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City Council Report

City Council Meeting: **September 10, 2019**
Agenda Item: **7.B**

To: Mayor and City Council
From: Susan Cline, Director, Public Works, Office of Sustainability & the Environment
Subject: Introduction and First Reading of an Ordinance adopting Local Amendments to the 2019 Energy and Green Building Codes 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 2019 California Energy Code and 2019 California Green Building Standards Code;
2. Introduce for first reading the attached ordinance that adopts the 2019 California Energy Code, 2019 California Green Building Standards Code and Santa Monica local amendments; and
3. Direct the City Manager to file the adopted resolution and ordinance with the California Energy Commission following the second reading of the ordinance at least 30 days before the effective date of the Codes.

Executive Summary

California's State Building Code Standards are comprehensively updated every three years, with adjustments annually. Local jurisdictions have limited authority to adopt stricter standards based on specific conditions. As a leader in sustainability, the City continues to seek solutions that will help meet its goals of reducing communitywide carbon emissions to 80 percent below 1990 levels by 2030 and achieving carbon neutrality (zero carbon dioxide emissions) by 2050 or sooner. One recommended action the City could take is to adopt carbon neutral construction codes for new commercial, mixed-use and multi-family properties, as outlined in the Climate Action and Adaptation Plan recently adopted by the City Council. This would increase energy efficiency and the use of renewable energy in new buildings, which would prevent the proliferation of carbon emissions.

Staff proposes amendments to the 2019 California Energy Code and 2019 California Green Building Standards Code that reach beyond the state's requirements to help the City meet its sustainability policy goals, subject to State approval.

Starting January 1, 2020, new buildings will have two design pathways for complying with the California Energy Code: all-electric design and mixed-fuel design. 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.

As an incentive to design all-electric buildings, Santa Monica's proposed ordinance (Attachment A) would require a higher level of energy efficiency for mixed-fuel buildings. All-electric buildings are not subject to higher levels of energy efficiency and may be built to the State's baseline efficiency requirements.

Also starting January 1, 2020, the California Energy Code will require solar photovoltaic systems on all new single-family and low-rise multifamily buildings (three stories or less). Santa Monica's proposed ordinance maintains the existing solar photovoltaic requirement for all new non-residential, high-rise residential, hotel and motel buildings. The ordinance also proposes a new solar photovoltaic requirement for all major additions.

City staff leveraged feasibility and cost-effectiveness studies, legal analysis, and model municipal code language, to develop the proposed ordinance (Attachment A) and a proposed resolution making required findings of justifying local climatic, geological, topographical, and environmental conditions (Attachment B).

If Council adopts the proposed ordinance and resolution, staff would submit a filing of Santa Monica's energy amendments and a cost-effectiveness study to the California Energy Commission. The California Energy Commission would hold a public hearing to discuss and potentially approve Santa Monica's energy amendments to the 2019 California Energy Code and 2019 California Green Building Standards Code. If

approved by the California Energy Commission, the ordinance would be presented to Council for a third reading in order to become effective by January 1, 2020.

Background

The California Building Standards Code (Title 24) consists of 13 parts that apply to the design, construction, and alteration of public and private buildings and equipment. The proposed ordinance provides local amendments to Title 24 Part 6, the California Energy Code (CEC), and Title 24 Part 11, the California Green Building Standards Code.

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 renewable energy systems. As the City's sources of electricity become cleaner from the increased use of renewable energy, natural gas remains the largest source of emissions in buildings.

Promoting or requiring all-electric construction and avoiding new demand for fossil fuel natural gas are necessary steps to achieve the City's goal of an 80 percent reduction below 1990 levels in communitywide carbon emissions by 2030 and carbon neutrality by 2050 or sooner.

The City's current Energy Reach Code, commonly referred to as a Zero-Net Energy (ZNE) Code (Attachment C), requires all new low-rise residential buildings to use 15 percent less energy than a standard design building and install enough solar panels to offset the expected annual energy needs. Documentation is required to show that the building's proposed design has an Energy Design Rating (EDR) of zero.

The EDR score is only applied to low-rise residential projects and is the primary metric used by the CEC to show compliance with the Energy Code. Using energy modeling software, project teams are able to compare their "Proposed Design EDR" with a code-compliant "Standard Design EDR". The Standard Design EDR can be thought of as an energy budget and the Proposed Design EDR must be under budget to comply. Over time, the CEC has reduced the energy budget and lowered the EDR in order to spur

energy efficiency. A score of 100 represents a home compliant with the 2006 building code, a score in the low 40s is typical of a home compliant with 2016 code, a score in the low 20s is compliant with 2019 code, and a score of zero represents a ZNE home.

The City's current Energy Reach Code also applies to high-rise residential, hotels/motels, and all other non-residential construction. The Energy Reach Code requires these building types to be designed to use 10 percent less energy than a standard design building and install a solar photovoltaic system with a rating of 2 watts per square foot of the building footprint.

Since the Energy Reach Code went into effect in May 2017, 105 single-family residences and accessory dwelling unit (ADU) projects have been submitted for plan check. To date, the City issued 72 permits and completed final inspection for 10 projects.

Past Council Actions

10/25/16 (Attachment C)	Ordinance Adopting the 2016 California Energy Code and Local Amendments
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Discussion

Pursuant to the Health and Safety Code, the California Building Standards Code (CBSC) applies to new buildings throughout the State of California. Every three years, the CBSC is updated to include the latest trends in design and construction to ensure safety and performance in buildings. The 2019 CBSC, including Title 24 Part 6, which governs building energy performance, and Title 24 Part 11, which governs green building standards, was published on July 1, 2019, and will become effective on January 1, 2020. For the first time, the 2019 CBSC will require solar on all low-rise residential buildings and offer two energy performance pathways for buildings: mixed fuel (using both electricity and natural gas) and all-electric construction.

Cities and counties may make amendments to the CBSC that meet the following conditions:

- Must be based on local climatic, geological, and topographical, conditions (for purposes of the Green Building Standards Code, such conditions include local environmental conditions);
- Must be cost-effective;
- Cannot pre-empt federal appliance efficiency standards; and
- Cannot be less restrictive than the State requirements.

Upon receiving the draft State energy 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 (Attachments D, E, F, and G), model language, sample findings, and other supporting documentation.

Staff hosted three local stakeholder workshops at Santa Monica libraries 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.

The City also participated in a Zero-Emission Buildings Reach Code Task Force, a project of the Building Decarbonization Coalition in partnership with the Natural Resources Defense Council, Sierra Club, and several California cities and counties. This Task Force provided staff with strategies for building electrification policy and reach code development support.

The California Energy Commission updated the calculations used to determine a low-rise residential building EDR. The resulting EDR metric and cost-effectiveness studies for single-family and low-rise multi-family buildings concluded that achieving an EDR of zero was not cost-effective for mixed-fuel design; therefore, the proposed reach code for mixed-fuel single-family and low-rise multi-family buildings requires an EDR of 10 or less.

Proposed Energy Code Amendments

Similar to the 2019 CBSC, new buildings in Santa Monica would have two design pathways for complying with the Energy Code: all-electric design and mixed-fuel design. However, as an incentive to design all-electric buildings, a higher level of energy efficiency would be required for mixed-fuel buildings. All-electric buildings would not be subject to higher levels of energy efficiency and may be built to the State’s standard design requirements. All-electric buildings powered by a combination of on-site solar and 100 percent Green Power from the Clean Power Alliance are effectively Zero-Emission Buildings.

The proposed requirements, summarized in the table below, would be applicable to all new buildings in Santa Monica.

		Code Compliance Pathways	
		All-Electric	Mixed-Fuel
Single Family & Low-Rise MF 	Efficiency + Solar: Meet State Code (no reach)	Efficiency + Solar: CalGreen Tier 1 • High-performance efficiency • Total Energy Design Rating of ≤ 10	
High Rise MF & Hotel 	Efficiency: Meet State Code Solar: 2 watts/sq. ft. of bldg. footprint	Efficiency: 5% better than State code Solar: 2 watts/sq. ft. of bldg. footprint	
Non-Residential 	Efficiency: Meet State Code Solar: 2 watts/sq. ft. of bldg. footprint	Efficiency: 10% better than State code Solar: 2 watts/sq. ft. of bldg. footprint	

For new single-family, duplex, and multi-family residential buildings up to three stories:

- All-Electric Building: shall be designed to code established by the 2019 CEC.
- Mixed-Fuel Building: shall be designed to CalGreen Tier 1 established by the 2019 CEC. CalGreen Tier 1 buildings have additional integrated efficiency and on-site renewable energy sufficient to achieve a Total Energy Design Rating of 10 or less.

For new multi-family buildings, four stories and greater, and new hotels and motels:

- All new buildings shall have a solar photovoltaic system with a minimum rating of 2 watts per square foot of the building's footprint.
- All-Electric Building: shall be designed to code established by the 2019 CEC.
- Mixed-Fuel Building: shall be designed to be 5 percent more efficient than the code established by the 2019 CEC. (The change from the current Energy Reach Code, which requires these buildings to be 10 percent more efficient is the result of the cost-effectiveness study.)

For all other new non-residential buildings:

- All new buildings shall have a solar photovoltaic system with a minimum rating of 2 watts per square foot of the building's footprint.
- All-Electric Building: shall be designed to code established by the 2019 CEC.
- Mixed-Fuel Building: shall be designed to be 10 percent more efficient than the code established by the 2019 CEC.

For all new buildings, the Certificate of Compliance described in Section 10-103 of the California Building Energy Efficiency Standards shall be prepared and signed by a Certified Energy Analyst (CEA) as the Documentation Author. A CEA is a person who is certified by the California Association of Building Energy Consultants. The CEA certification program was developed by the Statewide Codes and Standards Program and the California Association of Building Energy Consultants. CEAs are individuals who have demonstrated their mastery of the California Building Energy Efficiency

Standards (Title 24, Part 6). CEAs understand broader energy efficiency issues and are committed to providing quality service and conducting business in an ethical fashion. CEAs also commit to ongoing educational requirements, attending advanced industry training that puts them on the cutting edge.

Proposed Green Building Standards Code Amendments

Staff recommends amending the solar requirements found in Municipal Code sections 8.106.055 (4.201.4 and 4.201.5) and 8.106.080 (5.201.4) to require major additions to install a prescriptive amount of solar photovoltaics. Major additions include a story addition or a cumulative addition of 50 percent of the existing floor area.

Major additions to one- and two-family dwellings shall install a solar photovoltaic system with a minimum total wattage of 1.5 times the square footage of the addition. All major additions to multi-family and non-residential buildings are required to install a solar photovoltaic system with a minimum total wattage of 2 times the square footage of the addition's footprint.

Consistent with Santa Monica's leadership in energy efficiency and emissions reductions, staff recommends updating the pool heating requirements in Section 8.106.055 (4.201.3) and 8.106.080 (5.201.3) to specify, for new pool construction, if the pool is to be heated, an electric heat pump and/or solar thermal system shall be used. Electric heat-pump water heaters are effective in Santa Monica's mild climate and when operated during the electric utility's off-peak periods save 50 percent or more in energy costs compared to gas heaters.

Boards and Commissions

Public hearings were held on September 3, 2019 and August 14, 2019 with, respectively, the Task Force on the Environment and Santa Monica's Building and Fire-Life Safety Commission to discuss each of the proposed local amendments.

On August 14, 2019, the Building and Fire-Life Safety Commission unanimously approved recommending that the Council adopt the proposed local amendments to the

2019 California Energy Code and 2019 California Green Building Standards Code. The Commission also recommends Council consider an update to zoning codes such that "New construction shall not obstruct solar access on neighboring properties between the hours of 10 a.m. and 2 p.m. to solar panels previously installed per the requirements of the Santa Monica Energy Code."

On September 3, 2019, the Task Force on the Environment unanimously approved a motion to recommend that the Council adopt the proposed local amendments to the 2019 California Energy Code and 2019 California Green Building Standards Code.

Next Steps

The 2019 California Energy Code and 2019 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 B) sets forth findings regarding local climatic, geological, topographical, and environmental conditions that are required to support the adoption of the local code amendments. The ordinance (Attachment A) amends the 2019 California Energy Code and the 2019 California Green Building Standards Code.

The proposed amendments and findings and the cost-effective studies must be submitted to the California Energy Commission (CEC) following Council's second reading by September 30, in order to be effective in coordination with the January 1, 2020 effective date of the 2019 CBSC.

The CEC would then approve the amendments during a business meeting, following 60 days of public comment. Once approved, staff would return to Council with a CEC-approved resolution and ordinance for ratification. If Santa Monica's amendments are scheduled after September 30, then the local energy amendments would become effective after January 1, 2020. This would cause logistical challenges as the building industry prepares to comply with the new changes in 2020 and local amendments follow thereafter.

Therefore, staff recommends that Council pass the resolution (Attachment B) and approve the ordinance amending the 2019 California Energy Code and 2019 California Green Building Standards Code (Attachment A) so that staff may bring the final resolution and ordinance back to Council following approval by the California Energy Commission in time for the local amendments to take effect as of January 1, 2020.

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 City Hall's 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.

Financial Impacts and Budget Actions

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

Prepared By: Drew Lowell, Sustainability Analyst

Approved

Forwarded to Council



Susan Cline, Director

8/29/2019



Rick Cole, City Manager

9/3/2019

Attachments:

- A. Ordinance Energy and Green Building Code 8.5.19
- B. Resolution Energy and Green Building Code 8.5.19
- C. 2017 Energy Reach Code
- D. 2019 NonRes NC Cost-effectiveness Report FINAL
- E. 2019 Res NC Cost-Effectiveness Report FINAL
- F. 2019 SM Low Rise Res-PV-Additions-Final
- G. 2019 SM Pool Heating-Final

- H. Written Comments
- I. PowerPoint Presentation