



City Council Report

City Council Meeting: September 27, 2022
Agenda Item: 10.C

To: Mayor and City Council
From: Rick Valte, Public Works Director, Public Works, Office of Sustainability & the Environment
Subject: Introduction and First Reading of an Ordinance amending the Santa Monica Municipal Code and adopting Local Amendments to the 2022 California Green Building Code and adoption of a Resolution that provides findings of local climatic, geological, and topographical conditions as required by the Health and Safety Code

Recommended Action

Staff recommends that the City Council:

1. Adopt the attached resolution that provides findings of local climatic, geological, topographical, and environmental conditions as required to adopt Santa Monica local amendments to the 2022 California Green Building Standards Code;
2. Introduce for first reading the attached ordinance that amends the Santa Monica Municipal Code (SMMC) by adding chapter 8.38 entitled, Zero Emission Building Code and amend Santa Monica Municipal Code section 8.08.040 to allow the Building and Fire Life Safety Commission to hear appeals related to the Zero Emission Building Code;
3. Introduce for first reading the attached ordinance that adopts local amendments to the 2022 California Green Buildings Standards Code to support increased access to electric vehicle charging; and
4. Direct the City Manager to file the adopted resolution and ordinance amending the Green Building Standards Code with the California Building Standards Commission following the second reading of the ordinance at least 30 days before the effective date of the Codes.

Summary

As a leader in sustainability, the City continues to implement strategies that support its goals for a clean, safe, healthy, and sustainable community. As adopted by the City Council, the Climate Action and Adaptation Plan (Attachment A) recommends adopting carbon neutral construction codes for new residential, commercial, and

multi-family properties. These codes would increase energy efficiency, prohibit gas infrastructure in new buildings, and consequently reduce carbon emissions. Throughout the State, there is growing momentum among policymakers and green building stakeholders establishing building electrification as the most viable path to zero-emission buildings.

New construction buildings offer a major opportunity to mitigate future emissions given the long-term nature of a building as an asset. By “building it right” from the start, the City has an opportunity to drastically reduce future carbon emissions and “lock in” zero emissions throughout the life cycle of these buildings. To date, 58 California cities and counties have adopted code enhancements that require or encourage all-electric buildings, establishing a statewide trend toward building electrification. In line with this trend, staff proposes a two-part process:

1. Amend the Santa Monica Municipal Code (SMMC) by adding chapter 8.38 entitled, “Zero Emission Building Code”. As the City’s electricity supply has transitioned to mostly renewable energy sources, all-electric buildings and equipment would emit near-zero carbon dioxide emissions. The Code would prohibit gas infrastructure in newly constructed buildings for which a building permit for construction is issued on or after January 1, 2023, unless a complete building permit application is submitted on or before December 31, 2022. Exemption provisions are included for accessory dwelling units, certain laboratory equipment and medical uses, and cooking appliances in commercial kitchens.
2. Amend the California Green Building Standards Code (CALGreen) to increase the quantity of electric vehicle charging infrastructure required in newly constructed buildings. This amendment would build upon the community’s adopted goal of reducing carbon emissions from the transportation sector, which accounts for nearly 65% of greenhouse gas emissions. Adopting the local amendment would increase EV ready parking spaces to 60% for multi-residential, add 20% EV ready spaces for office parking facilities, and double the number of spaces equipped with EV chargers in other non-residential properties.

Staff will continue to conduct extensive outreach to the building community to prepare stakeholders for the ordinance's effective date of January 1, 2023.

Background

Limiting global warming to under 1.5 degrees Celsius above pre-industrial levels is imperative for avoiding the disastrous and irreparable effects of climate change. To meet this goal, action must be taken at all levels of government to significantly reduce greenhouse gas (GHG) emissions. Recognizing the importance of municipal action towards reducing the community's impact on climate change, in 2019 City Council adopted a goal of reducing communitywide carbon emissions to 80% below 1990 levels by 2030 and achieving carbon neutrality (zero carbon dioxide emissions) by 2050 or sooner. These ambitious but achievable goals initiated a range of interdepartmental City projects and programs designed to reduce the environmental impact of emissions from transportation, construction and landfill waste generation, and energy infrastructure (mostly from building emissions). In fact, 32% of emissions in Santa Monica are estimated to come from buildings, largely due to burning methane gas, commonly referred to as "natural gas," for space and water heating demands.

To achieve carbon neutrality, net increases in carbon emissions from new construction and development must be mitigated by efficient design, construction, and use of on-site and grid-supplied renewable energy. While many new buildings are utilizing zero emissions electricity sources from rooftop solar and Clean Power Alliance, the largest source of remaining emissions in buildings is methane gas.

At the local level, the City of Santa Monica is engaged in numerous efforts to reduce citywide GHG emissions. These include:

- Participation in the Clean Power Alliance, which offers 100% renewable and carbon-free electricity to customers,

- An Electrify Santa Monica rebate program to incentivize residents and small businesses to install EV charging stations and convert methane gas appliances to efficient electric alternatives, and
- Numerous energy efficiency-related projects and public EV infrastructure projects at municipal sites. Energy savings from four parking structure lighting retrofits in 2021 yielded a 44% average reduction in annual energy usage at those sites.

At the State level, public policy is trending toward all new construction in California to incorporate solar PV panels into both residential and non-residential buildings:

- January 1, 2022, the California Energy Code started requiring solar photovoltaic (PV) systems on all new low-rise residential buildings.
- January 1, 2023, the California Energy Code will expand the renewable energy requirements with solar PV and battery storage systems on all new multi-family and non-residential buildings.

In May 2019, the Clean Power Alliance (CPA), the City's Community Choice Energy entity, began procuring 100% renewable electricity for the community, accelerating the pace of renewable energy adoption locally and nearly eliminating emissions related to electricity. This, coupled with advances in appliance technologies, make a transition to an all-electric building not only viable but in most cases cost effective, particularly for new construction. All-electric buildings powered by a combination of on-site solar and 100% Green Power from the Clean Power Alliance are effectively zero emission buildings.

The City's current Energy Reach Code, (Attachment B), which is effective from January 1, 2020, through December 31, 2022, is known as an all-electric preferred code. It is a steppingstone toward eventually requiring all-electric buildings. This code has two pathways for compliance:

1. Mixed-fuel design. This pathway allows the use of both electric and methane in new construction but requires a higher level of energy efficiency to incentivize the design of all-electric buildings.

2. All-electric design. All-electric buildings are not subject to higher levels of energy efficiency and may be built to the State's standard design requirements.

City staff estimates that 30-40% of the new buildings permitted after 2020 are all-electric. With an estimated 60-70% of new buildings still including gas end-uses, it is clear that the next step is to require all-electric new construction. Given the State requirement for the City to build approximately 8,900 new housing units over the next 7 years, addressing carbon emissions from buildings represents a significant opportunity. The City of Santa Monica was one of the first cities in the State to implement an electric-preferred reach code. Since then, dozens of cities in California have passed more aggressive policies that ban gas infrastructure in new construction, including the municipalities of Berkeley, San Francisco, Ojai, and Santa Barbara.

Energy Resilience and Reliability

Questions surrounding grid reliability and resiliency are common as more buildings and vehicles electrify. Investor-owned utilities regulated by the California Public Utilities Commission, including Southern California Edison (SCE), are committed and required to meet this growing demand. To prepare for the increasing loads, SCE has deployed utility-scale energy storage projects to enhance storage capacity, introduced demand response programs that reward customers for using energy at off-peak times, and is accelerating the development and deployment of critical grid technologies.

Advancements in electric technologies such as battery energy storage and demand management, as well as evolving market factors are creating new pathways to energy reliability and resilience. Additionally, new, modern buildings include technologies that allow for maximizing energy load flexibility. For example, using heat pump water heaters as thermal storage can help match the timing of electricity demand to the generation of renewable energy, as well as reduce the severity of the late-afternoon demand ramp as solar output rapidly decreases.

Some industry stakeholders contend that mixed-fuel buildings offer greater resilience in the face of an electric outage, but this is misleading since most gas appliances today

operate with an electric ignition. While gas cooking stoves could be operated during an electricity outage, the inability to use electric-powered ventilation hoods would negatively impact indoor air quality. It is also important to note that gas lines and leaks pose a significant danger during fires and earthquakes and typically take longer to repair compared to electrical outages.

The proposed Zero Emission Building ordinance (Attachment C) would advance the City's emission reduction goals, by building upon the new 2022 State Energy Code, which encourages electric heat pumps and establishes electric-ready requirements for new homes. To develop the proposed ordinance, City staff evaluated pro-forma feasibility and cost-effectiveness studies (Attachment D), legal analysis, and model municipal code language from other cities.

EV Charger Reach Code

Based on the 2020 Greenhouse Gas Emission Inventory, 62% of the City's GHG emissions come from the transportation sector. The best way to reduce these emissions is to reduce trips from vehicles altogether by shifting to public or active transportation. For trips that must be made by cars, the shift from gas-powered vehicles to electric is a critical component of reducing GHG emissions and harmful pollution. The most common barrier to switching to an EV, especially for residents of multi-family buildings, is the lack of access to reliable charging at the home or workplace. Requiring EV charging infrastructure in new buildings is the best way to support the transition to EVs and is significantly less expensive than future retrofits to add EV charging.

In November 2017, City Council adopted the EV Action Plan (Attachment E), which includes strategies to remove barriers to EV adoption. This includes adopting building code updates that require greater levels of EV charging infrastructure in new buildings than required by the existing state code.

The 2022 California Green Building Code (CALGreen) includes increased EV charging requirements compared to previous code cycles, but it does not go far enough to

significantly improve access to EV charging given the pace of transition needed to meet state goals and meaningfully address the climate crisis. The state aims to have 5 million zero emission vehicles on the road by 2030 and estimates that there is currently a gap of 972,000 chargers needed to support this goal. Further, by 2035, all new cars and passenger trucks sold in California must be ZEVs per Executive Order N-79-20. Most of the buildings built in or after 2023 will continue to exist in 2035, and these EVs will need a place to charge.

The City has more than 150 public chargers and is actively expanding the public charging network, but will not be able to support the level of charging needed without significant increases in residential and non-residential projects. In February 2020, Council adopted an EV Charger Reach Code (Attachment F) to go beyond the 2019 CALGreen requirements. The new proposed requirements (Attachment G) are intended to provide higher levels of convenient EV charging access, with a focus on multifamily residents, based on feedback from the community, Commission meetings, and stakeholder workshops.

Reach Code Pathway

The State Building Standards Commission adopts amendments to the California Building Standards Codes (CBSC) every three years. Provided that required findings are made, the State allows cities to amend the CBSC to make them more restrictive.

In order for local amendments to be accepted by the State Building Standards Commission and enforceable at the local level, every local building standard amendment must provide a greater level of safety, accessibility, or environmental conservation and be deemed locally beneficial based on geological, topographical, and/or climatic conditions.

Reach codes are most commonly applied to new construction, as cost savings are often greatest at the time a building is first constructed. Jurisdictions may also include exemptions to reach codes based on the needs of specific sectors.

Reach Codes commonly fall into the following categories:

- Energy efficiency–focused;
- Incentivizing all-electric construction; or
- Requiring all-electric systems in new buildings.

Past Council Actions

Meeting Date	Description
05/28/19 (Attachment A)	Adopted the Climate Action & Adaptation Plan
09/24/19 (Attachment B)	Ordinance adopting the 2019 California Energy Code and Local Amendments
11/14/17 (Attachment E)	Adopted the EV Action Plan
02/25/20 (Attachment F)	Ordinance adopting the 2020 EV Charger Reach Code

Discussion

Pathways for Building Decarbonization

Decarbonizing buildings will require a multipronged approach, with different strategies applied to existing buildings and new construction. It is important to consider that buildings are long-term assets with energy infrastructure designed for equipment that is meant to last for decades. Therefore, each new building is an opportunity for investment in an emissions-free future. Advances in electric appliances, such as electric heat pumps and other electrical equipment are yielding much higher overall efficiencies than their natural gas counterparts, allowing for significant emissions reductions in buildings.

Existing buildings are less cost-effective to convert to all-electric systems. This is primarily due to the fact that most existing buildings already have natural gas infrastructure in place, negating any savings achieved by avoiding the cost of installing the infrastructure in the first place. Additionally, appliances in existing buildings typically reach their end of life at different times, eliminating the cost advantage of dual-purpose systems, such as heat pumps that provide both heating and cooling.

In order to address the existing building sector, the City will need to rely heavily on energy efficiency measures to leverage or create programs that help Santa Monica building owners transition to all-electric systems. Such programs include utility incentive programs, energy efficiency financing mechanisms, and other innovative programs that encourage the transition through finance, regulatory assistance, and education.

To date, 46 California jurisdictions have adopted new construction policies that require all-electric buildings, including Berkeley, Sacramento, San Francisco, San Jose, Ojai, and Santa Barbara. Similar legislation has passed in New York City, Seattle, Quebec, and entire countries, including Germany, France, the UK, Denmark, Austria, Ireland, and the Netherlands. In May 2022, the Los Angeles City Council voted to develop an ordinance and implementation plan to ban most gas appliances in new construction by January 1, 2023.

Natural Gas Infrastructure Prohibition Pathway (for New Construction)

Eleven of the California cities have chosen to require all-electric new construction projects with no gas appliances or gas plumbing by amending the zoning, health and safety, or other municipal codes. This option differs from amendments to the State Energy Code, in that it does not amend any of the California Building Standards Codes (CBSC); rather, it codifies a local prohibition of new gas infrastructure. Because the restriction applies only to the installation of gas infrastructure after the point of delivery to the property (i.e., after the meter installation), it does not fall within the jurisdiction of the CBSC.

Based on the above features of the natural gas prohibition pathway, Staff recommends City Council approve the ZEB Ordinance as an amendment to the Santa Monica Municipal Code. This approach is the predominant method that other California cities have chosen to require all-electric new buildings.

Cost Effectiveness Analysis

The Statewide Utilities' Codes and Standards Team completed cost-effectiveness studies in August 2019. These cost-effectiveness studies examined options for all-

electric and mixed-fuel new construction for single-family residential, multi-family residential, retail, office, and hotel use.

The studies revealed that all-electric buildings are generally cheaper to build due to the elimination of gas piping systems to and throughout the building(s) and reduced mechanical ventilation requirements. These lower initial costs generally make all-electric construction more cost-effective on a life-cycle basis. This is particularly true for low-rise residential buildings, where it is also often more cost effective for the owner to exceed code requirements by improving efficiency and adding additional solar PV panels. In fact, if one invests the savings from the gas infrastructure in PV capacity to offset the electricity load, an all-electric building is often cost-effective for the owner and the community from day one. The solar-powered building is less expensive to build and cheaper to operate.

Additionally, with the adoption of the 2022 code cycle, the state of California requires solar generation on all new buildings. This on-site generation enhances the cost-effectiveness of the all-electric new construction approach.

Unlike amendments to the Energy Code, a cost-effectiveness study is not required for amendments to Title 24, Part 11, of the California Building Standards Code (CALGreen), though many studies have shown the cost savings of installing EV charging infrastructure during the new construction process compared to retrofitting in the future.

Ordinance Development

Upon receiving the draft 2022 California Building Standards Codes for review, Office of Sustainability and the Environment staff participated in the California Codes and Standards Reach Codes Program, which is a collaboration between utilities, energy engineers, design professionals, stakeholders in the building industry, and staff from other local jurisdictions throughout the State. The program provided technical support to local governments considering local ordinances to support meeting local and/or statewide energy and greenhouse gas reduction goals. The program provided

resources such as cost-effectiveness studies, model language, sample findings, and other supporting documentation.

Staff hosted three virtual stakeholder workshops to review the cost-effectiveness studies developed by the program, explore reach code concepts, and present model code language. The workshop participants included architects, energy modelers, designers, builders, developers, and other local stakeholders. Staff also utilized code language from the approximately 58 leading California jurisdictions that have adopted codes that encourage or require all-electric buildings.

City of Santa Monica's Proposed Zero Emission Building Code Summary (Buildings)

Natural Gas Infrastructure is prohibited in Newly Constructed Buildings for which a building permit for construction is issued after January 1, 2023, unless a complete building permit application is submitted on or before December 31, 2022.

Exemptions are minimal and include the following:

- Accessory dwelling units or junior accessory dwelling units that are attached to an existing primary residential unit that has existing gas infrastructure.
- Equipment for laboratory equipment or clean rooms designed for scientific or medical uses.
- Cooking appliances in commercial restaurant kitchens or institutional cooking facilities. Further, commercial kitchens in restaurants and institutional cooking facilities with fuel gas infrastructure must also have sufficient electric capacity, wiring, and conduit to facilitate future full building electrification.

Proposed CALGreen Amendments (EV Charger Reach Code)

The proposed ordinance provides local amendments to Title 24 Part 11, the California Green Building Standards Code (CALGreen) in both the residential and non-residential code sections. Cities have the option to adopt increased voluntary requirements proposed in CALGreen that are known as Tier 1 and Tier 2, or they can adopt their own. Including higher EV charging capacity and electrical infrastructure in new buildings is

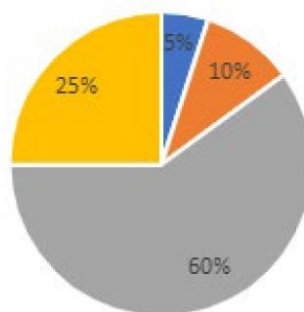
significantly less expensive than retrofitting and saves time by eliminating the need to obtain permits when a resident already has a receptacle in their parking space. The recommended amendments to the 2022 CALGreen code are as follows:

Residential – CALGreen Section 4.106.4.2 – New multifamily dwellings, hotels and motels, and new residential parking facilities:

- Apply the 5% EV Charger requirement to all projects (not just those with 20+ units)
 - All projects must install EV chargers in 5% of the parking spaces.
- Increase the Low Power L2 EV Ready requirement from 25% to 60%.
 - 60% of the parking spaces must be EV Ready with a receptacle capable of providing a minimum of 20-amperes to an EV charger.
- Require a minimum of 1 EV capable space for small multifamily projects that do not trigger the 10% EV Capable requirements.
 - The 2022 CALGreen code requires that 10% of the total number of parking spaces be EV Capable. Staff recommends keeping this requirement in addition to the recommended amendments above.
- Note: No more than one receptacle is required per dwelling unit when more than one parking space is provided by a single unit. There are no recommended changes to the existing EV Capable requirement for one- and two-family dwellings and townhouses in the 2022 CALGreen code.

Table 1. Proposed multifamily and motel EV charging requirements

Category	Requirement	Power (Amps)
EV Charger	5%	40
EV Capable	10%	40
Low Power Level 2 EV Ready	60%	20



■ EV Chargers ■ EV Capable ■ Low Power Level 2 ■ No Requirement

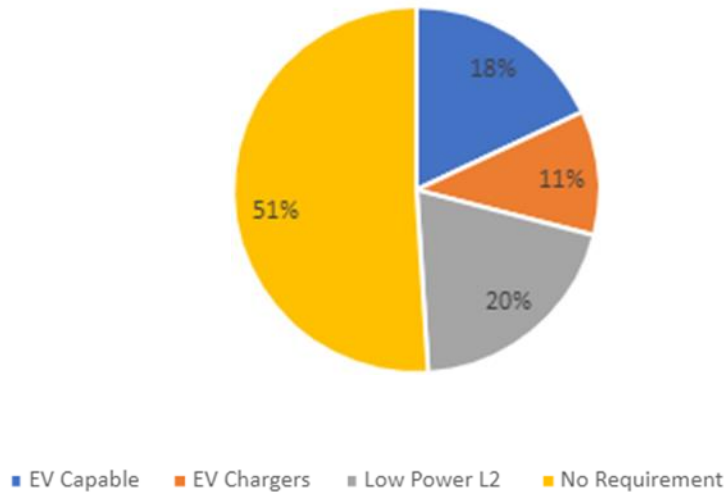
Non-residential – CALGreen Section 5.105.5.3

- Adopt CALGreen Tier 1
 - Tier 1 doubles the number of EV chargers required compared to the mandatory requirement (see Table 2 below).
 - Note: The number of EV chargers counts toward the required number of EV capable spaces.
- Add a requirement for office facilities: 20% of the parking spaces must be served by Low Power Level 2 EV Ready receptacles.
 - There is an excess of clean power (primarily solar) on the electrical grid during the daytime hours, which is why utilities incentivize the use of power during off-peak times. Encouraging charging at workplaces helps offset power demands at night to help balance the grid.

Table 2. Comparison of CALGreen Non-residential Requirements for EV Charging – Mandatory vs. Tier 1

Parking Spaces	EV CAPABLE		EV CHARGERS	
	Mandatory	Tier 1	Mandatory	Tier 1
0-9	0	2	0	0
10-25	4	5	0	2
26-50	8	11	2	4
51-75	13	19	3	5
76-100	17	26	4	9
101-150	25	38	6	13
151-200	35	53	9	18
201 and over	20% of total parking spaces	30% of total parking spaces	25% of EV capable spaces	33% of EV capable spaces

Table 3. Proposed Non-residential EV Charging Requirements



Notes: Low Power L2 EV Ready applies to office facilities only. The EV Charger and EV Capable percentages are based on averages of each parking count row shown in Table 2. The percentages take into account the fact that the number of EV chargers installed counts toward the required number of EV capable spaces.

Public Outreach

The ZEB Code was posted publicly on the City of Santa Monica’s website on May 9, 2022. City Staff also posted about the ZEB Code on social media as well as through newsletters. Public workshops on the ZEB Code and EV Charger Reach Code were held online to discuss each of the proposed local amendments on June 8, June 16, July 6, and July 7, 2022. Approximately 100 stakeholders attended the workshops. Staff also presented the proposed codes to the Commission on Sustainability, Environmental Justice, and the Environment, the EV Subcommittee, the Planning Commission, and the Building and Fire-Life Safety Commission. All public comments submitted to the Commission meetings were in support of the proposed code changes.

On July 20, 2022, the Planning Commission unanimously approved recommending that the Council adopt the proposed amendments to the SMMC and local amendments to the 2022 California Green Building Standards Code.

On August 15, 2022, the Commission on Sustainability, Environmental Justice, and the Environment unanimously approved a motion to recommend that the Council adopt the

proposed local amendments to the SMMC and 2022 California Green Building Standards Code.

On August 17, 2022, the Building and Fire-Life Safety Commission remained neutral on the proposed amendments to the SMMC and local amendments to the 2022 California Green Building Standards Code.

Next Steps

The 2022 California Green Building Standards Code, together with local amendments and required findings to support those local amendments, are presented for Council adoption. The resolution (Attachment H) sets forth findings regarding local climatic, geological, topographical, and environmental conditions that are required to support the adoption of the local code amendments.

The proposed amendments must be submitted to the California Building Standards Commission (CBSC) following Council's second reading by October 30, 2022 in order to be effective when the 2022 CALGreen takes effect on January 1, 2023.

Therefore, staff recommends that Council pass both resolutions and approve the ZEB ordinance and EV Charger Reach Code ordinance amending the 2022 California Green Building Standards Code.

Public notification of the effective date of the building code would be published on the City's website, and informational notices would be available at the City Hall Permit Counter. All local amendments approved by the City Council would also be published on the City's website in advance of the effective date of the code amendments. Staff will engage local industry associations and professionals to ensure awareness of and compliance with the new requirements.

The new code will help to streamline the plan check review process by removing one of the compliance pathways (for mixed-fuel buildings).

Financial Impacts and Budget Actions

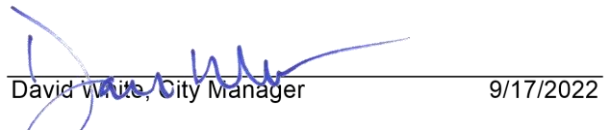
There are no immediate financial impacts or budget actions necessary as a result of the recommended action. Staff will return to Council if specific budget actions are required in the future.

Prepared By: Ariana Vito, Sustainability Analyst

Approved

Forwarded to Council


Rick Valte, Public Works Director 9/17/2022


David White, City Manager 9/17/2022

Attachments:

- A. Climate Action & Adaptation Plan (Web Link)
- B. 2019 Energy Code Ordinance
- C. PW-ORD-Zero Emissions Building Ordinance-092722
- D. Zero Emission Building Cost Effectiveness Studies
- E. EV Action Plan (Web Link)
- F. 2020 EV Charger Reach Code Ordinance
- G. PW-ORD-EV Reach Code-092722
- H. PW-RESO-EV Reach Code Findings-092722
- I. Written Comment