



Memorandum

TO: HONORABLE MAYOR
AND CITY COUNCIL

FROM: Kerrie Romanow
Chris Burton

SUBJECT: SEE BELOW

DATE: January 3, 2024

Approved

Date

1/10/24

**SUBJECT: REACH CODE ORDINANCE UPDATE FOR ELECTRIC VEHICLE
INFRASTRUCTURE IN NEW MULTIFAMILY DEVELOPMENTS**

RECOMMENDATION

Approve an ordinance of the City of San José making certain findings related to local modifications to State Codes based upon local, geographical, topographical, and climatic conditions and amending Parts 1 and 2 of Chapter 24.10 of Title 24 of the San José Municipal Code to amend requirements related to Electric Vehicle Charging Stations in New Multifamily Developments, to be effective on July 1, 2024.

SUMMARY AND OUTCOME

The City's current Electric Vehicle (EV) charging infrastructure component of the Reach Code for new multifamily development (EV Reach Code), in place since January 2020, requires parking to be 70 percent EV Capable (providing panel capacity and raceway infrastructure but no circuit or outlet), 20 percent EV Ready (providing a circuit and charging outlet), and 10 percent EV supply equipment (providing an EV charging station). Additionally, where common-use parking is provided, at least one of the EV charging stations must be a level 2 station (240V/20-40 amp) available for use by residents and guests. In April 2022, in light of the state mandate for the phase-out of gas-powered vehicles by 2035 and the City's goal of carbon neutrality by 2030, City Council directed staff to analyze the marginal cost per unit of increasing EV infrastructure in new multifamily developments to 95 percent EV Ready and five percent EV supply equipment.

In December 2022, staff presented the marginal cost analysis and stakeholder engagement results to the Transportation and Environment Committee. The committee requested staff bring the EV Reach Code ordinance update back to City Council by the end of March 2023, which was deferred to allow for more public engagement to finalize the proposed EV Reach Code amendment. Staff received public support and input on the marginal cost analysis and the

proposed EV Reach Code from feedback received during public outreach webinars in November 2022, February 2023, and September 2023.

The proposed EV Reach Code would ensure EV charging access for a maximum number of multifamily households by requiring:

- Access to a charging outlet for 100 percent of all spaces designated for use by residents, while
- Minimizing cost by requiring low-power level 2 EV Ready spaces;
- Twenty percent of parking spaces designated for non-residents and guests would be required to have a level 2 EV charging station;
- Direct billing for all assigned parking spaces, achieved through connecting virtually or via circuits to each unit's electrical meter, to the EV receptacle so that residents have direct access to low-cost time-of-use rates and can monitor and manage their EV charging.

If approved by City Council, the amended EV Reach Code for new multifamily developments will be effective July 1, 2024 and will be in line with the effective date of new requirements stemming from the California Green Building Standards Code's (CALGreen) intervening cycle. By lining up these two code updates, the process for submitting new building permits will be simplified.

BACKGROUND

The effects of climate change are devastating and increasing. To set out on an aggressive pathway to reduce San José's greenhouse gas emissions, City Council approved the Climate Smart San José plan in 2018 followed by the Pathway to Carbon Neutrality by 2030 in 2022. Buildings, transportation, and power sources are the City's key focus areas for reducing greenhouse gas emissions.

Every three years, the state updates its Technical Codes, including the California Building Energy Efficiency Standards (Part 6, Energy Standards) and the CALGreen (Part 11). In addition, midway through the three-year period of CALGreen, there will be an intervening cycle. While normally this is used to add definitions or clarifications, the intervening cycle that will become effective July 1, 2024 adds numerous additional requirements to CALGreen's base code. Local jurisdictions may adopt and amend building reach codes at any time to require development projects to exceed minimum state standards based upon geographical, topographical, or local climatic conditions. In 2019, City Council adopted a building reach code that became effective in January 2020 and included increased EV charging infrastructure requirements for all new building types. City Council then readopted that existing reach code in 2022, as is required every three-year building code cycle, to ensure continued application. As defined in the City's existing reach code: an EV Capable space has electrical panel capacity and

space for future EV circuits plus raceway from the panel to parking space to install charging access in the future; an EV Ready space is equipped with a completed circuit ending in a charging outlet; and EV service equipment space is equipped with a charging station. The EV charging infrastructure can be designed to provide increasingly fast charging, going from level 1 (120V/20 amp) to level 2 (240V/20-40 amp), and finally direct current fast charging (480V-100 amp). The City's current Reach Code requires the following EV parking requirements for new multifamily developments: 70 percent EV Capable; 20 percent EV Ready; and 10 percent EV supply equipment, and requires at least one level 2 charging station in common-use parking areas available for use by residents and guests.

In 2020, Governor Gavin Newsom issued Executive Order N-79-20 which bans the sale of gas-powered passenger vehicles by 2035. To meet this goal, the California Air Resources Board adopted Resolution 22-12 which calls for immediate local action to provide the charging infrastructure necessary to meet the growing demand for EV ownership. In San José, EV ownership has been on a steady incline since 2015¹; this year through the second quarter of 2023, more than 40 percent of new light-duty vehicle sales in Santa Clara County have been EVs². However, multifamily residents often lack access to onsite EV charging, which hinders EV uptake.³

In April 2022, City Council directed staff to analyze the marginal cost per unit of expanding EV infrastructure in new multifamily developments with parking to 95 percent charging outlets and five percent charging stations. At the December 2022 Transportation and Environment Committee meeting, staff presented the cost analysis findings and was instructed to return to City Council in March 2023 with an updated EV Reach Code ordinance. The City Council date was deferred to allow for more public engagement to finalize the City's proposed EV Reach Code amendment.

ANALYSIS

The EV Reach Code that City Council directed staff to assess differs from the City's current requirement standards in that it eliminates EV Capable spaces, which provide wiring but no charging outlet, and provides 100 percent charging access in new multifamily developments. Based on City Council direction, staff research, and public engagement (see Public Outreach section for details), staff evaluated an EV Reach Code update for new multifamily developments with the following goals in mind: 1) keep construction costs as close to the City's existing EV Reach Code as possible; 2) provide as much EV charging access to each multifamily household

¹Mobility: Electric Vehicles. City of San Jose (2022): <https://www.sanjoseca.gov/your-government/departments-offices/environmental-services/climate-smart-san-jos/climate-smart-data-dashboard/mobility-electric-vehicles>

² California Energy Commission (2023). New ZEV Sales in California. Data last updated August 2, 2023. Retrieved October 13th, 2023 from <https://www.energy.ca.gov/zevstats>

³ The Expanding EV Market (February 2023): [2022-PIA-Survey-Report.pdf \(pluginamerica.org\)](https://www.pluginamerica.org/2022-PIA-Survey-Report.pdf)

as possible; and 3) allow multifamily residents to manage their own EV charging costs (e.g., through choice of electric rate and access to usage and direct charges).

Peninsula Clean Energy, the community choice aggregation program serving San Mateo County, completed a study for multifamily developments that found low-power charging can meet the vast majority of EV drivers' needs, especially if these drivers are charging their cars overnight.⁴ Requiring more low-power charging outlets, at a minimum, also helps to decrease the overall cost to developers as it would reduce the sizing requirements for transformers and electrical panels.

From September 2022 to February 2023, staff evaluated three different EV Reach Code update options that included at a minimum EV Ready parking spaces in 100 percent of spaces. The three options included continuing to require higher-power level 2 outlets (40 amp), allowing for low-power level 2 outlets (20 amps), or a mix of both. These three options were considered in relation to what costs would be for keeping the existing EV Reach Code in effect. Under the current EV Reach Code, the requirement is for 40 amp charging outlets. On-site transformers must be sized to provide 40 amps at each space, regardless of whether the space has an outlet or is only EV Capable. Within the various options, staff also compared Direct Billing (having a parking space directly connected to a unit's electrical panel) and Indirect Billing (generally having charging fees billed by a third party, typically an EV charging service or network provider).

City staff worked with consultants to develop a cost analysis for various iterations of the EV Reach Code. The analysis concluded that expanding EV charging access to 100 percent of resident parking spaces is cost-comparable to the City's current reach code. The analysis modeled upstream costs incurred due to the required EV infrastructure from the utility transformer, including feeder, joint trench, panels, and electrical room sizing. The analysis also included downstream costs from the circuit breaker, including wiring, conduits, and receptacles and chargers. It also allowed comparison of Direct Billing costs versus Indirect Billing costs. City staff shared this analysis in public webinars and one-on-one meetings with developers and other interested stakeholders during the spring and early summer of 2023. In these meetings, developers expressed concerns that they did not believe that the cost model reflected the total costs of EV infrastructure within a project. They also stated that the Direct Billing component would be difficult and add significant costs, beyond what was shown in the cost model.

Based on this feedback, staff worked with our consultants to update the cost analysis based on some additional development cost data (such as costs for joint trench, switchgear, and electric room sizing increases) that was provided to staff by one of our local developers. The addition of these costs increased the base cost of the required EV infrastructure, but these costs remained

⁴ Commute & Multifamily EV Charging Level Needs Analysis. Peninsula Clean Energy: <https://www.peninsulacleanenergy.com/wp-content/uploads/2021/09/Determining-the-Appropriate-Level-of-Power-Sharing-for-EV-Charging-in-Multifamily-Properties-1.pdf>

proportionally the same in all proposed iterations of the EV Reach Code and therefore did not impact the overall cost comparison to the City's existing EV Reach Code. The final cost analysis can be seen in the **Attachment - EV Reach Code Cost Analysis**. Additional soft costs that were brought up by developers, such as permitting and financing costs, were not incorporated into the model as they were too variable.

During the time period that staff was engaging with developers, there were also multiple engagement efforts with EV advocates. Advocates expressed their desire for all parking spaces to be directly billed to units, as this would give the residents access to the cheapest available electrical rates offered specifically for units with an EV. Their concern is that without direct-billing, EV charging in multifamily developments would be managed by the building owner and/or third parties, who could, at their discretion, add fees or set pricing to residents that may be cost prohibitive to residents. High-level cost analysis done by the City's consultant, and shared with the advocates, showed that over a one-year period, the additional cost of charging without the direct wiring would be approximately \$130 annually, or 18 percent, compared to the lowest cost EV electric utility rate. The cost of Direct Billing using standard residential electric rates may be slightly (two percent) more expensive than Indirect Billing.⁵ On the other hand, the added developer costs of infrastructure and wiring for the Direct Billing would be significant, especially in larger mid-rise and high-rise buildings, and developers would likely pass along these additional costs to the residents of the building. In addition, there would also be logistical issues in multifamily residences with unbundled parking when a new tenant elects not to purchase the space that was assigned to the unit by the previous tenant and a tenant of a different unit elects to purchase that space.

Over the summer of 2023, City staff learned that Direct Billing⁶ would be added to the CALGreen base code in the 2022 intervening cycle, which will become effective on July 1, 2024. In order for it to continue to be a reach code, the City's proposed EV Reach Code would need to include the Direct Billing requirement, removing the previously researched Indirect Billing option. The intervening cycle did not specify how buildings with unassigned parking should comply with Direct Billing requirements, other than providing local enforcing agencies the ability to exempt new developments from this requirement if deemed infeasible. The intervening cycle also changed requirements for hotel/motel to be at least 40 percent EV Ready. The City's current Reach Code has no EV Ready requirement, but instead includes a 50 percent EV Capable requirement. Therefore, to meet the requirements of the intervening cycle, the proposed EV Reach Code includes amendments requiring 40 percent EV Ready. The requirements for 10 percent EV supply equipment remain the same.

⁵ Analysis of multifamily EV driver charging costs based on Pacific Gas and Electric rates and direct/indirect billing conducted by TRC in response to stakeholder engagement request.

⁶ The CALGreen Intervening Cycle code will require direct wiring from the dwelling unit's electrical panel to each EV parking space. City staff have elected to amend this language to require direct billing, which adds flexibility for future virtual submetering offerings under development by the California Public Utilities Commission and California investor-owned utilities. These future submetering offerings may allow building designers to avoid costly or infeasible designs that direct wiring may require.

Parking is typically provided in multifamily developments in San José as follows:

- *Assigned Parking:* This is a parking space that is assigned to a specific residential unit.
- *Unassigned Parking:* This is parking that is available to any tenant of the residential building but is not assigned to any one specific unit.
- *Unbundled Parking:* This is parking that is for sale or lease to residents of a building, separate from the sale or lease of living units within that residential building.

In the case of unbundled parking, when a tenant purchases or leases the parking space, the space becomes assigned to them, but that space is not permanently assigned to that specific unit, as the next resident of that unit may elect not to purchase the space. Unbundled parking is encouraged by the City's [Transportation Demand Management ordinance](#), as it provides cost savings to tenants who do not have a personal vehicle and rely on public transit or other means of travel. Generally, a parking space accounts for approximately 17 percent of a tenants rent⁷, so unbundled parking is a more equitable solution for tenants who do not have cars and would otherwise be paying for a parking space that they do not use. Therefore, staff is not proposing that *all* parking spaces for residential use offer Direct Billing. Instead, the proposed EV Reach Code still provides flexibility for parking to be unbundled and not tied to a specific unit.

EV Reach Code Recommendation

Based on the cost analysis, internal department input, public input, and the forthcoming requirements stemming from the CALGreen intervening cycle , staff recommends City Council adopt an updated EV Reach Code that requires the following for new multifamily developments:

- 100 percent of assigned residence parking spaces to have low-power level 2 (20 amp) EV charging outlets connected directly to the dwelling unit's meter;
- 100 percent of unbundled or unassigned residence parking spaces to have low-power level 2 (20 amp) EV charging outlets, however they would not have to be connected directly to the dwelling unit's meter; and
- 20 percent of non-resident parking spaces (e.g., leasing office parking, dedicated guest parking, etc.) to be EV charging stations.

Cost Analysis of Recommendation

Since the 2022 CALGreen intervening cycle requirement for EV spaces to be direct-billed goes into effect July 1, 2024, this additional cost must be factored into the base cost of the existing EV Reach Code. When normalized to account for the new Direct Billing requirements set by the state, the current EV infrastructure costs under the existing EV Reach Code with Direct Billing costs approximately \$780,723 or 1.12 percent of construction costs. Compared to the City's current EV Reach Code, the proposed Low-Power and Direct Billing option is estimated to cost developers approximately \$709,201, which represents 1.02 percent of construction costs for a

⁷ The Hidden Cost of Bundled Parking (Pierce, Gabbe, UCLA and Santa Clara University), 2018

standard multifamily development. The Low-Power and Direct Billing option ensures that residents have full EV charging access and direct billing through a connection to the unit's electrical meter so that residents can select their residential rate and monitor and manage their EV charging to reduce costs. See Attachment for the full detailed cost analysis.

This option balances the City's goals of keeping construction costs down and providing residents with maximized EV charging access and ability to manage their own EV charging costs. As EV adoption grows locally, and more gas-powered vehicles are retired, all neighborhoods will benefit from cleaner, healthier air.

Policy Alternatives

Alternative #1: Do Not Update the City's Existing EV Reach Code.

Pros: This alternative would continue to apply the City's existing EV Reach Code requiring 70 percent EV Capable parking spaces, 20 percent EV Ready parking spaces equipped with charging outlets, and the remaining 10 percent of parking spaces be equipped with charging stations. It would not require the adoption of any code updates.

Cons: This alternative only provides 30 percent charging access; not all multifamily households will have the opportunity to charge EVs onsite without additional future installation by an electrician to provide access to more spaces. This is actually a more expensive option as this alternative does not include the costs of direct billing which becomes part of the CALGreen base code on July 1, 2024. At that time, the added costs of direct billing would result in the existing EV Reach Code to become more costly than the recommended EV Reach Code (Attachment), with costs estimated at \$780,723 or about ~1.12 percent of construction costs for a new 100-unit multifamily housing development with EV charging infrastructure at each parking space.

Reason for not recommending: This alternative does not help meet future demand for charging infrastructure due to the expected increase in EV ownership and will result in a more costly EV infrastructure requirement for new multifamily development as of July 1, 2024 than the proposed EV Reach Code.

Alternative #2: Require Direct Billing for All Parking Spaces – no exception for Unbundled/Unassigned Parking Spaces.

Pros: This alternative would remove the exceptions for unbundled or unassigned parking spaces and require that all EV spaces be direct billed to their residential unit. This ensures that all residents of new multifamily developments have access to time of use, residential EV charging rate options.

Cons: This alternative may not align with existing City policies that encourage flexibility for the assignment of parking, in particular the opportunity to unbundle parking. While there is some existing technology, such as Polaris wire terminals, that allow wiring connection modifications to be made more easily, this may be more suited to smaller complexes and be less feasible for buildings with dozens or hundreds of units. This wiring modification would also require a licensed electrician and may require an electrical permit in order to change, resulting in additional time and costs. Requiring an assigned space to be directly billed to the unit would remove the ability for a tenant to choose not to

pay for a parking space if they relied on other means of transportation, such as bicycle or transit. Developers have also expressed concerns over the cost of direct wiring, especially in mid-rise and high-rise multifamily buildings, and have stated that wiring costs will increase exponentially in larger projects.

Reason for not recommending: In December of 2022, the City Council made a bold step of eliminating minimum parking requirements, becoming the largest city in the country to do this. Requiring all spaces to be direct billed, and essentially re-establishing a de-facto minimum parking requirement, would be a step back. Staff also believes that with the overall expansion of the provision of EV Ready parking spaces, the additional costs of networked chargers will reduce.

Alternative #3: Make March 1, 2024 the Effective Date of the Proposed EV Reach Code

Pros: This alternative would make the newest version of the EV Reach Code effective as soon as possible and would ensure that all new multifamily residential developments would provide 100 percent EV charging access beginning with all projects that submit building permits in March of 2024 or later.

Cons: It often takes months of time for developers to prepare the plan sets required at the time of submittal for multifamily building permits. If the EV Reach Code is implemented for all permit submittals starting March 1, 2024, developers will have less than two months to revise plans to be in conformance with the updated EV Reach Code. It would also go into effect only four months prior to the 2022 CALGreen intervening cycle's (which includes substantial changes to EV requirements) effective date of July 1, 2024.

Reason for not recommending: Making multiple changes to building energy code requirements effective on different dates complicates the submittal process for developers. Based on current development trends looking at the last six months of development data, an average of 134 multifamily unit permits are being issued per month, so the four-month delay of implementation of an updated EV Reach Code could potentially not apply to roughly 536 units.

Racial Equity Impact Analysis

The Low-Power and Direct Billing (when applicable) EV Reach Code option provides two essential benefits to multifamily residents: 1) equitable access to charging infrastructure, with each household having access to at least one parking space with EV charging capability, and 2) equitable access to the most affordable electricity rates, through direct billing requirements that allow residents to manage their electricity rate plan and EV charging costs. Together, these also benefit the most energy-burdened communities in San José. In a 2020 study on energy burden, the American Council for an Energy-Efficient Economy found that low-income multifamily renters experience the highest median energy burden in San José.⁸ This means renters in these households are spending more than six percent of their monthly income on energy expenses. These households are impacted monthly, as they are forced to make decisions between paying their utility bill or going without electricity in order to meet other necessities. The Direct Billing requirement, achieved through connecting to a dwelling unit's meter, will empower all

⁸ How High Are Household Energy Burdens? An Assessment of National and Metropolitan Energy Burdens Across the U.S. American Council for an Energy-Efficient Economy (2020): <https://www.aceee.org/research-report/u2006>

multifamily households to access the most affordable electricity to charge their EV. Over the lifespan of their EV, these same households can expect to save \$6,000-\$10,000 by choosing an EV over its gas-powered counterpart.⁹

For the Low-Power and Direct Billing option, unassigned or unbundled parking not tied directly to a residential unit would be required to have low-power level 2 EV charging outlets at each parking stall, and 20 percent of parking spaces designated for non-residents are required to have a level 2 EV charging station installed. This will ensure that multifamily residents have as much access to EV charging even if there are fewer parking spaces than the number of units and provides access to charging information and costs for transparency to the user.

Climate Smart San José Analysis

Updating the City's EV Reach Code requirements helps to advance two goals under Climate Smart San José, by facilitating:

- the reduction of energy or water use consumption, or increases the demand for renewable energy; and
- the choice of mobility choices other than single-occupancy, gas-powered vehicles.

EVALUATION AND FOLLOW-UP

Staff will continue to provide progress updates to the Transportation and Environment Committee and City Council on Climate Smart San José activities on a semi-annual basis.

COORDINATION

This memorandum has been coordinated with the City Attorney's Office, City Manager's Budget Office, Office of Economic Development and Cultural Affairs, Energy Department, and Department of Transportation.

PUBLIC OUTREACH

This memorandum will be posted on the City's Council Agenda website for the January 23, 2024 City Council meeting.

In addition to the agenda posting, the following outreach efforts were undertaken.

⁹ EVs Offer Big Savings Over Traditional Gas-Powered Cars. Consumer Reports (2022):
<https://www.consumerreports.org/hybrids-evs/evs-offer-big-savings-over-traditional-gas-powered-cars/>

Public Outreach Feedback

In November 2022, City staff held three public webinars to share its marginal cost analysis for potential EV Reach Code options that met the 95 percent EV charging outlets and five percent charging station requirements, as directed by the City Council. In February 2023, following the direction from the Transportation and Environment Committee in December 2022, staff held an additional three public webinars to present updated EV Reach Code policy options that meet City Council's requirements for 95 percent EV charging outlets and five percent charging stations, but differ in their approach (e.g., including Direct Billing requirements, offering various mixes of low- and standard-power level 2 EV charging infrastructure) and cost, to allow participants to provide feedback. In response to stakeholder feedback, staff conducted additional meetings and one-on-one meetings with developers on the cost analysis. Staff also conducted one-on-one meetings with EV charging advocates. In September 2023, staff held three additional public webinars to present updates to the cost analysis based on stakeholder feedback and updates reflecting CALGreen's intervening cycle code updates, set to go into effect in July 2024. One webinar was geared towards the general public, one towards advocates, and one towards developers and industry professionals.

Altogether, staff conducted nine public engagement webinars with 100 total attendees. Staff shared webinar invitations with over 1300 email contacts covering a variety of stakeholder groups, including business associations, affordable housing developers, local nonprofits, community-based organizations, environmental organizations, residents, and developers. Staff promoted the webinars on social media and the Climate Smart San José webpage. Staff also notified Councilmembers about the webinars via email and encouraged them to share with their constituents.

Based on input received during the public webinars, there is general public support to update the EV Reach Code for new multifamily developments to level 2 charging outlets with direct billing because it provides residents with equitable access to quicker EV charging infrastructure while allowing residents to access the most affordable electricity to charge their vehicles.

COMMISSION RECOMMENDATION AND INPUT

No commission recommendation or input is associated with this action.

CEQA

Categorically Exempt under Section 15308 of the CEQA Guidelines, Actions by Regulatory Agencies for Protection of the Environment, File No. ER20-202.

HONORABLE MAYOR AND CITY COUNCIL

January 3, 2024

Subject: Reach Code Ordinance Update for EV Infrastructure in New Multifamily Developments

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PUBLIC SUBSIDY REPORTING

This item does not include a public subsidy as defined in section 53083 or 53083.1 of the California Government Code or the City's Open Government Resolution.

/s/

CHRIS BURTON

Director, Planning, Building, and Code Enforcement

/s/

KERRIE ROMANOW

Director, Environmental Services

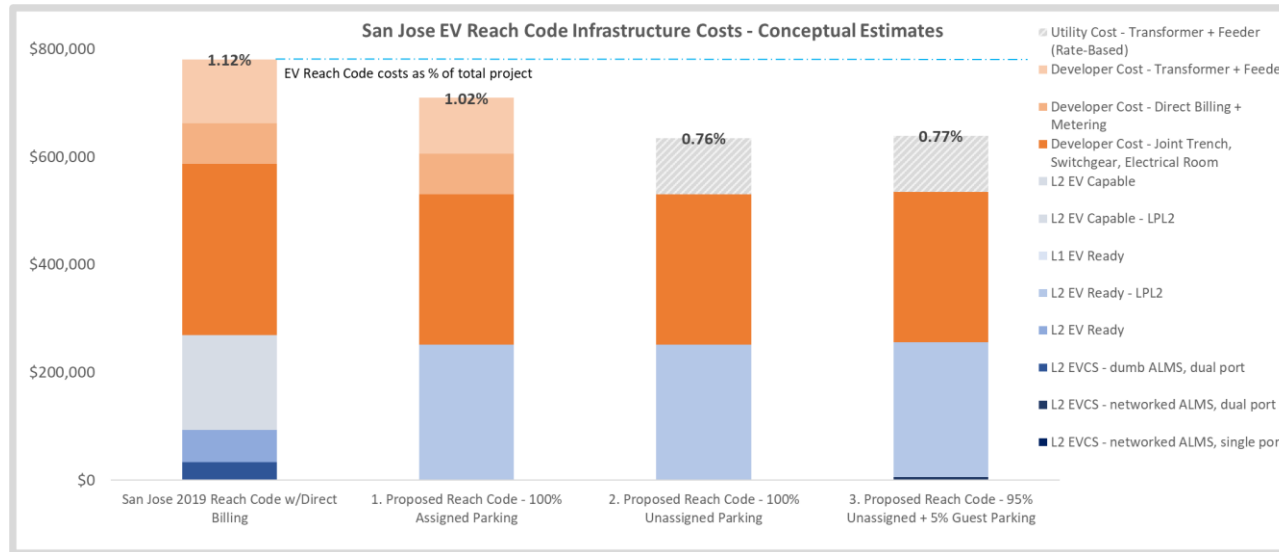
For questions, please contact Julie Benabente, Deputy Director, at
Julie.Benabente@sanjoseca.gov.

ATTACHMENT: EV Reach Code Cost Analysis

Attachment - EV Reach Code Cost Analysis

Port Type	Max Volts / Amps per Port	Cost per Port	San Jose 2019 Reach Code w/Direct Billing		1. Proposed Reach Code - 100% Assigned Parking		2. Proposed Reach Code - 100% Unassigned Parking		3. Proposed Reach Code - 95% Unassigned + 5% Guest Parking	
			% of units (1 space/unit)	cost	% of units (1 space/unit)	cost	% of units (1 space/unit)	cost	% of units (1 space/unit)	cost
L2 EV Capable	240V/40A	\$2,520	70%	\$176,396	100%	\$0	100%	\$0	95%	\$0
L2 EV Capable - LPL2	240V/20A	\$2,175		\$0		\$0		\$0		\$0
L1 EV Ready	120V/20A	\$2,205		\$0		\$0		\$0		\$0
L2 EV Ready - LPL2	240V/20A	\$2,509	20%	\$0		\$250,901		\$250,901		\$250,274
L2 EV Ready	240V/40A	\$2,983		\$59,668		\$0		\$0		\$0
L2 EVCS - dumb ALMS, dual port	240V/40A	\$3,305	10%	\$33,054		\$0		\$0	1%	\$0
L2 EVCS - networked ALMS, dual port	240V/40A	\$5,210		\$0		\$0		\$0		\$5,210
L2 EVCS - networked ALMS, single port	240V/40A	\$6,985		\$0		\$0		\$0		\$0
Totals - Breaker and Downstream			100%	\$269,117	100%	\$250,901	100%	\$250,901	96%	\$255,484
Direct Wiring Approach			EV Subpanel at Garage		EV Subpanel at Garage		None		None	

kVA		912	480	480	461
Rule 29 Applicable?		No	No	Yes	Yes
Utility Cost - Transformer + Feeder (Rate-Based)		\$0	\$0	\$103,700	\$103,700
Developer Cost - Transformer + Feeder		\$119,000	\$103,700	\$0	\$0
Developer Cost - Direct Billing + Metering		\$75,000	\$75,000	\$0	\$0
Developer Cost - Joint Trench, Switchgear, Electrical Room		\$317,606	\$279,600	\$279,600	\$279,600
Developer	Cost	\$780,723	\$709,201	\$530,501	\$535,084
	Percent of construction	1.12%	1.02%	0.76%	0.77%



Model Assumptions:

- 100-unit building
- 100 parking spaces
- 150,000 ft² dwelling space
- \$447/ft² dwelling cost of construction
- 25,000 ft² parking
- \$101/ft² parking cost of construction
- EV infrastructure materials costs based on RSMeans data and online retail pricing