

BOARD of SUPERVISORS



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MEMORANDUM

TO: Tom Hui, Director, Department of Building Inspection
Sonya Harris, Secretary, Building Inspection Commission

FROM: Erica Major, Assistant Clerk, Land Use and Transportation Committee

DATE: October 2, 2019

SUBJECT: LEGISLATION INTRODUCED

The Board of Supervisors' Land Use and Transportation Committee has received the following legislation, introduced by Supervisor Mandelman on September 24, 2019:

File No. 190974

Ordinance amending the Green Building Code to establish energy performance requirements for certain new building construction; adopting environmental findings, and findings of local conditions under the California Health and Safety Code and the California Public Resources Code; and directing the Clerk of the Board of Supervisors to forward the Ordinance to state agencies as required by state law.

The proposed ordinance is being transmitted pursuant to Charter, Section D3.750-5, for public hearing and recommendation. It is pending before the Land Use and Transportation Committee and will be scheduled for hearing upon receipt of your response.

Please forward me the Commission's recommendation and reports at the Board of Supervisors, City Hall, Room 244, 1 Dr. Carlton B. Goodlett Place, San Francisco, CA 94102 or by email at: Erica.Major@sfgov.org.

cc: William Strawn, Department of Building Inspection
Carolyn Jayin, Department of Building Inspection

1 [Green Building Code - Energy Performance in Newly Constructed Buildings]

2
3 **Ordinance amending the Green Building Code to establish energy performance**
4 **requirements for certain new building construction; adopting environmental findings,**
5 **and findings of local conditions under the California Health and Safety Code and the**
6 **California Public Resources Code; and directing the Clerk of the Board of Supervisors**
7 **to forward the Ordinance to state agencies as required by state law.**

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9 NOTE: **Unchanged Code text and uncodified text** are in plain Arial font.
10 **Additions to Codes** are in *single-underline italics Times New Roman font*.
11 **Deletions to Codes** are in *strikethrough italics Times New Roman font*.
12 **Board amendment additions** are in double-underlined Arial font.
13 **Board amendment deletions** are in ~~strikethrough Arial font~~.
14 **Asterisks (* * * *)** indicate the omission of unchanged Code
15 subsections or parts of tables.

16 Be it ordained by the People of the City and County of San Francisco:

17 Section 1. Environmental Findings. The Planning Department has determined that the
18 actions contemplated in this ordinance comply with the California Environmental Quality Act
19 (California Public Resources Code Sections 21000 et seq.). Said determination is on file with
20 the Clerk of the Board of Supervisors in File No. _____ and is incorporated herein by
21 reference. The Board affirms this determination.

22 Section 2. General Findings.

23 (a) The California Building Standards Code is contained in Title 24 of the California
24 Code of Regulations, and consists of several parts that are based upon model codes with
25 amendments made by various State agencies. The California Green Building Standards

1 Code, also known as the CALGreen Code, is Part 11 of Title 24 of the California Code of
2 Regulations.

3 (b) Local jurisdictions are required to enforce the California Green Building
4 Standards Code, but they may also enact more stringent standards when reasonably
5 necessary because of local conditions caused by climate, geology, or topography.
6 Historically, the City has enacted the San Francisco Green Building Code as amendments to
7 the California Green Building Standards Code. This ordinance is such an ordinance.

8 (c) Pursuant to Charter Section D3.750-5, the Building Inspection Commission
9 considered the applicable sections of this ordinance at a duly noticed public hearing on
10 _____.

11
12 Section 3. Findings Regarding Local Conditions Required by the California Health and
13 Safety Code.

14 (a) California Health & Safety Code Section 17958.7 provides that before making
15 any changes or modifications to the California Green Building Standards Code and any other
16 applicable provisions published by the State Building Standards Commission, the local
17 governing body must make an express finding that each such change or modification is
18 reasonably necessary because of specified local conditions, and the findings must be filed
19 with the State Building Standards Commission before the local changes or modifications go
20 into effect.

21 (b) The Board of Supervisors hereby finds and declares that the following
22 amendments to the San Francisco Green Building Code are reasonably necessary because
23 of local climatic, topological, and geological conditions as discussed below.

24 (1) Human activities releasing greenhouse gases into the atmosphere cause
25 increases in worldwide average temperature, which contribute to melting of glaciers and

1 thermal expansion of ocean water. As a city located on the tip of a peninsula, surrounded on
2 three sides by bodies of water, San Francisco is experiencing and will continue to experience
3 the repercussions of climate change, with rising sea levels causing significant erosion,
4 increasing impacts to infrastructure during extreme tides, and causing the City to expend
5 funds to modify the sewer system.

6 (2) The effects of climate change on California include reduction in annual
7 snow accumulation in the Sierra Nevada Mountains, which increases the frequency of
8 drought, and increasing evapotranspiration from forests and rangelands, which increases
9 vulnerability of fire. San Francisco has already experienced increased frequency of drought
10 conditions, and harmful air quality due to wildland fires; and these problems are likely to
11 persist for the foreseeable future.

12 (3) Some San Francisco residents, such as the elderly, are particularly
13 vulnerable to increases in frequency, peak temperature, and extended duration of heat events
14 resulting from climate changes, as well as being vulnerable to extreme concentrations of toxic
15 air pollutants in the City due to fires in Northern California, such as occurred in 2017 and
16 2018.

17 (4) The operation of buildings comprise a significant portion of the City's
18 greenhouse gas emissions. In 2017, the operation of buildings was responsible for 43.7% of
19 citywide greenhouse gas emissions. The City has grown considerably in recent years. For
20 example, since 1990 the economy of the City grew 162% and population increased by 22%.
21 This growth results in the new construction of buildings and significant rehabilitation of existing
22 buildings.

23 (5) Strong energy efficiency standards reduce emissions by lowering overall
24 energy use. The increased availability of renewable energy also reduces emissions
25 associated with electricity usage. In 2017, 80% of emissions from the operation of buildings

1 citywide was due to consumption of natural gas or district steam produced via combustion of
2 natural gas.

3 (6) Emissions from natural gas can be reduced by limiting consumption. The
4 primary constituent of natural gas is methane, which is 86 times more potent of a greenhouse
5 gas than carbon dioxide. In addition, more than 4% of methane leaks into the atmosphere
6 prior to delivery.

7 (7) The City can help reduce emissions from electricity use through
8 conservation, by increasing generation of renewable electricity to meet the California
9 Renewable Portfolio Standards, and voluntary enhancement of clean generation resources by
10 CleanPowerSF, the City's Community Choice Aggregation program. Emissions of carbon
11 dioxide per megawatt hour of electricity delivered to the City have decreased by 78% since
12 1990. The City has set the goal of ensuring that 100% of electricity usage citywide is
13 generated via renewable, greenhouse gas-free sources by 2030.

14 (8) It is necessary and appropriate to require building owners in San
15 Francisco to take steps to reduce the energy consumed by inefficient building operations
16 when such operations utilize fossil fuels instead of low-carbon electricity, in order to reduce
17 pollution, improve resilience to disruption of natural gas supplies in the event of disaster,
18 reduce risk of fire due to leaks or ruptures, and reduce the global warming effects associated
19 with the consumption of fossil fuels and natural gas.

20 (c) Recently, the California Energy Codes and Standards Program issued the 2019
21 Nonresidential New Construction Reach Code Cost Effectiveness Study, and the 2019 Cost-
22 effectiveness Study: Low Rise Residential New Construction. Both studies are on file with the
23 Clerk of the Board of Supervisors in Board file no. _____. Based on the studies, the Board
24 of Supervisors finds that meeting the energy performance requirements established in this
25

1 ordinance are cost-effective, and will use no more energy than the standards contained in the
2 2019 California Energy Standards (CCR Title 24, Part 6).

3
4 Section 4. Findings Required by California Public Resources Code and Title 24 of the
5 California Code of Regulations.

6 (a) California Public Resources Code Section 25402.1(h)(2) and Section 10-106 of
7 the California Code of Regulations, Title 24, Part 1, Locally Adopted Energy Standards,
8 authorize a local jurisdiction to adopt and enforce more restrictive local energy standards,
9 provided that the local jurisdiction makes a determination that the local standards are cost-
10 effective and will save more energy than the current Statewide standards, and provided
11 further that the local jurisdiction files an application for approval with the California Energy
12 Commission together with documentation supporting the cost-effectiveness determination.
13 Local energy standards may take effect only after the California Energy Commission has
14 reviewed and formally approved them.

15 (b) Based upon the findings of a cost-effectiveness study performed on the more
16 restrictive local standards contained in the City's proposed ordinance, the Board of
17 Supervisors hereby determines that these local energy standards are cost-effective and will
18 save more energy than the standards contained in the 2019 California Green Building
19 Standards Code. A copy of the cost-effectiveness study is on file with the Clerk of the Board
20 of Supervisors in File No. _____ .

21
22 Section 5. The Green Building Code is hereby amended by revising Sections 202
23 (definitions placed in alphabetical sequence), 4.201, and 5.201, to read as follows:

24 **SECTION 202 – DEFINITIONS**

25 * * * *

1 **ALL-ELECTRIC BUILDING OR PROJECT.** *A building or project that uses a permanent*
2 *supply of electricity as the source of energy for all space conditioning (including heating and cooling),*
3 *water heating (including pools and spas), cooking appliances, and clothes drying appliances. An All-*
4 *Electric Building or Project may include solar thermal collectors, but may not install natural gas or*
5 *propane plumbing in or in connection with the building, structure, or within property lines of the*
6 *premises, extending from the point of delivery at the gas meter.*

7 * * * *

8 **MIXED-FUEL BUILDING.** *A building that uses natural gas or propane as fuel for space*
9 *heating, water heating (including pools and spas), cooking appliances or clothes drying appliances, or*
10 *is plumbed for such equipment.*

11 * * * *

12 **NATURAL GAS.** *Shall have the same meaning as “Fuel Gas” as defined in California*
13 *Plumbing Code and Mechanical Code.*

14 * * * *

15 **TOTAL ENERGY DESIGN RATING.** *A metric required by the California Energy*
16 *Commission to be applied to low-rise residential construction in order to comply with California Title*
17 *24 Part 6 Energy Standards. The Total Energy Design Rating has two components: (a) the Energy*
18 *Efficiency Design Rating; and (b) the Solar Electric Generation and Demand Flexibility Design Rating.*
19 *The Solar Electric Generation and Demand Flexibility Design Rating is subtracted from the Energy*
20 *Efficiency Design Rating to determine the Total Energy Design Rating. California Energy Standards*
21 *require that each building must separately comply with the Energy Efficiency Design Rating and the*
22 *Total Energy Design Rating.*

23 * * * *

24 **SECTION 4.201 – GENERAL**

25 * * * *

1 **4.201.3 Energy Performance.**

2 **(a) All-electric buildings.** *A newly constructed all-electric building shall be*
3 *designed and constructed such that the Total Energy Design Rating and Energy Efficiency Design*
4 *Rating for the proposed building are no greater than the corresponding Energy Design Ratings for*
5 *a Standard Design Building compliant with California Title 24 Part 6 Energy Standards.*

6 **(b) Mixed-fuel buildings.** *A newly constructed mixed-fuel low-rise*
7 *residential building shall:*

8 **(1)** *Be designed and constructed such that the Energy Efficiency*
9 *Design Rating for the proposed building is no greater than the Energy Efficiency Design Rating for the*
10 *Standard Design Building; and*

11 **(2)** *Be designed and constructed such that the Total Energy Design*
12 *Rating for the proposed building is 14 or less, as calculated by compliance software approved by the*
13 *California Energy Commission.*

14 **Exception:** *Mixed-fuel low-rise residential buildings with limited solar*
15 *access are excepted if a photovoltaic (PV) system meeting the minimum requirements as specified in*
16 *California Energy Standards Joint Appendix JA11 is installed on all available areas of 80 contiguous*
17 *square feet or more with effective annual solar access. Effective annual solar access shall be 70% or*
18 *greater of the output of an unshaded PV array on an annual basis, wherein shade is due to existing*
19 *permanent natural or human-made barriers external to the dwelling, including but not limited to trees,*
20 *hills, and adjacent structures.*

21 **(3)** *A newly constructed mixed-fuel high-rise residential building*
22 *shall be designed and constructed such that the Energy Budget for the proposed building is no greater*
23 *than 90% of the Title 24 Part 6 Energy Budget for the Standard Design Building as calculated by*
24 *compliance software approved by the California Energy Commission.*

1 **SECTION 5.201 – GENERAL**

2 * * * *

3 **5.201.1.1 Energy Performance.** ~~[Reserved]~~

4 **(a) All-electric buildings.** *A newly constructed all-electric non-residential*
5 *building shall demonstrate the Energy Budget for the proposed building is no greater than the Energy*
6 *Budget calculated for the Standard Design Building meeting California Title 24 Part 6 Energy*
7 *Standards.*

8 **(b) Mixed-fuel buildings.** *A newly constructed mixed-fuel non-residential*
9 *building shall demonstrate the Energy Budget for the proposed building is no greater than 90% of the*
10 *Title 24 Part 6 Energy Budget for the Standard Design Building meeting California Title 24 Part 6*
11 *Energy Standards.*

12 **Exception:** *Buildings consisting primarily of occupancy F, L, or H are exempt*
13 *from this Section.*

14 Section 6. Effective and Operative Dates.

15 (a) This ordinance shall become effective 30 days after enactment. Enactment
16 occurs when the Mayor signs the ordinance, the Mayor returns the ordinance unsigned or
17 does not sign the ordinance within ten days of receiving it, or the Board of Supervisors
18 overrides the Mayor's veto of the ordinance.


19 (b) This ordinance shall be operative on and after either January 1, 2020 or its
20 effective date as stated in subsection (a), whichever is later.

21 Section 7. Transmittal to State Officials. The Clerk of the Board of Supervisors is
22 hereby directed to transmit this ordinance, upon enactment, to the California Building
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Standards Commission for filing and to the California Energy Resources and Conservation
Department for approval, pursuant to the applicable provisions of California law.

APPROVED AS TO FORM:

By:  _____
for ROBB KAPLA
Deputy City Attorney

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LEGISLATIVE DIGEST

[Green Building Code - Energy Performance in Newly Constructed Buildings]

Ordinance amending the Green Building Code to establish energy performance requirements for certain new building construction; adopting environmental findings, and findings of local conditions under the California Health and Safety Code and the California Public Resources Code; and directing the Clerk of the Board of Supervisors to forward the Ordinance to state agencies as required by state law

Existing Law

The Green Building Code currently does not provide definitions or energy performance standards for new all-electric buildings or mixed-fuel buildings.

Amendments to Current Law

The proposed legislation would define all-electric buildings as buildings relying solely on electricity for all uses and which do not contain any natural gas or propane plumbing or connections. The proposed legislation would define mixed-fuel buildings as buildings that include plumbing and connections for natural gas and/or propane. The legislation affirms existing California Energy Standards requirements that new all-electric buildings and mixed-fuel buildings achieve energy performance that equal or are better (lower) than the standard design building. The standard design building is the modeled energy design rating or energy budget that would be achieved by utilizing the prescriptive energy efficiency requirements of the California Energy Code.

This legislation would impose no new or additional requirements on all-electric buildings beyond the existing California Energy Standards.

This legislation would require new mixed-fuel low-rise residential buildings to establish that their energy efficiency design ratings are equal to or lower than the energy efficiency design rating of a standard design building, and that their total energy design rating is no greater than 14. New mixed-fuel high-rise residential buildings would need to establish that their energy budgets are 90% or less than a standard design building's energy budget. Similarly, new mixed-fuel non-residential buildings, regardless of height, would need to establish that their energy budgets are 90% or less than a standard design building's energy budget.

Background

California Code of Regulations Title 24 Part 6 allows all-electric and mixed-fuel buildings to forego prescriptive requirements and receive credit for solar energy generation and demand

response, as long as the energy performance of these measures would be equal to or better than what would be achieved by the prescriptive requirements. The legislation defines a building's total energy design rating as the proposed building's energy efficiency design rating (the higher the less efficient) minus the proposed building's solar electric generation and demand flexibility design rating.

Under California law, a new building must establish that its total energy design rating equals or is lower than the standard design building, either by fulfilling all applicable prescriptive requirements, or by calculating a total energy design rating per the methods specified by the California Energy Commission.

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