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Title:	Report regarding an ordinance to amend Title 15 of the South San Francisco Municipal Code to adopt a reach code for all-electric nonresidential new construction and enhanced electric vehicle charging infrastructure. (Christina Fernandez, Chief Sustainability Officer; Phillip Perry, Chief Building Official; Leila Silver, Integrative Designs 360)		
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Report regarding an ordinance to amend Title 15 of the South San Francisco Municipal Code to adopt a reach code for all-electric nonresidential new construction and enhanced electric vehicle charging infrastructure. (*Christina Fernandez, Chief Sustainability Officer; Phillip Perry, Chief Building Official; Leila Silver, Integrative Designs 360*)

RECOMMENDATION

Staff recommends that the City Council waive reading and introduce an ordinance amending the 2022 California Green Building Standards Code to 1) require newly constructed nonresidential buildings to be all-electric, with limited exceptions and 2) establish electric vehicle (EV) charging infrastructure requirements for new residential and non-residential construction that are more stringent than statewide standards.

BACKGROUND/DISCUSSION

The City of South San Francisco (the City) is committed and uniquely positioned to become a regional climate leader and has taken the initiative to update its original 2014 Climate Action Plan (CAP) to align with new State regulations and targets to combat climate change. The City intends to remain a leader in sustainability by implementing policies, incentives, educational programs, and new technology that further decarbonization efforts. The CAP update sets targets to achieve carbon neutrality by 2045 which aligns with the States targets and exceeds goals set by the original 2014 CAP. The CAP also outlines the City's commitment to equitably mitigate and address the impacts of climate change, while realizing the co-benefits of climate mitigation actions that help create a sustainable community. In 2016, the City joined Peninsula Clean Energy (PCE), a public, locally controlled electricity provider, that provides the City with access to carbon free electricity generated 100% by renewable sources.

As a strategy to support the CAP, on June 9, 2021, City Council adopted the City's first local building electrification reach code that required all new appliances in single-family and multi-family buildings to be electric (all-electric required). Additionally, new single-family and multi-family buildings were subject to increased electric vehicle (EV) charging requirements. The local amendments impacted residential projects that submitted for building permit under the 2019 code cycle and exempted all new nonresidential construction.

In October 2022, City staff provided an update to Council on the additional outreach conducted to the local business and development community regarding building electrification and EV reach codes. During the study session, staff also presented the potential building electrification and EV reach code options available for local adoption under the 2022 building code cycle. Staff requested direction from Council on the preferred reach code options related to building electrification and EV charging stations for new construction. On March 16, 2023, staff also presented the proposed reach code policy during a Planning Commission meeting for feedback on the policy components and proposed exemptions. The comments from the meeting are highlighted in the discussion below.

Per the direction of City Council, staff has included the following in the proposed ordinance amending 2022 California Green Building Standards Code (CALGreen, Title 24, Part 6): 1) all-electric requirements for all new nonresidential construction (with limited exemptions) and 2) enhanced EV charging infrastructure requirements for new single-family, multi-family, and nonresidential buildings using the PCE model code. Based on Council direction, staff focused the newly proposed reach code requirements on new construction only. Staff will return to Council at a later date to explore incentives, rebates, and potential reach code mandates for existing buildings.

The staff presentation during the October 26, 2022, study session provided an overview of recent national and statewide developments impacting local jurisdictions' decisions to adopt reach code policies, as well as a background on California reach codes, the environmental, health, and economic benefits of electrification, and the different reach code policy options for new construction. Staff also shared an update on the additional feedback received from the business and development community during the second phase of the stakeholder engagement efforts conducted throughout 2022.

The discussion below summarizes feedback given by the Council during the October 2022 study session, high-level findings from the additional stakeholder outreach, as well as the proposed all-electric and EV charging policy components that amend the 2022 CALGreen Code based on the PCE model code language.

National and Regional Legislative Context

Recent national and state legislation have shifted the role of governments in climate change mitigation and GHG emission reduction efforts. The State of California remains a national leader on climate action and continues to establish legislative and regulatory frameworks to support climate change driven policies. Key statewide elements to note include the following:

- SB 32 (2016) established a statewide greenhouse gas (GHG) emission reduction target of 40% below 1990 levels by 2030.
- EO B-55-18 (2018) set a target of statewide carbon neutrality by 2045.
- SB 100 (2018) requires that 100% of all electricity within the state to be carbon-free by 2040.
- EO N-29-20 (2020) requires the elimination of new, internal combustion passenger vehicles by 2035.
- CPUC Decision 19-01-011 (2022) eliminated subsidies that incentivize gas lines to new buildings starting July 1, 2023.
- CARB SIP Strategy (2022) sets zero-emission standard for space and water heaters by and bans the sale of gas heaters, furnaces, and water heaters by 2030.

At the federal level, on August 16, 2022, President Biden signed the Inflation Reduction Act dedicating significant funding to combat climate change. Example of the criteria within the Inflation Reduction Act include rebates and tax credits for efficient appliances and home upgrades, tax credits for rooftop solar systems, and tax credits for electric vehicles. It also invests in technologies like solar, wind, and clean hydrogen, with provisions that encourage domestic sourcing of materials. The law is projected to yield significant reductions to GHG emissions, with independent and official government projections agreeing it will reduce about one billion metric tons of annual emissions in 2030, with total annual emissions reaching about a 40 percent drop below 2005 levels in the year 2030.

Reach Code Adoption Process

The State of California adopts new building standards, organized in Title 24 of the California Code of Regulations, also referred to the California Building Standards Code, every three years. The triennial timeframe is known as a code cycle, and the current code cycle (2022 code) went into effect on January 1, 2023. Local jurisdictions may adopt local reach codes that go beyond the minimum state requirements by amending the CALGreen Code (Title 24, Part 11), Energy Code (Title 24, Part 6), or the municipal Health and Safety Code.

Local amendments that mandate energy efficiency or conservation measures, such as a higher performance standard or battery storage, require California Energy Commission (CEC) approval, and must be supported by a cost-effectiveness study and filed as an amendment to the Energy Code (Title 24, Part 6). Local amendments that do not require efficiency or conservation, such as requiring electric-only construction or electric vehicle charging stations, can amend the CALGreen Code (Title 24, Part 11) and do not require CEC approval or cost-effectiveness analyses. However, cost-effectiveness analyses can demonstrate to the community that amendments to the code are financially responsible and do not represent an unreasonable burden to the residential and nonresidential building owners and occupants.

Building Electrification Reach Codes

Staff researched the opportunities and limitations of the potential reach code policy options that prioritize electric end uses over natural gas or require enhanced efficiency above the statewide Energy Code. The following options were presented to Council for consideration for a nonresidential reach code:

- OPTION 1 - Efficiency: All new construction exceeds minimum energy code (via Energy Code, Title 24, Part 6).
- OPTION 2 - All-Electric Preferred: Allows mixed-fuel buildings with high energy performance, requiring additional energy efficiency measures, battery storage, and/or pre-wiring for buildings to be electric-ready (via Energy Code, Title 24 Part 6).
- OPTION 3 - All-Electric Required: Appliances must be electric (via Green Building Code, Title 24 Part 11).
- OPTION 4 - All-Electric Municipal Ordinance: No gas hookup allowed (via municipal ordinance).
- OPTION 5- Electric Only Plus Efficiency: All new construction is electric only and exceeds minimum energy code (via Green Building Code, Title 24 Part 11 and Energy Code, Title 24 Part 6).

Staff considered the benefits and challenges of each available adoption mechanism during the development process and shared these findings with Council during the October 2022 study session. Ultimately, the decision to proceed with the electric only amendment via the CALGreen Code (Option 3) provides the City with opportunity to establish electric only requirements for nonresidential new construction without triggering the CEC review process, which can add months to the enforcement timeline. The CALGreen amendment allows the City to file for approval directly with the Building Standards Commission (BSC) and provides the opportunity to house the electrification and EV charging requirements in one green building reach code ordinance (e.g., one chapter of the municipal code). The City's 2019 residential all-electric requirements adopted under the California Energy Code (Title 24, Part 6) carried over to the 2022 code cycle and was adopted by Council on December 14, 2022.

The 2022 California Energy Code already requires solar PV, battery storage readiness electric-readiness provisions for new residential buildings and prescriptive solar PV and battery storage for new nonresidential buildings.

Electric Vehicle Charging Reach Codes

Residents are showing a significant interest in electric vehicles. The number of registered plug-in vehicles in San Mateo, Santa Clara, and Alameda counties increased 30% from 2019 to 2021. In that same time frame, the total number of registered gas combustion vehicles in these counties shrank by 4%. In San Mateo County, 1 in 4 personal new vehicles purchases was an EV in 2021.

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 retrofit costs of EV infrastructure installation, while helping to increase EV adoption and decrease transportation-related greenhouse gas emissions.

Council approved enhanced EV charging infrastructure requirements for new single-family and multi-family buildings during the 2019 code cycle. Staff presented the new 2022 EV reach code provisions for Council's consideration during the previous study session. The proposed requirements are based on the PCE model EV reach code and enhances charging accessibility while meeting driver needs, minimizing costs, and allowing for limited exceptions.

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

- **EV Charging Station:** All supply equipment is installed at a parking space, such that an EV can charge without additional equipment.
- **EV Ready:** Parking space is provided with all power supply and associated outlet, such that a driver-provided supply equipment can be plugged in, and a vehicle can charge.
- **EV Capable:** Conduit is installed to the parking space and building electrical panel and transformers have reserved capacity to serve future load. An electrician would be required to complete the circuit and/or increase the gauge of upstream wiring before charging is possible.

EV charging capacity can be summarized as three categories:

- **Level 1:** Capable of charging at 110/120V, 16A. This is equivalent to a standard home outlet.
- **Level 2:** Installation of a 208/240V, 40A circuit or 208/240V, 20A circuit for low power. This is the service capacity typically used for larger appliance loads in homes.
- **Level 3 (DC Fast Charging):** Capable of charging at 20-400kW. This is the type of charger used for Tesla Superchargers and DC Fast Chargers at some supermarkets.

The 2022 California Green Building Code update (Title 24, Part 11) increased 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:
 - 5% must be Level 2 EV Charging Stations
 - 25% must be Low Power Level 2 EV Ready, and
 - 10% of parking spaces must be Level 2 EV Capable.
- Non-residential:
 - 5% must have Level 2 EV Charging Stations, and
 - 15% of parking spaces must be Level 2 EV Capable.

The proposed EV reach code requirements go above the State's EV requirements for new construction.

Community and Stakeholder Feedback

Over the course of two years, staff conducted extensive community and stakeholder outreach to inform the policy direction and limited exemptions to incorporate into the proposed reach code policy. Detailed summaries of local stakeholder and business owner comments of building electrification and EV charging infrastructure can be referenced in [Staff Report 21-791 <https://ci-ssf-ca.legistar.com/ViewReport.ashx?M=R&N=Text&GID=642&ID=4541299&GUID=3809DB88-404B-49BA-93B0-9DFF65973861&Title=Legislation+Text>](https://ci-ssf-ca.legistar.com/ViewReport.ashx?M=R&N=Text&GID=642&ID=4541299&GUID=3809DB88-404B-49BA-93B0-9DFF65973861&Title=Legislation+Text) and [Staff Report 22-718 <https://ci-ssf-ca.legistar.com/ViewReport.ashx?M=R&N=Text&GID=642&ID=5097976&GUID=78D4947E-108D-4C3E-AEAB-AE7F3FEF943F&Title=Legislation+Text>](https://ci-ssf-ca.legistar.com/ViewReport.ashx?M=R&N=Text&GID=642&ID=5097976&GUID=78D4947E-108D-4C3E-AEAB-AE7F3FEF943F&Title=Legislation+Text).

As a result of the feedback from the business and development community, staff heard the following preferences for a potential all-electric and EV reach code policy:

- The first iteration of nonresidential all-electric codes should apply to new construction only.

- Provide a “grace period” or exception for projects that received entitlement prior to the ordinance effective date.
- Rollout requirements under the 2022 building code cycle (effective January 1, 2023).
- Validation of energy infrastructure and capacity due to grid reliability concerns, consider backup power exemptions.
- Remain business friendly to the biotech lab/medical/restaurant community via exemptions.

Planning Commission Meeting and Public Comments

During the Planning Commission meeting on March 16, 2023, staff presented the proposed all-electric policy components for nonresidential new construction and the proposed electric vehicle charging infrastructure requirements for all new residential and nonresidential construction. One of the main concerns brought up by the commissioners related to extending exemptions for future or unknown tenant spaces in a new nonresidential buildings, as the needs of the future tenant space may not be known when the new nonresidential building (core and shell building) is constructed. During the public comment period, a few members of the community expressed the following feedback on the proposed reach code policy.

One member of the community expressed support for the all-electric reach code requirements for nonresidential new construction. They also requested that the trigger be extended to impact qualifying alteration projects, similar to the current residential reach code policy. Staff evaluated the trigger for alterations during the policy development process and determined that a 50% alteration scenario is not likely to occur based on historical building permit data. The Building Department typically receives building permit applications for new nonresidential construction or tenant improvements (TIs). The member of the community also requested that staff remove the exemptions specific for labs, medical uses, and industrial processes.

A member from the biotech community expressed the need for industry specific exemptions for laboratory and medical uses. The community member commented on the need for 24-hour power to support research and lab efforts for the biotech and medical community. They also expressed concern over power outages and the capacity of the grid to handle additional loads from all-electric new construction. The community member strongly advised the City to consider keeping the exemptions in the proposed policy or expanding on the exemptions for the biotech and medical occupancy types.

One community member also showed favor for the exemptions related to life science and medical buildings. The community member mentioned that many biotech industries in the City rely on steam generated by gas to continue their operations. Due to the nature of the biotech development, the community member also suggested that the City allow for the gas infrastructure to be stubbed to the street, so a future connection could be made in the event that natural gas is needed for operations.

Another community member who spoke at the Planning Commission meeting suggested that the City continue to support and protect the life science industry as it plays a big role in the local economy. The community member asked that staff consider ways to not undermine the biotech and medical sector by allowing for exemptions to these occupancy types. The community member also asked that staff continue conversations with the local biotech and life science community to continue to inform the reach code policy development efforts.

Proposed Policy Components

The proposed reach code ordinance requires all-electric new buildings and enhanced EV charging infrastructure via local amendment to the 2022 CALGreen Code and amends Title 15 of the South San Francisco Municipal Code. The proposed requirements would be triggered on building permit application for new construction. The policy components of the ordinance are described below. The proposed ordinance accompanying this staff report sets the Reach Code requirements in full detail.

Policy Component #1: Building Electrification for Nonresidential New Construction

The residential all-electric provisions carried over from the 2019 reach code will continue to impact all newly constructed residential buildings and alterations that include replacement or addition of over 50 percent of the existing foundation for purposes other than a repair or reinforcement as defined in California Existing Building Code Section 202; or where over 50 percent of the existing framing above the sill plate is removed or replaced for purposes other than repair. The main change is to the mechanism for adoption. The 2019 reach code amended the Energy Code (Title 24, Part 6). To align with the latest decision from the CEC regarding energy conservation and efficiency standards only require CEC approval, the previous requirements have been organized as an amendment to the CALGreen Code (Title 24, Part 11).

Staff is proposing to remove the previous exemption for nonresidential buildings and include all-electric requirements for new nonresidential buildings. The 50/50 alterations rule will continue to impact residential buildings only. The ordinance recommends that newly constructed nonresidential buildings be designed and constructed as all-electric, with limited exemptions as described below.

The proposed ordinance includes limited exemptions for buildings subject to the full electrification requirements. Staff presented potential reach code exemptions during the October 2022 study session based on previous development efforts and the additional stakeholder feedback received in 2022. The proposed ordinance includes the following exemptions.

EXEMPTIONS:

- Specialized equipment for Industrial processes, laboratories, and medical uses.
- Commercial Food Heat-Processing Equipment.
- Back-up power for Critical Facilities necessary to protect public health or safety in the event of an electric grid outage.
- Nonresidential building projects that receive valid entitlements from the City of South San Francisco within six (6) months of the effective date of the proposed ordinance.
- If there is not an all-electric prescriptive pathway for a building under the state Energy Code, and the building is unable to achieve the Energy Code's performance compliance pathway using commercially available technology and an approved calculation method, then the building official may grant a modification.

It is common practice to include electric-readiness requirements for projects that receive approval to install combustion equipment (equipment or appliance that uses fuel gas). The proposed ordinance suggests language that requires electrical infrastructure and physical space to accommodate future installation of any electrical heating appliance that receives approval for an exemption by the Community Development Director or designee. The proposed ordinance also specifies when fuel gas infrastructure no longer serves one of the exemptions outlined above, that the fuel gas infrastructure must be capped (otherwise terminated or removed) by the entity previously entitled to the exception. The intent of this language is to ensure that the lifecycle for approved fuel gas infrastructure applies only to the end use associated with the approved building permit and is not utilized for other end uses in the future.

Policy Component #2: Electric Vehicle Charging Infrastructure for New Construction

The reach code ordinance also includes increased electric vehicle (EV) charging infrastructure requirements beyond 2022 CALGreen standards.

To evaluate the financial impact on first costs, Peninsula Clean Energy commissioned an analysis of the total cost of implementing various EV infrastructure measures. Staff have worked closely with PCE to establish new construction EV requirements which are more in-line with local EV adoption trends, while providing flexibility for the builder and keeping construction costs as low as possible.

The recommended requirements for EV infrastructure include:

New Single-Family Dwelling:

- One dedicated EV ready Level 2 circuit, and
- One dedicated EV ready Level 1 circuit if there is a second parking space.

New Multi-family Dwelling:

- 15% of units with parking spaces, Level 2 EV Charging Stations.
- 85% of units with parking spaces, Low Power Level 2 EV Ready.

New Nonresidential Office Building:

- 20 % of the parking spaces, Level 2 EV Charging Stations installed.
- 30% of the parking spaces, Level 2 EV Capable.

New Hotel and Motel Building:

- 5% of the parking spaces, Level 2 EV Charging Stations installed.
- 25% of the parking spaces, Low Power Level 2 EV Ready.
- 10% of the parking spaces, Level 2 EV Capable.

Other New Nonresidential Building:

- 10% of the parking spaces, Level 2 EV Charging Stations installed.
- 10% of the parking spaces, Level 2 EV Capable.

The proposed EV reach code provisions outline specific exemptions for new buildings. The exemptions are based on the current 2022 CALGreen Code exemptions for EV charging, the PCE EV Model Code, and Council direction during the previous study session. The exemptions extend to 1) when the local enforcing agency has determined EV charging infrastructure is not feasible (i.e., utility unable to supply adequate power), 2) Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without additional parking facilities and without electrical panel upgrade or new panel installation, 3) multi-family residential R-2 building projects with approved entitlements within six (6) months of the effective date of the proposed ordinance, 4) parking spaces accessible only by automated mechanical car parking systems are not required to comply with this code section and 5) nonresidential construction projects that receive valid entitlements within six (6) months of the proposed ordinance. The EV reach code requirements also align with the statewide code by allowing Automatic Load Management Systems (ALMS) to be permitted to reduce load when multiple vehicles are charging.

Incentives and Rebates to Support the Proposed Policy

The largest concern about the reach code proposals was related to what the overall cost burden it may pose on the community. Councilmembers expressed concerns for community members that would be unable to afford the transition to electric appliances and emphasized the need to increase accessibility and availability of rebates and incentives. Staff acknowledged the cost burden differences between existing buildings and new construction during the development process. To alleviate concerns around cost-effectiveness and the current available workforce of contractors who specialize in electrification, the proposed ordinance focuses on new construction only. All-electric new construction is shown to be cost-effective in South San Francisco (climate zone 4) based on the Statewide Utility Program's 2022 cost-effectiveness analyses. All-electric new construction is shown to be less expensive and cost beneficial for builders and developers compared to existing buildings.

When considering building electrification, incentives are vital in supporting customers with the transition. PCE and BayREN have incentives and rebates that directly support the community. As part of the EV Ready program, [Peninsula Clean Energy <https://www.peninsulacleanenergy.com/ev-ready/>](https://www.peninsulacleanenergy.com/ev-ready/) offers free technical assistance for EV charging projects through its program partner, CLEAResult. For eligible properties, CLEAResult will provide project scope and design, helping to minimize cost and maximizing value. PCE also provides South San Francisco community members access to the [Electrification Technical Assistance Program <https://allelectricdesign.org/>](https://allelectricdesign.org/) provides extensive free technical assistance to architects, builders, developers, design engineers, contractors, and energy consultants to learn about all-electric building technologies and electric vehicle infrastructure. Homeowners, multifamily property owners, and small and medium businesses can also access rebates through BayREN that provide direct financing for switching gas appliances to electric (i.e., replacing gas water heater with high-efficiency heat pump water heater). Staff will continue to

collaborate with regional partners to provide incentives that support decarbonization and electrification to the South City community.

FISCAL IMPACT

The proposed Reach Codes would not have any fiscal impact to the City. The green building amendments parallel the structure and terms of the State code and as such any incremental plan check and inspection time should be minimal.

RELATIONSHIP TO STRATEGIC PLAN

This update meets the strategic plan goals of building, maintaining, and planning for a sustainable city.

CONCLUSION

Staff recommends that the City Council waive reading and introduce an ordinance amending the 2022 California Green Building Standards Code to 1) require newly constructed nonresidential buildings to be all-electric, with limited exceptions and 2) establish electric vehicle (EV) charging infrastructure requirements for new construction that are more stringent than statewide standards.

Attachments

1. [Cost Effectiveness Studies by the Statewide Utility Program <https://localenergycodes.com/content/resources>](https://localenergycodes.com/content/resources)
2. [2022 Adopted Reach Codes by Jurisdiction <https://localenergycodes.com/content/adopted-ordinances?mode=grab_page&attitude=print&view=adopted_ordinances>](https://localenergycodes.com/content/adopted-ordinances?mode=grab_page&attitude=print&view=adopted_ordinances)
3. Presentation