

Proposed Reach Codes for New Construction

2022 Building Code Cycle (January 1, 2023 – December 31, 2025)

All-electric new construction

Current reach code (expires December 31, 2022)	Proposed reach code requirement (January 1, 2023 – December 31, 2025)
Requires all residential buildings and buildings with office use to be all-electric	Requires all new construction to be all-electric. Commercial kitchens and hotel/motel laundry services would be exempt from this requirement. Staff recommend adding exception language for space conditioning for buildings with biotech laboratories use.

Discussion

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 reach code established an infeasibility exemption process that allows an applicant to apply for an exemption from this reach code if there are circumstances that makes it infeasible to build all-electric. To date, this infeasibility exemption has not been used. The City's building electrification reach codes resulted in the issuance of permits for 449 all-electric dwelling units.

The Bay Area Reach Code 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.

In addition, if a project applicant finds they are not able to achieve the Energy Code performance standards and build all-electric, project applicants can apply for an exception, regardless of the building type or use. Staff anticipate that it would be a rare occurrence that project applicants would not be able to comply with the all-electric requirement and need to apply for an exception because of the availability of electric technology and the cost-effectiveness of all-electric new construction.

PCE engaged with representatives from various biotechnology companies to understand the challenges of new all-electric construction of buildings with biotech use. PCE concluded that it is feasible to require all-electric new construction of nonresidential buildings with biotech use, thus there is no exception language for biotech in the model ordinance. Staff recommend revising the model ordinance to include language similar the City of San Carlos's reach code that allows fossil gas for space conditioning in laboratory areas if there is a third-party verification to demonstrate infeasibility or lack of cost-effectiveness.

Enhanced electric vehicle (EV) requirements for new construction

Impacted buildings	Current reach code (expires December 31, 2022)	Proposed reach code requirement (January 1, 2023 – December 31, 2025)	
Single Family Homes and Two-Family Townhomes	One Level 2 EV Ready space per dwelling unit	One Level 2 EV Ready per dwelling unit; One Level 1 EV Ready space if second space provided	
Multifamily Buildings	15% Level 2 EV Capable	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	5% Level 2 EVCS 10% Level 2 EV Capable <i>Total: 15% of spaces</i>	<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

Definitions:

- Level 1 EV Ready - Includes full 110/120 V 20-amp circuit with a receptacle or outlet
- Level 2 EV Capable - Includes panel capacity for 208/240 V 40-amp circuit and conduit or raceways
- Level 2 EV Ready (low-power) - Includes full 208/240 V 20-amp circuit with a receptacle or outlet
- Level 2 EV Ready - Includes full 208/240 V 40-amp circuit with a receptacle or outlet
- Level 2 EV Charging Space (EVCS) - Includes full charging capability with EVSE (Electric Vehicle Supply Equipment) installed

Discussion:

Installing EV infrastructure in new construction is significantly cost saving compared to retrofitting existing buildings. PCE authorized a study to compare new construction and retrofit costs and modeled two different sized multifamily buildings and an office building. In each scenario, retrofitting existing buildings to install EV infrastructure costs three to four times more than the installation of EV infrastructure at the time of new construction. Retrofitting for EV infrastructure can require costly trenching, wiring, and electrical work. Installing EV infrastructure as part of new construction will save the building owner significant costs compared to retrofitting in the future.

For single family homes and two-family townhomes, currently the City's reach code requires one Level 2 EV Ready space per dwelling unit. The Bay Area Reach Codes Model Code that requires one Level 2 EV Ready space per dwelling unit; in addition, one Level 1 EV Ready space would be required if the development includes more than one parking space to ensure sufficient charging access.

For multifamily buildings, the City's current reach code requires 15% Level 2 EV Capable spaces. The Bay Area Reach Codes group focuses on ensuring every residential unit has access to EV charging, this is a substantial increase above the City's current reach code requirements. However, at-home charging is critical to encourage EV adoption.

The Bay Area Reach Codes team developed two reach code options for multifamily. The first draft of the Bay Area Reach Code model ordinance recommended 40% Level 2 EVCS and 60% Level 1 EV Ready for new multifamily buildings. In July 2022, the Bay Area Reach Code model ordinance was updated to include an alternate option for multifamily requiring Level 2 (low-power) instead of Level 1 charging. PCE staff drafted this reach code option after receiving feedback from different cities expressing preference for Level 2 charging over Level 1 due to the charging speed.

Staff reached out to other cities and found varied proposed requirements for new multifamily construction for the 2022 code cycle. Both reach code options ensure 100% of residences have access to EV charging, however the reach code option with Level 2 (low-power) allows for a faster charge compared to Level 1. Level 1 outlets are the typical standard outlet that you see inside your home. According to a California Air Resources Board study, 50% of EV drivers use Level 1 charging. PCE assessed EV charging needs for multifamily properties and found that in residential settings, cars are typically parked for more than twelve hours. Given the average commute for a Bay Area resident is approximately 25 – 35 miles per day, charging needs can often be satisfied with a Level 1 charger, avoiding additional costs for faster charging infrastructure.

PCE analyzed a 100-dwelling multifamily building and found that the Option A with 60% of Level 1 charging costs \$195,000 compared to Option B with 85% of Level 2 (low-power) charging costs \$225,000. Note that EV infrastructure costs account for 0.3% - 0.5% of total construction costs.

For nonresidential buildings, the City's current reach code requires 5% Level 2 EVCS and 10% Level 2 EV Capable. The Bay Area Reach Codes option provides a recommendation for office use and a recommendation for all other uses. The option for office use requires a higher percentage of EV readiness than the option for all other uses.