1	[Green Building, Environment Codes - Better Roof Requirements for Renewable Energy Facilities]
2	
3	Ordinance amending the Green Building Code and the Environment Code to establish
4	requirements for certain new building construction facilitating development of
5	renewable energy facilities; updating provisions of the Green Building requirements for
6	City buildings; setting an operative date of January 1, 2017; providing findings as to
7	local conditions pursuant to the California Health and Safety Code; directing the Clerk
8	of the Board of Supervisors to transmit the Ordinance to appropriate State officials;
9	affirming the Planning Department's determination under the California Environmental
10	Quality Act; and making findings of consistency with the General Plan, and the eight
11	priority policies of Planning Code, Section 101.1.
12	NOTE: Unchanged Code text and uncodified text are in plain Arial font.
13	Additions to Codes are in <u>single-underline italics Times New Roman font</u> . Deletions to Codes are in <u>strikethrough italics Times New Roman font</u> .
14	Board amendment additions are in double-underlined Arial font. Board amendment deletions are in strikethrough Arial font. Asterisks (* * * *) indicate the omission of unchanged Code
15	subsections or parts of tables.
16	
17	Be it ordained by the People of the City and County of San Francisco:
18	
19	Section 1. CEQA Findings and General Plan Consistency Findings.
20	(a) The Planning Department has determined that the actions contemplated in this
21	ordinance comply with the California Environmental Quality Act (California Public Resources
22	Code Sections 21000 et seq.). Said determination is on file with the Clerk of the Board of
23	Supervisors in File No. 160154 and is incorporated herein by reference. The Board affirms
24	this determination.

Supervisor Wiener
BOARD OF SUPERVISORS

1	(b) On, the Planning Commission, in Resolution No,
2	adopted findings that the actions contemplated in this ordinance are consistent, on balance,
3	with the City's General Plan and eight priority policies of Planning Code Section 101.1. The
4	Board adopts these findings as its own. A copy of said Resolution is on file with the Clerk of
5	the Board of Supervisors in File No, and is incorporated herein by reference.
6	
7	Section 2. General Findings.
8	(a) The California Building Standards Code is contained in Title 24 of the California
9	Code of Regulations, and consists of several parts that are based upon model codes with
10	amendments made by various State agencies. The California Green Building Standards
11	Code, also known as the CALGreen Code, is Part 11 of Title 24 of the California Code of
12	Regulations, and San Francisco has enacted the San Francisco Green Building Code as
13	amendments to the 2013 California Green Building Standards Code.
14	(b) Local jurisdictions are required to enforce the California Green Building Standards
15	Code but they may also enact more stringent standards when reasonably necessary because
16	of local conditions caused by climate, geology, or topography.
17	(c) The Building Inspection Commission considered the applicable sections of this
18	ordinance at a duly noticed public hearing on The Commission on the
19	Environment considered the applicable sections of this ordinance at a duly noticed public
20	hearing on
21	
22	Section 3. Findings Regarding Local Conditions Required by the California Health and
23	Safety Code.
24	(a) California Health & Safety Code Section 17958.7 provides that before making any
25	changes or modifications to the California Green Building Standards Code and any other

- applicable provisions published by the State Building Standards Commission, the governing body must make an express finding that each such change or modification is reasonably necessary because of specified local conditions, and the findings must be filed with the State Building Standards Commission before the local changes or modifications go into effect.
 - (b) The Board of Supervisors expressly declares that the following amendments to the San Francisco Green Building Code are reasonably necessary because of local climatic, topological, and geological conditions as listed below.
 - (1) As a coastal city located on the tip of a peninsula, San Francisco is vulnerable to sea level rise, and human activities releasing greenhouse gases into the atmosphere cause increases in worldwide average temperature, which contribute to melting of glaciers and thermal expansion of ocean water resulting in rising sea levels.
 - (2) San Francisco is already experiencing the repercussions of excessive CO₂ emissions as rising sea levels threaten the City's shoreline and infrastructure, have caused significant erosion, increased impacts to infrastructure during extreme tides, and have caused the City to expend funds to modify the sewer system.
 - (3) Some people in San Francisco, such as the elderly, may be particularly vulnerable to higher temperatures resulting from climate changes.
 - (4) Installing solar will help San Francisco meet its goals under Ordinance No. 81-08, to have a greenhouse gas-free electric system by 2030 and to reduce greenhouse gas emissions citywide to 40% below 1990 levels by 2025 and 80% by 2050.
 - (5) It is reasonably necessary to require building owners to take steps to reduce the energy consumed by inefficient building operations and produce renewable, low-carbon electricity, or capture solar heat, in order to reduce pollution, benefit biodiversity, improve resilience to climate change by reducing localized heat islands, and reduce the global warming effects of energy consumption.

1	(6) Installing solar heating or solar energy systems benefits the health, welfare,
2	and resiliency of San Francisco and its residents.
3	(c) Requiring solar water heating and/or solar photovoltaics at the time of new
4	construction is more cost-effective than installing the equipment after construction because
5	workers are already on-site, permitting and administrative costs are lower, and it is more cost-
6	effective to include such systems in existing construction financing. Based upon the findings
7	of a cost-effectiveness study performed on the more stringent local standards contained in the
8	City's proposed amendments to the 2013 San Francisco Green Building Code, the Board of
9	Supervisors hereby determines that these local energy standards are cost-effective and will
10	save more energy than the standards contained in the 2013 California Green Building
11	Standards (CALGreen) Code (Title 24 Part 11) and the 2013 California Energy Standards
12	(Title 24 Part 6). A copy of the cost-effectiveness study is on file with the Clerk of the Board of
13	Supervisors in File No
14	
15	Section 4. The Green Building Code is hereby amended by revising Sections 202 and
16	301.1, adding Sections 4.201.2 and 5.201.1.2, and deleting Sections 5.103.1.5 and 5.103.2.3,
17	to read as follows:
18	SEC. 202. DEFINITIONS.
19	COMPLIANCE SOFTWARE. Software to demonstrate compliance with the performance
20	approach of Part 6 and that has been approved pursuant to Section 10-109 of Part 1 of Title 24 of the
21	California Code of Regulations.
22	GREENPOINT RATED, GREENPOINTS and GREENPOINTS CHECKLIST. The
23	residential green building rating system and checklist and certification methodology of the
24	non-profit organization Build It Green.

1	HIGH-RISE RESIDENTIAL BUILDING. For the purposes of this code, a building that is
2	of Occupancy Group R and is four stories or greater.
3	HISTORICAL RESOURCE. A property that meets the terms of the definitions in
4	Section 21084.1 of the CEQA Statute (The California Environmental Quality Act [Public
5	Resources Code Section 21084.1]) and Section 15064.5 of the CEQA Guidelines, as
6	determined by the San Francisco Planning Department.
7	LARGE COMMERCIAL BUILDING. A commercial building or addition of Group B, M,
8	A, or I occupancy that is 25,000 gross square feet or more.
9	LEED® and LEED® CHECKLIST. The Leadership in Energy and Environment Design
10	rating system, certification methodology, and checklist of the United States Green Building
11	Council (USGBC).
12	LOW-RISE RESIDENTIAL BUILDING. For the purposes of this code, a building that is
13	of Occupancy Group R and is three stories or less or that is a one or two family dwelling or
14	townhouse.
15	MAJOR ALTERATIONS. Alterations where interior finishes are removed and
16	significant upgrades to structural and mechanical, electrical and/or plumbing systems are
17	proposed where areas of such construction are 25,000 gross square feet or more in Group B,
18	M or R occupancies of existing buildings.
19	MID-SIZE COMMERCIAL BUILDING. A commercial building of Group B or M
20	occupancy that is 5,000 or more and less than 25,000 gross square feet, and is not a high-rise
21	building.
22	NEWLY CONSTRUCTED (or NEW CONSTRUCTION). A newly constructed building
23	(or new construction) is a building that has never before been used or occupied for any

25

purpose and does not include additions, alterations or repairs.

1	NEW LARGE COMMERCIAL INTERIORS. First-time tenant improvements where
2	areas of such construction are over 25,000 gross square feet or more in Group B or M
3	occupancy areas of existing buildings.
4	NONRESIDENTIAL COMPLIANCE MANUAL. The document published by the California
5	Energy Commission to aid in compliance and enforcement of the Title 24 California Building Energy
6	Standards, for buildings of nonresidential occupancy and high-rise residential buildings.
7	RESIDENTIAL COMPLIANCE MANUAL. The document published by the California Energy
8	Commission to aid in compliance and enforcement of the Title 24 California Building Energy
9	Standards, for low-rise residential buildings.
10	
11	SEC. 301.1. SCOPE.
12	Buildings in the City and County of San Francisco_shall be designed to include the
13	green building measures specified as mandatory under the California Green Building
14	Standards Code (CalGreen).
15	Additional green building requirements established by the City and County of San
16	Francisco are mandatory for:
17	(1) Newly constructed Group R occupancy buildings,
18	(2) Newly constructed buildings of Group B, M, A, and I occupancies that are
19	25,000 gross square feet or more,
20	(3) New first-time build-outs of commercial interiors that are 25,000 gross
21	square feet or more in buildings of Group B or M occupancies, and
22	(4) Major alterations that are 25,000 gross square feet or more in existing
23	buildings of Group B, M or R occupancies, where interior finishes are removed and significant
24	upgrades to structural and mechanical, electrical and/or plumbing systems are proposed.
25	Exempt from additional local requirements of this chapter, unless otherwise noted, are:

1	(1) Any new building in which laboratory use of any occupancy classification is the
2	primary use, and
3	(2) Any building undergoing renovation in which the area of renovation will be primarily
4	for laboratory use of any occupancy classification.
5	(3) Any new building of Group B occupancy where electronic data processing will be the
6	primary use is exempt from the solar energy requirements of Section 5.201.1.1. All other relevant
7	sections of this code shall apply.
8	
9	SEC. 4.201.2. RENEWABLE ENERGY AND BETTER ROOFS
10	(a) Newly constructed Group R occupancy buildings of 10 occupied floors or less which apply
11	for a building permit on or after January 1, 2017 shall install solar photovoltaic systems and/or solar
12	thermal systems in the Solar Ready Area required by California Code of Regulations (CCR), Title 24,
13	<u>Part 6 Section 110.10.</u>
14	(b) The required Solar Ready Area for the project shall be calculated under Title 24, Part 6,
15	Section 110.10(a) through (e), as applicable, and Residential Compliance Manual Section 7, except as
16	provided below.
17	(1) For single family residences, Exceptions 3 and 5 to Title 24, Part 6,
18	Section 110.10(b)1A may be applied in the calculation of the minimum Solar Ready Area.
19	Exceptions 1, 2, 4, 6, and 7 may not be applied in the calculation.
20	(2) For Group R Occupancy buildings other than single family residences,
21	Exceptions 3 and 5 to Title 24, Part 6, Section 110.10(b)1B may be applied in the calculation of the
22	minimum Solar Ready Area. Exceptions 1, 2, and 4 may not be applied in the calculation.
23	(3) Buildings with a calculated minimum Solar Ready Area of less than 150 contiguous
24	square feet due to limited solar access under Exception 5 to Title 24, Part 6, Section 110.10(b)1A or
25	Exception 3 to Title 24, Part 6, Section 110.10(b)1B are exempt from the solar energy requirements in

1	this Section 4.201.2.
2	(c) The sum of the areas occupied by solar photovoltaic collectors and/or solar thermal
3	collectors must be equal to or greater than the Solar Ready Area. The solar zone shall be located on
4	the roof or overhang of the building, or on the roof or overhang of another structure located within
5	250 feet of the building or on covered parking installed with the building project. Solar photovoltaic
6	systems and solar thermal systems shall be installed in accord with: all applicable State code
7	requirements, including access, pathway, smoke ventilation, and spacing requirements specified in
8	CCR Title 24, Part 9; all applicable local code requirements; manufacturer's specifications; and the
9	following performance requirements:
10	(1) Solar photovoltaic systems: The total nameplate capacity of photovoltaic collectors
11	shall be at least 10 Watts _{DC} per square foot of roof area allocated to the photovoltaic collectors.
12	(2) Solar thermal systems: Single family residential solar domestic water heating
13	systems shall be OG-300 System Certified by either the Solar Rating and Certification Corporation
14	(SRCC) or the International Association of Plumbing and Mechanical Officials (IAPMO). Solar
15	thermal systems installed in all other Group R occupancy buildings other than single family residences
16	shall use collectors with OG-100 Collector Certification by SRCC or IAPMO, shall be designed to
17	generate annually at least 100 kBtu per square foot of roof area allocated to the solar thermal
18	collectors. Systems with at least 500 square feet of collector area shall include a Btu meter installed on
19	either the collector loop or potable water side of the solar thermal system.
20	
21	SEC. 5.103.1.5. RENEWABLE ENERGY.
22	Effective January 1, 2012, permit applicants must submit documentation verifying either:
23	(1) Acquisition of renewable on-site energy or purchase of green energy credits in accord with
24	LEED EA2 or EA6, or

(2) Achieve a 10% compliance margin over Title 24 Part 6 2013 California Energy Standards.

systems and solar thermal systems shall be installed in accord with all applicable state and local code

1	requirements, manufacturer's specifications, and the following performance requirements:
2	(1) Solar photovoltaic systems: The total nameplate capacity of photovoltaic collectors
3	shall be at least 10 Watts _{DC} per square foot of roof area allocated to the photovoltaic collectors.
4	(2) Solar thermal systems: Solar thermal systems installed to serve non-residential
5	building occupancies shall use collectors with OG-100 Collector Certification by the Solar Rating and
6	Certification Corporation (SRCC) or the International Association of Plumbing and Mechanical
7	Officials (IAPMO), shall be designed to generate annually at least 100 kBtu per square foot of roof
8	area allocated to the solar thermal collectors, and, for systems with at least 500 square feet of collector
9	area, shall include a Btu meter installed on either the collector loop or potable water side of the solar
10	thermal system.
11	
12	Section 5. The Environment Code is hereby amended by adding Chapter 26,
13	consisting of Section 2601, to read as follows:
14	CHAPTER 26: BETTER ROOF REQUIREMENTS
15	SEC. 2601. BETTER ROOF IMPLEMENTATION.
16	(a) Purpose. The purpose of this Section 2601 is to track and support improvement of
17	requirements for newly constructed buildings which will increase the utility of rooftops by ensuring
18	development of renewable energy resources.
19	(b) The Department of the Environment shall:
20	(1) Review and propose technical requirements for rooftop photovoltaic and solar
21	thermal systems and their performance and components, where not otherwise governed by applicable
22	state or local codes. The Department of Building Inspection and the Planning Department may
23	contribute to the cost of technical support as well as the cost of public information programs
24	supporting the implementation of the Better Roof program.

1	(2) Recommend revisions to the Better Roof requirements of San Francisco Green
2	Building Code Sections 4.201.2 and 5.201.1.2 based on project data and other new information, to
3	support the City's goals for greenhouse gas emissions reduction, environmental justice, provision of
4	renewable energy, development of Zero Net Energy Buildings, biodiversity, and pollution prevention.
5	(c) Reporting. The Environment Director shall collaborate with the Department of Building
6	Inspection, the Department of Planning, and the Public Utilities Commission to prepare and publish an
7	annual report on the renewable energy resources developed in compliance with this Chapter 26, San
8	Francisco Green Building Code Section 4.201.2, and San Francisco Green Building Code
9	<u>Section 5.201.1.2 et seq.</u>
10	
11	Section 6. The Environment Code is hereby amended by amending Section 706, to
12	read as follows:
13	SEC. 706. SAN FRANCISCO-SPECIFIC LEED CREDIT REQUIREMENTS FOR
14	MUNICIPAL CONSTRUCTION PROJECTS.
15	(a) As part of the LEED Gold certification requirement for municipal construction
16	projects, the projects must achieve the following LEED credits:
17	(1) Stormwater Management. The LEED Project Administrator shall submit
18	documentation verifying that a construction project that is located outside the City and County
19	of San Francisco achieves the LEED SS6.2 credit. Construction projects located within the
20	City and County of San Francisco shall implement the applicable stormwater management
21	controls adopted by the San Francisco Public Utilities Commission (the "SFPUC"). All
22	construction projects shall develop and implement construction activity pollution prevention
23	and stormwater management controls adopted by the SFPUC, and achieve LEED
24	prerequisite SSp1 or similar criteria adopted by the SFPUC, as applicable.

1	(2) Indoor Water Use Reduction. The LEED Project Administrator shall submit
2	documentation verifying a minimum 30% percent reduction in the use of indoor potable water,
3	as calculated to meet and achieve LEED credit WE3.2.
4	(3) Energy Performance. Using an Alternative Calculation Method (ACM) approved by
5	the California Energy Commission, the LEED Project Administrator shall calculate the project's
6	energy use, and compare it to the standard or "budget" building to achieve LEED credit EA1 by either:
7	(A) A 15 percent compliance margin over Title 24, Part 6, 2008 California
8	Energy Standards; or,
9	(B) Document compliance with Title 24, Part 6, 2008 California Energy
10	Standards, including submittal of all standard documentation, and additionally demonstrate that the
11	project achieves a 15 percent or greater compliance margin over the ASHRAE 90.1 2007 energy cost
12	baseline using the published LEED 2009 rules. Such analysis shall include all on-site building energy
13	use, including exterior and security lighting, elevators, all process loads, and receptacle loads.
14	(3) (4) Renewable Energy. The LEED Project Administrator shall confer with
15	SFPUC on renewable energy opportunities for municipal construction projects, including
16	photovoltaics, solar hot water and wind power. Space allocation and infrastructure for future
17	renewable energy installations shall be included in municipal construction projects, as advised by
18	SFPUC, including but not limited to structural capacity, wiring conduits, supply and return piping, and
19	control wiring. The LEED Project Administrator shall submit documentation verifying that
20	either:
21	(A) The project meets LEED prerequisite EA 1 Energy Performance
22	requirement and demonstrates compliance with Title 24, Part 6 California Energy Standards in effect
23	at the time of the permit application; and, At least 1 percent of the building's energy costs are offset by
24	on-site renewable energy generation, achieving LEED credit EA 2, including any combination
25	of: photovoltaic, solar thermal, wind, biofuel-based electrical systems, geothermal heating, geothermal

1	electric, wave, tidal, or low impact hydroelectric systems, or as specified in Section 25741 of the
2	California Public Resources Code; or,
3	(B) The project includes a combination of photovoltaic and/or solar thermal
4	area meeting the requirements of San Francisco Green Building Code Chapter 5, Division 5.2, or
5	demonstrates applicability of exceptions therein. In addition to meeting LEED prerequisite EA 1
6	Energy Performance requirement, achieve an additional 10 percent compliance margin over Title 24,
7	Part 6, 2008 California Energy Standards, for a total compliance margin of at least 25 percent.
8	(4) (5) Commissioning. The LEED Project Administrator shall submit
9	documentation verifying that the facility has been or will meet the criteria necessary to achieve
10	LEED credit EA 3.0 (Enhanced Commissioning), in addition to LEED prerequisite EAp1
11	(Fundamental Commissioning of Building Energy Systems.)
12	(5) (6) Enhanced Refrigerant Management. The LEED Project Administrator
13	shall submit documentation verifying that the project will reduce ozone depletion, while
14	minimizing direct contribution to climate change, achieving LEED credit EA 4.
15	$\underline{(6)}$ (7) Construction Debris Management. The LEED Project Administrator shall
16	submit documentation verifying the diversion of a minimum of 75% percent of the project's
17	construction and demolition debris, as calculated to achieve LEED credit MR2.2. The project
18	must also satisfy; the requirements of Section 708.
19	(7) (8) IAQ Management: During Construction. The LEED Project Administrator
20	shall submit documentation verifying that the sponsoring City department has prepared and
21	implemented an Indoor Air Quality Management Plan that achieves LEED credit EQ 3.1. This
22	requirement includes meeting or exceeding the recommended Control Measures of the Sheet
23	Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for
24	Occupied Buildings under Construction, 2nd Edition 2007, ANSI-SMACNA 008-2008
25	(Chapter 3).

1	(8) (9) IAQ Management: Before Occupancy. The LEED Project Administrator
2	shall submit documentation verifying that the sponsoring City department has prepared and
3	implemented an Indoor Air Quality Management Plan that achieves LEED credit EQ 3.2.
4	$\underline{(9)}$ (10) Low Emitting Materials. The LEED Project Administrator shall submit
5	documentation verifying that the project is using low-emitting materials, subject to onsite
6	verification, achieving LEED credits EQ 4.1. EQ 4.2. EQ 4.3. and EQ 4.4 wherever applicable
7	(A) Adhesives, sealants and sealant primers shall achieve LEED credit
8	EQ 4.1. including compliance with South Coast Air Quality Management District (SCAQMD)
9	Rule #1168, amended January 7, 2005.
10	(B) Interior paints and coatings applied on-site shall achieve LEED credit
11	EQ 4.2. including:
12	(i) Architectural paints and coatings shall meet the VOC content
13	limits of Green Seal Standard GS-11 (1st Edition, 1993).
14	(ii) Anti-corrosive and anti-rust paints applied to interior ferrous
15	metal substrates shall not exceed the VOC content limit of Green Seal Standard GC-03 (2nd
16	Edition, 1997) of 250 g/L.
17	(iii) Clear wood finishes, floor coatings, stains, primers, and
18	shellacs applied to interior elements shall not exceed SCAQMD Rule 1113 (2004) VOC
19	content limits.
20	(C) Flooring systems shall achieve LEED credit EQ 4.3 Option 1.
21	including:
22	(i) Interior carpet shall meet the testing and product requirements
23	of the Carpet and Rug Institute Green Label Plus program.
24	(ii) Interior carpet cushioning shall meet the requirements of the
25	Carpet and Rug Institute Green Label program.

1	(iii) Hard surface flooring, including linoleum, laminate flooring,
2	wood flooring, ceramic flooring, rubber flooring, and wall base shall be certified as compliant
3	with the FloorScore standard, provided, however, that 100% percent reused or 100% percent
4	post-consumer recycled hard surface flooring may be exempted from this LEED credit EQ 4.3
5	requirement. Projects exercising this exemption for hard surface flooring shall otherwise be
6	eligible (or LEED credit EQ 4.3.)
7	(D) Interior composite wood and agrifiber products shall achieve LEED
8	credit EQ 4.4 by containing no added urea formaldehyde resins. Interior and exterior
9	hardwood plywood, particleboard, and medium density fiberboard composite wood products
10	shall additionally meet California Air Resources Board Air Toxics Control Measure for
11	Composite Wood (17 CCR 93120 et seq.), by or before the dates specified in those sections.
12	(E) Project sponsors are encouraged to achieve LEED Pilot Credit 2:
13	Persistent Bioaccumulative Toxic Chemicals Source Reduction: Dioxins and Halogenated
14	Organic Compounds. This standard is consistent with Environment Code Chapter 5: Non-PV
15	Plastics.
16	$\underline{(10)}(11)$ Indoor Chemical and Pollutant Source Control. The LEED Project
17	Administrator shall submit documentation verifying that the project will minimize and control
18	the entry of pollutants into buildings and later cross contamination of regularly occupied areas
19	achieving LEED credit EQ 5.
20	
21	Section 7. Effective Date; Operative Date. This ordinance shall become effective 30
22	days after enactment. Enactment occurs when the Mayor signs the ordinance, the Mayor
23	returns the ordinance unsigned or does not sign the ordinance within ten days of receiving it,

or the Board of Supervisors overrides the Mayor's veto of the ordinance. This ordinance shall

become operative on January 1, 2017.

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1	
2	Section 8. Transmittal to State Officials. The Clerk of the Board of Supervisors is
3	hereby directed to transmit this ordinance, upon enactment, to the California Building
4	Standards Commission for filing, pursuant to the applicable provisions of California law.
5	
6	Section 9. Scope of Ordinance. In enacting this ordinance, the Board of Supervisors
7	intends to amend only those words, phrases, paragraphs, subsections, sections, articles,
8	numbers, punctuation marks, charts, diagrams, or any other constituent parts of the Municipal
9	Code that are explicitly shown in this ordinance as additions, deletions, Board amendment
10	additions, and Board amendment deletions in accordance with the "Note" that appears under
11	the official title of the ordinance.
12	
13	
14	APPROVED AS TO FORM:
15	DENNIS J. HERRERA, City Attorney
16	D
17	By: THOMAS J. OWEN
18	Deputy City Attorney
19	
20	
21	
22	
23	
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