

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.

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

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 cConstruction 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 c~~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 serving 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.*
25

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.*

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

[Revise this section as follows:]

SEC. 4.106.4.2.5. IDENTIFICATION.

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

Notes:

1. The California Department of Transportation adopts and publishes the “California Manual on Uniform Traffic Control Devices (California MUTCD)” to provide uniform standards and specifications for all official traffic control devices in California. Zero Emission Vehicle Signs and Pavement Markings can be found in the New Policies & Directives Number 13-01. Website: <http://www.dot.ca.gov/hq/traffops/policy/13-01.pdf>.
2. See Vehicle Code Section 22511 for EV charging space signage in off-street parking facilities and for use of EV charging spaces.
3. The Governor’s Office of Planning and Research (OPR) published a “Zero-Emission Vehicle Community Readiness Guidebook” which provides helpful information for local governments, residents and businesses. Website: 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. ~~[N]~~**

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. ~~[N]~~**

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. ~~FN~~**

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 d~~Design 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. ~~[N]~~**

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.

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

[Revise this section as follows:]

SEC. 5.106.5.3.5. ~~[N]~~

Future charging spaces qualify as designated parking as described in Section 5.106.5.2; Designated parking for clean air vehicles.

Notes:

- 1. The California Department of Transportation adopts and publishes the California Manual on Uniform Traffic Control Devices (California MUTCD) to provide uniform standards and specifications for all official traffic control devices in California. Zero Emission Vehicle Signs and Pavement Markings can be found in the New Policies & Directives number 13-01. www.dot.ca.gov/hq/traffops/policy/13-01.pdf.
- 2. See Vehicle Code Section 22511 for EV charging spaces signage in off-street parking facilities and for use of EV charging spaces.
- 3. The Governor’s Office of Planning and Research published a Zero-Emission Vehicle Community Readiness Guidebook which provides helpful information for local governments, residents and businesses. www.opr.ca.gov/docs/ZEV_Guidebook.pdf.

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

CHAPTER 27: ELECTRIC VEHICLE READINESS IMPLEMENTATION.

SEC. 2701. PURPOSE.

The purpose of this Chapter 27 is to encourage the utilization of electric service 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 ~~23~~25. 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 ~~24~~26. 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 ~~25~~27. 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
19 By: _____
20 NEHA GUPTA
Deputy City Attorney

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