



DATE: October 22, 2019

CATEGORY: Public Hearing

DEPT.: Community Development/Fire

TITLE: **Ordinances Amending Chapters 8, 14, and 24 of the City Code to Adopt the 2019 California and 2018 International Codes, Incorporating by Reference Other Uniform Codes, and Adopt Reach Codes**

RECOMMENDATION

1. Introduce an Ordinance Amending Chapter 8, Articles I through XIV, of the Mountain View City Code, Relating to the Adoption of the 2019 California Building Codes, Incorporating by Reference Other International and Uniform Codes, and Adoption of the 2018 International Property Maintenance Code and 1997 Uniform Code for the Abatement of Dangerous Buildings (Attachment 1 to the Council report), to be read in title only, further reading waived, and set second reading for November 12, 2019.
2. Introduce an Ordinance Amending Chapter 14, Articles I and II, of the Mountain View City Code, Relating to the Adoption of the 2018 International Fire Code, Incorporating by Reference the Amendments Adopted by the State of California to Establish the 2019 California Fire Code (Attachment 2 to the Council report), to be read in title only, further reading waived, and set second reading for November 12, 2019.
3. Introduce an Ordinance Amending Chapter 24, Article I, of the Mountain View City Code, Relating to Hazardous Materials (Attachment 3 to the Council report), to be read in title only, further reading waived, and set second reading for November 12, 2019.

BACKGROUND

The State adopts new California Building Standards Codes (CBSC) every three years. The new 2019 State Codes go into effect on January 1, 2020. In order to maintain consistency with other cities in the State and region, staff proposes that the City of Mountain View adopt the 2019 CBSC, which consists of Building, Fire, Residential, Electrical, Plumbing, Mechanical, Energy, Green Building, Historical, Existing Building

and Referenced Standards. In addition, staff proposes that the City adopt the 1997 Uniform Code for the Abatement of Dangerous Buildings, 2018 International Fire Code, and the 2018 International Property Maintenance Code (IPMC) by reference and with local amendments.

The State of California allows cities to amend the CBSC to make them more restrictive, provided required findings are made. The amendments must be necessary to address local climatic, geologic, environmental, or topographic conditions that affect the health, safety, and welfare of residents. Staff is proposing several local amendments, including the “Reach Codes,” as described in the next section of this report. Local amendments must be adopted before January 1, 2020.

The City of Mountain View demonstrated leadership in sustainability when it adopted its first Mountain View Green Building Code (MVGBC) in 2010 and the first Environmental Sustainability Action Plan (ESAP) in 2008. Subsequently, the Council adopted two additional ESAPs and the Climate Protection Road Map, a communitywide climate action plan, to serve as a plan for achieving the City’s short- and long-term sustainability goals. Staff has prepared a fourth Sustainability Action Plan for Council consideration on October 22, 2019. The Reach Codes proposed as part of this update are consistent with the Sustainability Action Plan 4 (SAP-4) and Climate Protection Road Map goals of reducing greenhouse gas (GHG) emissions from new construction.

In alignment with the above, staff recommends modifying the requirements of Part 6 and Part 11 of the California Building Standards Code. This report provides an overview of the cost-effectiveness study, detailed findings, and provides language recommended for the associated reach goals for the 2019 building cycle.

ANALYSIS

Under State law, a city must file an application with the California Energy Commission (CEC), which must include a cost-effectiveness study, whenever local amendments to the State’s building energy efficiency standards (located in the California Energy Code) are adopted. These local amendments are the aforementioned Reach Codes. It is required that the City demonstrates to the CEC in the cost-effectiveness study that the local amendments to the code are financially responsible and do not represent an unreasonable burden to nonresidential and residential applicants. The code can either be prescriptive or performance-based. Most sections of the codes are typically prescriptive and require a minimum or maximum that must be met. Other sections

such as engineering analysis can be performance-based if they are shown to perform equivalent to prescriptive measures.

Statewide Cost-Effectiveness Study

Funded by California's investor-owned utilities, the California Statewide Codes and Standards Program (Statewide Program) led the development of a cost-effectiveness study for Energy Code reach goals that examined different performance-based approaches for new construction of specific building types. In some instances, the use of prescriptive measures was deemed more readily achievable (such as solar panels or cool roofs). Although the Statewide Program's analysis focused on performance-based ordinances, some conclusions about prescriptive measures can be drawn from the results.

Building Prototypes

The Statewide Program's analysis estimated the cost-effectiveness of several building prototypes, including one-story and two-story single-family homes; a two-story, multi-family building; a three-story office building; a one-story retail building; and a four-story hotel. The single-family homes and office building prototypes are directly applicable to City of Mountain View development. The City has increased the number of new dwelling units constructed over the past five years in addition to many approved development projects, including new commercial buildings, hotels, apartments, and mixed-use projects.

Local Analysis and Coordination

In an effort to establish uniformity in local building and fire code amendments throughout the Bay Area, staff participates in the International Code Council (ICC) Tri-Chapter Uniform Code Committee and Santa Clara County Fire Marshals' Code Adoption Committees, a consortium of building and fire officials throughout the greater Bay Area that discusses local implications of the codes and amendments. These professional affiliations allow us to keep up-to-date with the State and local code developments which have been incorporated in this proposed code adoption.

The City of Mountain View participated in a regional effort across Santa Clara and San Mateo Counties, led by Silicon Valley Clean Energy (SVCE) and Peninsula Clean Energy (PCE), to develop model Reach Codes to reduce natural gas use in new buildings and support electric vehicle adoption. These model Reach Codes served as a framework for building electrification and electric vehicle charging infrastructure

requirements in new construction, and each participating city is determining the most appropriate level of implementation for proposed Reach Code measures based on local conditions. As will be discussed later in this report, Mountain View has historically been more ambitious in its sustainability initiatives than many of its peer cities, due to the City's sustainability goals, strong community support, and high levels of adoption of both green building measures and electric vehicles. The Reach Codes proposed in this report reflect these factors.

The regional Reach Code effort led by SVCE/PCE included significant stakeholder outreach as part of the development of the model codes. Additionally, City of Mountain View staff held two public meetings on September 19, 2019 to solicit community feedback on the City's proposed Reach Codes. Key input received from the community about the proposed Reach Codes included:

- Support for staff's proposal to require, rather than incentivize, building electrification measures.
- Support for the proposed restrictions on what type of appliances and equipment must be electric for each proposed building type.
- Concern about the high proposed electric vehicle charger installation requirements for multi-family buildings. Staff considered this input and revised the proposed installation requirements as outlined in the following section, while requiring rewiring to accommodate future charger installation to maintain maximum flexibility to adapt to future demand.
- Feedback that the City should not require installation of electric vehicle chargers in single-family homes, to allow electric vehicle owners to choose the charger most appropriate to their vehicle. Staff incorporated this input into the proposed codes by requiring rewiring, rather than installation, for this building type.

Staff is proposing the following amendments to the CBSC, International Codes, and City ordinances which include clean-up modifications, and new City amendments. Pertinent new amendments are summarized in Attachment 4.

City-Specific Amendments – Reach Codes

Recommended amendments to Mountain View City Code Chapter 8, "Building," incorporate Reach Code goals in the Mountain View Green Building Code for

qualifying new construction. These proposed code amendments support the adopted sustainability goals of the City of Mountain View.

Building Appliance Electrification:

Building electrification is a critical part of meeting the City's GHG reduction goals by reducing natural gas use in buildings. Currently, natural gas use is responsible for approximately 72 percent of energy sector emissions in Mountain View, and 17 percent of total communitywide GHG emissions. Switching key equipment and appliances from natural gas to electricity achieves significant GHG emissions reductions due to the nearly carbon-free electricity supplied by SVCE. Adopting electrification requirements for new construction is especially important in anticipation of the significant amount of new development expected in Mountain View. Staff has worked closely with SVCE consultants to interpret the results of the State study and infer what options may or may not be cost-effective for the building types that are prevalent in the City of Mountain View but were not analyzed by the team. SVCE and PCE have also provided consultant support to assist cities in understanding the cost-effectiveness study results and adopting Reach Codes.

Proposed Reach Codes for New Construction

The proposed Reach Code was developed to meet the recommendations of SVCE/PCE and the cost-effectiveness study requirements of the CEC. As discussed above, they also address issues raised by stakeholders, including community members and developers. These approaches will achieve the City's goals of providing renewable and clean energy for constituents, contractors, and developers for new construction in Mountain View. The following is a summary of key revisions proposed in the Mountain View Green Building Code. The proposed codes would not permit gas appliances in new construction, other than cooking appliances, fireplaces, and fire pits in single-family/duplex construction and except for cooking appliances in for-profit kitchens in multi-family, mixed use, hotel/motel, and commercial construction. This approach exceeds the incentive-based requirements in the SVCE and PCE model code and places Mountain View amongst a relatively small number of cities considering a requirement to significantly limit natural gas usage. A table summarizing staff's current understanding of the reach codes adopted or being considered by other cities in the region is included as Attachment 5.

Natural Gas Requirements:

Single-Family/Duplex

- Electric – Heating/Cooling, Water Heater, Clothes Dryer
- Natural Gas Allowed for Cooking Appliances, Fireplace, and Fire Pit
 - Prewiring is required for future use of electric appliances where natural gas installed

Multi-Family (3+ Units), Mixed-Use, Hotel/Motel

- Electric – Heating/Cooling, Water Heater, Clothes Dryer, and Cooking Appliances
- Natural Gas Allowed for Cooking Appliances in a For-Profit Kitchens (commercial restaurants not located on an office campus)
 - Prewiring is required for future use of electric appliances where natural gas installed

Commercial

- Electric – Heating/Cooling, Water Heater, Clothes Dryer, and Cooking Appliances
- Natural Gas Allowed for Cooking Appliances in a For-Profit Kitchen and in F (Factory Industrial), H (Hazardous Materials), and L (Laboratories) Occupancies
 - Prewiring is required for future use of electric appliances where natural gas installed

Photovoltaic (PV) Requirements:

Staff utilized the SVCE's consultants to interpret the study's results and infer what options may or may not be suitable in Mountain View. The proposed reach goals were developed to meet the recommendations of SVCE/PCE and the cost-effectiveness study requirements of the CEC. The proposed requirements also took into consideration the energy requirements of different building types and ability to accommodate PVs on building rooftops.

Single-Family/Duplex

- PV Installation per California Energy Code, prewired to expand system to accommodate an all-electric building at 100 percent of annual kWh consumption offset.

Multi-Family (3+ Units), Mixed-Use, Hotel/Motel, and Commercial

- PV Installed on 50 percent of Roof Area and meet mandated California Energy Code (Title 24, Part 6).

Electric Vehicle (EV) Charger Requirements:

Local residents are showing a significant interest in electric vehicles. For example, the number of registered plug-in vehicles in Santa Clara County increased by 23 percent from January to October 2018 alone; the highest percentage of registered vehicles that are EVs of any county in California. According to the Department of Motor Vehicles, there are 26.42 EVs per 1,000 people in Mountain View, with a total of 3,083 vehicles (October 2018). Almost 5 percent of the vehicles currently registered in the City of Mountain View are EV; this is the highest percentage in the State.

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 nonresidential parking has ample EV charging capability will reduce long-term costs of EV infrastructure installation while helping to increase EV adoption and decrease transportation-related greenhouse gas emissions. While California's new minimum requirements are a step forward, the requirements for multi-family dwellings and nonresidential buildings are not enough to keep pace with the current growth or the expected EV growth looking towards 2030. The Statewide Program's team reviewed approaches to increase the amount of EV infrastructure in new-construction buildings, while keeping construction costs as low as possible.

Unlike amendments to the Energy Code, a cost-effectiveness study is not required for amendments to Title 24, Part 11, of the Green Building Code "CALGreen," which covers items such as EV charging infrastructure. These amendments are to the Mountain View Green Building Code, which is a version of "CALGreen"; therefore, a cost-effectiveness study is not required. However, to evaluate the financial impact, PCE and SVCE commissioned an analysis of the total cost of implementing various EV infrastructure measures. As a result, SVCE, PCE, and the Statewide Program's teams have established

new-construction EV recommendations 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 proposed amendments for EV charging stations will require that a greater percentage of parking spaces be provided with charging infrastructure to support the increasing number of EVs in Mountain View.

Type of Electric Vehicle Charging Infrastructure

EV charging requirements in California can generally be broken into three categories:

- **EV Charging Installed:** 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 charging station can be plugged in and a vehicle can charge.
- **EV-Capable:** Conduit is installed to the parking space, and building electrical system has ample capacity to serve future load. An electrician would be required to complete the circuit before charging is possible.

EV charging capacity and speed can be summarized as three categories:

- Level 1: Capable of charging at 120V, 20A. This is equivalent of a standard home outlet and can charge a typical car to run 40 miles of range in an eight-hour/overnight charge.
- Level 2: Capable of charging at 240V, 30A to 40A. This is the service capacity typically used for larger appliance loads in homes and can charge four times faster than Level 1 chargers and can charge a typical car to run up to 180 miles during an eight-hour charge.
- Level 3 (DC Fast Charging): Capable of charging at 20 kW to 400kW. This is the type of charger is used for Tesla Superchargers and DC Fast Chargers at some retail centers. This type of charger can charge a typical car to run 50 to 90 miles in 30 minutes or less.

The 2019 California Green Building Standard Code Update (Title 24, Part 11) increases requirements for EV 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: 10 percent of parking spaces must be Level 2 EV-capable.
- Nonresidential: 6 percent of parking spaces must be Level 2 EV-capable.

Recommended EV Charging Requirements:

The proposed requirements for EV chargers in Mountain View are summarized below.

Residential

- Single Family Dwelling:
 - One dedicated Level 1 circuit.
 - One dedicated Level 2 EV-Ready.
- Multi-Unit Dwelling:
 - 15 percent EV2 Installed.
 - 85 percent EV-Ready.
 - Level 3/DC Fast Charger for every 100 spaces.

Mixed-Use

- Multi-Unit Dwelling:
 - 15 percent EV2 Installed.
 - 85 percent EV-Ready.
 - Level 3/DC Fast Charger for every 100 spaces.

- Commercial Parking:
 - Installed per Table A5.106.5.3.2.

Commercial and Hotel/Motel:

- Installed per Table A5.106.5.3.2.

**Standard Code Requirements in CalGreen
5.106.5.3.3**

TOTAL NUMBER OF ACTUAL PARKING SPACES	2019 CALGREEN CODE NUMBER OF REQUIRED EV-READY SPACES (Table 5.106.5.3.3)
0 to 9	0
10 to 25	1
26 to 50	2
51 to 75	4
76 to 100	5
101 to 150	7
151 to 200	10
201 and over	6 percent of total ¹
¹ Calculation for spaces shall be rounded up to the nearest whole number.	

Proposed Modifications to CalGreen

NUMBER OF REQUIRED EV CHARGING SPACES		
TABLE A5.106.5.3.2		
Total Number of Actual Parking Spaces	Number of Required EV Charging Spaces ¹	Type of EV Charger
0-9	1	EV2 Installed ²
10 or more	15%	EV2 Installed ^{2&3}
100 or more	1 for every 100 spaces on-site ⁴	Level 3/ DC Fast Charger
¹ Calculation for spaces shall be rounded up to the nearest whole number. ² EV-Ready shall be provided for all non-EV Installed spaces on-site. ³ SAE J1772 (IEC Type 1) or alternative approved by the Chief Building Official. ⁴ Each Installed Level 3 Charger shall be included in the 15 percent required installed spaces.		

City-Specific Amendments – Other than Reach Code

New amendments to Mountain View City Code Chapter 8 are necessary to address local requirements and maintain uniformity in building code amendments throughout the County and to further accomplish the Council-adopted Greenhouse Gas reduction targets and the Governor’s September 2018 Greenhouse Gas reduction goals.

New amendments to Mountain View City Code Chapter 14 are necessary to address local requirements and maintain uniformity in fire code amendments throughout the County.

New amendments to Mountain View City Code Chapter 24, “Hazardous Materials,” were made to address requirements that were added to the California Fire Code.

Statement of Findings

Pursuant to State law, when a city makes a change to the model codes, it must make findings for each amendment, addition, or deletion based upon climatic, topographical, or geological conditions, including local environmental conditions as established by the City. The amendments to the California Green Code and the California Energy Code are necessary due to local environmental conditions due to climate change issues. On

November 3, 2009, in response to climate change, the City Council approved communitywide Greenhouse Gas Reduction Targets which aligned with the provisions of California Assembly Bill 32 (California Global Warming Solutions Act of 2006). Assembly Bill 197 and Senate Bill 32, which expand upon the goals of AB 32, were approved by the Governor on September 8, 2016, to be effective on or before January 1, 2017. Executive Order B-48-18, signed by the Governor on January 26, 2018, set a new target of 5 million Zero Emissions Vehicles, which include electric vehicles, in California by 2030 and targets to significantly expand vehicle charging infrastructure. Senate Bill 100, "The 100 Percent Clean Energy Act of 2018," was approved by the Governor on September 10, 2018, to be effective on or before December 30, 2030. Executive Order B-55-18, signed by the Governor on September 10, 2018, set a new Statewide goal to achieve carbon neutrality no later than 2045. The proposed California Green Building Standards and California Energy Code amendments include provisions to administer and preserve natural resources, encourage the use of sustainable materials, manage waste, and reduce other direct and indirect causes of climate change.

The following findings fulfill the requirement for making local amendments to building standards: "The City of Mountain View experiences low humidity and warm temperatures during the summer months, creating conditions which are particularly conducive to the ignition and spread of grass, brush, and structure fires. Additionally, the City of Mountain View is geographically located in the most severe seismic zone, Seismic Zone 4, and situated near active earthquake faults capable of producing substantial seismic activity. Since the City of Mountain View is divided by major freeways and other transportation corridors, the occurrence of a major earthquake would significantly impact the ability of Fire Department personnel to respond to emergencies should one or more overpasses be substantially damaged or collapsed. Additionally, fire suppression capabilities could be severely limited should the water system be extensively damaged during a seismic event. Therefore, mitigation measures are necessary such as: automatic fire suppression systems, communications systems, access to buildings, seismic protection, safety controls for hazardous materials, and other safeguards in an effort to minimize risks to citizens, property, and fire suppression personnel."

The proposed local amendments support the adopted sustainability goals of the City of Mountain View, including the Council's Major Goal to "Promote environmental sustainability and the quality of life for the enjoyment of current and future generations with a focus on measurable outcomes." The proposed Reach Codes are consistent with the goals outlined in Sustainability Action Plan 4 to reduce GHG emissions from energy use in new buildings and accelerate the electrification of vehicles, and will help the City achieve its adopted GHG emissions reduction targets.

FISCAL IMPACT

The proposed revisions to the Building and Energy Codes will require staff resources to review and provide outreach/education to the community and applicants. This was anticipated in the programs and additional staffing proposed in Sustainability Action Plan 4, including the addition of a Deputy Building Official. The Action Plan also proposes the addition of a Program Manager for Building and Vehicle Electrification, which will support programs aimed at reducing GHG emissions in new and existing buildings and accelerating the electrification of vehicles through research, policy design, and program implementation. The costs for these new staff positions, as outlined in the Action Plan, is proposed to be covered by funds allocated for sustainability programs through Fiscal Year 2021-22. Funding for code books and associated staff training is provided for in the Fiscal Year 2019-20 Building Inspection Division and Fire Department budgets.

ALTERNATIVES

1. Do not modify Chapters 8, 14, and 24 of the City Code or amend the 2019 State, 2018 International Codes or 1997 Dangerous Building Code and be preempted by State-adopted codes on January 1, 2020. Preemption by the State would eliminate the City's ability to enforce the proposed and existing amendments.
2. Do not adopt, or modify the local amendments as specified by the City Council.
3. Provide other direction.

PUBLIC NOTICING

Agenda posting in the local newspaper and direct mail to selected businesses, architects, contractors, and developers and two community outreach meetings held on September 19, 2019.

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- Attachments:
1. Draft Ordinance, Chapter 8
 2. Draft Ordinance, Chapter 14
 3. Draft Ordinance, Chapter 24
 4. Summary List of Amendments to Chapters 8, 14, and 24 of the Mountain View City Code
 5. Local Activity – Reach Code Comparisons
 6. [Council Report on Adoption of 2016 Codes](#)