the Building Official determines that it is infeasible for the applicant to fully meet the requirements of the Energy Code and one of the exceptions listed above applies, the Building Official shall determine the maximum feasible threshold of compliance reasonably achievable for the project. The decision of the Building Official or designee shall be provided to the applicant in writing. If an exception is granted, the applicant shall be required to comply with the Energy Code in all other respects and shall be required to achieve, in accordance with this Chapter, the threshold of compliance determined to be achievable by the Building Official or designee.
- b. Denial of Exception. If the Building Official determines that it is reasonably possible for the applicant to fully meet the requirements of the Energy Code, the request shall be denied, and the Building Official shall so notify the applicant in writing. The project and compliance documentation shall be modified to comply with this Chapter prior to further review of any pending planning or building permit application.
- c. Appeals of Exception Denial. If denied the infeasibility exemption, the applicant may appeal in writing to the Director of Community Development Department (DCD). The DCD will consider the information provided and render a written decision regarding infeasibility based on the factors set forth in this Chapter. The decision of the DCD shall be final.

Solar-ready Requirement for New Construction

Additionally, the proposed ordinance, as discussed at the March City Council study session, expands the mandatory requirements for solar ready buildings and solar panel system requirements as set forth in the 2019 California Energy Code to include the following additional construction types:

1. Hotel/Motel Occupancies and High-rise Multifamily buildings with ten habitable stories or fewer
2. Nonresidential Buildings with three habitable stories or fewer, other than healthcare facilities

Table 110.10-A: Solar panel requirements for all new nonresidential and high-rise residential buildings

Square footage of building	Size of panel
Less than 10,000 sq. ft.	Minimum of 3-kilowatt PV systems
Greater than or equal to 10,000 sq. ft.	Minimum of 5-kilowatt PV systems
EXCEPTION: As an alternative to a solar PV system, the building type may provide a solar water system (solar thermal) with a minimum collector area of 40 square feet, additional to other solar thermal equipment otherwise required for compliance with Part 6.	

Staff also request direction from Council on how to address developments that cannot achieve solar on their property due to infeasibility constraints, as proven by the developer and approved by the Building Official. One option, that supports the intent of this ordinance, would be to establish a fund for developers that cannot achieve the requirements to pay into a Community Energy Program that would allow the City to support community related energy initiatives. This option would require a study to determine the details of how the offset costs would be established, collected and administered programmatically.

Green Building Code Amendments - Electric Vehicle Charging Infrastructure

The March 2021 City Council Study Session provided specific language for proposed EV charging requirements, modifying the initial staff proposal from EV ready parking spaces in new development from 25% Level 2 and 75% Level 1 chargers to 25% Level 2 and 75% Lite Level 2 at 3.8 kW using an automatic load management software to balance the loads.

The proposed Green Building code amendments include additional electric vehicle charging infrastructure (EVCI) for the construction of new buildings. Increased EVCI would enable more people to purchase, drive and charge EVs in Santa Clara. It is especially important to have chargers where vehicles are parked for long periods of time including the home and workplace.

Unlike amendments to the Energy Code, a cost-effectiveness study is not required for amendments to the Green Building Code, including the proposed EV charging infrastructure requirements. However, to evaluate the financial impact on first costs, PCE/SVCE commissioned an analysis of the total cost of implementing various EV infrastructure measures. Staff have utilized the Peninsula Clean Energy, Silicon Valley Clean Energy, and Statewide Program's analysis and balanced that with council directive on taking a bold approach to advancing EV charging to establish new construction EV requirements which are more in-line with local EV adoption trends and near future EV charging demand. The proposed EV reach codes also provide flexibility for the builder while still allowing Santa Clara to meet state and local climate targets and support a healthy community.

The proposed ordinance calls for the following EV charging requirements:

New Construction Type	Charging Requirements
New One-and Two-Family Dwellings and Townhouses	Private garages with two or more parking spaces, provide one Level 2 EV Ready Space, one Level 1 EV Ready Space Dwellings with only one parking space, provide one Level 2 EV Ready Space For spaces not assigned to a dwelling unit: • 25% of the unassigned parking space (s) shall be Level 2 EV Ready Space(s) • 75% of the unassigned spaces shall be Low Power Level 2 EV Ready Space(s)
New Multifamily Dwellings	For buildings with 20 or less dwelling units, provide one Level 2 EV Ready Space per unit with parking. For buildings with over 20 dwelling units, provide one Level 2 EV Ready Space for each of the first 20 dwelling units with parking space(s) For all additional dwelling units above 20 with parking spaces: • 25% of dwelling units with parking space(s) shall be provided with at least one Level 2 EV Ready Space • 75% of dwelling units with parking space(s) shall be provided with at least one Low Power Level 2 EV Ready Space(s) Secured bicycle parking with 110v electrical outlets shall be provided
New Multifamily Affordable	10% of dwelling units with parking space(s) provided with at least one Level 2 EV Ready Space Remaining dwelling units with parking space (s) provided with at least one Level 1 EV Ready Space
New Hotels/Motels	10% of parking spaces provided with Level 2 EVCS Additional 50% of parking spaces provided with EV Capable spaces

New Offices & Other New Non- Residential	35% of parking spaces provided with one Level 2 EVCS Additional 35% of parking spaces EV Capable
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Additionally, the proposed reach code allows for Automatic Load Management Systems (ALMS). ALMS is a control system which permits 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.

Cost Effectiveness

In order to obtain CEC approval, the City must demonstrate that the amendments to the Energy Code would be cost effective and would not represent an unreasonable burden to builders and ultimately, the building's occupants. Unlike amendments to the Energy Code, a cost-effectiveness study is not required for amendments to CalGREEN for increased amounts of EV infrastructure.

A Statewide Cost-Effectiveness Study for Energy Code Reach Codes was funded by the California investor-owned utilities (IOUs). The California Statewide Codes and Standards Program (Statewide Program) led the development of a cost-effectiveness study for Energy Code reach codes that examined different performance-based approaches for new construction of specific building types. There are two kinds of reach code approaches: performance-based ordinances and prescriptive ordinances. Performance-based ordinances mandate an increase in the overall energy efficiency required but leave flexibility for the builder on how to achieve this goal. In contrast, prescriptive ordinances mandate implementation of a specific measure. While the Statewide Program's analysis focused on performance-based ordinances, the City is able to utilize the analysis as some conclusions about prescriptive measures can be made from the results.

Because the City of Santa Clara leveraged the Bay Area reach code adoption efforts from Peninsula Clean Energy (PCE), Silicon Valley Clean Energy (SVCE), and the County of San Mateo Office of Sustainability to draft a model code and contracted with TRC to provide technical support for the City's reach code outreach and modeled the draft code in large part on successfully adopted codes developed in other jurisdictions, staff does not anticipate a challenge with obtaining CEC approval.

Community Benefit

Reducing or eliminating natural gas usage in the building sector is an important component of climate mitigation to achieve the State's goal of Carbon Neutrality by 2045. Since Senate Bill 100 requires a 100% clean electric grid by 2045, passing a reach code that disincentivizes natural gas infrastructure will enable Santa Clara to work towards achieving carbon neutrality no later than 2045. While this change may go against the preferences of some home users, and/or result in additional construction costs, there are other significant benefits, including:

- Improvement of indoor air quality due to elimination of chemicals produced through indoor fuel combustion.
 - Ex: Gas stoves in homes increase children's asthma risk by 42%
- Elimination of the leading cause of house fires with transition to induction ranges
- Potential developer and building occupant cost savings
- Decrease in public safety risks associated with leaking natural gas legacy infrastructure between the point of extraction and entry to homes that has been the source of catastrophic

explosions throughout California and the US.

Conclusion

As discussed above, adoption of the proposed reach code would enable the City to better achieve its CAP goals for a local reduction in GHG emissions and to maintain a position of environmental leadership. The draft reach code was developed with community input and makes use of provisions similar to those used in other neighboring jurisdictions, while also incorporating the specific input provided by the City Council at two recent Council meetings.

ENVIRONMENTAL REVIEW

The local amendments are exempt from the requirements of the California Environmental Quality Act ("CEQA") pursuant to CEQA Guidelines section 15061(b)(3) as the activity is covered by the general rule that CEQA applies only to projects which 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. The proposed standards are more stringent than the State energy standards, there are no reasonably foreseeable adverse impacts and there is no possibility that the activity in question would have a significant effect on the environment.

FISCAL IMPACT

The proposed adoption of the reach code may have some impact to future construction costs for City projects. This cost is warranted in that the adoption of the reach code will enable the City to implement its CAP and other policy goals, which in turn could result in fiscal benefits.

COORDINATION

This report has been coordinated with the City Manager's Office, Silicon Valley Power, the Community Development Department, and the City Attorney's Office.

PUBLIC CONTACT

Public contact was made by posting the Council agenda on the City's official-notice bulletin board outside City Hall Council Chambers. A complete agenda packet is available on the City's website and in the City Clerk's Office at least 72 hours prior to a Regular Meeting and 24 hours prior to a Special Meeting. A hard copy of any agenda report may be requested by contacting the City Clerk's Office at (408) 615-2220, email clerk@santaclaraca.gov <<mailto:clerk@santaclaraca.gov>> or at the public information desk at any City of Santa Clara public library.

ALTERNATIVES

1. Take no action at this time and continue to use the previously adopted State model codes without adopting any local amendments.
2. Direct staff to revise or remove specific local amendments.
3. Request staff to bring back additional information for further consideration including bringing back the final version of the amended ordinance for adoption.

RECOMMENDATION

Staff recommend that City Council introduce electrification reach codes as written, to be established on January 1, 2022; to help reduce carbon emissions associated with new construction, reduce costs in new construction, improve indoor air quality and safety of our building stock, support affordable

housing, and increase adoption of electric vehicles.

Reviewed by: Andrew Crabtree, Director of Community Development

Approved by: Deanna J. Santana, City Manager

ATTACHMENTS:

1. Draft Ordinance
2. Cost-Effectiveness Studies - High-rise New Construction
3. Cost-Effectiveness Studies - Mid-rise New Construction
4. Cost-Effectiveness Studies - New Attached ADU's
5. Cost-Effectiveness Studies - Non-residential New Construction
6. Cost-Effectiveness Studies -Residential New Construction
7. Electric Vehicle Infrastructure Cost Analysis Report for Peninsula Clean Energy (PCE) & Silicon Valley Clean Energy(SVCE)