

File No. 170202

Committee Item No. 1

Board Item No. 2

COMMITTEE/BOARD OF SUPERVISORS

AGENDA PACKET CONTENTS LIST

Committee: Land Use and Transportation

Date April 17, 2017

Board of Supervisors Meeting

Date April 25, 2017

Cmte Board

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| <input type="checkbox"/> | <input type="checkbox"/> | Budget and Legislative Analyst Report |
| <input type="checkbox"/> | <input type="checkbox"/> | Youth Commission Report |
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| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Department/Agency Cover Letter and/or Report |
| <input type="checkbox"/> | <input type="checkbox"/> | Memorandum of Understanding (MOU) |
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| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <u>Building Inspection Commission Recommendation</u> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <u>Commission on the Environment Resolution No. 002-17-00E</u> |
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Completed by: Alisa Somera Date April 13, 2017

Completed by: Victor Young Date April 18, 2017

BOARD of SUPERVISORS

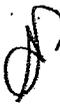


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MEMORANDUM

LAND USE AND TRANSPORTATION COMMITTEE SAN FRANCISCO BOARD OF SUPERVISORS

TO: Supervisor Mark Farrell, Chair
Land Use and Transportation Committee

FROM:  Alisa Somera, Legislative Deputy Director

DATE: April 18, 2017

SUBJECT: **COMMITTEE REPORT, BOARD MEETING**
Tuesday, April 18, 2017

The following file should be presented as a **COMMITTEE REPORT** at the Board meeting, Tuesday, April 18, 2017. This item was acted upon at the Committee Meeting on Monday, April 17, 2017, at 1:30 p.m., by the votes indicated.

Item No. 27 File No. 170202.

Ordinance amending the Green Building Code and the Environment Code to establish requirements for installation of electric vehicle charger infrastructure in new buildings or buildings undergoing major alterations, and requirements for notification to building owners, residents, and lessees; affirming the Planning Department's determination under the California Environmental Quality Act; making findings under the California Health and Safety Code; and directing the Clerk of the Board of Supervisors to forward this Ordinance to the California Building Standards Commission upon final passage.

AMENDED, AMENDMENT OF THE WHOLE BEARING SAME TITLE

Vote: Supervisor Mark Farrell - Aye
Supervisor Aaron Peskin - Aye
Supervisor Katy Tang - Aye

RECOMMENDED AS AMENDED AS A COMMITTEE REPORT

Vote: Supervisor Mark Farrell - Aye
Supervisor Aaron Peskin - Aye
Supervisor Katy Tang - Aye

c: Board of Supervisors
Angela Calvillo, Clerk of the Board
Jon Givner, Deputy City Attorney

1 [Green Building and Environment Codes - Requirements for Installation of Electric Vehicle
2 Chargers]

3 Ordinance amending the Green Building Code and the Environment Code to establish
4 requirements for installation of electric vehicle charger infrastructure in new buildings
5 or buildings undergoing major alterations, and requirements for notification to building
6 owners, residents, and lessees; affirming the Planning Department's determination
7 under the California Environmental Quality Act; making findings under the California
8 Health and Safety Code; and directing the Clerk of the Board of Supervisors to forward
9 this Ordinance to the California Building Standards Commission upon final passage.

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

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

19 Section 1. 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. 170202 and is incorporated herein by reference. The Board affirms
24 this determination.

25 (b) The Building Inspection Commission considered this ordinance on March 15, 2017
and March 29, 2017, at a duly noticed public hearing, pursuant to Charter Section D3.750-5.

1 Section 2. Findings Regarding Local Conditions Required by the California Health and
2 Safety Code.

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

9 (b) The Board of Supervisors expressly declares that the following amendments to the
10 San Francisco Green Building Code are reasonably necessary because of local climatic,
11 topological, and geological conditions as listed below.

12 (1) As a coastal city located on the tip of a peninsula, San Francisco is
13 vulnerable to sea level rise, and human activities releasing greenhouse gases into the
14 atmosphere cause increases in worldwide average temperature, which contribute to melting of
15 glaciers and thermal expansion of ocean water – resulting in rising sea levels.

16 (2) San Francisco is already experiencing the repercussions of excessive CO₂
17 emissions as rising sea levels threaten the City's shoreline and infrastructure, have caused
18 significant erosion, have increased impacts to infrastructure during extreme tides, and have
19 caused the City to expend funds to modify the sewer system.

20 (3) Some subpopulations of San Francisco residents are vulnerable to heat
21 events.

22 (4) Increasing the adoption and use of electric vehicles will help San Francisco
23 meet its goals under Ordinance No. 81-08, to reduce greenhouse gas emissions citywide to
24 40% below 1990 levels by 2025 and 80% by 2050.

25

1 (5) Use of electric vehicles benefits the health, welfare, and resiliency of San
2 Francisco and its residents.

3 (6) Electric vehicles depend upon convenient access to charging, and the ability
4 to serve electric vehicles in existing buildings is commonly limited by the electrical system
5 capacity of the building.

6 (c) The most cost-effective time to prepare building electrical infrastructure for electric
7 vehicle charging is when electric service is installed or upgraded due to construction, because
8 workers are already on-site, utility service upgrade costs are lower, permitting and
9 administrative costs are lower, and it is more cost-effective to include such systems in existing
10 construction financing.

11
12 Section 3. The Green Building Code is hereby amended by revising Section 202, to
13 read as follows:

14 *[Add and amend the following definitions:]*

15 **SEC. 202. DEFINITIONS.**

16 * * * *

17 **ELECTRIC VEHICLE CHARGING SPACE (EV Space).** A space intended for *future*
18 installation of EV charging equipment and charging of electric vehicles. *The EV Space need not*
19 *be reserved exclusively for electric vehicle charging.*

20 **ELECTRIC VEHICLE CHARGING STATION (EVCS).** One or more electric vehicle
21 charging spaces served by electric vehicle charger(s) or other charging equipment allowing
22 charging of electric vehicles. *For purposes of determining compliance with accessibility*
23 *requirements, when the permitted length of time a vehicle may occupy an electric vehicle charging*
24 *station differs from the permitted duration of stay in publicly accessible parking spaces in the same*
25 *parking area, electric Electric vehicle charging stations are not considered parking spaces.*

1 When the permitted duration of stay in a space served by electric vehicle charger(s) is the same as
2 other publicly accessible parking spaces in the same parking area, EVCS may be considered parking
3 spaces. The EVCS need not be reserved exclusively for electric vehicle charging.

4 **ELECTRIC VEHICLE (EV) FAST CHARGER.** Off-board charging equipment with a
5 minimum direct current or alternating current power output of 24 kW, for the purpose of providing an
6 electric vehicle charge in significantly less time than a standard Electric Vehicle Charger.

7 **ELECTRIC VEHICLE LOAD MANAGEMENT SYSTEM.** An electronic system designed to
8 allocate charging capacity among EV chargers.

9 * * * *

10 **PASSENGER VEHICLES.** Motor vehicles designed primarily for transportation of
11 persons, with capacity of 12 persons or less.

12 * * * *

13 **TRUCKS.** Trucks or truck-based vehicles with both a payload capacity of 4,000 pounds
14 or less, and a gross vehicle weight ratio of 14,000 pounds or less. As used herein, "trucks"
15 does not include heavy duty vehicles, which are vehicles of any type with a gross vehicle
16 weight ratio of more than 14,000 pounds.

17 * * * *

18
19 Section 4. The Green Building Code is hereby amended by revising Section 202, to
20 read as follows:

21 **SEC. 202. DEFINITIONS.**

22 * * * *

23 **MAJOR ALTERATIONS.** Alterations and additions where interior finishes are removed
24 and significant upgrades to structural and mechanical, electrical, and/or plumbing systems are
25

1 proposed where areas of such construction are 25,000 gross square feet or more in Group B,
2 M. or R occupancies of existing buildings.

3 * * * *

4
5 Section 45. The Green Building Code is hereby amended by revising Section 302.1, to
6 read as follows:

7 *[Revise this section as follows:]*

8 **SEC. 302.1. MIXED OCCUPANCY BUILDINGS.**

9 In mixed occupancy buildings, each portion of a building shall comply with the specific
10 *California Title 24 Part 11 required* measures applicable to each specific occupancy *as required*
11 *by California Code of Regulations Title 24 Part 11 and the San Francisco Green Building*
12 *Code.* However, to fulfill any *additional local green building requirements of San Francisco Green*
13 *Building Code Sections 4.103 through 4.105 and 5.103 through 5.105, as applicable,* the project
14 sponsor may apply a single required green building standard to the entire building.

15
16 Section 56. The Green Building Code is hereby amended by adding Section 4.103.3.3,
17 to read as follows:

18 *[Add the following section:]*

19 **SEC. 4.103.3.3. ELECTRIC VEHICLE CHARGING.**

20 Sections 4.106.4 through 4.106.4.2.6 of this Chapter shall apply to all newly-constructed
21 buildings and associated newly-constructed parking facilities for passenger vehicles and
22 trucks, and to major alterations to existing Group R occupancy buildings where electrical service to
23 the building will be upgraded. In major alterations where existing electrical service will not be
24 upgraded, the requirements of Sections 4.106.4 through 4.106.4.2.6 shall apply to the maximum extent
25 that does not require an upgrade to existing electrical service.

1 Section ~~67~~. The Green Building Code is hereby amended by revising Section 4.106.4,
2 to read as follows:

3 *[Revise this section as follows:]*

4 SEC. 4.106.4. ELECTRIC VEHICLE (EV) CHARGING FOR NEW CONSTRUCTION AND
5 MAJOR ALTERATIONS.

6 New construction and major alterations shall comply with Sections 4.106.4.1 and
7 4.106.4.2 to provide electrical capacity and infrastructure to facilitate future installation and use of
8 EV Chargers, such that the project will be capable of providing electric vehicle EV charging
9 services at 100% of off-street parking spaces provided for passenger vehicles and trucks. Electric
10 Vehicle Supply Equipment (EVSE) shall be installed in accordance with the California
11 Electrical Code California Electrical Code Article 625, and the California Energy Code,
12 Subchapter 4, Section 130.5, and as follows: San Francisco Building Code and the San
13 Francisco Electrical Code, subject to the following exceptions: ~~California Electrical Code.~~

14 Exceptions:

15 On a case-by-case basis, where the ~~local enforcing agency~~ Director has
16 determined EV charging and infrastructure are not feasible based upon one or more of
17 the following conditions:

- 18 1. Where there is no commercial power supply.
- 19 2. Where there is evidence substantiating that meeting the requirements will
20 alter the local utility infrastructure design requirements on the utility side of the meter so
21 as to increase the utility side cost to the homeowner or the developer by more than
22 \$400.00 per ~~dwelling unit parking space~~. In such cases, buildings subject to Section 4.106.4
23 shall maximize the number of EV Charging Spaces, up to a utility side cost of a maximum of
24 \$400 per space. Cost shall be determined by dividing the increase in local utility infrastructure
25 cost attributable to compliance with this section by the sum of parking spaces and Electric

1 Vehicle EV Charging Spaces.

2 3. In major alterations, where there is evidence substantiating that meeting the
3 requirements of this section presents an unreasonable hardship or is technically infeasible,
4 the Director may consider an appeal from the project sponsor to reduce the number of EV
5 Charging Spaces required or provide for EV charging elsewhere.

6 4. Where a project is undertaken specifically to meet the City's Mandatory
7 Seismic Retrofit Program as required under Chapter 4A, 4B, or 4D of the San
8 Francisco Existing Building Code.

9 Section 78. The Green Building Code is hereby amended by revising
10 Sections 4.106.4.1 and 4.106.4.1.1, to read as follows:

11 [Revise this section as follows:]

12 **SEC. 4.106.4.1. NEW ONE-AND-TWO-FAMILY DWELLINGS AND TOWN-HOUSES WITH**
13 **ATTACHED OR ADJACENT PRIVATE GARAGES.**

14 For each parking space, install a 40-Amp 208 or 240-volt branch circuit, including raceway,
15 electrical panel capacity, overprotection devices, wire, and termination point such as a receptacle. The
16 termination point shall be in close proximity to the proposed EV charger location. Raceways are
17 required to be continuous at enclosed, inaccessible, or concealed areas and spaces. Raceway for each
18 circuit shall not be less than trade size 1 (nominal 1-inch inside diameter).

19 ~~For each dwelling unit, install a listed raceway to accommodate a dedicated 208/240-volt~~
20 ~~branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The~~
21 ~~raceway shall originate at the main service or unit subpanel and shall terminate into a listed cabinet,~~
22 ~~box or other enclosure in close proximity to the proposed location of an EV charger. Raceways are~~
23 ~~required to be continuous at enclosed, inaccessible or concealed areas and spaces. The service panel~~
24 ~~and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and~~
25 ~~space(s) reserved to permit installation of a branch circuit overcurrent protective device.~~

1 SEC. 4.106.4.1.1. IDENTIFICATION.

2 The service panel or subpanel circuit directory shall identify the overcurrent protective
3 device space(s) reserved for future EV charging as "EV READY" for full circuits and otherwise
4 "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as
5 "EV READY" for full circuits and otherwise "EV CAPABLE".

6
7 Section 89. The Green Building Code is hereby amended by revising
8 Section 4.106.4.2, to read as follows:

9 *[Revise this section as follows:]*

10 SEC. 4.106.4.2. NEW MULTIFAMILY DWELLINGS AND MAJOR ALTERATIONS.

11 Where ~~three~~ *17* or more multifamily dwelling units are constructed on a building site, or
12 undergo major alteration, 100% 3-percent of the total number of off-street parking spaces
13 provided for all types of parking facilities for passenger vehicles and trucks, but in no case less
14 than one, shall be electric vehicle charging spaces (EV Spaces) capable of supporting future
15 EVSE: ~~Calculations for the number of EVCS shall be rounded up to the nearest whole number.~~ A
16 branch circuit panelboard shall be provided at each parking level, and the panelboard shall
17 have capacity to deliver a minimum 8 amperes at 208 or 240 volts multiplied by the total
18 number of EV Spaces and shall provide sufficient space in the panelboard to install one 40-
19 ampere minimum dedicated branch circuit and overcurrent protective device for each EV
20 Space. The circuits and overcurrent protective devices shall remain reserved for exclusive use
21 by electric vehicle charging.

22 ~~**Note:** Electrical engineering design and construction documents are intended to~~
23 ~~demonstrate the project's capability and capacity for facilitating future EV charging.~~
24 ~~There is no requirement for EV spaces to be constructed or available until EV Chargers are~~
25 ~~installed for use. There is no requirement for EV Chargers to be installed. The intention~~

1 of sizing the panel to deliver 8 amperes per EV Space is to provide the option to utilize
2 ~~Electric Vehicle Load Management Systems to provide Level 2 EV charging (40~~
3 ~~amperes at 208 or 240 volts) at 100% of parking spaces. Eight (8) amperes of capacity~~
4 ~~per EV Space is sufficient for a listed EV Load Management system to manage the~~
5 ~~available capacity in a safe manner. For example, such a system may allocate up to~~
6 ~~36 amperes at 208 or 240 volts to vehicles in 20% of the total number of EV Charging~~
7 ~~Stations simultaneously. The same system may allocate 8 amperes to vehicles in~~
8 ~~100% of parking spaces.~~

9 EV load management systems are not required, but may be necessary if EVSE are
10 installed serving greater than 20% of parking spaces simultaneously.

11
12 Section 910. The Green Building Code is hereby amended by revising
13 Section 4.106.4.2.1, to read as follows:

14 *[Revise this section as follows:]*

15 **SEC. 4.106.4.2.1. ELECTRIC VEHICLE CHARGING SPACE LOCATIONS.**

16 ~~Electrical engineering design and e~~Construction documents shall indicate the location
17 of proposed EV spaces. Where parking spaces are provided for public use or for common use by
18 residents, at At least one EV space shall be located in common use areas and available for use
19 by all residents.

20 When EV chargers are installed, accessible EV spaces required by Section 4.106.2.2,
21 Item 3, shall comply with at least one of the following options:

22 1. The EV space shall be located adjacent to an accessible parking space meeting the
23 requirements of the California Building Code, Chapter 11A, to allow use of the EV charger
24 from the accessible parking space.

25 2. The EV space shall be located on an accessible route, as defined in the California

1 Building Code, Chapter 2, to the building.

2
3 Section 4011. The Green Building Code is hereby amended by revising
4 Section 4.106.4.2.2, to read as follows:

5 *[Revise this section as follows:]*

6 **SEC. 4.106.4.2.2. ELECTRIC VEHICLE CHARGING SPACE (EV SPACES) DIMENSIONS.**

7 *Unless otherwise specified by Planning Code Section 154, The EV spaces shall be designed*
8 *to comply with the following:*

- 9 1. The minimum length of each EV space shall be 18 feet (5486 mm).
- 10 2. The minimum width of each EV space shall be 9 feet (2743 mm).
- 11 3. One in every 25 EV spaces, but not less than one, shall also have an 8-foot (2438
12 mm) wide minimum aisle. A 5-foot (1524 mm) wide minimum aisle shall be permitted
13 provided the minimum width of the EV space is 12 feet (3658 mm).

14 a. Surface slope for this EV space and the aisle shall not exceed 1 unit vertical
15 in 48 units horizontal (2.083% ~~percent~~ slope) in any direction.

16 *b. Notwithstanding any other applicable requirements, when an EV charger is installed*
17 *servicing an accessible parking space, the space may be considered a parking space if the duration of*
18 *stay is not subject to any limitations different from those generally applied to other publicly accessible*
19 *parking spaces in the same parking area. If the duration of stay in an accessible space equipped with*
20 *an EV charger is subject to limitations different from those generally applied to other publicly*
21 *accessible parking spaces in the same parking area, the space is not a parking space.*

22 *4. Accessible spaces must meet the dimensions specified above, Planning Code Section 154,*
23 *or other applicable accessibility requirements, whichever would result in a larger the largest*
24 *space size.*

1 Section 4112. The Green Building Code is hereby amended by revising
2 Section 4.106.4.2.3, to read as follows:

3 *[Revise this section as follows:]*

4 **SEC. 4.106.4.2.3. SINGLE EV SPACE REQUIRED.**

5 Where a single EV space is required, install a full circuit with a minimum of 40-Amp 208 or
6 240 Volt capacity, including listed raceway, sufficient electrical panel capacity, overcurrent protection
7 devices, wire, and termination point such as a receptacle. The termination point shall be in close
8 proximity to the proposed EV charger location. The raceway shall not be less than trade size 1
9 (nominal 1-inch inside diameter).

10 ~~Install a listed raceway capable of accommodating a 208/240-volt dedicated branch circuit.~~
11 ~~The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall~~
12 ~~originate at the main service or subpanel and shall terminate into a listed cabinet, box or enclosure in~~
13 ~~close proximity to the proposed location of the EV spaces. Construction documents shall identify the~~
14 ~~raceway termination point. The service panel and/or subpanel shall provide capacity to install a~~
15 ~~40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch~~
16 ~~circuit overcurrent protective device.~~

17
18 Section 4213. The Green Building Code is hereby amended by revising
19 Section 4.106.4.2.4, to read as follows:

20 *[Revise this section as follows:]*

21 **SEC. 4.106.4.2.4. MULTIPLE EV SPACES REQUIRED.**

22 (a) For a minimum of 10% of EV Spaces and in no case less than two EV Spaces when the total
23 number of EV Spaces is two or more, install a full circuit with minimum of 40-Amp 208 or 240 Volt
24 capacity per EV Space, including listed raceway, sufficient electrical panel service capacity,
25 overcurrent protection devices, wire, and suitable listed termination point such as a receptacle. The

1 termination point shall be in close proximity to the proposed EV charger location. Calculations for the
2 number of EV Spaces shall be rounded up to the nearest whole number.

3 (b) For an additional 10% of EV Spaces (totaling not less than 20% when combined
4 with (a)), install either:

5 (1) A full circuit with minimum of 40 Amp 208 or 240 Volt capacity, including listed
6 raceway, sufficient electrical panel capacity, overcurrent protection devices, wire,
7 and suitable listed termination point such as a receptacle. OR

8 (2) A full listed raceway with pull string and sufficient electrical panel capacity for a
9 minimum of 40 Amp 208 or 240 Volt capacity per circuit per EV Space. The
10 raceway shall extend for the complete run from the branch circuit panelboard to a
11 termination point in close proximity to the proposed EV charger location.

12 (b) Branch circuit panelboard(s) shall be installed at each parking level with service
13 capacity to deliver a minimum 40 amperes at 208 or 240 volts multiplied by 20% of the total
14 number of EV Spaces. The panelboard(s) shall have sufficient space to install a minimum of
15 one 40-ampere dedicated branch circuit and overcurrent protective device per EV Space up to
16 a minimum of 20% of the total number of EV Spaces. The circuits and overcurrent protective
17 devices shall remain reserved exclusively for EV charging.

18 Exception: Circuits and overcurrent protective devices in panelboards not located
19 on the same level may contribute to the requirements of 4.106.4.2.4(b), provided
20 the circuits are reserved exclusively for EV charging. For example, the circuit
21 servicing an EV Space dedicated to a condominium owner may connect to the
22 electrical panelboard of the corresponding condominium.

23 (c) For all remaining EV Spaces, For all EV Spaces not required to install full circuits or
24 raceway per Section 4.106.4.2.4(a):

25 (1) Either:

1 (A) Provide sufficient space for future installation of additional electrical
2 panelboard(s) to support a 40 ampere 208 or 240 Volt capacity branch circuit and overcurrent
3 protection device per EV Space, or equivalent consistent with Section 4.106.4.2.4.1; or

4 (B) Provide space in installed electrical panelboard(s) to support installation of a
5 40 ampere 208 or 240 Volt capacity branch circuit and overcurrent protection device per EV
6 Space, or equivalent consistent with Section 4.106.4.2.4.1.

7 (2) Install raceway or sleeves where penetrations to walls, floors, or other partitions
8 will be necessary to install panels, raceways, or related electrical components necessary per
9 site conditions for future installation of branch circuits. All such penetrations must comply with
10 applicable codes, including but not limited to the San Francisco Electrical Code and the San
11 Francisco Fire Code.

12 (d) Construction documents, including *electrical engineering and design* and construction
13 documents shall indicate the raceway termination point to supply an EV charger with a 40-
14 ampere minimum branch circuit. Electrical engineering design and related documents, shall
15 demonstrate that the electrical service capacity and electrical system, including any on-site
16 distribution transformer(s), can charge EVSE at a minimum of 20% of the total number of EV
17 Spaces simultaneously, at the full rated amperage of the EVSE or a minimum of 40 amperes
18 per branch circuit, as modified by Section 4.106.4.2.4.1 Electric Vehicle Fast Charging Spaces.
19 As appropriate, *construction documents shall provide information on amperage of future EVSE,*
20 *raceway method(s), wiring schematics, anticipated EV load management system design(s), and*
21 *electrical load calculations* to verify that the electrical panel service capacity and electrical
22 system, including any on-site distribution transformer(s), can charge all EV Space and EVSEs
23 required by sections (a) and (b) simultaneously at the full rated amperage of the EVSE.

24 NOTES:

25 1. Electric vehicle charging infrastructure and housing are critical priorities for

1 the City and County of San Francisco. Where provisions of this Section
2 4.106.4.2.4 require the installation of an electrical transformer, and such
3 transformer cannot be accommodated on the project site due to the
4 combination of project site dimensions, San Francisco Building Code, San
5 Francisco Electrical Code, and applicable utility regulations, the Director of
6 Public Works is encouraged to issue a Sidewalk Vault Encroachment Permit,
7 provided that the fronting property owner complies with all requirements
8 governing street occupancy, including but not limited to the San Francisco
9 Public Works Code and Department of Public Works Order 165,553.

10 2. An EV load management system may be necessary in order to provide EV charging
11 at EV Spaces required by section (c). Raceways and related components
12 that are planned to be installed underground, enclosed, inaccessible or in
13 concealed areas and spaces shall be installed at the time of original
14 construction more than 20% of EV Spaces.

15 3. Note: This section does not require EV chargers or EV load management
16 systems to be installed.

17 *Construction documents shall indicate the raceway termination point and proposed location of*
18 *future EV Spaces and EV chargers. Construction documents shall also provide information on*
19 *amperage of future EVSE, raceway method(s), wiring schematics and electrical load calculations to*
20 *verify that the electrical panel service capacity and electrical system, including any on-site distribution*
21 *transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at*
22 *the full rated amperage of the EVSE. Plan design shall be based upon a 40 ampere minimum branch*
23 *circuit. Raceways and related components that are planned to be installed underground, enclosed,*
24 *inaccessible or in concealed areas and spaces shall be installed at the time of original construction.*

1 Section 4.106.4.2.4.1. The Green Building Code is hereby amended by adding
2 Section 4.106.4.2.4.1, to read as follows:

3 [Add the following section:]

4 SEC. 4.106.4.2.4.1. ELECTRIC VEHICLE (EV) FAST CHARGING SPACES.

5 (a) Installation of one Electric Vehicle EV Fast Charger may reduce the number of EV Spaces
6 required under Section 4.106.4.2.4 (a) and (b) by up to five EV Spaces, provided that the project
7 includes at least one EV Space equipped with a full circuit able to deliver 40-Amp 208 or 240 Volt
8 capacity to the EV Space, including listed raceway, sufficient electrical panel capacity, overcurrent
9 protection devices, wire, and suitable listed termination point such as a receptacle.

10 The electrical panel board(s) provided at each parking level served by EV Fast Chargers shall
11 have sufficient capacity to supply each Electric Vehicle EV Fast Charger with a minimum of 30 kW AC
12 in addition to the capacity to serve any remaining EV Spaces with required under Section
13 4.106.4.2.4(a) a minimum of 8 amperes at 208 or 240 volts per EV Space, with a minimum of
14 40 amperes per circuit at 208 or 240 volts per EV Space.

15 (b) After the requirements of 4.106.4.2.4(a) and (b) are met, each planned Electric Vehicle EV
16 Fast Charger may reduce the number of planned EV Spaces required under 4.106.4.2.4(c) by up to five
17 spaces. Electrical engineering design and construction documents shall indicate the raceway
18 termination point and proposed location of future EV fast charger spaces and EV fast chargers.
19 Electrical engineering design and construction documents shall also provide information on amperage
20 of EV fast chargers, raceway method(s), wiring schematics, and electrical load calculations to verify
21 that the electrical panel service capacity and electrical system has sufficient capacity to simultaneously
22 operate all installed EV fast chargers at the full rated amperage of the EV fast charger(s) and
23 simultaneously serve any remaining spaces required by 4.106.4.2.4(a) and (b). Raceways and related
24 components that are planned to be installed underground, enclosed, inaccessible, or in concealed areas
25 and spaces shall be installed at the time of original construction.

1
2 Section 4415. The Green Building Code is hereby amended by revising
3 Section 4.106.4.2.5, to read as follows:

4 *[Revise this section as follows:]*

5 **SEC. 4.106.4.2.5. IDENTIFICATION.**

6 The service panel or subpanel circuit directory shall identify the overcurrent protective
7 device space(s) reserved for future EV charging purposes as "EVSE READY" for full circuits.
8 and otherwise "EVSE CAPABLE" in accordance with the California Electrical Code. *The raceway*
9 *termination location or receptacle shall be permanently and visibly marked as "EVSE READY" for full*
10 *circuits and otherwise "EVSE CAPABLE," until such time as EVSE are installed.*

11 **Notes:**

12 1. The California Department of Transportation adopts and publishes the
13 "California Manual on Uniform Traffic Control Devices (California MUTCD)" to provide
14 uniform standards and specifications for all official traffic control devices in California.
15 Zero Emission Vehicle Signs and Pavement Markings can be found in the New Policies
16 & Directives Number 13-01. Website: [http://www.dot.ca.gov/hq/traffops/policy/13-](http://www.dot.ca.gov/hq/traffops/policy/13-01.pdf)
17 [01.pdf](http://www.dot.ca.gov/hq/traffops/policy/13-01.pdf).

18 2. See Vehicle Code Section 22511 for EV charging space signage in off-street
19 parking facilities and for use of EV charging spaces.

20 3. The Governor's Office of Planning and Research (OPR) published a "Zero-
21 Emission Vehicle Community Readiness Guidebook" which provides helpful
22 information for local governments, residents and businesses. Website:
23 http://opr.ca.gov/docs/ZEV_Guidebook.pdf.

1 Section 4516. The Green Building Code is hereby amended by adding
2 Section 5.103.3.3, to read as follows:

3 *[Add the following section:]*

4 **SEC. 5.103.3.3. ELECTRIC VEHICLE CHARGING.**

5 Section 5.106.5.3 of this chapter shall apply to all newly constructed buildings and associated
6 newly-constructed parking facilities for passenger vehicles and trucks, and to major alterations
7 to existing Group A, B, I, and M occupancy buildings where electrical service to the building will be
8 upgraded. In major alterations where existing electrical service will not be upgraded, the all
9 requirements of under Section 5.106.5 (all sections) shall apply to the maximum extent that does not
10 require upgrade to existing service;

11 (1) does not require upgrade to existing service; and

12 (2) the Director does not determine that compliance with Section 5.106.5.3.3 and Title
13 24 Chapter 11B, if applicable, is technically infeasible, as defined in California
14 Building Code Chapter 2, Section 202.

15
16 Section 4617. The Green Building Code is hereby amended by revising
17 Section 5.106.5.3, to read as follows:

18 *[Revise this section as follows:]*

19 **SEC. 5.106.5.3. ELECTRIC VEHICLE (EV) CHARGING. ~~AN~~**

20 In new construction and major alterations, 100% of off-street parking spaces in buildings and
21 facilities provided for all types of parking facilities passenger vehicles and trucks shall be
22 electric vehicle charging spaces (EV Spaces) capable of supporting future EVSE. Electrical
23 engineering design and construction documents shall indicate the location of all proposed EV spaces.
24 When EVSE is installed, it shall be in accordance with the San Francisco Building Code and the San
25 Francisco Electrical Code.

1 Construction shall comply with Section 5.106.5.3.1 or Section 5.106.5.3.2 to facilitate future
2 installation of electric vehicle supply equipment (EVSE). When EVSE(S) is/are installed, it shall be in
3 accordance with the California Building Code, the California Electrical Code, and as follows:

4
5 Section 4718. The Green Building Code is hereby amended by revising
6 Section 5.106.5.3.1, to read as follows:

7 [Revise this section as follows:]

8 **SEC. 5.106.5.3.1. SINGLE CHARGING SPACE REQUIREMENTS. ~~FN~~**

9 ~~When a single EV Space is required per Section 5.106.5.3.3, install a full branch circuit with a~~
10 ~~minimum of 40-Amp 208 or 240 Volt capacity, including listed raceway, sufficient electrical panel~~
11 ~~capacity, overcurrent protection devices, wire, and suitable listed termination point such as a~~
12 ~~receptacle. The termination point shall be in close proximity to the proposed EV charger location. The~~
13 ~~raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The circuit shall be~~
14 ~~installed in accordance with the California Electrical Code San Francisco Electrical Code and the~~
15 ~~San Francisco Building Code.~~

16 ~~When only a single charging space is required per Table 5.106.5.3.3, a raceway is required to~~
17 ~~be installed at the time of construction and shall be installed in accordance with the California~~
18 ~~Electrical Code. Construction plans and specifications shall include, but are not limited to, the~~
19 ~~following:~~

- 20 ~~1. The type and location of the EVSE.~~
21 ~~2. A listed raceway capable of accommodating a 208 or 240 volt dedicated branch circuit.~~
22 ~~3. The raceway shall not be less than trade size 1."~~
23 ~~4. The raceway shall originate at a service panel or a subpanel serving the area, and shall~~
24 ~~terminate in close proximity to the proposed location of the charging equipment and into a listed~~
25 ~~suitable cabinet, box, enclosure or equivalent.~~

1 5. ~~The service panel or subpanel shall have sufficient capacity to accommodate a minimum~~
2 ~~40-ampere dedicated branch circuit for the future installation of the EVSE.~~

3
4 Section 4819. The Green Building Code is hereby amended by revising
5 Section 5.106.5.3.2, to read as follows:

6 *[Revise this section as follows:]*

7 **SEC. 5.106.5.3.2. MULTIPLE CHARGING SPACE REQUIREMENTS. ~~NY~~**

8 (a) For a minimum of 10% of EV Spaces, and in no case less than two EV spaces when the total
9 number of EV Spaces is two or more, install a full circuit with minimum of 40-Amp 208 or 240 Volt
10 capacity per EV Space, including listed raceway, sufficient electrical panel service capacity,
11 overcurrent protection devices, wire, and suitable listed termination point such as a receptacle. The
12 termination point shall be in close proximity to the proposed EV charger location. Calculations for
13 the number of EV Spaces shall be rounded up to the nearest whole number.

14 (b) For an additional 10% of EV Spaces (total of not less than 20% when combined
15 with (a)), install either:

16 (1) A full circuit with minimum of 40 Amp 208 or 240 Volt capacity, including listed
17 raceway, sufficient

18 (b) Branch circuit panelboard(s) shall be installed at each parking level with service
19 capacity to deliver a minimum 40 amperes at 208 or 240 volts multiplied by 20% of the total
20 number of EV Spaces. The panelboard(s) shall have sufficient space to install a minimum of
21 one 40-ampere dedicated branch circuit and overcurrent protective device per EV Space up to
22 a minimum of 20% of the total number of EV Spaces. The circuits and overcurrent protective
23 devices shall remain reserved for exclusive use by electric vehicle charging.

24 (c) For all EV Spaces not required to install full circuits or raceways per Section
25 5.106.5.3.2(a):

1 (1) Either:

2 (A) Provide space for future installation of additional electrical panel
3 capacity, overcurrent protection devices, wire, and suitable listed termination
4 point such as a receptacle; or

5 (2) A full listed raceway with pull string and sufficient electrical panel capacity for a minimum
6 of 40 Amp panelboards to support a 40 ampere 208 or 240 Volt capacity per circuit per EV
7 Space. The raceway shall extend for the complete run from the branch circuit panelboard to a
8 termination point in close proximity to the proposed EV charger location, branch circuit and
9 overcurrent protection device per EV Space, or equivalent consistent with Section
10 5.106.5.3.2.1; or

11 (B) Provide space in installed electrical panelboard(s) to support
12 installation of a 40 ampere 208 or 240 volt capacity branch circuit and overcurrent protection
13 device per EV Space, or equivalent consistent with Section 5.106.5.3.2.1.

14 (2) Install raceway or sleeves where penetrations to walls, floors, or other
15 partitions will be necessary to install panels, raceways, or related electrical components
16 necessary for future installation of branch circuits. All such penetrations must comply with
17 applicable codes, including but not limited to the San Francisco Electrical Code and the San
18 Francisco Fire Code.

19 (d) (e) For all remaining EV Spaces, Construction documents, including electrical
20 engineering and design and construction documents shall indicate the raceway termination
21 point to supply an EV charger with a 40 ampere minimum branch circuit. Electrical
22 engineering design and related documents, shall demonstrate the electrical service capacity of
23 the electrical system, including any on-site distribution transformer(s), can charge EVSE at a
24 minimum of 20% of the total number of EV Spaces simultaneously, at the full rated amperage
25 of the EVSE or a minimum of 40 amperes per branch circuit, whichever is greater. As

1 appropriate, construction documents shall provide information on amperage of future EVSE,
2 raceway method(s), wiring schematics, anticipated EV load management system design(s), and
3 electrical load calculations to verify that the electrical panel service capacity and electrical
4 system, including any on-site distribution transformer(s), can charge all EV Space and EVSEs
5 required by subsections (a) and (b) simultaneously at the full rated amperage of the EVSE.
6 Installation of an EV load management system is not required, but may be necessary in order
7 to provide EV charging at EV Spaces required by subsection (c). Raceways and related
8 components that are planned to be installed underground, enclosed, inaccessible, or in
9 concealed areas and spaces shall be installed at the time of original construction.

10 Exceptions.

- 11 1. Where there is no commercial power supply.
- 12 2. Where there is evidence substantiating that meeting the requirements will alter the local
13 utility infrastructure design requirements directly related to the implementation of this
14 Section may increase the utility side cost to the developer by more than \$400 per parking
15 space. In such cases, buildings subject to Section 5.106.5.3.2 shall maximize the number of
16 EV Spaces, up to a maximum utility side cost of \$400 per space. Cost shall be determined by
17 dividing the increase in local utility infrastructure cost attributable to compliance with this
18 section by the sum of parking spaces and Electric Vehicle Charging Spaces.
- 19 3. In major alterations, where there is evidence substantiating that meeting the requirements of
20 this section present an unreasonable hardship or is technically infeasible, the Director
21 may upon request from the project sponsor consider an appeal to reduce the number of EV
22 Spaces required.

23 Note: This section does not require installation of EVSE.

24 The intent of sizing the panel with a minimum of 8 amperes per EV Space and
25 EVSE electrical service to provide 40 amperes at 208 or 240 Volts to at least 20% of

1 spaces simultaneously is to provide the option to utilize Electric Vehicle listed EV Load
2 Management Systems to provide Level 2 EV charging (40 amperes at 208 or 240 volts) at
3 100% of parking spaces. Eight (8) amperes of capacity per EV Space is sufficient for A
4 listed EV Load Management system to manage manages the available capacity in a safe
5 manner, such as allocating 36 amperes at 208 or 240 volts to vehicles in 20% of the total
6 number of EV Charging Stations simultaneously, or allocating 8 amperes to vehicles in 100% of
7 parking spaces, or similar. Given the capacity required by this Section, individual EV chargers
8 may be installed in up to 20% of parking spaces before an EV load management system is
9 necessary.

10 When multiple charging spaces are required per Table 5.106.5.3.3, raceway(s) is/are required
11 to be installed at the time of construction and shall be installed in accordance with California
12 Electrical Code. Construction plans and specifications shall include, but are not limited to, the
13 following:

- 14 1. The type and location of the EVSE.
- 15 2. The raceway(s) shall originate at a service panel or a subpanel(s) serving the area, and shall
16 terminate in close proximity to the proposed location of the charging equipment and into listed suitable
17 cabinet(s), box(es), enclosure(s) or equivalent.
- 18 3. Plan design shall be based upon 40 ampere minimum branch circuits.
- 19 4. Electrical calculations shall substantiate the design of the electrical system, to include the
20 rating of equipment and any on-site distribution transformers and have sufficient capacity to
21 simultaneously charge all required EVs at its full rated amperage.
- 22 5. The service panel or subpanel(s) shall have sufficient capacity to accommodate the required
23 number of dedicated branch circuit(s) for circuits for the future installation of the EVSE.

1 Section 4920. The Green Building Code is hereby amended by adding
2 Section 5.106.5.3.2.1, to read as follows:

3 *[Add the following section:]*

4 SEC. 5.106.5.3.2.1. ELECTRIC VEHICLE (EV) FAST CHARGING SPACES.

5 (a) Installation of one Electric Vehicle EV Fast Charger may reduce the number of EV Spaces
6 required under Section 5.106.5.3.2(a) and (b) by up to 10 EV Spaces, provided that the project
7 includes at least one EV Space equipped with a full circuit able to deliver 40 Amps at 208 or 240 volts
8 to the EV Space, including listed raceway, sufficient electrical panel capacity, overcurrent protection
9 devices, wire, and suitable listed termination point such as a receptacle.

10 The electrical panel board(s) provided at each parking level served by EV Fast Chargers shall
11 have sufficient capacity to supply each Electric Vehicle fast charger with a minimum of 30 kW AC in
12 addition to the capacity to serve any remaining EV spaces with a minimum of 8-amperes at 208 or 240
13 volts per EV Space simultaneously, with a minimum of 40 amperes per circuit.

14 (b) After the requirements of 5.106.5.3.2(a) and (b) are met, each planned Electric Vehicle EV
15 Fast Charger may reduce the number of planned EV Spaces required under 5.106.5.3.2(c) by up to 10
16 spaces. Electrical engineering design and construction documents shall indicate the raceway
17 termination point and proposed location of future EV Fast Charger Spaces and EV Fast Chargers.
18 Electrical engineering design and construction documents shall also provide information on amperage
19 of EV Fast Chargers, raceway method(s), and wiring schematics. Electrical engineering design and
20 construction documents shall also provide electrical load calculations to verify that the electrical panel
21 service capacity and electrical system has sufficient capacity to simultaneously operate all installed EV
22 Fast Chargers with the full rated amperage of the EV fast charger(s), and simultaneously serve a
23 minimum of 40 amps per branch circuit to any remaining EV spaces required by Sections 4.106.4.4.2
24 (a) and (b) 5.106.5.3.2(a). Raceways and related components that are planned to be installed in
25 underground, enclosed, inaccessible, or in otherwise concealed areas and/or spaces, shall be installed

1 at the time of original construction.

2
3 Section 2021. The Green Building Code is hereby amended by revising
4 Section 5.106.5.3.3, to read as follows:

5 *[Revise this section as follows:]*

6 SEC. 5.106.5.3.3. EV SPACE SLOPE, DIMENSIONS, AND LOCATION. EV CHARGING SPACE
7 CALCULATION. [N]

8 Electrical engineering dDesign and construction documents shall indicate how many
9 accessible EVCS would be required under Title 24 Chapter 11B Table 11B-228.3.2.1, if applicable, in
10 order to convert all EV Spaces required under 5.106.5.3.2 to EVCS. Electrical engineering,
11 excluding the exceptions in 5.106.5.3.2. Design and construction documents shall also
12 demonstrate that the facility is designed so that compliance with accessibility standards will be feasible
13 for accessible EV Spaces at the time of EVCS installation. Surface slope for any area designated for
14 accessible EV Spaces shall meet slope requirements in section 11B-812.3 at the time of original
15 building construction and vertical clearance requirements in Section 11B-812-4, if applicable.

16 Exception: Accessibility requirements of Section 5.106.5.3.3 shall not apply to buildings
17 which that are not covered under Title 24 Part 2 Chapter 11B. In addition, all applicable
18 exceptions to Chapter 11B shall continue to apply to this Section 5.106.5.3.3.

19 Note: Section 5.106.5.3.3, above, requires that the project be prepared to comply with
20 accessibility requirements applicable at the time of EVSE installation. Section 11B-812 of the
21 2016 California Building Code requires that a facility providing EVCS for public and common
22 use also provide one or more accessibility EVCS as specified in Table 11B-228.3.2.1.

23 Chapter 11B applies to regulates accessibility in certain buildings and facilities, including
24 but not limited to accessibility in public buildings, public accommodations, commercial
25 buildings, and publicly funded housing (see section 1.9 of Part 2 of the California Building

1 Code). Section 11B-812.4 requires that "Parking spaces, access aisles and vehicular routes
2 servicing them shall provide a vertical clearance of 98 inches (2489 mm) minimum."

3 Section 11B-812.3 requires that parking spaces and access aisles meet maximum slope
4 requirements of 1 unit vertical in 48 units horizontal (2.083% slope) in any direction at the time
5 of new building construction or renovation. Section 11B-812.5 contains accessible route
6 requirements.

7 Table 5.106.5.3.3 shall be used to determine if single or multiple charging space requirements
8 apply for the future installation of EVSE.

9 ~~Exceptions: On a case by case basis where the local enforcing agency has determined~~
10 ~~EV charging and infrastructure is not feasible based upon one or more of the following~~
11 ~~conditions:~~

12 ~~1. Where there is insufficient electrical supply.~~

13 ~~2. Where there is evidence suitable to the local enforcing agency substantiating that~~
14 ~~additional local utility infrastructure design requirements, directly related to the~~
15 ~~implementation of Section 5.106.5.3, may adversely impact the construction cost of the project.~~

16
17 Section 2422. The Green Building Code is hereby amended by revising
18 Section 5.106.5.3.4, to read as follows:

19 [Revise this section as follows:]

20 SEC. 5.106.5.3.4. IDENTIFICATION. ~~AND~~

21 The service panel or subpanel(s) circuit directory shall identify the reserved overcurrent
22 protective device space(s) for future EV charging as "EVSE READY" for full circuits and
23 otherwise "EVSE CAPABLE." The raceway termination location or receptacle shall be
24 permanently and visibly marked as "EVSE READY" for full circuits and otherwise "EVSE
25 CAPABLE" until such time as EVSE are installed.

1
2 Section ~~2223~~. The Green Building Code is hereby amended by revising
3 Section 5.106.5.3.5, to read as follows:

4 *[Revise this section as follows:]*

5 **SEC. 5.106.5.3.5. ~~NY~~**

6 Future charging spaces qualify as designated parking as described in
7 Section 5.106:5.2, Designated parking for clean air vehicles.

8 **Notes:**

9 1. The California Department of Transportation adopts and publishes the
10 California Manual on Uniform Traffic Control Devices (California MUTCD) to provide
11 uniform standards and specifications for all official traffic control devices in California.
12 Zero Emission Vehicle Signs and Pavement Markings can be found in the New Policies
13 & Directives number 13-01. www.dot.ca.gov/hq/traffops/policy/13-01.pdf.

14 2. See Vehicle Code Section 22511 for EV charging spaces signage in off-
15 street parking facilities and for use of EV charging spaces.

16 3. The Governor's Office of Planning and Research published a Zero-Emission
17 Vehicle Community Readiness Guidebook which provides helpful information for local
18 governments, residents and businesses. www.opr.ca.gov/docs/ZEV_Guidebook.pdf.

19
20 Section 24. The Environment Code is hereby amended by adding Chapter 27, to read
21 as follows:

22 **CHAPTER 27: ELECTRIC VEHICLE READINESS IMPLEMENTATION.**

23 **SEC. 2701. PURPOSE.**

24 The purpose of this Chapter 27 is to encourage the utilization of electric service
25 capacity designated for electric vehicle charging that has been installed in San Francisco

1 buildings in accordance with the San Francisco Green Building Code.

2 SEC. 2702. REQUIREMENTS FOR THE DEPARTMENT OF BUILDING
3 INSPECTION.

4 The Director of the Department of Building Inspection shall provide to the Department
5 of Environment a list of the buildings and facilities that are Electric Vehicle Ready, as
6 identified by their compliance with San Francisco Green Building Code Sections 4.106 and
7 5.106, or equivalent means to identify such buildings and facilities.

8 SEC. 2703. REQUIREMENTS FOR THE DEPARTMENT OF THE ENVIRONMENT.

9 The Department of the Environment shall maintain a list of Electric Vehicle Ready
10 buildings and facilities, and annually notify owners of Electric Vehicle Ready buildings of both
11 their responsibilities under this Chapter 27, and any currently available financing or incentives
12 for the installation of electric vehicle chargers.

13 SEC. 2704. REQUIREMENTS OF ELECTRIC VEHICLE READY BUILDING
14 OWNERS.

15 (a) Owners of Electric Vehicle Ready buildings, including homeowners' associations
16 and similar entities, shall annually notify all residents and lessees of owned Electric Vehicle
17 Ready buildings of the remaining electrical service capacity in the facility; the right of tenants
18 of dwelling units in California to install electric vehicle service equipment per California Civil
19 Code Section 1947.6; and of any applicable financing or incentives, as conveyed by the
20 Department of Environment under Section 2703.

21 (b) Enforcement of notification requirement for building owners.

22 (1) Warning. The Director shall issue a written warning to any building owner he
23 or she determines is violating subsection (a) of this Section 2704. In the event the Director
24 finds that after 30 days from the date of such warning, a building owner has failed to comply,
25 the Director may impose administrative fines as provided in this Section 2704.

1 (2) Administrative Fines. Violations of the provisions of this Chapter, or of any
2 regulations issued by the Director pursuant to Section 2007, may be punished by
3 administrative fines as follows. For buildings of 50,000 square feet and greater, up to \$100 per
4 day for a maximum of 25 days in one twelve-month period for each building in violation. For
5 buildings of 49,999 square feet or less, up to \$50 per day for a maximum of 25 days in one
6 12-month period for each building in violation.

7 (3) Except as to the amount of administrative fines, set forth above,
8 Administrative Code Chapter 100, "Procedures Governing the Imposition of Administrative
9 Fines," as may be amended from time to time, is hereby incorporated in its entirety and shall
10 govern the imposition, enforcement, collection, and review of administrative citations issued
11 by the Department of the Environment to enforce this Section 2704 and any rule or regulation
12 adopted pursuant to this Chapter 27.

13 (c) Use of Proceeds. Administrative fine collected under subsection (b) shall be used to
14 fund implementation and enforcement of this Chapter.

15 (d) This Section 2704 shall not apply to the City or to any municipally owned buildings.

16 SEC. 2705. DISCLAIMER.

17 In adopting and implementing this Chapter, the City and County of San Francisco is
18 assuming an undertaking only to promote the general welfare. It is not assuming, nor is it
19 imposing on its officers and employees, an obligation for breach of which it is liable in money
20 damages to any person who claims that such breach proximately caused injury.

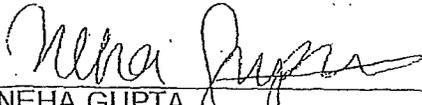
21
22 Section 2325. Effective and Operative Dates. This ordinance shall become effective
23 30 days after enactment. Enactment occurs when the Mayor signs the ordinance, the Mayor
24 returns the ordinance unsigned or does not sign the ordinance within ten days of receiving it,
25

1 or the Board of Supervisors overrides the Mayor's veto of the ordinance. The provisions of
2 this ordinance shall become operative on ~~May 1, 2017~~ January 1, 2018.

3
4 Section 2426. Scope of Ordinance. In enacting this ordinance, the Board of
5 Supervisors intends to amend only those words, phrases, paragraphs, subsections, sections,
6 articles, numbers, punctuation marks, charts, diagrams, or any other constituent parts of the
7 Municipal Code that are explicitly shown in this ordinance as additions, deletions, Board
8 amendment additions, and Board amendment deletions in accordance with the "Note" that
9 appears under the official title of the ordinance.

10
11 Section 2527. Directions to Clerk. The Clerk of the Board of Supervisors is hereby
12 directed to forward a copy of this ordinance to the California Building Standards Commission
13 upon final passage.

14
15
16 APPROVED AS TO FORM:
17 DENNIS J. HERRERA, City Attorney

18 By: 
19 NEHA GUPTA
20 Deputy City Attorney

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25

REVISED LEGISLATIVE DIGEST
(4/17/2017, Amended in Committee)

[Green Building Code and Environment Code - Requirements for Installation of Electric Vehicle Chargers]

Ordinance amending the Green Building Code and the Environment Code to establish requirements for installation of electric vehicle charger infrastructure in new buildings or buildings undergoing major alterations, and requirements for notification to building owners, residents, and lessees; affirming the Planning Department's determination under the California Environmental Quality Act; making findings under the California Health and Safety Code; and directing the Clerk of the Board of Supervisors to forward this ordinance to the California Building Standards Commission upon final passage.

Existing Law

The relevant provisions of the Green Building Code set forth requirements for installation of electric vehicle ("EV") charging infrastructure in new construction. No provision of local law currently provides for notification regarding EV charging infrastructure to building owners, residents, or lessees.

Amendments to Current Law

This proposal adds and amends certain definitions as follows. It defines "Electric Vehicle Charging Space" as a space intended for installation of EV charging equipment and charging of electric vehicles, and adds that this chapter does not require an EV Space to be reserved exclusively for EV charging.

It also amends the definition of "Electric Vehicle Charging Station," currently provided as one or more electric vehicle charging spaces served by electric vehicle charger(s) or other charging equipment allowing charging of electric vehicles, to comply with accessibility requirements. The proposed addition to the definition specifies that when the permitted length of time a vehicle may occupy an EV charging station differs from the permitted duration of stay in publicly accessible parking spaces in the same parking area, EV charging stations are not considered parking spaces. When the permitted duration of stay in a space served by EV charger(s) is the same as other publicly accessible parking spaces in the same parking area, EV charging stations may be considered parking spaces. This proposed amendment does not modify whether a space may be considered parking under other applicable San Francisco codes.

The proposal adds a definition for "Electric Vehicle Fast Charger," defining this as off-board charging equipment with a minimum direct current or alternating current power output of 24 kW, for the purpose of providing an electric vehicle charge in significantly less time than a standard Electric Vehicle Charger.

It adds a definition for "Electric Vehicle Load Management System," defining this as an electronic system designed to allocate charging capacity among EV chargers. It also adds definitions for "Passenger Vehicles," defining them as motor vehicles designed primarily for transportation of persons with a capacity of 12 persons or less, and "Trucks," defining them as trucks or truck-based vehicles with a payload capacity of 4,000 pounds or less and a gross vehicle weight ratio of 14,000 pounds or less.

The proposal furthermore modifies the definition of "Major Alterations" San Francisco previously added to its Green Building Code. The current definition includes alterations where interior finishes are removed and significant upgrades to structural and mechanical, electrical, and/or plumbing systems are proposed where areas of such construction are 25,000 gross square feet or more in Group B, M, or R occupancies of existing buildings. This proposal would expand this definition to include alterations "and additions" meeting the mentioned criteria.

Existing law requires new construction to include electrical capacity to support future installation of EV chargers. This proposal requires new construction, and associated newly constructed parking facilities for passenger vehicles and trucks, as well as those Group R occupancies undergoing major alterations that involve electrical service upgrades to include electrical capacity and infrastructure, to facilitate future installation and use of EV Chargers such that the building will be capable of providing electric vehicle charging services at 100% of parking spaces. This requirement is subject to certain exceptions. Existing exceptions include where there is no commercial power supply, and where the requirements would impose costs higher than \$400 per dwelling unit on the owner or developer. This proposal modifies this cost-based exception to apply in instances where the requirements would impose costs higher than \$400 per EV charging space. It would also add an exception for instances where a sponsor to a major alterations project can demonstrate that the requirements impose unreasonable hardship or are technically infeasible. A further exception would apply for projects undertaken specifically to meet the City's Mandatory Seismic Retrofit Program as required under Chapter 34B of the Building Code.

Existing law applicable to one and two-family dwellings and town-houses with attached private garages specifies that for each dwelling unit, there must be installed a listed raceway to accommodate a dedicated 208/240-volt branch circuit. This proposal requires one and two-family dwellings and town-houses with attached or adjacent private garages to install for each parking space a 40-Amp 208 or 240-volt branch circuit, including raceway, electrical panel capacity, overprotection devices, wire and termination point such as a receptacle.

For new multifamily dwellings, existing law requires that where 17 or more multifamily dwelling units are built on a site, 3% of spaces (and at least 1 space) must be capable of supporting future EV charging. This proposal requires that where 3 or more multifamily dwelling units are constructed on a building site or undergo major alterations, 100% of off-street parking spaces for passenger vehicles and trucks must be capable of supporting future EV charging.

Existing law requires that EV charging space locations be designated on construction documents, and that at least one EV space be located in common use areas available for use by all residents. It further requires that the EV space be located either adjacent to an accessible parking space, or on an accessible route. This proposal modifies this requirement for a common use EV space to apply only where parking spaces are provided for public use or common use by residents.

Existing law specifies that EV charging space dimensions must be at least 18 feet long and 9 feet wide, and that at least 1 of every 25 (and at least 1) should have a minimum 8-foot wide aisle. Such an aisle can be minimum 5 feet wide if the EV space width is 12 feet. Existing law also specifies that this EV space and aisle must have no greater than a 2.083% slope in any direction.

This proposal adds to this provision that notwithstanding any other requirements, when an EV charger is installed serving an accessible parking space, the space may be considered a parking space if the duration of stay is not subject to any limitations different from those generally applied to other publicly accessible parking spaces in the same parking area. If the duration of stay in an accessible space equipped with an EV charger is subject to limitations different from those generally applied to other publicly accessible parking spaces in the same parking area, the space is not a parking space. Per the proposal, accessible spaces must meet either the above dimensions, or those in Planning Code Section 154, whichever would result in the largest space size.

Where a single EV charging space is required at residential building sites, existing law requires that a raceway be installed at the time of construction and comply with certain listed specifications. This proposal modifies these specifications to require installation of a full circuit with a minimum of 40-Amp 208 or 240 Volt capacity, including listed raceway, sufficient electrical panel capacity, overcurrent protection devices, wire, and suitable listed termination point such as a receptacle.

Where multiple EV spaces are required at residential building sites, existing law provides that construction documents should indicate the raceway termination point and proposed location of future EV spaces and chargers; provide information on amperage of future EV supply equipment, raceway method(s), wiring schematics, anticipated EV load management system design(s), and electrical load calculations; and base plan design on a 40-ampere minimum branch circuit.

This proposal would add to the requirements for instances where multiple EV spaces are required at residential building sites to specify that for a minimum of 10% percent of EV spaces, and in no case less than 2 spaces when the total number of EV spaces is 2 or more, there must be installed a full circuit with minimum of 40-Amp 208 or 240 Volt capacity per EV space, including listed raceway, sufficient electrical panel capacity, overcurrent protection devices, wire, and suitable listed termination point such as a receptacle, reserved exclusively for EV charging. The proposal further requires installation of branch panel board(s) at each parking level that meet certain specifications, subject to specified exceptions. It also specifies requirements for those EV spaces not required to contain a full circuit.

This proposal adds a new provision regarding EV fast charging spaces at residential building sites. It provides that installation of an EV fast charger may reduce the number of EV spaces required under other provisions by up to 5 EV spaces, provided that the project includes at least one EV space equipped with a full circuit able to deliver 40-Amp 208 or 240 Volt capacity to the EV space. The electrical panel board(s) provided at each parking level served by EV fast chargers shall have sufficient capacity to supply each EV fast charger with a minimum of 30 kW AC in addition to the capacity to serve any remaining EV spaces with a minimum of 8-amperes at 208 or 240-volts per EV space, with a minimum of 40 amperes per circuit.

For nonresidential building sites, this proposal requires that 100% of off-street parking spaces provided for all types of parking facilities for passenger vehicles and trucks shall be EV spaces capable of supporting future EV charging equipment.

Where a single EV charging space is required at nonresidential building sites, existing law requires that a raceway be installed at the time of construction and comply with certain listed specifications. This proposal modifies these specifications to require installation of a full branch circuit with a minimum of 40-Amp 208 or 240 Volt capacity, including listed raceway, sufficient electrical panel capacity, overcurrent protection devices, wire, and suitable listed termination point such as a receptacle.

Where multiple EV spaces are required at nonresidential building sites, existing law provides that raceway installation take place at the time of construction, and construction documents should contain listed specifications.

Under this proposal, where multiple EV spaces are required at nonresidential building sites, a minimum of 10% of spaces, and no less than 2 when there are 2 or more, must include a full circuit with minimum of 40-Amp 208 or 240 Volt capacity per EV space, including listed raceway, sufficient electrical panel capacity, overcurrent protection devices, wire, and suitable listed termination point such as a receptacle. The proposal specifies the electrical infrastructure that must be installed, and provides that the circuits and overcurrent protective devices shall remain reserved exclusively for EV charging. It furthermore prescribes requirements for spaces not required to include full circuits or raceways. This proposal also specifies that construction and related documents shall demonstrate the electric service capacity of the system and other specified information.

This proposal provides for several exceptions to these requirements, including where there is no commercial power supply; where implementation would generate for the developer a utility side cost of more than \$400 per parking space; and where the project sponsor for a major alteration demonstrates the requirements impose unreasonable hardship or are technically infeasible.

This proposal adds provisions regarding EV fast charging spaces at nonresidential building sites. It states that installation of 1 EV fast charger may reduce the number of otherwise required EV spaces by up to 10, provided that the project includes at least one EV Space equipped with a full circuit able to deliver 40 Amps at 208 or 240 volts to the EV Space, including listed raceway, sufficient electrical panel capacity, overcurrent protection devices,

wire, and suitable listed termination point such as a receptacle. The electrical panel board(s) provided at each parking level served by EV Fast Chargers shall have sufficient capacity to supply each Electric Vehicle fast charger with a minimum of 30 kW AC in addition to the capacity to serve any remaining EV spaces with a minimum of 8-amperes at 208 or 240 volts per EV space simultaneously, with a minimum of 40 amperes per circuit at 208 or 240 volts per EV space.

Existing law provides that whether single or multiple EV charging space requirements apply is determined according to Table 5.106.5.3.3, subject to certain exceptions. This proposal deletes this provision, inserts requirements that construction documents indicate how many accessible EV charging stations are required according to Title 24 Chapter 11B Table 11B-228.3.2.1, and sets forth additional accessibility requirements.

The proposal adds a new chapter to the Environment Code regarding EV Readiness Implementation. It directs the Director of the Department of Building Inspection to notify the Director of the Department of the Environment of buildings in compliance with the Green Building Code's EV Readiness requirements. The Director of the Department of the Environment shall maintain a list of these buildings, and on an annual basis notify building owners of certain specified responsibilities. Building owners are responsible for notifying residents and lessees of remaining electric service capacity in the building, tenants' rights to install EV service equipment under California Civil Code Section 1947.6, and of any applicable financing or incentives. The Director of the Department of the Environment is responsible for notifying building owners annually of this responsibility, and of available EV financing or incentives. The proposal also contains warning and enforcement penalties for these requirements, to be administered by the Director of the Department of the Environment.

Background

This proposal, originally introduced before the Board of Supervisors on February 28, 2017, contains amendments adopted at the Land Use Committee on April 10, 2017 and April 17, 2017.

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BOARD of SUPERVISORS



City Hall
Dr. Carlton B. Goodlett Place, Room 244
San Francisco 94102-4689
Tel. No. 554-5184
Fax No. 554-5163
TDD/TTY No. 554-5227

March 7, 2017

File No. 170202

Lisa Gibson
Acting Environmental Review Officer
Planning Department
1650 Mission Street, Ste. 400
San Francisco, CA 94103

Dear Ms. Gibson:

On February 28, 2017, Mayor Lee introduced the following proposed legislation:

File No. 170202

Ordinance amending the Green Building Code to establish requirements for installation of electric vehicle charger infrastructure in new buildings or buildings undergoing major alterations; affirming the Planning Department's determination under the California Environmental Quality Act; making findings under the California Health and Safety Code; and directing the Clerk of the Board of Supervisors to forward this Ordinance to the California Building Standards Commission upon final passage.

This legislation is being transmitted to you for environmental review.

Angela Calvillo, Clerk of the Board

For By: *Alisa Somera*
Alisa Somera, Legislative Deputy Director
Land Use and Transportation Committee

Attachment

Not defined as a project under CEQA Guidelines Sections 15060(c) and 15378 because it does not result in a physical change in the environment.

c: Joy Navarrete, Environmental Planning
Jeanie Poling, Environmental Planning

Jeanie Poling 3/9/17



BUILDING INSPECTION COMMISSION (BIC)

Department of Building Inspection Voice (415) 558-6164 - Fax (415) 558-6509
1660 Mission Street, San Francisco, California 94103-2414

April 5, 2017

Edwin M. Lee
Mayor

COMMISSION

Angus McCarthy
President

Kevin Clinch
Gail Gilman
John Konstin
Frank Lee
Debra Walker
James Warshell

Sonya Harris
Secretary

Annie Chow
Assistant Secretary

Tom C. Hui
Director

Ms. Angela Calvillo
Clerk of the Board
Board of Supervisors, City Hall
1 Dr. Carlton B. Goodlett Place, Room 244
San Francisco, CA 94102-4694

Dear Ms. Calvillo:

RE: File No.170202

Ordinance amending the Planning Code and Green Building Code to establish requirements for installation of electric vehicle charger infrastructure in new buildings or buildings undergoing major alterations; affirming the Planning Department's determination under the California Environmental Quality Act; making findings under the California Health and Safety Code; and directing the Clerk of the Board of Supervisors to forward this ordinance to the California Building Standards Commission upon final passage.

The Building Inspection Commission met and held a public hearing on March 29, 2017 regarding File No. 170202 on the proposed amendment to the San Francisco Planning Code and Green Building Code referenced above. The Commissioners voted unanimously to support this proposed amendment.

The Commissioners voted as follows:

President McCarthy	Yes	Vice-President Walker	Yes
Commissioner Gilman	Yes	Commissioner Lee	Yes
Commissioner Warshell	Yes		

Should you have any questions, please do not hesitate to call me at 558-6164.

Sincerely,

Sonya Harris
Commission Secretary

cc: Tom C. Hui, S.E., Director
Mayor Edwin M. Lee
Supervisor Katy Tang
Board of Supervisors

1 [Support of Requirements for Installation of Electric Vehicle Chargers Ordinance File Number:
2 170202]

3

4 **Resolution urging the Board of Supervisors and the Mayor to adopt File Number**
5 **170202, an Ordinance amending the Green Building Code to establish requirements for**
6 **installation of electric vehicle charger infrastructure in new buildings or buildings**
7 **undergoing major alterations (Electric Vehicle Readiness Ordinance).**

8 WHEREAS, The City and County of San Francisco has a duty to protect the natural
9 environment, the economy, and the health of its citizens; and,

10 WHEREAS, Pollutants from operation of internal combustion motor vehicles, such as
11 particulates and nitrous oxides, contribute to respiratory distress, can trigger heart attacks,
12 and increase the risk of lung cancer; and,

13 WHEREAS, The American Lung Association estimates that reduction in criteria air
14 pollutant emissions due to adoption of electric vehicles can save Californians \$13 billion in
15 health care costs per year by 2030; and,

16 WHEREAS, As a coastal city located on the tip of a peninsula, San Francisco is
17 vulnerable to sea level rise; and,

18 WHEREAS, Human activities releasing greenhouse gases into the atmosphere are
19 increasing worldwide average temperature, which contributes to melting of glaciers and
20 thermal expansion of ocean water – resulting in rising sea levels; and,

21 WHEREAS, San Francisco is already experiencing the repercussions of rising sea
22 levels that threaten the City's shoreline and infrastructure, cause erosion, and impact
23 infrastructure during extreme tides; and,

24

25

1 WHEREAS, increasing the adoption of electric vehicles will help San Francisco meet
2 its goals under Ordinance No. 81-08, to reduce greenhouse gas emissions citywide to 40%
3 below 1990 levels by 2025, and 80% by 2050; and,

4 WHEREAS, Electric vehicles are fueled by electricity; and,

5 WHEREAS, Electric vehicle adoption depends upon convenient access to charging,
6 and the ability to serve electric vehicles in existing buildings is commonly limited by the
7 electrical system capacity of the building; and,

8 WHEREAS, The most cost-effective time to prepare building electrical infrastructure for
9 electric vehicle charging is when electric service is installed or upgraded due to construction,
10 because workers are already on-site, infrastructure for electric vehicle charging need only pay
11 the marginal costs of increased utility service, permitting, construction project management,
12 and financing, and marginal cost is much less than full cost; and,

13 WHEREAS, Half of the electric vehicles on the road in the US are in California; and,

14 WHEREAS, The San Francisco Bay Area is a global hub of plug-in electric vehicle
15 adoption, with electric vehicles accounting for nearly 6% of new vehicle registrations in 2016;
16 and,

17 WHEREAS, California requires that by 2025 a minimum of 22% of vehicles sold in
18 California by each auto manufacturer must be Zero Emission Vehicles ("ZEVs"); and,

19 WHEREAS, California's goal is to have 1.5 million ZEVs on the road by 2025, and
20 sales of electric vehicles to date have exceeded projections; and,

21 WHEREAS, Battery electric vehicles are the most widely available category of ZEVs
22 and account for the vast majority of sales of ZEVs; and,

23 WHEREAS, Adoption of clean transportation supports innovation in technologies such
24 as charging management and battery storage, which provide new opportunities to build upon
25 San Francisco's strengths in supporting the clean energy economy; and,

1 WHEREAS, Electric vehicles support new possibilities for consuming clean electricity,
2 and will provide new opportunities to balance loads on the electrical grid in order to
3 accommodate increased supply of distributed renewable electricity resources; and,

4 WHEREAS, Mayor Edwin M. Lee and Supervisor Katy Tang introduced legislation that
5 would amend the Green Building Code to establish requirements for installation of electric
6 vehicle charger infrastructure in new buildings and buildings undergoing major alterations;
7 now, therefore, be it,

8 RESOLVED, That the Commission on the Environment urges the Board of Supervisors
9 and the Mayor to adopt File Number 170202, an ordinance to establish requirements for
10 electric vehicle readiness in San Francisco; and, be it,

11 FUTHER RESOLVED, That the Commission on the Environment recognizes that the
12 Electric Vehicle Readiness Ordinance will help the City and County of San Francisco meet its
13 goal of 100% renewable energy use in San Francisco by the year 2030.

14 I hereby certify that this Resolution was adopted at the Commission on the
15 Environment's Meeting on March 28, 2017.

16
17
18 
19 _____
Anthony Valdez, Commission Affairs Manager

20 Vote: 4-0 Approved
21 Ayes: Commissioners Bermejo, Hoyos, Stephenson and Wald
22 Noes: None
23 Absent: Commissioner Wan
24
25

File No. 170202

4/17/17- Presented in Committee

EV Ready Ordinance – Amendment 4/17/2017 

Section 4.106.4 ELECTRIC VEHICLE (EV) CHARGING FOR NEW CONSTRUCTION AND MAJOR ALTERATIONS.

Exceptions:

4. Where a project is undertaken specifically to meet the City's Mandatory Seismic Retrofit Program as required under Chapter 4A, 4B, or 4D of the San Francisco Existing Building Code.

EV Readiness – Protections for Major Alterations 

EV Readiness is applicable to Major Alterations:

- Interior finishes are removed,
- and the project area is >25,000 sq feet;
- and includes significant structural;
- and significant mechanical/electrical/ plumbing.

For residential major alterations, the ordinance:

- Does not require increased electrical service (p 5, line 20-25)
- Cannot add more than \$400/parking space to utility fees for new electrical service (p 6, line 19-22)
- Allows exemption for hardship or infeasibility (p 7, line 2-5)
- Exempts mandatory seismic retrofits (p 7, line 6-8)



100 Van Ness
A Major Alteration

4/10/2017 Received in Committee

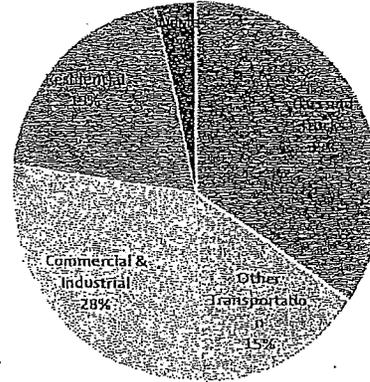
San Francisco Electric Vehicle Ready Ordinance

Staff Report

Updated: December 16, 2016

Plug-in electric vehicles (PEVs) benefit public health, the Bay Area's economy, and environmental sustainability. The American Lung Association estimates EV adoption can save Californians \$13 billion in health care per year by 2030.¹ Cars and trucks contribute 41% of communitywide greenhouse gas emissions in San Francisco, and PEVs fueled with renewable electricity are essential to the City's goal to reduce greenhouse gas emissions 80% by 2050. Using the grid for transport provides considerable emissions reduction today, and the benefit will increase as California's Renewable Portfolio Standard increases to 50% by 2030 (up from 28% today). PEVs alone – including electric taxis and car share – can reduce communitywide emissions 20%.²

San Francisco GHG Emissions Sources (2012)



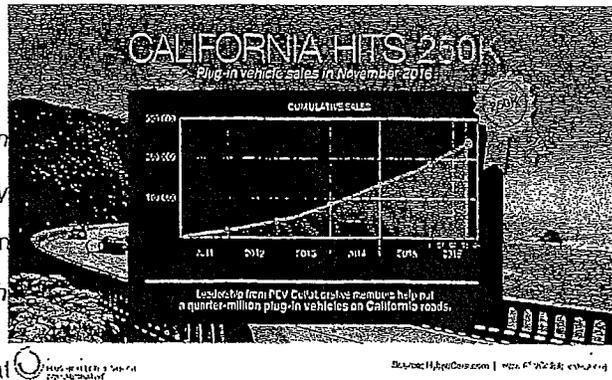
To foster PEV adoption, drivers must be able to fuel their vehicles. In most existing buildings, adding wiring to deliver electricity to a parking stall represents over half of the cost of installing an electric vehicle charger.³ Since existing buildings were not designed for EV charging, a large number of chargers can require upgrading major electrical components – which can be cost-prohibitive.

However, including electrical infrastructure for EV charging in new construction can reduce those costs by 75% or more.⁴ Given a prudent amount of capacity, innovative charging management systems can maximize the number of PEVs that can be served without electrical upgrades.

Market

Buildings last decades and the PEV market is growing. Governor Brown's goal is 1.5 million EVs on California roads by 2025, and we are on track to exceed this goal. By November 2016, more than 250,000 PEVs have been sold statewide.

Nearly 5% of new vehicle registrations in the Bay Area are PEVs.⁵ Demand for charging is growing accordingly, and is on track to greatly exceed the minimum EV preparedness required by California's Green Building Standards (CALGreen).



¹ American Lung Association (2016) *Health and*

² Siemens (2016) *Reaching 80x50: Technology*

³ Interviews with ARUP, CB Engineers, Stok En

⁴ Energy Solutions (2016) *Plug-In Electric Veh*
Francisco.

⁵ California Department of Motor Vehicles data

San Francisco Electric Vehicle Ready Ordinance

San Francisco vs. CALGreen – EV Readiness Requirements

	Non-Residential		Residential	
	CALGreen (January 1, 2017)	San Francisco Proposal	CALGreen	San Francisco Proposal
Minimum threshold	10 parking spaces	1 parking space	1-2 or 17+ units	1+ units
Spaces designed to serve PEVs	6%	100%	3%	100%

Proposed Applicability.

New residential, commercial and municipal buildings, as well as major alterations to commercial and residential buildings. (B, I, M, A and R occupancies)

The San Francisco Green Building Code defines major alterations as a project scope including >25,000 square feet project area; and significant structural improvement; and significant mechanical, electrical, or plumbing work. Such projects are colloquially, "gut rehabs", which afford comparable opportunities to new construction.

Objective

Cost-effectively support the transition to electric vehicles by ensuring new buildings and certain major renovations are prepared for today's electric vehicle market, and have flexibility to support charging as the EV market grows over the life of the building.

Recommendation

Require new buildings to be ready to deliver electricity for EV charging to any parking space by:

- **Turnkey EV Readiness in 10% of parking spaces:** Support today's EV market by installing full circuits to enable simple installation and activation of standard Level 2 chargers.
- **Flexible EV Readiness in an additional 10% of spaces:** Install conduit from electrical panel(s) to each parking space, enabling easy installation of Level 2 chargers and flexibility to upgrade.
- **All remaining spaces - EV Capable:** To maximize opportunity for expansion, require project plans to indicate the path of future wiring to each parking space. Install conduit only in locations that are far more economical to access in new construction.
- **Overall:** Size electrical infrastructure (electrical service, panels, transformers, etc.) to simultaneously charge vehicles in 20% of parking spaces: With this capacity, innovative load management systems afford the option to install an EV charger in every parking space.
- **Flexibility:** Allow upgrading to "fast chargers" if desired.

Benefits

- Prepares building for EV market growth; reduces cost and hassle to provide EV chargers.
- Not requiring chargers avoids locking in current technologies, and ensures flexibility to add chargers as needed.

San Francisco Electric Vehicle Ready Ordinance

- Does not change parking requirements or create new parking.

Cost

Electric vehicle charging can pose two categories electric infrastructure costs in new construction:

- Building electrical systems (Starting from electric meter, including wiring and all components)
- Local network (Upgrades to the electric grid, such as utility-owned transformers and other nearby infrastructure)

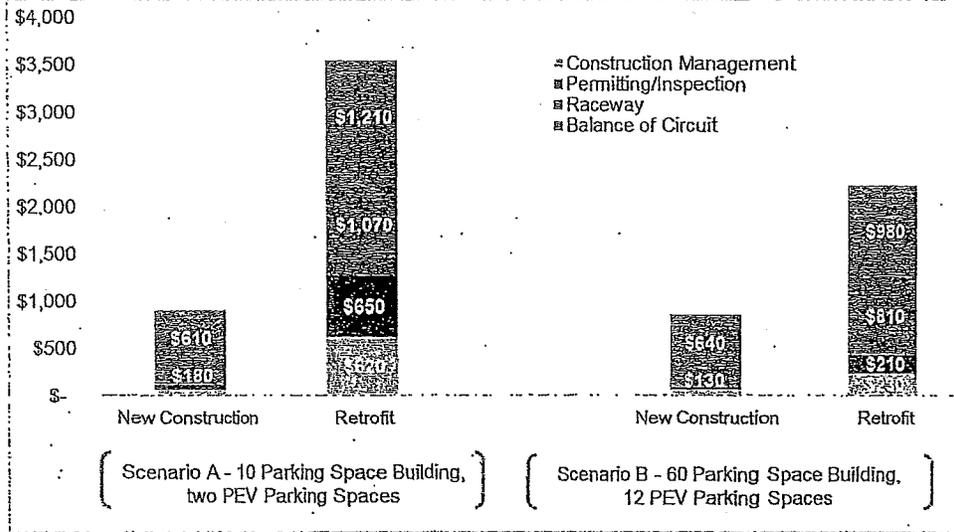
Building Electrical Systems

The report *Plug-In Electric Vehicle Infrastructure Cost-Effectiveness Report for San Francisco* found the ordinance as proposed poses minimal increase in the total cost of new construction, and considerable cost savings as chargers are installed. See: <http://bit.ly/evreadyscosteffectiveness>

Summary: Cost of EV Readiness

Total Parking Area	Number of Turnkey EV Ready Spaces	Cost Per Turnkey EV Ready Parking Space	Added Cost to Entire Building	Estimated Increase in Cost Per Parking Space
10 Parking Spaces	2	\$920	\$1,840	\$184
60 Parking Spaces	12	\$860	\$10,320	\$172

Cost of EV Ready New Construction & Major Renovation vs. Retrofit



Local Network Cost (Utility Grid)

Cost borne by the developer for establishing new utility service are variable, and there is no consistent relationship to building size, use, or type. Therefore, generally consistent with CALGreen, the proposal

San Francisco Electric Vehicle Ready Ordinance

caps the incremental cost of local network upgrades at \$400 per parking space or housing unit, whichever is greater.



SAN FRANCISCO
CLIMATE ACTION

0 50 100 ROOTS

KILROY
REALTY
CORPORATION

4/10/2017

Received in Committee

Dear Mayor Ed Lee and Supervisor Tang,

Kilroy Realty is committed to environmental sustainability, in the course of providing excellent service to our tenants. In both new development and existing buildings, we are committed to providing electric vehicle charging stations per tenant needs.

We would like to express our support for the proposed San Francisco Electric Vehicle Readiness Ordinance that is under consideration by the Board of Supervisors Land Use Committee today.

With the rapid increase in adoption of Electric Vehicles, the need to equip parking spaces with charging stations has increased dramatically. It can only increase further in the future.

Considering electric vehicle charging at time of design and construction will make it significantly easier to install electric vehicle chargers, and reduces the cost of retrofitting to add electrical infrastructure. Pragmatically, we have to note that San Francisco's zoning and related policies that limit parking and encourage transit reduce the cost of compliance with the ordinance. But, importantly, the ordinance reduces or eliminates a significant hurdle to Electric Vehicle adoption, so is a reasonable approach to stimulate the use of EVs by San Francisco residents, visitors, and commuters.

We find that the ordinance appropriately balances the needs to build for the future with the need to control costs today, and therefore fully support it.

With regards,
Sincerely,



Sara Neff
SVP, Sustainability
Kilroy Realty Corporation

4/10/2017

Amendments in Committee
(Tan a)

✓ ACCEPTED

EV Ready Ordinance – Amendments

- Clarified the ordinance is applicable to off-street parking spaces provided for Passenger Vehicles and Trucks (Sections 4.103.3.3, 4.106.4.2, and 5.106.5.3), and defined those vehicles (Section 202).
- Added the definition of Major Alterations; this definition is the basis for applicability of certain green building requirements in the San Francisco Green Building Code. This definition is nearly verbatim with the adopted version; the phrase “and additions” has been added.
- Added exemption for technical infeasibility of upgrading existing parking facilities to applicable accessibility requirements. (Section 4.106.4 Exception 3, and 5.103.3.3 (2).) This provision does not affect the applicability of any accessibility requirements that may be applicable under other laws.
- Referenced San Francisco Planning Code Section 154 *DIMENSIONS FOR OFF-STREET PARKING ... SPACES*, so that San Francisco’s allowances for compact parking spaces may continue to be applied.
- Require calculations of the number of EV spaces that must be equipped with a circuit for EV charging to be rounded up to the nearest whole number.
- Strike section 4.106.4.2.4 (b), and 5.106.5.3.2(b), which proposed requiring 10% of spaces to be equipped with either a 40-amp circuit or conduit without wire. Such spaces were referred to as “flexible EV spaces”. Sections 4.106.4.2.4(a) and 5.106.5.3.2(a) continue to require installation of a minimum 40 amp circuit for EV charging to a minimum of 10% of spaces.
- In place of the struck section, added:
 - 4.106.4.2.4(b), Requires electrical panels be installed with capacity sufficient for charging at 20% of spaces simultaneously. An exception allows panels installed on other floors to contribute to this requirement; this provision may be helpful for certain small infill projects where a parking space and within-unit electrical panel are in reasonable proximity to one another.
 - 4.106.4.2.4(c) Requires provision of space, such as wall space in parking areas, to be able to add panels in the future. This provision ensures limited physical space does not prevent the installation of charging serving all parking spaces. Requires installation of conduit or ‘sleeves’ through walls, where necessary, to ensure it is straightforward to expand charging to additional spaces.
 - 4.106.4.2.4(d) Requires engineering documents to demonstrate that the pertinent electrical system components are sufficient for the requirements of (a) through (c), above.
 - 4.106.4.2.4 Note 1 requests that the Department of Public Works accommodate Sidewalk Vault Encroachment Permits in cases where a transformer is necessary and cannot be accommodated on the project site.
- Amend Section 5.106.5.3.2(a) through (d) (applicable to non-residential occupancies) for consistency with the amendments above.
- Typographic corrections as necessary.

BOARD of SUPERVISORS



City Hall
Dr. Carlton B. Goodlett Place, Room 244
San Francisco 94102-4689
Tel. No. 554-5184
Fax No. 554-5163
TDD/TTY No. 554-5227

March 7, 2017

File No. 170202

Lisa Gibson
Acting Environmental Review Officer
Planning Department
1650 Mission Street, Ste. 400
San Francisco, CA 94103

Dear Ms. Gibson:

On February 28, 2017, Mayor Lee introduced the following proposed legislation:

File No. 170202

Ordinance amending the Green Building Code to establish requirements for installation of electric vehicle charger infrastructure in new buildings or buildings undergoing major alterations; affirming the Planning Department's determination under the California Environmental Quality Act; making findings under the California Health and Safety Code; and directing the Clerk of the Board of Supervisors to forward this Ordinance to the California Building Standards Commission upon final passage.

This legislation is being transmitted to you for environmental review.

Angela Calvillo, Clerk of the Board

for By: *Alisa Somera*
Alisa Somera, Legislative Deputy Director
Land Use and Transportation Committee

Attachment

c: Joy Navarrete, Environmental Planning
Jeanie Poling, Environmental Planning

BOARD of SUPERVISORS



City Hall
1 Dr. Carlton B. Goodlett Place, Room 244
San Francisco 94102-4689
Tel. No. 554-5184
Fax No. 554-5163
TDD/TTY No. 554-5227

MEMORANDUM

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

FROM: *ll*
for Alisa Somera, Legislative Deputy Director
Land Use and Transportation Committee

DATE: March 7, 2017

SUBJECT: LEGISLATION INTRODUCED

The Board of Supervisors' Land Use and Transportation Committee has received the following legislation, introduced by Mayor Lee on February 28, 2017:

File No. 170202

Ordinance amending the Green Building Code to establish requirements for installation of electric vehicle charger infrastructure in new buildings or buildings undergoing major alterations; affirming the Planning Department's determination under the California Environmental Quality Act; making findings under the California Health and Safety Code; and directing the Clerk of the Board of Supervisors to forward this Ordinance to the California Building Standards Commission upon final passage.

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: alisa.somera@sfgov.org.

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

BOARD of SUPERVISORS



City Hall
1 Dr. Carlton B. Goodlett Place, Room 244
San Francisco 94102-4689
Tel. No. 554-5184
Fax No. 554-5163
TDD/TTY No. 554-5227

MEMORANDUM

TO: Deborah Raphael, Director, Department of the Environment
Ed Reiskin, Executive Director, Municipal Transportation Agency
John Rahaim, Director, Planning Department

FROM: *ll*
for Alisa Somera, Legislative Deputy Director
Land Use and Transportation Committee

DATE: March 7, 2017

SUBJECT: LEGISLATION INTRODUCED

The Board of Supervisors' Land Use and Transportation Committee has received the following proposed legislation, introduced by Supervisor Mayor Lee on February 28, 2017:

File No. 170202

Ordinance amending the Green Building Code to establish requirements for installation of electric vehicle charger infrastructure in new buildings or buildings undergoing major alterations; affirming the Planning Department's determination under the California Environmental Quality Act; making findings under the California Health and Safety Code; and directing the Clerk of the Board of Supervisors to forward this Ordinance to the California Building Standards Commission upon final passage.

If you have comments or reports to be included with the file, please forward them to me at the Board of Supervisors, City Hall, Room 244, 1 Dr. Carlton B. Goodlett Place, San Francisco, CA 94102 or by email at: alisa.somera@sfgov.org.

c: Guillermo Rodriguez, Department of the Environment
Anthony Valdez, Department of the Environment
Janet Martinsen, Municipal Transportation Agency
Kate Breen, Municipal Transportation Agency
Dillon Auyoung, Municipal Transportation Agency
Viktoriya Wise, Municipal Transportation Agency
Scott Sanchez, Planning Department

Lisa Gibson, Planning Department
AnMarie Rodgers, Planning Department
Aaron Starr, Planning Department
Joy Navarrete, Planning Department
Jeanie Poling, Planning Department

OFFICE OF THE MAYOR
SAN FRANCISCO



EDWIN M. LEE

RECEIVED
2/28/2017 @ 5:17pm

TO: Angela Calvillo, Clerk of the Board of Supervisors
FROM: ^{for} Mayor Edwin M. Lee 
RE: Green Building Code - Requirements for Installation of Electric Vehicle
Chargers
DATE: February 28, 2017

Attached for introduction to the Board of Supervisors is an ordinance amending the Green Building Code to establish requirements for installation of electric vehicle charger infrastructure in new buildings or buildings undergoing major alterations; affirming the Planning Department's determination under the California Environmental Quality Act; making findings under the California Health and Safety Code; and directing the Clerk of the Board of Supervisors to forward this ordinance to the California Building Standards Commission upon final passage.

Please note that this legislation is co-sponsored by Supervisor Katy Tang.

Should you have any questions, please contact Mawuli Tugbenyoh (415) 554-5168.

170202