



# 2019 Energy Code Building Energy Efficiency Standards Training



Wednesday, November 6, 2019



8:00 AM to 11:30 AM



City Staff, Contractors, Architects & Students. All Are Welcome !

Attend this program to learn how the latest version of the Standards will affect building design in your commercial and residential new construction projects.

At the conclusion of the presentation, participants will have an overview understanding of:

- Changes in scope, and new and revised mandatory and prescriptive requirements for:
  - Nonresidential building envelope design
  - Electrical lighting and associated controls
  - Mechanical systems and associated controls
- Changes in scope and application of 2019 Title 24 Energy Standards as they relate to low-rise residential buildings



Doors Open at 7:30 AM !

[Click Here to Register Now !](#)

Come and Enjoy some Hot Coffee While You Learn From the Energy Experts!

4 AIA Learning Units

Registration Link: <http://events.constantcontact.com/register/event?>

Where: **UC Riverside, Palm Desert**

75080 Frank Sinatra Drive, Room B200, Palm Desert CA 92211

**Free! Free! Free! Free! Free! Free! Free! Free!**

For More Information, please call 760 323 8214



ORDINANCE NO. \_\_\_\_\_

AN ORDINANCE OF THE CITY OF PALM SPRINGS, CALIFORNIA, AMENDING PALM SPRINGS ZONING CODE CHAPTER 93.00 TO ADD SECTIONS 93.16.00 THROUGH 93.16.09 AND AMEND SECTIONS 92.17.1.01, 92.17.2.01, 92.20.01 92.21.01 AND 93.03.00 TO FACILITATE SOLAR ENERGY SYSTEMS (CASE 5.1470 ZTA).

***City Attorney's Summary***

*This Ordinance adds a new Chapter to the Palm Springs Zoning Code that will facilitate the installation of solar energy systems by establishing height, visibility and setback standards and allowing solar energy systems in all zoning districts. Additional requirements will apply for structures in Environmentally Sensitive Area Specific Plan zones. This Ordinance also will help streamline installation of solar energy systems on new residential construction three (3) stories and under, which will be required as part of the 2019 California Energy Code, which takes effect January 1, 2020.*

THE CITY COUNCIL FINDS AND DETERMINES AS FOLLOWS:

- A. The Sustainability Commission of the City of Palm Springs, by vote of 11 to 0 at its meeting of March 19, 2019, approved draft amendments to the Zoning Code to encourage the use and development of solar energy systems and solar energy facilities and recommended that the City forward the draft ordinance to the Planning Commission for adoption.
- B. Notice of a public hearing of the Planning Commission of the City of Palm Springs to consider Case 5.1470 ZTA was given in accordance with applicable law.
- C. On June 26, 2019, a public hearing on the proposed Zone Text Amendment was held by the Planning Commission in accordance with applicable law, at which meeting the Planning Commission voted 5-0-2 to recommend approval of the proposed amendments.
- D. On July 24, 2019, the City Council held a noticed public hearing on the proposed Zone Text Amendment in accordance with applicable law. Following the public hearing, City Council provided direction to the Planning and Sustainability Commissions and voted 5-0 to table the Zone Text Amendment pending further revisions by these Commissions to ensure the Amendment was sufficiently supportive of solar energy system adoption.
- E. The Sustainability Commission, by vote of 10-0-1 at its meeting of September 17, 2019, approved the revised amendments to the Zoning Code and recommended that the City forward the revised ordinance to the Planning Commission for adoption.

F. Notice of a public hearing of the Planning Commission of the City of Palm Springs to consider Case 5.1470 ZTA was given in accordance with applicable law.

G. On October 10, 2019, a public hearing on the revised Zone Text Amendment was held by the Planning Commission in accordance with applicable law, at which meeting the Planning Commission voted \_ to \_ to recommend approval of the proposed amendments.

H. On November 6, 2019, the City Council held a noticed public hearing on the revised Zone Text Amendment in accordance with applicable law.

I. The proposed Zone Text Amendment is not subject to the California Environmental Quality Act (Public Resources Code Section 21000 *et. seq.*) pursuant to Section 15060(c)(2) and 15060(c)(3) of the State Guidelines, because the Ordinance will not result in a direct or reasonably foreseeable indirect physical change in the environment and is not a "project," as that term is defined in Section 15378 of the State Guidelines. Certain structures and projects allowable under this proposed Zone Text Amendment would require an environmental evaluation under the California Environmental Quality Act (CEQA) at the time an application is filed for such development.

J. The City Council has carefully reviewed and considered all the evidence presented in connection with the hearing on the Zone Text Amendment, including, but not limited to, the staff report, and all written and oral testimony presented.

K. The City Council finds that approval of the proposed Zone Text Amendment would:

1. Allow solar energy systems in all zoning districts, with additional requirements for the Environmentally Sensitive Area Specific Plan zone.

2. Provide guidelines for placement, height, and setbacks for solar energy systems.

3. Facilitate implementation of the 2019 California Energy Code, which takes effect January 1, 2020, by providing a consolidated location for city solar zoning requirements. The new Energy Code will, among its provisions, require all new residential construction three (3) stories and under to install a solar energy system.

4. Implement the following goals of the General Plan:

- Support and encourage the use of alternative energy in the construction of new buildings and retrofit of existing buildings;
- Encourage and support the incorporation of energy efficiency and conservation practices in subdivision and building design;
- Make the maximum use of solar electric capabilities on an individual and community wide basis.

5. Implement the following goals of the Sustainability Plan:

- Develop strategies to reduce community-wide contributions to greenhouse gas emissions to 1990 levels by 2020 and 80% below 1990 by 2050;
- Encourage the building or retrofitting of one million square feet of green buildings;
- Reduce the total energy use by all buildings built before 2012 by 10%;
- Reduce energy use and carbon use from new homes and buildings;
- Supply 50% of all energy from renewable sources by 2030.

THE CITY COUNCIL OF THE CITY OF PALM SPRINGS DOES HEREBY ORDAIN AS FOLLOWS:

**SECTION 1.** That the findings and determinations reflected above are true and correct and are incorporated by this reference herein as the cause and foundation for the action taken by and through this Ordinance.

**SECTION 2.** Chapter 93.00 of the Palm Springs Zoning Code is amended to add Sections 93.16.00 through 93.16.09 as follows:

**93.16.00 Solar Energy Systems and Facilities**

Sections 93.16.00 through 93.16.09 constitute the zoning regulations for solar energy systems and solar energy facilities in the City.

**93.16.01 Short Title**

Sections 93.16.00 through 93.16.09 may be referred to as the Solar Zoning Ordinance of the City of Palm Springs.

**93.16.02 Purpose**

Recognizing that the Sustainability Plan has set a vision of Palm Springs as a high efficiency, renewable energy city, the City Council finds that it is in the public interest to reduce energy demand, encourage the use and development of solar energy systems as a clean, renewable energy source and to help promote local, renewable energy jobs. The purpose of this Solar Zoning Ordinance is to facilitate the effective and efficient use of solar energy systems by the residents, businesses and institutions of Palm Springs while protecting the public health, safety and welfare.

**93.16.03 Definitions**

“Solar access” means space open to the sun and clear of overhangs or shade, including access across adjacent parcel air rights, for the purpose of capturing direct sunlight to operate a solar energy system.

“Solar energy system” shall have the meaning assigned to it in Section 8.100.020 of the Palm Springs Municipal Code.

“Solar energy facilities” means an alternative energy facility that consists of one or more ground-mounted or free-standing solar collection devices, solar energy related equipment (including storage) and other associated infrastructure with the primary intention of generating electricity or otherwise converting solar energy to a different form of energy for primarily commercial or other off-site use.

#### **93.16.04 Permitted Accessory Use**

A. Solar energy systems are permitted in all zoning districts as an accessory use to a permitted principal use subject to the standards for accessory uses in the applicable zoning district and the specific criteria set forth in this Solar Zoning Ordinance. In the ESA-SP zone, a solar energy system that is structurally mounted to the roof of a single-family dwelling or multi-family residential building that is permitted under Section 92.21.1.01 shall be considered an accessory use under Subdivisions (A)(2) and (B)(6) of such section.

B. For purposes of determining compliance with building coverage standards of the applicable zoning district, the total horizontal projection area of all ground-mounted and free-standing solar collectors, including solar photovoltaic cells, panels, arrays, inverters, shall be considered pervious coverage only if pervious conditions are maintained underneath the solar photovoltaic cells, panels, and arrays.

C. Installation or replacement of solar energy systems that does not change the use or the basic exterior characteristics or appearance of a non-conforming building or structure is allowed.

D. Solar energy systems may generate energy in excess of the energy requirements of a property if the energy is to be credited under an applicable net energy metering program or used or stored onsite.

#### **93.16.05 Height, Visibility and Setback Requirements**

A. Roof-mounted solar energy systems shall be subject to the following requirements and allowances:

1. Roof-mounted solar energy systems may extend up to five (5) feet above the roof surface on which they are installed, even if this exceeds the maximum height limit in the zoning district in which the structure is located.

2. Roof-mounted solar energy systems shall be designed and located in a manner that minimizes their visibility from public streets without decreasing the energy performance of the system by more than ten (10) percent as compared with a more visible location. All solar energy systems on single-family dwellings not conforming to the roof profile are subject to the approval of the Director.

B. Ground-mounted solar energy systems shall be subject to the following requirements and allowances:

1. All ground-mounted solar energy systems for single-family dwellings are subject to the approval of the Director.

2. All other ground-mounted solar energy systems shall be designed and located in a manner that minimizes their visibility from public streets without decreasing the energy performance of the system by more than ten (10) percent as compared with a more visible location.

3. The setback of ground-mounted solar energy systems accessory to a multi-family dwelling principal use or accessory to a principal use in non-residential zoning districts is subject to the following additional standards:

a. Solar collectors are allowed to be located up to one half (1/2) of the setback that would otherwise apply from the front, side or rear property line.

b. Accessory equipment also may be installed within the required side and rear setback but shall not be closer than two (2) feet to any property line.

C. The review and determination of visibility from public streets shall be made by the Director. The review and determination of performance of solar collectors shall be made by the City Manager or designee.

D. Solar energy systems in the ESA-SP zoning district shall comply with the design standards set out in Section 92.21.1.05.

### **93.16.06 Solar Energy Facilities**

As stated in Subdivision (D)(9)(a) of Section 92.17.1.01, Subdivision (D)(7)(a) of Section 92.17.2.01, Subdivisions (B)(1)(b)(i) and (B)(2)(a)(i) of Section 92.20.01 and Subdivision (D)(2)(a) of Section 92.21.01, solar energy facilities may be permitted in the zoning districts referred to in such sections, subject to approval of a conditional use permit, as provided in Section 94.02.00.

### **93.16.07 Protection of Solar Access**

A structure, fence, or wall shall not be constructed or modified in a residential zoning district so as to obstruct the solar access of a solar energy system on a neighboring parcel to a degree that significantly decreases (as such term is defined in Subdivision (B)(2)(a) of Section 93.16.05) the energy performance of the system. The Planning Commission may modify this requirement if it finds that strict compliance would unduly limit property development, or unduly interfere with the development potential as envisioned for the area in the General Plan or Zoning Code. Vegetation is encouraged to be sited to reduce solar gain while not obstructing solar access insofar as practical.

### **93.16.08 Solar Orientation**

Dwelling units in subdivisions of five (5) or more lots are encouraged to be sited to reduce solar gain as well as to take advantage of solar access and provide maximum exposure of roof area to the sun insofar as practical, including their orientation with respect to sun angles.

### **93.16.09 Building, Construction and Permitting**

Building, construction and permitting of solar energy systems and solar energy facilities shall be subject to the provisions of Title 8 of the Palm Springs Municipal Code including Chapters 8.04, 8.05 and 8.100 thereof, as applicable.

**SECTION 3.** The term “solar collectors” in Subdivision (D)(9)(a) of Section 92.17.1.01, Subdivision (D)(7)(a) of Section 92.17.2.01, Subdivisions (B)(1)(b)(i) and (B)(2)(a)(i) of Section 92.20.01 and Subdivision (D)(2)(a) of Section 92.21.01 is replaced by the term “Solar energy facilities as defined in Section 93.16.03”.

**SECTION 4.** Subdivision (C)(3) of Section 93.03.00 of the Palm Springs Zoning Code is rescinded.

**SECTION 5.** If any section or provision of this Ordinance is for any reason held to be invalid or unconstitutional by any court of competent jurisdiction, or contravened by reason of any preemptive legislation, the remaining sections and/or provisions of this ordinance shall remain valid. The City Council hereby declares that it would have adopted this Ordinance, and each section or provision thereof, regardless of the fact that any one or more section(s) or provision(s) may be declared invalid or unconstitutional or contravened via legislation.

**SECTION 6.** The proposed Zone Text Amendment is not subject to the California Environmental Quality Act (Public Resources Code Section 21000 et seq.) pursuant to Section 15060(c)(2) and 15060(c)(3) of the State Guidelines, because the Ordinance will not result in a direct or reasonably foreseeable indirect physical change in the environment and is not a "project," as that term is defined in Section 15378 of the State Guidelines.

**SECTION 7.** The Mayor shall sign and the City Clerk shall certify to the passage and adoption of this Ordinance and shall cause the same, or the summary thereof, to be published and posted pursuant to the provisions of law and this Ordinance shall take effect thirty (30) days after passage.

PASSED, APPROVED, AND ADOPTED BY THE PALM SPRINGS CITY COUNCIL THIS 6th DAY OF NOVEMBER, 2019.

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Robert Moon, Mayor

ATTEST:

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Anthony Mejia, MMC, City Clerk

CERTIFICATION

STATE OF CALIFORNIA )  
COUNTY OF RIVERSIDE ) ss.  
CITY OF PALM SPRINGS )

I, Anthony Mejia, City Clerk of the City of Palm Springs, California, do hereby certify that Ordinance No. \_\_\_\_\_ is a full, true, and correct copy, and introduced by the City Council at a regular meeting held on the 6th day of November, 2019, and adopted at a regular meeting of the City Council held on the [4th] day of December, 2019 by the following vote:

AYES:  
NOES:  
ABSENT:  
ABSTAIN:

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ANTHONY MEJIA, MMC  
CITY CLERK

ORDINANCE NO. \_\_\_\_\_

AN ORDINANCE OF THE CITY OF PALM SPRINGS, CALIFORNIA, AMENDING PALM SPRINGS ZONING CODE CHAPTER 93.00 TO ADD SECTIONS 93.16.00 THROUGH 93.16.09 AND AMEND SECTIONS 92.17.1.01, 92.17.2.01, 92.20.01 92.21.01 AND 93.03.00 TO FACILITATE SOLAR ENERGY SYSTEMS (CASE 5.1470 ZTA).

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- E. The Sustainability Commission, by vote of ~~to~~ 10-0-1 at its meeting of September 17, 2019, approved the revised amendments to the Zoning Code and recommended that the City forward the revised ordinance to the Planning Commission for adoption.

F. Notice of a public hearing of the Planning Commission of the City of Palm Springs to consider Case 5.1470 ZTA was given in accordance with applicable law.

G. On ~~[September 25]~~, October 10, 2019, a public hearing on the revised Zone Text Amendment was held by the Planning Commission in accordance with applicable law, at which meeting the Planning Commission voted \_ to \_ to recommend approval of the proposed amendments.

H. On ~~[October 23]~~, November 6, 2019, the City Council held a noticed public hearing on the revised Zone Text Amendment in accordance with applicable law.

I. The proposed Zone Text Amendment is not subject to the California Environmental Quality Act (Public Resources Code Section 21000 *et. seq.*) pursuant to Section 15060(c)(2) and 15060(c)(3) of the State Guidelines, because the Ordinance will not result in a direct or reasonably foreseeable indirect physical change in the environment and is not a "project," as that term is defined in Section 15378 of the State Guidelines. Certain structures and projects allowable under this proposed Zone Text Amendment would require an environmental evaluation under the California Environmental Quality Act (CEQA) at the time an application is filed for such development.

J. The City Council has carefully reviewed and considered all the evidence presented in connection with the hearing on the Zone Text Amendment, including, but not limited to, the staff report, and all written and oral testimony presented.

K. The City Council finds that approval of the proposed Zone Text Amendment would:

1. Allow solar energy systems in all zoning districts, with additional requirements for the Environmentally Sensitive Area Specific Plan zone.

2. Provide guidelines for placement, height, and setbacks for solar energy systems.

3. Facilitate implementation of the 2019 California Energy Code, which takes effect January 1, 2020, by providing a consolidated location for city solar zoning requirements. The new Energy Code will, among its provisions, require all new residential construction three (3) stories and under to install a solar energy system.

4. Implement the following goals of the General Plan:

- Support and encourage the use of alternative energy in the construction of new buildings and retrofit of existing buildings;
- Encourage and support the incorporation of energy efficiency and conservation practices in subdivision and building design;
- Make the maximum use of solar electric capabilities on an individual and community wide basis.

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- Develop strategies to reduce community-wide contributions to greenhouse gas emissions to 1990 levels by 2020 and 80% below 1990 by 2050;
- Encourage the building or retrofitting of one million square feet of green buildings;
- Reduce the total energy use by all buildings built before 2012 by 10%;
- Reduce energy use and carbon use from new homes and buildings;
- Supply 50% of all energy from renewable sources by 2030.

THE CITY COUNCIL OF THE CITY OF PALM SPRINGS DOES HEREBY ORDAIN AS FOLLOWS:

**SECTION 1.** That the findings and determinations reflected above are true and correct and are incorporated by this reference herein as the cause and foundation for the action taken by and through this Ordinance.

**SECTION 2.** Chapter 93.00 of the Palm Springs Zoning Code is amended to add Sections 93.16.00 through 93.16.09 as follows:

**93.16.00 Solar Energy Systems and Facilities**

Sections 93.16.00 through 93.16.09 constitute the zoning regulations for solar energy systems and solar energy facilities in the City.

**93.16.01 Short Title**

Sections 93.16.00 through 93.16.09 may be referred to as the Solar Zoning Ordinance of the City of Palm Springs.

**93.16.02 Purpose**

Recognizing that the Sustainability Plan has set a vision of Palm Springs as a high efficiency, renewable energy city, the City Council finds that it is in the public interest to reduce energy demand, encourage the use and development of solar energy systems as a clean, renewable energy source and to help promote local, renewable energy jobs. The purpose of this Solar Zoning Ordinance is to facilitate the effective and efficient use of solar energy systems by the residents, businesses and institutions of Palm Springs while protecting the public health, safety and welfare.

**93.16.03 Definitions**

“Solar access” means space open to the sun and clear of overhangs or shade, including access across adjacent parcel air rights, for the purpose of capturing direct sunlight to operate a solar energy system.

“Solar energy system” shall have the meaning assigned to it in Section 8.100.020 of the Palm Springs Municipal Code.

“Solar energy facilities” means an alternative energy facility that consists of one or more ground-mounted or free-standing solar collection devices, solar energy related equipment (including storage) and other associated infrastructure with the primary intention of generating electricity or otherwise converting solar energy to a different form of energy for primarily commercial or other off-site use.

#### **93.16.04 Permitted Accessory Use**

A. Solar energy systems are permitted in all zoning districts as an accessory use to a permitted principal use subject to the standards for accessory uses in the applicable zoning district and the specific criteria set forth in this Solar Zoning Ordinance. In the ESA-SP zone, a solar energy system that is structurally mounted to the roof of a single-family dwelling or multi-family residential building that is permitted under Section 92.21.1.01 shall be considered an accessory use under Subdivisions (A)(2) and (B)(6) of such section.

B. For purposes of determining compliance with building coverage standards of the applicable zoning district, the total horizontal projection area of all ground-mounted and free-standing solar collectors, including solar photovoltaic cells, panels, arrays, inverters, shall be considered pervious coverage only if pervious conditions are maintained underneath the solar photovoltaic cells, panels, and arrays.

C. Installation or replacement of solar energy systems that does not change the use or the basic exterior characteristics or appearance of a non-conforming building or structure is allowed.

D. Solar energy systems may generate energy in excess of the energy requirements of a property if the energy is to be credited under an applicable net energy metering program or used or stored onsite.

#### **93.16.05 Height, Visibility and Setback Requirements**

A. Roof-mounted solar energy systems shall be subject to the following requirements and allowances:

1. Roof-mounted solar energy systems may extend up to five (5) feet above the roof surface on which they are installed, even if this exceeds the maximum height limit in the zoning district in which the structure is located.

2. Roof-mounted solar energy systems shall be designed and located in a manner that minimizes their visibility from public streets without ~~compromising the effectiveness of the solar collectors, decreasing the energy performance of the system by more than ten (10) percent as compared with a more visible location.~~ All solar energy systems on single-family dwellings not conforming to the roof profile are subject to the approval of the Director.

B. Ground-mounted solar energy systems shall be subject to the following requirements and allowances:

1. All ground-mounted solar energy systems for single-family dwellings are subject to the approval of the Director.

2. All other ground-mounted solar energy systems shall be designed and located in a manner that minimizes their visibility from public streets without ~~compromising the effectiveness of the solar collectors~~decreasing the energy performance of the system by more than ten (10) percent as compared with a more visible location.

3. The setback of ground-mounted solar energy systems accessory to a multi-family dwelling principal use or accessory to a principal use in non-residential zoning districts is subject to the following additional standards:

a. Solar collectors are allowed to be located up to one half (1/2) of the setback that would otherwise apply from the front, side or rear property line.

b. Accessory equipment also may be installed within the required side and rear setback but shall not be closer than two (2) feet to any property line.

C. The review and determination of visibility from public streets shall be made by the Director. The review and determination of ~~effectiveness~~performance of solar collectors shall be made by the City Manager ~~of the Office of Sustainability or designee.~~

D. Solar energy systems in the ESA-SP zoning district shall comply with the design standards set out in Section 92.21.1.05.

### **93.16.06 Solar Energy Facilities**

As stated in Subdivision (D)(9)(a) of Section 92.17.1.01, Subdivision (D)(7)(a) of Section 92.17.2.01, Subdivisions (B)(1)(b)(i) and (B)(2)(a)(i) of Section 92.20.01 and Subdivision (D)(2)(a) of Section 92.21.01, solar energy facilities may be permitted in the zoning districts referred to in such sections, subject to approval of a conditional use permit, as provided in Section 94.02.00.

### **93.16.07 Protection of Solar Access**

A structure, fence, or wall shall not be constructed or modified in a residential zoning district so as to obstruct the solar access of a solar energy system on a neighboring parcel to a degree that significantly decreases (as such term is defined in Subdivision (B)(2)(a) of Section 93.16.05) the energy performance of the system. The Planning Commission may modify this requirement if it finds that strict compliance would unduly limit property development, or unduly interfere with the development potential as envisioned for the area in the General Plan or Zoning Code. Vegetation is encouraged to be sited to reduce solar gain while not obstructing solar access insofar as practical.

### **93.16.08 Solar Orientation**

Dwelling units in subdivisions of five (5) or more lots are encouraged to be sited to reduce solar gain as well as to take advantage of solar access and provide maximum exposure of roof area to the sun insofar as practical, including their orientation with respect to sun angles.

### **93.16.09 Building, Construction and Permitting**

Building, construction and permitting of solar energy systems and solar energy facilities shall be subject to the provisions of Title 8 of the Palm Springs Municipal Code including Chapters 8.04, 8.05 and 8.100 thereof, as applicable.

**SECTION 3.** The term “solar collectors” in Subdivision (D)(9)(a) of Section 92.17.1.01, Subdivision (D)(7)(a) of Section 92.17.2.01, Subdivisions (B)(1)(b)(i) and (B)(2)(a)(i) of Section 92.20.01 and Subdivision (D)(2)(a) of Section 92.21.01 is replaced by the term “Solar energy facilities as defined in Section 93.16.03”.

**SECTION 4.** Subdivision (C)(3) of Section 93.03.00 of the Palm Springs Zoning Code is rescinded.

**SECTION 5.** If any section or provision of this Ordinance is for any reason held to be invalid or unconstitutional by any court of competent jurisdiction, or contravened by reason of any preemptive legislation, the remaining sections and/or provisions of this ordinance shall remain valid. The City Council hereby declares that it would have adopted this Ordinance, and each section or provision thereof, regardless of the fact that any one or more section(s) or provision(s) may be declared invalid or unconstitutional or contravened via legislation.

**SECTION 6.** The proposed Zone Text Amendment is not subject to the California Environmental Quality Act (Public Resources Code Section 21000 et seq.) pursuant to Section 15060(c)(2) and 15060(c)(3) of the State Guidelines, because the Ordinance will not result in a direct or reasonably foreseeable indirect physical change in the environment and is not a "project," as that term is defined in Section 15378 of the State Guidelines.

**SECTION 7.** The Mayor shall sign and the City Clerk shall certify to the passage and adoption of this Ordinance and shall cause the same, or the summary thereof, to be published and posted pursuant to the provisions of law and this Ordinance shall take effect thirty (30) days after passage.

PASSED, APPROVED, AND ADOPTED BY THE PALM SPRINGS CITY COUNCIL THIS  
      6th DAY OF       NOVEMBER, 2019.

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Robert Moon, Mayor

ATTEST:

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Anthony Mejia, MMC, City Clerk

CERTIFICATION

STATE OF CALIFORNIA )  
COUNTY OF RIVERSIDE ) ss.  
CITY OF PALM SPRINGS )

I, Anthony Mejia, City Clerk of the City of Palm Springs, California, do hereby certify that Ordinance No. \_\_\_\_\_ is a full, true, and correct copy, and introduced by the City Council at a regular meeting held on the 6th day of ~~October~~November, 2019, and adopted at a regular meeting of the City Council held on the 4th day of ~~November~~December, 2019 by the following vote:

AYES:  
NOES:  
ABSENT:  
ABSTAIN:

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ANTHONY MEJIA, MMC  
CITY CLERK



## MEMORANDUM

DATE: August 19, 2019

SUBJECT: Home Energy Audit Program

TO: Commissioners Flanagan and Goins, Solar and Green Building Committee Members  
Patrick Tallarico, Manager, Office of Sustainability

FROM: David Freedman, Solar and Green Building Committee Member

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At the Committee's June meeting we discussed home energy efficiency labels and agreed to investigate a voluntary pilot program. If approved by the Committee and Commission, the City would provide up to \$10,000 to fund a rebate program available to homeowners that participate in an energy audit program.

Berkeley and Portland have energy audit requirements. Both programs use the Home Energy Score based on US Department of Energy (DOE) standards. The Home Energy Score Report estimates home energy use and associated costs and provides cost-effective energy solutions to improve the home's efficiency. Each Home Energy Score is shown on a simple one-to-ten scale, where a ten represents the most efficient homes. A sample Home Energy Score Report is included as Attachment 1.

Berkeley's Building Energy Saving Ordinance (BESO) requires an audit prior to sale of a house of up to four dwelling units or whole building under 25,000 square feet (<https://www.cityofberkeley.info/BESO/>). The report is filed with the city and a filing fee is charged (\$79 for a house of up to four dwelling units or building under 5,000 square feet and \$152 for a building 5,000 to 24,999 square feet). Berkeley requires energy assessors to register with the City and posts a list of the registered energy assessors. Berkeley does not include energy efficiency suggestions in its report as the ones generated using the DOE software are not aligned with the city's recently adopted electrification ordinance. Berkeley does not subsidize the report but allows transfer of BESO compliance from seller to buyer at the time of sale. The deferral requires the buyer to complete an energy assessment within 12 months of the sale date.

Portland requires the audit at the time of listing of a single-family house (<https://www.pdxhes.com/>). The score must be included in the listing or advertising and displayed at the house. Portland estimates the cost to be between \$150-\$250 per audit and offers a free assessment to households whose income is at or below 60 percent of median family income for the local area.

Currently, there are no DOE-certified assessors of the Home Energy Score in the Coachella Valley. One home inspector in Palm Desert hopes to obtain the certification by the end of September. This inspector currently provides a home energy report using the template of the International Association of Certified Home Inspectors (InterNACHI). A sample InterNACHI report is available at <http://energytool.nachi.org/my-report/268b94e-mpioih>. The report estimates the home's yearly energy usage, pinpoints potential energy inefficiencies, develops recommendations for energy improvements and determines potential energy savings based on a typical family's energy usage. The inspector charges \$175 for the report on a stand-alone basis or \$100 if included with a home inspection.

In addition to the DOE and InterNACHI home energy audit standards, California has its own standard home energy audit performed by qualified HERS raters, called a “Whole House Rating” or commonly referred to as a “HERS II” test. The audit (or rating, because it generates a score) creates a computer model of the home, but once done it can be useful for recommending upgrades and improvements. The audit can take four to eight hours and cost from \$300 to \$600 depending on level of detail and service the homeowner requires. The rating score represents the energy use of the home relative to a house that meets the 2008 Energy Code. A score of 120 means the house uses 20% more than a house that meets the 2008 Energy Code. A score of 75 means it uses 25% less. A Zero Net Energy house would get a score of zero. As the California Energy Commission does not mandate this report in connection with new construction, additions or alterations, there are no current plans to update the software to tie it to the 2019 Energy Code that enters into effect on January 1, 2020. A sample HERS II report is included as Attachment 2.

A comparison of the three standards for home energy audits (DOE, InterNACHI and HERS) is included as Attachment 3. At the September 3 Committee meeting, Patrick and I would like to get your feedback on:

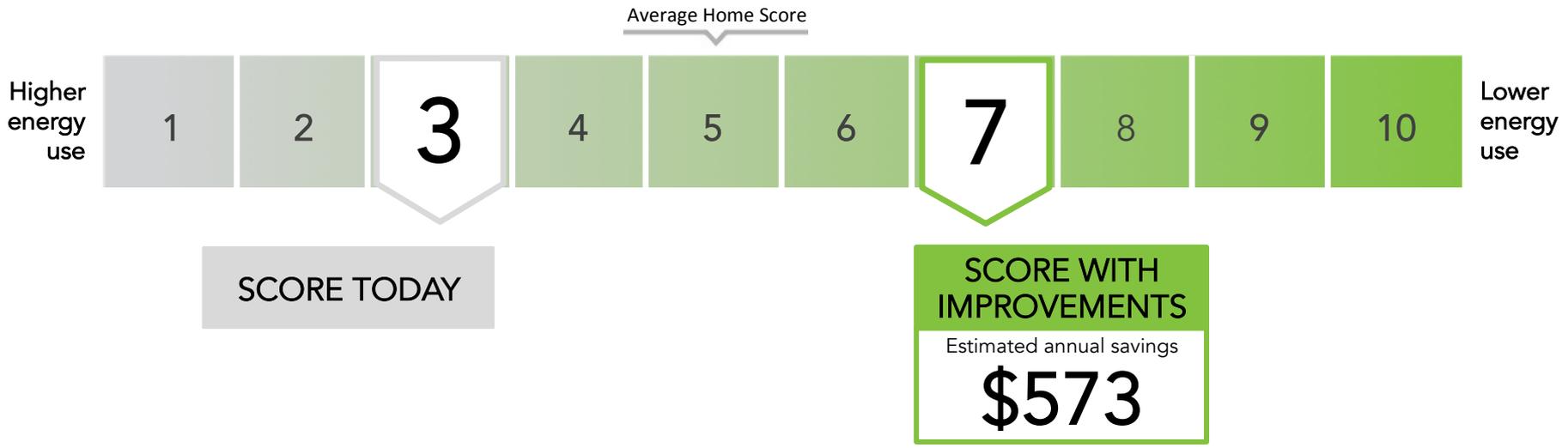
- 1) Preference for one program over another.
- 2) Picking one program versus giving the homeowner a choice of programs eligible for a rebate.
- 3) Rebate amount (e.g., a \$10,000 program could fund a \$100 rebate for 100 audits).
- 4) Should this program should be linked to the home buying process, and if so, how.

This type of program could serve as a precursor to a more robust program that could be done when the City makes the switch to Desert Community Energy (DCE). The program would be subject to DCE Board approval and input from DCE's Community Advisory Committee, but the City's initial work could provide important lessons learned about the effectiveness of such a program.

CONDITIONED FLOOR AREA: 1,500 ft<sup>2</sup>  
YEAR BUILT: 1970

12345 Honeysuckle Lane  
Smithville, AR 72466

SCORE TODAY **3**



The U.S. Department of Energy's Home Energy Score assesses the energy efficiency of a home based on its structure and heating, cooling, and hot water systems. For more information visit [HomeEnergyScore.gov](http://HomeEnergyScore.gov).

12345 Honeysuckle Lane  
Smithville, AR 72466SCORE  
TODAY**3**

## Home Facts

The Home Energy Score's Home Facts includes details about the home's current structure, systems, and estimated energy use. For more information about how the score is calculated, visit our website at [HomeEnergyScore.gov](http://HomeEnergyScore.gov).

## About This Home



### ASSESSMENT

Type	Official
Assessor ID	#1234567
Scoring tool version	v2016

### HOME CONSTRUCTION

Year built	1970
Number of bedrooms	3
Stories above ground level	1
Interior floor-to-ceiling height	10
Conditioned floor area	1,500 ft <sup>2</sup>
Direction faced by front of house	North
Air sealed?	No
Air leakage rate	6,500 CFM50

## Estimated Annual Energy Use



### ENERGY BY TYPE

Total	204 MBtus
Score basis	141 MBtus
Electricity	11,956 kWh
Natural gas	519 therms
Propane	226 gallons

### COST BASIS

Electricity	\$0.091 / kWh
Natural gas	\$1.153 / therms
Propane	\$2.171 / gallon
Energy cost per square foot	\$1.45 / ft <sup>2</sup>

### DEFINITIONS & CONVERSIONS

MBtu	Million British thermal units; generic energy unit
kWh	Kilowatt-hour; electricity unit
Therm	100,000 Btu; heat energy unit
Electricity conversion	1 MBtu = 293 kWh
Heat conversion	1 MBtu = 10 therms

12345 Honeysuckle Lane  
Smithville, AR 72466

SCORE TODAY **3**

## Home Facts

The Home Energy Score's Home Facts includes details about the home's current structure, systems, and estimated energy use. For more information about how the score is calculated, visit our website at [HomeEnergyScore.gov](http://HomeEnergyScore.gov).

## Roof / Attic



### ROOF / ATTIC 1

Attic floor area	500 ft <sup>2</sup>
Roof construction	Roof with Radiant Barrier / Composition Shingles or Metal / R-0
Roof color	Medium dark
Attic: ceiling type	Unconditioned attic
Attic floor insulation	R-25

### ROOF / ATTIC 2

Attic floor area	1,000 ft <sup>2</sup>
Roof construction	Standard Roof / Composition Shingles or Metal / R-0
Roof color	Medium dark
Attic: ceiling type	Unconditioned attic
Attic floor insulation	R-9

## Foundation



### FOUNDATION / FLOOR 1

Floor area	500 ft <sup>2</sup>
Foundation type	Slab-on-grade foundation
Foundation walls insulation	R-0

### FOUNDATION / FLOOR 2

Floor area	1,000 ft <sup>2</sup>
Foundation type	Unconditioned basement
Floor insulation above foundation	R-0
Foundation walls insulation	R-0

## Walls



<u>WALL CONSTRUCTION</u>	<u>TYPE / EXTERIOR FINISH</u>	<u>INSULATION VALUE</u>
Front	Wood frame with Optimum Value Engineering (OVE) / Brick Veneer	R-19
Back	Wood frame / Wood, Asbestos, Fiber Cement, Shingle, or Masonite	R-0
Right	Concrete block or stone / Stucco	R-3
Left	Wood frame with rigid foam sheathing / aluminum siding	R-3

12345 Honeysuckle Lane  
Smithville, AR 72466

SCORE TODAY **3**

## Home Facts

The Home Energy Score's Home Facts includes details about the home's current structure, systems, and estimated energy use. For more information about how the score is calculated, visit our website at [HomeEnergyScore.gov](http://HomeEnergyScore.gov).

## Windows & Skylights



### WINDOW AREA

Front	70 ft <sup>2</sup>
Back	90 ft <sup>2</sup>
Right	40 ft <sup>2</sup>
Left	30 ft <sup>2</sup>

<u>WINDOW CONSTRUCTION</u>	<u>PANES</u>	<u>FRAME</u>	<u>GLAZING or U-VALUE &amp; SHGC</u>
Front	Single	Aluminum	Clear
Back	Double	Wood or Vinyl	Solar-controlled low-E
Right	Double	Aluminum w/ thermal break	Insulating low-E, argon gas fill
Left	Triple	Wood or vinyl	Insulating low-E, argon gas fill

### SKYLIGHTS ROOF / ATTIC 1

Present?	Yes		
Area	30 ft <sup>2</sup>		
Type	Single	Aluminum	Tinted

### SKYLIGHTS ROOF / ATTIC 2

Present?	No
----------	----

12345 Honeysuckle Lane  
Smithville, AR 72466

SCORE TODAY **3**

## Home Facts

The Home Energy Score's Home Facts includes details about the home's current structure, systems, and estimated energy use. For more information about how the score is calculated, visit our website at [HomeEnergyScore.gov](http://HomeEnergyScore.gov).

## Systems



### HVAC SYSTEM 1

Percent conditioned area served **33%**  
 Heating type **Electric heat pump**  
 Heating efficiency value **7.8 HSPF**  
 Cooling type **Electric heat pump**  
 Cooling efficiency value **12 SEER**

### DUCT SYSTEM 1

	<u>INSULATED?</u>	<u>SEALED?</u>	<u>PERCENT OF DUCTS IN THIS LOCATION</u>
Unconditioned attic	Yes	No	100%

### HVAC SYSTEM 2

Percent conditioned area served **67%**  
 Heating type **Central gas furnace**  
 Heating installation year **2009**  
 Cooling type **Central air conditioning**  
 Cooling installation year **2009**

### DUCT SYSTEM 2

	<u>INSULATED?</u>	<u>SEALED?</u>	<u>PERCENT OF DUCTS IN THIS LOCATION</u>
Unconditioned basement	No	No	50%
Unconditioned attic	No	No	25%
Conditioned space	No	No	25%

### HOT WATER

System type **LPG storage**  
 Installation year **1997**

12345 Honeysuckle Lane  
Smithville, AR 72466SCORE  
TODAY

3

## Recommendations

The Home Energy Score's Recommendations show how to improve the energy efficiency of the home to achieve a higher score and save money. When making energy related upgrades, homeowners should consult with a certified energy professional or other technically qualified contractor to ensure proper sizing, installation, safety, and adherence to code. Learn more at [HomeEnergyScore.gov](http://HomeEnergyScore.gov).

**REPAIR NOW.** These improvements will save you money, conserve energy, and improve your comfort.



- ▶ **Air Tightness:** Have a professional seal all the gaps and cracks that leak air to save **\$110** / year
- ▶ **Ducts 1:** Add insulation around ducts in unconditioned spaces to at least R-6 to save **\$43** / year
- ▶ **Attic 2:** Increase attic floor insulation to at least R-19 to save **\$57** / year
- ▶ **Ducts 2:** Add insulation around ducts in unconditioned spaces to at least R-6 to save **\$23** / year
- ▶ **Ducts 2:** Have a professional seal all the gaps and cracks that leak air to save **\$74** / year

**REPLACE LATER.** These improvements will help you save energy when it's time to replace or upgrade.



- ▶ **Windows:** Choose those with an ENERGY STAR label to save **\$61** / year
- ▶ **Water Heater:** Choose one with an ENERGY STAR label to save **\$159** / year
- ▶ **Electric Heat Pump:** Choose one with an ENERGY STAR label to save **\$32** / year

## Comments



Current local incentives may make this house a good candidate for a new water heater.

# California Home Energy Audit Certificate

## Energy Impact

### Greenhouse Gas Emissions

CO<sub>2</sub> = 3.86 tons/year

### Energy Consumption

Electricity (kWh/year)	
Heating	772
Cooling	603
Water Heating	0
Lights	623
Appliances	2,992
<b>Total</b>	<b>4,990</b>

### Natural Gas (therms/year)

Heating	155
Cooling	0
Water Heating	194
Lights	0
Appliances	17
<b>Total</b>	<b>366</b>

### Operating Cost (\$/year)

Electricity	\$588
Gas	\$366
<b>Total</b>	<b>\$954</b>

### Renewable Energy Production

Electricity 0

### Ancillary Energy Uses

Electricity 0  
Gas 0

### Information on Compliance With Other Programs:

N/A



### Qualifying Information: BPC NOT AUTHORIZED

Software estimates are based on typical occupancy patterns which may be different from your household use patterns. As a result, these software estimates may not match the household's energy actual consumption. Occupant's energy use patterns may change after energy efficiency upgrades.

### HERS Provider:

CalCERTS, Inc  
31 Natoma St Suite 120  
Folsom, CA 95630  
916-985-3400  
www.calcerts.com

### Rating Information

Rating Number: CC11-1798847021  
EnergyPro Version: 5.1.9.1  
Certified Rater: John Rater  
USR999999  
John Rater's HVAC  
Folsom, 95630  
Rating Date: March 26, 2014



Official Home Energy Audit  
in conformance with the  
requirements of the  
California Energy  
Commission  
www.energy.ca.gov

## Site Information

### Address

1301 Bidwell  
Folsom, CA 95630

### General Information

Conditioned Floor Area 1,184 ft<sup>2</sup>  
Conditioned Volume 9,476 ft<sup>3</sup>  
Bedrooms 2  
House Type Single Family  
Foundation Type Slab on Grade

## Energy Efficiency Features

### Insulation

Ceiling R-30  
Wall R-13  
Floor Over Crawlspace None  
Slab Edge None, 0

### Windows

SHGC 0.63, 0.67, 0.83  
U-Factor 0.66, 0.84, 1.19

### Heating System

Gas Furnace 0.95 AFUE  
Ducted  
Electric Heat Pump 9 HSPF  
Ductless Fan  
Electric Heat Pump 9 HSPF  
Ductless Fan

### Cooling System

Split A/C 14.5 SEER  
Ducted  
Split A/C 18 SEER  
Ductless  
Split A/C 18 SEER  
Ductless

### Ventilation System

None

### Water Heating System

1 - 50 Gal GasFired (0.6 EF)

ELECTRONICALLY SIGNED by

*John Rater*

at CalCERTS, Inc

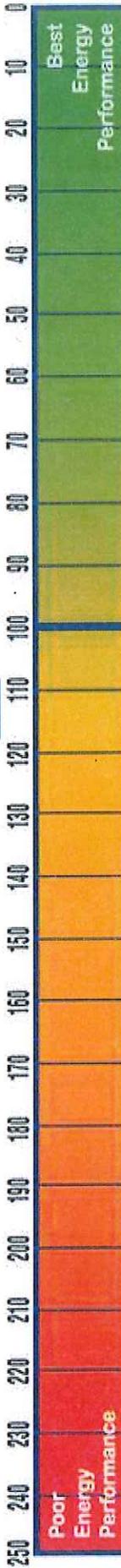
Energy Auditor Signature

Date: \_\_\_\_\_

# California Home Energy Rating Certificate

YOUR HOME

113



250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

High Energy Efficiency / Solar Home

2008 Standards New Home

Net Zero Energy Home

**Information on Compliance With Other Programs:**  
N/A

**Energy Impact**

**Greenhouse Gas Emissions**  
CO<sub>2</sub> = 3.86 tons/year

**Energy Consumption**  
Electricity (kWh/year)

Heating	772
Cooling	603
Water Heating	0
Lights	623
Appliances	2,992
<b>Total</b>	<b>4,990</b>

Natural Gas (therms/year)	155
Heating	0
Cooling	194
Water Heating	0
Lights	17
Appliances	366
<b>Total</b>	<b>666</b>

**Operating Cost (\$/year)**

Electricity	\$588
Gas	\$366
<b>Total</b>	<b>\$954</b>

**Renewable Energy Production**  
Electricity 0

**Ancillary Energy Uses**  
Electricity 0  
Gas 0

**Qualifying Information:**  
**BPC NOT AUTHORIZED**

Software estimates are based on typical occupancy patterns which may be different from your household use patterns. As a result, these software estimates may not match the household's energy actual consumption. Occupant's energy use patterns may change after energy efficiency upgrades.



**Site Information**

**Address**  
1301 Bidwell  
Folsom, CA 95630

**General Information**  
Conditioned 1,184 ft<sup>2</sup>  
Floor Area  
Bedrooms 2  
House Type Single Family  
Foundation Type Slab on Grade

**Energy Efficiency Features**

**Insulation**  
Ceiling R-30  
Wall R-13  
Floor Over Crawlspace None  
Slab Edge None, 0

**Windows**  
SHGC 0.63, 0.67, 0.83  
U-Factor 0.66, 0.84, 1.19

**Heating System**  
GasFurnace 0.95 AFUE  
Ducted

Electric Heat Pump 9 HSPF  
DuctlessFan  
Electric Heat Pump 9 HSPF  
DuctlessFan

**Cooling System**  
Split A/C 14.5 SEER  
Ducted  
Split A/C 18 SEER  
Ductless  
Split A/C 18 SEER  
Ductless

**Water Heating System**  
1 - 50 Gal GasFired (0.6 EF)

**Official Home Energy Rating**  
in conformance with the requirements of the  
California Energy Commission  
www.energy.ca.gov



**HERS Provider:**  
CALCERTS, Inc  
31 Natoma St Suite 120  
Folsom, CA 95630  
916-985-3400  
www.calcerts.com

**Rating Information**

Rating Number: CC11-1798847021  
EnergyPro Version: 5.1.9.1  
Certified Rater: John Rater  
USR9999999  
John Rater's HVAC  
Folsom, 95630

Rating Date: March 26, 2014  
ELECTRONICALLY SIGNED by

**John Rater**  
at CalCERTS, Inc

Rater Signature \_\_\_\_\_ Date \_\_\_\_\_



## Explanation of Energy Features

### General Information

Your **2** bedroom, **Single Family** home built in **1985** has **1,184** square feet of Conditioned Floor Area, and has a volume of **9,476** cubic feet. Conditioned floor area means how large is the part of your home that is served by your heating and cooling system. Your garage is not conditioned floor area. A porch that is outside or an added room that has no duct work in it are also examples of unconditioned floor area. The number of bedrooms and whether yours is a single family home or a multifamily home are factors that are used to help estimate energy usage and occupancy behavior.

Home energy software estimates are based on typical occupancy patterns and thermostat settings, hot water use, appliance use, and other factors, which may be different than your household's use patterns. As a result consumers are cautioned that these software estimates may not match the household's actual energy savings. It's also possible that your energy use patterns may change after energy efficiency upgrades as household members adjust to new equipment and changed comfort conditions.

### Energy Efficiency Features in Your Home

**Insulation** is used to help slow down the gain or loss of heat in your home. Insulation can be installed in walls, attics (called "ceiling insulation"), around the ducts and along the edge of the slab, or under the floor. More insulation is better, if it is installed properly. Insulation is measured in R-Value, so the higher the R number, the better the insulation. The insulation in your Ceiling is **R-30**; the insulation in your Walls is **R-13**; the insulation in your Crawlspace is **None**; the insulation on your Slab Edge is **None, 0**.

**Windows** are an important energy feature. After all, a window is just a large hole in the wall, so it is an important factor in saving energy. The window frame transfers heat directly into and out of your home, and it needs to keep unwanted air from leaking around the window into your home. The glass may be single or dual pane (dual pane is more energy efficient) and the glass may have some special characteristics that add even more energy efficiency. Your home has windows with SHGC Ratings of **0.63, 0.67, 0.83** and U-Factors of **0.66, 0.84, 1.19**.

**The Heating System** is one of the highest users of energy in your home, depending on the climate where you live. It is very important for both comfort and health and safety. Your home has **3** systems. System #1 has a **Gas Furnace** with an **AFUE** of **0.95**. System #2 has a **Electric Heat Pump** with an **HSPF** of **9**. System #3 has a **Electric Heat Pump** with an **HSPF** of **9**. AFUE means "Annual Fuel Utilization Efficiency". This is just a fancy term for how energy efficient is the heating system...just like "miles per gallon" of your car. Of course, the better miles per gallon your car gets, the less fuel you have to buy, so it is the same with your heating system, which translates to lower utility bills.

**The Cooling System** is also a very high energy user, again, depending on whether you live in a hot or cold climate area. Your home has **3** systems. Cooling system #1 is a **Split A/C** and has a **SEER** value of **14.5**. Cooling system #2 is a **Split A/C** and has a **SEER** value of **18**. Cooling system #3 is a **Split A/C** and has a **SEER** value of **18**. SEER is the "miles per gallon" number for air conditioners. SEER stands for "Seasonal Energy Efficiency Ratio".

**A Ventilation System** is used to provide fresh air, circulate it, and remove stale air at a specific rate. Your home Does Not Have a ventilation system.

**The Water Heating System** in your home is another pretty large user of energy, especially if it is older, leaky or has little or no insulation on it or in it. There are many different types of water heating systems. The most common is a "storage tank" that uses gas to heat the water and then keep it in the tank until it is needed. The efficiency of a hot water heating system is usually stated by the "energy factor". The higher the number, the more efficient the system is. The Hot Water Heating System in your home is a **Gas Fired**, and the Energy Factor is **0.6**.



## Custom Alternatives and Recommendations

The list of Recommended Custom Improvements indicates how each individual improvement affects the energy efficiency of your home. The list below shows you the savings that are possible if you make each of the Recommended Improvements independently. In order to see how each improvement will affect your energy efficiency if all were installed, we suggest you run a Standard Report.

Improving only your home's **Roof Insulation** to **R-49.0** will improve your home's HERS Index Score to **110** and provide an individual estimated annual savings of **\$16**.

Improving only your home's **Building Leakage** to a CFM of **1860** will improve your home's HERS Index Score to **111** and provide an individual estimated annual savings of **\$22**.

Improving only your home's **Appliances** by getting a Dishwasher with an **Energy Factor** of **0.67** and by getting an indoor refrigerator that uses **450** will improve your home's HERS Index Score to **109** and provide an individual estimated annual savings of **\$32**.

Improving only your home's **Domestic Hot Water Heater** to a **Gas Fired** with a **0.0 Gallon Capacity** and an EF Rating of **0.840** will improve your home's HERS Index Score to **106** and provide an individual estimated annual savings of **\$68**.

Improving **ALL of the Above Improvements** to your home will improve your home's HERS Index Score to **96** and provide an individual estimated annual savings of **\$136**.

CalCERTS, inc.®

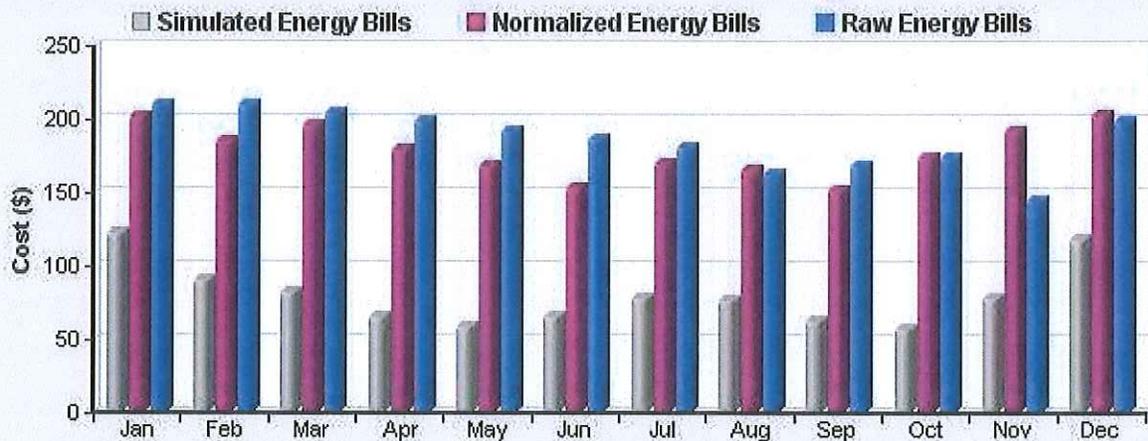




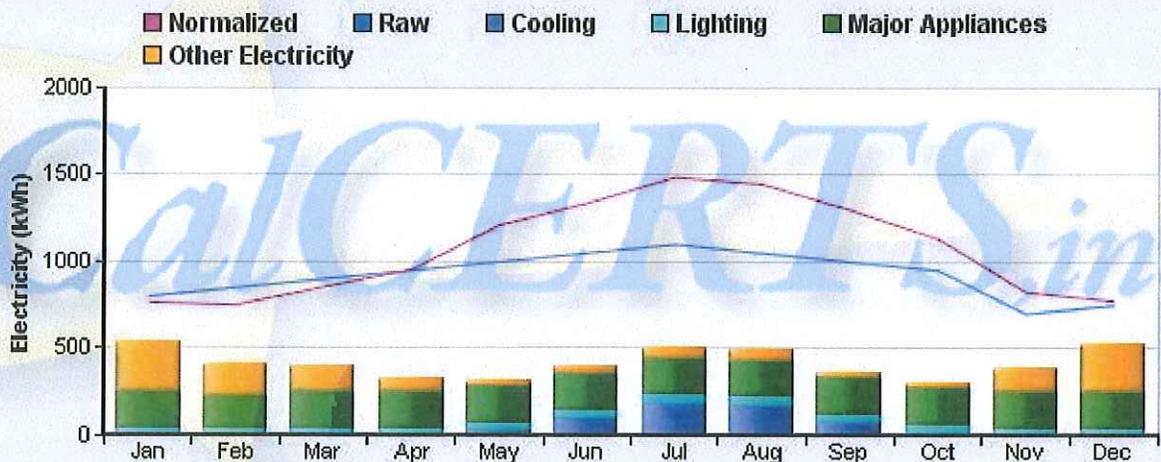
# California Home Energy Consumption Analysis

Rating Number: CC11-1798847021 EnergyPro Version: 5.1.9.1 Rating Date: March 26, 2014 Page 1 of 2

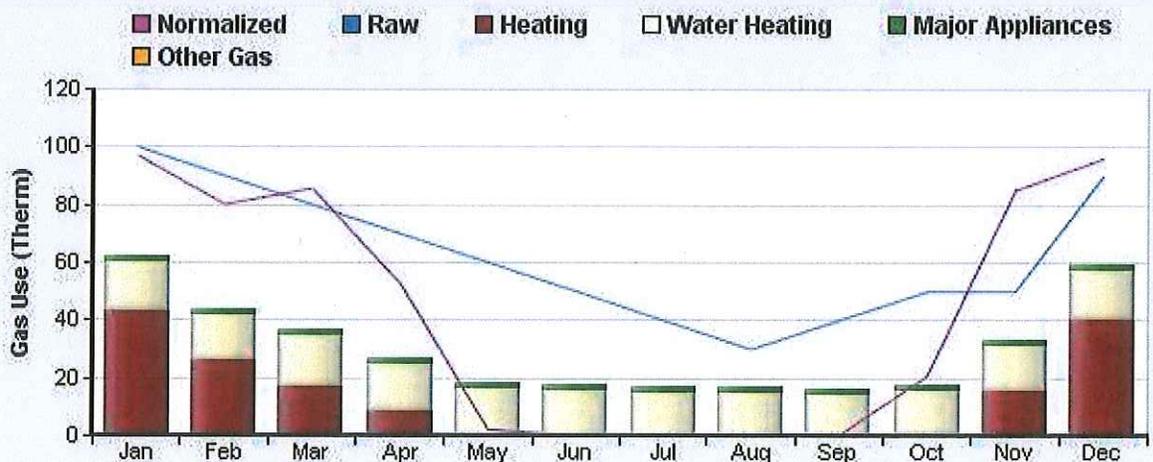
## Energy Cost



## Electricity Use



## Gas Use



# California Home Energy Consumption Analysis

Rating Number: CC11-1798847021 EnergyPro Version: 5.1.9.1 Rating Date: March 26, 2014 Page 2 of 2

## TABULAR REPORT

Month	Electricity		Gas		Total Cost
	Cost	kWh Used	Cost	Therms Used	
<b>Jan</b>	\$90.00	800	\$120.00	100	\$210.00
<b>Feb</b>	\$102.00	850	\$108.00	90	\$210.00
<b>Mar</b>	\$108.00	900	\$96.00	80	\$204.00
<b>Apr</b>	\$114.00	950	\$84.00	70	\$198.00
<b>May</b>	\$120.00	1000	\$72.00	60	\$192.00
<b>Jun</b>	\$126.00	1050	\$60.00	50	\$186.00
<b>Jul</b>	\$132.00	1100	\$48.00	40	\$180.00
<b>Aug</b>	\$126.00	1050	\$36.00	30	\$162.00
<b>Sep</b>	\$120.00	1000	\$48.00	40	\$168.00
<b>Oct</b>	\$114.00	950	\$60.00	50	\$174.00
<b>Nov</b>	\$84.00	700	\$60.00	50	\$144.00
<b>Dec</b>	\$90.00	750	\$108.00	90	\$198.00

## Utility Rates

Type	Electricity	Electricity	Gas	Gas
<b>Name</b>	SMUD RSE, RSC	SMUD RSE, RSC	PG&E G1 R	PG&E G1 R
<b>Season</b>	SMUD RSE, RSC Winter	SMUD RSE, RSC, RSG Summer	PG&E G1 R Winter	PG&E G1 R Summer
<b>CO2</b>	.69	.69	11.65	11.65
<b>Meter Charge</b>	\$7.20	\$7.20	\$0.00	\$0.00
<b>Tier 1 Rate</b>	\$0.097	\$0.105	\$0.981	\$0.981
<b>Tier 1 Threshold</b>	1120	700	55	14
<b>Tier 2 Rate</b>	\$0.179	\$0.186	\$1.24	\$1.24
<b>Tier 2 Threshold</b>	0	0	0	0
<b>Tier 3 Rate</b>	\$0	\$0	\$0	\$0
<b>Tier 3 Threshold</b>	0	0	0	0





## Home Energy Audit Report Comparison Chart

Report Name	Home Energy Score	HERS II Rating	Home Energy Report
Certifying Entity	Department of Energy	CalCERTS / CHEERS	InterNACHI
Currently available in Coachella Valley	No	Yes	Yes
Includes rating	Yes	Yes	No
Rating linked to house sale / listing	Yes	No	No
Rating system	1-10 (higher is better)	0-250 (lower is better)	None
Diagnostic testing	Blower door optional; cannot enter duct blaster measurement into Home Energy Score	Blower door, duct blaster	None
Number of data inputs	50+	50+	About 40
Field work + data input time	1.25 hours	4 – 8 hours	10 minutes, if done as part of a general home inspection; less than one hour, if done as a stand-alone inspection service
Estimated cost	\$150 – \$250	\$300 – \$600	\$100 with concurrent home inspection, \$175 without
Estimated Annual Energy Use	Yes	Yes	Yes
Energy Efficiency Recommendations	Yes	Yes	Yes
Estimated Energy Efficiency Cost Savings	Yes	Yes	Yes



CITY COUNCIL  
**Staff Report**

**Meeting Date:** Feb. 26, 2019  
**To:** Mayor and City Council  
**From:** Scott Chadwick, City Manager  
**Staff Contact:** David de Cordova, Principal Planner/Michael Grim, Sr. Program Manager  
[David.deCordova@carlsbadca.gov](mailto:David.deCordova@carlsbadca.gov) or 760-602-4604  
[Mike.Grim@carlsbadca.gov](mailto:Mike.Grim@carlsbadca.gov) or 760-602-4623

**Subject:** Introduce an Energy Conservation Ordinance and Electric Vehicle Charging Infrastructure Ordinance.

**Project Name:** Climate Action Plan Ordinances  
**Project No.:** MCA 17-0002 (PUB17Y-0013)

**Recommended Action**

Introduce ordinances amending Carlsbad Municipal Code, Title 18, Chapters 18.21 and 18.30 regarding energy efficiency, renewable energy, alternative water heating and electric vehicle charging infrastructure for residential and nonresidential new construction and major renovations.

**Executive Summary**

The city’s Climate Action Plan (CAP) was adopted by the City Council on September 22, 2015. The CAP calls for the adoption of ordinances related to energy efficiency, renewable energy, alternative water heating and electric vehicle charging infrastructure. Implementation of these ordinances is intended to reduce greenhouse gas (GHG) emissions and assist in reaching the GHG reduction targets contained in the CAP. These ordinances amend Title 18 of the Carlsbad Municipal Code, and therefore require City Council approval. The energy-related ordinances also constitute amendments to the California Building Code Title 24, Parts 6 and 11, and must receive approval from the California Energy Commission (CEC) and be filed with the California Building Standards Commission (CBSC) prior to implementation. The electric vehicle charging ordinance amends the California Building Code Title 24, Part 11 (CALGreen) and will become effective 30 days after City Council adoption and after filing with the CBSC.

**Discussion**

The city’s Climate Action Plan (CAP), adopted by the City Council on September 22, 2015, calls for the adoption of ordinances related to energy efficiency, renewable energy, alternative water heating and electric vehicle charging infrastructure. Implementation of these ordinances is intended to reduce greenhouse gas (GHG) emissions and assist in reaching GHG reduction targets contained in the CAP.

Generally, the ordinances are designed to reduce energy consumption, increase local production of renewable energy, reduce natural gas usage for water heating and reduce GHG

emissions from vehicles. The purpose, general requirements and applicability of each ordinance is described below. A summary of the specific ordinance requirements is contained in Exhibit 4.

### Energy Conservation Ordinances

*Energy Efficiency* – the purpose of the energy efficiency provisions is to increase the energy efficiency of residential and nonresidential buildings. This is accomplished through inclusion of cost-effective energy efficiency measures in new construction and/or major renovations.

Residential efficiency provisions apply to renovations of existing single-family and multi-family residential buildings with a building permit valuation of \$60,000 or more. This is the same threshold that triggers a local Coastal Development Permit. Building permit applicants can opt to perform a home energy assessment and be exempted from the ordinance requirements if they achieve a minimum energy efficiency score.

Nonresidential efficiency provisions apply to all new construction and major renovations adding more than 1,000 square feet of floor area or with a building permit valuation of \$200,000 or more.

*Photovoltaic (PV) Energy* – the purpose of the PV provisions is to increase the amount of locally generated renewable energy in nonresidential buildings. This is accomplished through the inclusion of cost-effective PV systems in new construction and major renovations.

The PV provisions apply to all new nonresidential construction and major renovations with a building permit valuation of \$1,000,000 or more that affect 75 percent or more of the existing floor area. It also applies to projects increasing the existing roof area by 2,000 or more square feet.

*Water Heating* – the purpose of the water heating provisions is to reduce the usage of natural gas for heating water in residential and nonresidential buildings. This is accomplished through the inclusion of cost-effective energy-efficient electric water heaters and/or solar water heating systems in all new residential and nonresidential construction. A separate residential water heating ordinance is proposed because its provisions rely on the 2019 Energy Code update, which will become effective on January 1, 2020. As such, the local ordinance amending residential water heating requirements will not become effective until January 1, 2020.

Electric Vehicle (EV) Ordinance – the purpose of the electric vehicle ordinance is to promote increased EV use by providing more opportunity for EV charging. This is accomplished through the inclusion of cost-effective EV charging infrastructure in new construction and major renovations.

The ordinance applies to all new residential and nonresidential construction. The ordinance also applies to major residential renovations, which are defined as: 1) one and two-family dwellings and townhouses with an attached garage, whose project includes an electrical service panel upgrade, or has a building permit valuation of \$60,000 or more; and 2) a multifamily project

(three or more dwellings) undergoing replacement/upgrade of major building systems, which includes 2,500 square feet or more of site work (grading, parking area replacement/addition, or landscaping), and has a building permit valuation of \$200,000 or more.

#### Cost-effectiveness

Public Resources Code Section 2502.1(h)2 requires that local jurisdictions perform and submit to the CEC a “cost effectiveness” study with supporting analysis showing that ordinances with additional energy saving measures are cost-effective. City staff partnered with the California Energy Codes and Standards team, as well as the Center for Sustainable Energy (CSE) and TRC Solutions, to prepare cost-effectiveness studies for the proposed energy conservation ordinance. All studies followed CEC analysis protocol and showed that the energy saving measures in the proposed ordinance are cost-effective based upon utility bill savings by the customer.

The city also worked with CSE and TRC to prepare a cost-effectiveness study for the EV ordinance, even though this is not required by state law. All studies are on file with the City Clerk’s Office and available for public review.

#### Fiscal Analysis

Cost associated with administering these ordinances will be recovered through plan check, permitting and inspection fees currently in effect. No fee modifications are proposed.

#### Next Steps

Upon adoption, the energy conservation ordinance (energy efficiency, PV, and water heating) will be submitted to the CEC for review and approval. The ordinance will become effective upon CEC approval and after filing with the CBSC. The residential water heating provisions will become effective on January 1, 2020, concurrent with the statewide 2019 Building Standards Code update. The EV ordinance will become effective 30 days after City Council adoption and filing with the CBSC.

#### Environmental Evaluation (CEQA)

The project was previously evaluated in the Final Program Environmental Impact Report (EIR) for the General Plan update (GPA 07-02), Climate Action Plan (SS 15-05) and other documents (EIR 13-02), dated September 22, 2015. The EIR evaluated the potential environmental effects of the implementation of the Climate Action Plan including the adoption and enforcement of energy conservation and electric vehicle charging infrastructure ordinances. This project is within the scope of the Final Program EIR 13-02 and no further California Environmental Quality Act (CEQA) compliance is required.

#### Public Notification

The city conducted a variety of public outreach efforts for the CAP ordinances, including: individual and group stakeholder meetings; presentations at the Carlsbad Chamber of Commerce, Carlsbad Sustainability Coalition and Building Industry Association (BIA); press releases and a news article in Carlsbad Business Journal; and distribution of fact sheets through emails to interested parties and displays at the Development Services front counter. The draft ordinances were posted on the city’s website for public review and comment.

This item was noticed in accordance with the Ralph M. Brown Act and was available for public viewing and review at least 72 hours prior to scheduled meeting date.

**Exhibits**

1. Ordinance amending Title 18, Chapters 18.21 and 18.30 for energy efficiency, PV systems and nonresidential water heating systems
2. Ordinance amending Title 18, Chapter 18.30 for residential water heating systems
3. Ordinance amending Title 18, Chapter 18.21 for electric vehicle charging infrastructure
4. Summary of ordinance applicability and requirements
5. Proposed text changes to Carlsbad Municipal Code Chapters 18.21 and 18.30 for energy efficiency, photovoltaic and alternative water heating systems
6. Proposed text changes to Carlsbad Municipal Code Chapter 18.21 for electric vehicle infrastructure



## SUMMARY OF PROPOSED ENERGY CONSERVATION AND ELECTRIC VEHICLE CHARGING INFRASTRUCTURE ORDINANCES

The city's Climate Action Plan (CAP) calls for the adoption of ordinances related to energy efficiency, renewable energy, alternative water heating and electric vehicle charging infrastructure. Implementation of these ordinances is intended to reduce greenhouse gas (GHG) emissions and assist in reaching the GHG reduction targets contained in the CAP. Below is a summary of the proposed ordinances, separated by topic and type of construction.

### Energy Efficiency – Residential

**Applicability:** All renovations of existing single-family and multi-family residential buildings with a building permit valuation of \$60,000 or more.

**Requirements:** See Table 1 below.

*Table 1 - Existing Residential Energy Efficiency Required Measures by Building Type and Vintage*

Measure	Existing Conditions	Requirement	Single Family Vintage	Multi-family Vintage
Heating, Ventilation and Cooling Ducts	Insulation with a thermal resistance (R-value) greater than or equal to R-2.1 and $\geq 30\%$ leakage ( $\geq 25\%$ leakage for multi-family units)	2016 Title 24 Section 150.2(b)1E without verification by a certified Home Energy Rating System (HERS) Rater.	Pre-1978	Pre-1978
Attic Insulation	Insulation with an R-value of greater than or equal to R-5, vented attic	Insulation with an R-value of R-38	Pre-1978	Pre-1991
Cool Roof	Asphalt shingles, dark (project scope includes replacement of roof)	Aged solar reflectance greater than or equal to 0.25 Thermal emittance greater than or equal to 0.75	Pre-1978	Pre-1991
Water Heating Package	40-gal uninsulated tank No pipe insulation No low-flow fixtures	Water heater blanket with an R-value of greater than or equal to R-6 Hot water pipe insulation greater than or equal to 3/4 inch thick Low-Flow Fixtures with rated flow rates no more than CALGreen requirements	1978 and newer	1991 and newer
Lighting Package	Screw-in (A-base) incandescent and halogen lamps	Screw-in LED lamps and manual-on automatic-off vacancy sensors that meet Title 24 Section 110.9(b)4.C	1978 and newer	1991 and newer

Exceptions<sup>1</sup>: The requirement for inclusion of energy efficiency measures does not apply to residential buildings that receive a rating of seven (7) or higher on the U.S. Department of Energy's Home Energy Score rating system based upon an assessment by a Home Energy Score Certified Assessor, to the satisfaction of the Building Official.

## Energy Efficiency – Non-residential

Applicability: All new non-residential buildings and renovations to existing non-residential buildings with a building permit valuation of \$200,000 or greater or add 1,000 or more square feet.

Requirements: Development must meet the energy standards of CALGreen (Title 24, Part 11 of the California Building Code) Voluntary Tier 1.

Exceptions: Some of the proposed Energy Conservation Ordinance is more restrictive than CALGreen Voluntary Tier 1, in which case the more restrictive ordinance shall apply. Specifically:

- 1) all new non-residential construction shall follow the city's water heating ordinance requirements;
- 2) all new non-residential construction and renovations with a building permit valuation of \$1,000,000 or higher that affect 75 percent or more of the existing floor area; OR renovations that increase roof area by greater than or equal to 2,000 square feet shall follow the city's photovoltaic ordinance requirements.

## Photovoltaic – Non-residential

Applicability: All new non-residential buildings and renovations to existing non-residential buildings with a building permit valuation of \$1,000,000 or higher that affect 75 percent or more of the existing floor area; OR renovations that increase roof area by greater than or equal to 2,000 square feet.

Requirements: Development must include a photovoltaic (PV) system that meets one of the following minimum size requirements:

- 1) offsets 80 percent of the building's electrical demand;
- 2) generates a minimum of 15-kilowatts per 10,000 square feet of gross floor area; or

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<sup>1</sup> Exceptions described in this summary are proposed with the local ordinance amendments and may modify, or be in addition to, exceptions contained in existing statewide codes (such as for technical infeasibility or unreasonable hardship).

- 3) generates a minimum of 5-kilowatts for buildings under 10,000 square feet of gross floor area.

- Exceptions:
- 1) The existence of practical challenges to effective PV installation, such as building site location, limited rooftop availability, or shading from nearby structures, topography or vegetation. In these cases, the applicant may be responsible for alternative energy conservation measures to comply with the California Environmental Quality Act.
  - 2) The building satisfies the purpose and intent of the PV system requirement using alternate on-site renewable generation systems such as wind energy systems.

## **Water Heating – Low-rise Residential**

Applicability: All new residential buildings with three or fewer habitable stories.

- Requirements:
- 1) Development must include a water heating system that derives at least 60 percent of its energy from on-site solar energy or recovered energy;
  - 2) Development must include a water heating system meeting one of the following requirements:
    - a) contains heat pump water heater(s) or other form of electric water heating system(s), that meets California Energy Code (Title 24, Part) standards and is paired with a greater than or equal to 300W PV system;
    - b) contains a solar water heating system that uses OG-300 certified collectors and provides a 0.6 solar fraction or includes collectors covering 40 or more square feet.

Exceptions: If on-site energy or recovered energy is economically infeasible.

*Note: The residential water heating ordinance will be implemented when the 2019 building code (Title 24) standards are adopted. The 2019 standards will include a requirement for residential photovoltaic systems, which will support the water heating measures identified in the ordinance.*

## **Water Heating – High-rise Residential and Hotel/Motel**

Applicability: All new residential buildings with four or more habitable stories and all new hotel/motel buildings.

Requirements:

- 1) High-rise residential and hotel/motel development must include a water heating system meeting one of the following requirements:
  - a) contains heat pump water heater(s) or other form of electric water heating system(s), that meets California Energy Code (Title 24, Part 6) standards;
  - b) contains a solar water heating system that uses OG-100 certified collectors and provides a 0.6 solar fraction or includes collectors covering 40 or more square feet.
- 2) Buildings serving multiple units with a central water-heating system can include a gas or propane water heating system provided they include a recirculation system and a solar water heating system.

**Water Heating – Non-residential**

Applicability: All new non-residential buildings.

Requirements: Development must include a water heating system that derives at least 40 percent of its energy from on-site solar energy or recovered energy and meets one of the following requirements:

- 1) contains heat pump water heater(s), tankless electric resistance, or other form of electric water heating system(s) that meet Title 24 standards;
- 2) contains a solar water heating system that provides a 0.4 solar fraction and uses OG-100 certified collectors.

Exceptions: If on-site energy or recovered energy is economically infeasible.

**Electric Vehicle Charging Infrastructure - Residential**

Applicability: All new residential buildings and major renovations to existing residential buildings, as defined in Table 2 below.

Requirements: Provide electric vehicle (EV) spaces and EV charging infrastructure in accordance with Table 2 below.

Table 2 – Residential EV Charging Infrastructure by Project Type

Project Type	Requirement
New Residential Construction*  One- and two-family dwellings and townhouses with attached private garages  Multi-family projects (three or more dwellings)	Must have one parking space per dwelling unit be EV supply equipment ready.  Must have 10 percent of parking spaces, or a minimum of one space, be EV supply equipment capable. 50 percent of the EV capable spaces, or a minimum of one space, must have EV supply equipment installed.
Residential Additions and Alterations  One- and two-family dwellings and townhouses with attached private garages whose project includes an electrical service panel upgrade <b>or</b> a permit valuation ≥\$60,000  Multifamily project (three or more dwelling units) performing a major renovation <sup>2</sup> <b>and</b> has a permit valuation of ≥\$200,000	Must have one parking space per dwelling unit be EV supply equipment ready.  Must have 10 percent of parking spaces, or a minimum of one space, be EV supply equipment capable. 50 percent of the EV capable spaces, or a minimum of one space, must have EV supply equipment installed.

\*For all residential projects where common or visitor use parking is provided, at least one space shall be equipped with an EV charging station and shall be available for use by all residents.

**Exceptions:** Projects involving one- and two-family dwellings with a permit valuation greater than or equal to \$60,000 but do not include an electrical service panel upgrade must meet these requirements to the maximum extent that does not trigger a panel upgrade. Also, requirement may be reduced if it adds more than \$400 cost per parking space for utility-side infrastructure upgrades.

## Electric Vehicle Charging Infrastructure – Non-residential

**Applicability:** All new non-residential developments.

**Requirements:** Provide EV spaces and EV charging infrastructure in accordance with Table 3 below.

<sup>2</sup> Major Renovations: Renovations where interior finishes are removed and significant site work and upgrades to structural and mechanical, electrical and/or plumbing systems are proposed. Significant site work as used herein means site alterations that: require a grading permit pursuant to Carlsbad Municipal Code Chapter 15.16; rehabilitate or install 2,500 square feet or more of landscaping; or repave, replace or add 2,500 square feet or more of vehicle parking and drive area.

Table 3 – Non-residential EV Spaces and Charging Infrastructure

Total Number of Parking Spaces	Number of Required EV Spaces	Number of Required EV Charging Infrastructure Installed Spaces
0-9	1	1
10-25	2	1
26-50	4	2
51-75	6	3
76-100	9	5
101-150	12	6
151-200	17	9
201 and over	10 percent of total parking spaces	50 percent of required EV spaces

Exceptions: No locally-amended exceptions proposed; statewide infeasibility exceptions would apply.

**PROPOSED TEXT CHANGES TO  
CARLSBAD MUNICIPAL CODE CHAPTERS 18.21 AND 18.30  
ENERGY EFFICIENCY, PHOTOVOLTAIC AND ALTERNATIVE WATER HEATING SYSTEMS**

**Legend to proposed text amendments:**

1. Existing Carlsbad Municipal Code (CMC) language appears as regular upright text.
2. New CMC language is underlined.
3. Excerpts from the California Green Building Standards Code (CALGreen) and California Energy Code added to the CMC are shown in *italics*.
4. Carlsbad additions to CALGreen and Energy Code are underlined, and deletions are shown in ~~strikeout~~.

**Chapter 18.21 List of Sections**

Amend Chapter 18.21 List of Sections to reference new sections as follows:

**Sections:**

- 18.21.010 Adoption.**  
**18.21.020 Building official designated.**  
**18.21.030 Permit fees.**  
**18.21.155 California Green Building Standards Code Appendix A5 adopted in part and amended as mandatory requirements – Energy efficiency.**

**Section 18.21.010**

Amend Section 18.21.010 as follows:

**18.21.010 Adoption.**

The 2016 California Green Building Standards Code copyrighted by the California Building Standards Commission, together with those amendments, exceptions, additions and deletions incorporated into this chapter, is adopted by reference as the Green Building Standards Code of the City of Carlsbad.

**Section 18.21.155**

Add Section 18.21.155 as follows:

**18.21.155 California Green Building Standards Code Appendix A5 adopted in part and amended as mandatory requirements – Energy efficiency.**

California Green Building Standards Code Appendix A5 - Nonresidential Voluntary Measures, Division A5.2 – Energy Efficiency, Sections A5.201, A5.202, Subsections A5.203.1.1 (Tier 1 Prerequisites) through A5.203.1.2.1 Tier 1, and Sections A5.211 through A5.213, are adopted and amended herein as mandatory requirements for construction of nonresidential, high-rise

residential, hotels/motels, and alterations thereto having a building permit valuation of at least \$200,000 or additions of at least 1,000 square feet.

A. Section A5.203.1.1.2 of the California Green Building Standards Code is amended to read as follows:

**A5.203.1.1.2 Service water heating in restaurants.** ~~Newly constructed restaurants shall comply with California Energy Code Section 140.58, 000 square feet or greater and with service water heaters rated 75,000 Btu/h or greater shall install a solar water heating system with a minimum solar savings fraction of 0.15.~~

**Exceptions:**

~~1. Buildings with a natural gas service water heater with a minimum of 95-percent thermal efficiency.~~

~~2. Buildings where greater than 75 percent of the total roof area has annual solar access that is less than 70 percent. Solar access is the ratio of solar insolation, including shade, to the solar insolation without shade. Shading from obstructions located on the roof or any other part of the building shall not be included in the determination of annual solar access.~~

B. Section A5.211 of the California Green Building Standards Code is amended to read as follows:

**A5.211.1 On-site renewable energy.** Use on-site renewable energy sources such as solar, wind, geothermal, low-impact hydro, biomass and bio-gas for at least 1 percent of the electric power calculated as the product of the building service voltage and the amperage specified by the electrical service overcurrent protection device rating or 1 kW, (whichever is greater), in addition to the electrical demand required to meet 1 percent of the natural gas and propane use. The building project's electrical service overcurrent protection device rating shall be calculated in accordance with the 2016 California Electrical Code. Natural gas or propane use is calculated in accordance with the 2016 California Plumbing Code.

**A5.211.1.1 Documentation.** Using a calculation method approved by the California Energy Commission, calculate the renewable on-site energy system to meet the requirements of Section A5.211.1, expressed in kW. Factor in net-metering, if offered by local utility, on an annual basis.

**A5.211.3 Green power.** If offered by local utility provider, participate in a renewable energy portfolio program that provides a minimum of 50 percent electrical power from renewable sources. Maintain documentation through utility billings.

Exception to A5.211.1, A5.211.1.1 and A5.211.3: All new nonresidential, high-rise residential, and hotel/motel buildings, and alterations thereto having a building permit valuation of at least \$1,000,000 and affecting at least 75 percent of existing floor area, or alterations that increase roof size by at least 2,000 square feet, shall instead comply with California Energy Code Section 120.10.

**Chapter 18.30 List of Sections**

Amend Chapter 18.30 List of Sections to reference new sections as follows:

**Sections:**

- 18.30.010** Adoption.
- 18.30.020** Purpose and application.
- 18.30.030** Building official designated.
- 18.30.040** Solar alternative design provisions required.
- 18.30.050** Permit fees.
- 18.30.110** **California Energy Code Subchapter 1 amended - Definitions**
- 18.30.130** **California Energy Code Subchapter 3 amended – Nonresidential photovoltaic system required.**
- 18.30.150** **California Energy Code Subchapters 3 and 5 amended – Nonresidential water heating requirements.**
- 18.30.170** **California Energy Code Subchapters 7 and 8 amended – Residential water heating requirements.**
- 18.30.190** **California Energy Code Subchapter 9 amended – Energy efficiency in existing residential buildings.**

**Section 18.30.110 California Energy Code Subchapter 1 amended - Definitions**

Add Section 18.30.110 as follows:

**18.30.110** **California Energy Code Subchapter 1 amended – Definitions.**

Section 100.1(b) is amended by adding the following definition:

*SOLAR ELECTRIC GENERATION SYSTEM or PHOTOVOLTAIC SYSTEM is the complete set of all components for converting sunlight into electricity through the photovoltaic process, including the array of panels, inverter(s) and the balance of system components required to enable the system to effectively deliver power to reduce a building's consumption of electricity from the utility grid.*

**Section 18.30.130 California Energy Code Subchapter 3 amended – Nonresidential photovoltaic system required**

Add Section 18.30.130 as follows:

**18.30.130** **California Energy Code Subchapter 3 amended – Nonresidential photovoltaic system required.**

Section 120.10 is added to the California Energy Code as follows:

**SECTION 120.10**  
**NONRESIDENTIAL PHOTOVOLTAIC SYSTEM REQUIRED**

All new nonresidential, high-rise residential, and hotel/motel buildings shall comply with the requirements of Section 120.10(a) or 120.10(b). Additions to existing nonresidential, high-rise residential, and hotel/motel buildings where the total roof area is increased by at least 2,000 square feet, and alterations to existing nonresidential, high-rise residential, and hotel/motel buildings with a permit valuation of at least \$1,000,000 that affect at least 75 percent of the gross floor area shall also comply with the requirements of Section 120.10(a) or (b).

The required installation of a photovoltaic (PV) system shall be sized according to one of the following methods:

(a) Based on gross floor area.

1. Buildings with greater than or equal to 10,000 square feet of gross floor area shall install a minimum PV system sized at 15 kilowatts direct current (kWdc) per 10,000 square feet of gross floor area.

**Note to Section 120.10(a)1:** PV system size = 15 kWdc X (Gross Floor Area / 10,000 sq. ft.), where the building size factor shall be rounded to the nearest tenth and the resulting product shall be rounded to the nearest whole number. For example, an applicant with a 126,800 square foot building shall install a minimum 191 kilowatt (kWdc) PV system.

2. Buildings under 10,000 square feet of gross floor area shall install a minimum 5-kilowatt (kWdc) PV system.

**Note to Section 120.10(a)2:** Applicants are encouraged to right-size the PV system based on the building's electrical demand to improve the system's cost effectiveness.

- (b) Based on Time Dependent Valuation (TDV). Install a solar PV system that will offset 80 percent of the building's TDV energy on an annual basis. The system sizing requirement shall be based upon total building TDV energy use including both conditioned and unconditioned space and calculated using modeling software or other methods approved by the Building Official.

**Exception 1 to Section 120.10:** The Building Official may waive or reduce, by the maximum extent necessary, the provisions of this Section if the Official determines there are sufficient practical challenges to make satisfaction of the requirements infeasible. Practical challenges may be a result of the building site location, limited

rooftop availability, or shading from nearby structures, topography or vegetation. The applicant is responsible for demonstrating requirement infeasibility when applying for an exemption.

**Exception 2 to Section 120.10:** The Building Official may waive or reduce, by the maximum extent necessary, the provisions of this Section if the Official determines the building has satisfied the purpose and intent of this provision through the use of alternate on-site renewable generation systems such as wind energy systems.

**Section 18.30.150 California Energy Code Subchapters 3 and 5 amended – Nonresidential water heating requirements**

Add Section 18.30.150 as follows:

**18.30.150 California Energy Code Subchapters 3 and 5 amended – Nonresidential water heating requirements.**

A. Section 120.11 is added to the California Energy Code as follows:

**SECTION 120.11**

**NONRESIDENTIAL MANDATORY REQUIREMENTS FOR SERVICE WATER HEATING SYSTEMS**

Any newly constructed nonresidential building shall derive its service water heating from a system that provides at least 40 percent of the energy needed for service water heating from on-site solar energy or recovered energy. Solar energy includes solar photovoltaics and solar-water heating systems.

**Exception to Section 120.11:** Buildings for which the Building Official has determined that service water heating from on-site solar energy or recovered energy is economically or physically infeasible. Applicant is responsible for demonstrating requirement infeasibility when applying for an exemption.

B. Section 140.5 of the California Energy Code is amended to read as follows:

**SECTION 140.5**

**PRESCRIPTIVE REQUIREMENTS FOR SERVICE WATER HEATING SYSTEMS**

(a) **Nonresidential occupancies.** A service water-heating system installed in a nonresidential building ~~complies with this section if it complies shall comply~~ with the applicable requirements of Sections 110.1, 110.3 ~~and~~, 120.3, and 120.11. In addition, a service water-heating system shall meet the requirements of 1, 2, or 3 below:

1. A heat pump water heater. The storage tank shall be located in a conditioned space.

2. An electric resistance water heater.
3. A solar water-heating system with a minimum solar savings fraction of 0.40. Solar water-heating systems and collectors shall be certified and rated by the Solar Rating and Certification Corporation (SRCC), the International Association of Plumbing and Mechanical Officials, Research and Testing (IAPMO R&T), or by a listing agency that is approved by the Executive Director.

(b) **High-rise residential and Hotel/Motel occupancies.** A service water heating system installed in a high-rise residential or hotel/motel building ~~complies with this section if it meets the requirements of Section 150.1(c)8.~~ shall meet the requirements of either 1, 2, or 3. For recirculation distribution systems serving individual dwelling units, only Demand Recirculation Systems with manual on/off control as specified in the Reference Appendix RA4.4.9 shall be used:

1. For systems serving individual dwelling units, the water heating system shall meet the requirement of either A, B, or C:
  - A. A single heat pump water heater. The storage tank shall be located in the garage or conditioned space. In addition, one of the following:
    - i. A compact hot water distribution system; or
    - ii. A photovoltaic system of 0.3 kWdc larger than the requirement specified in Section 120.10.
  - B. A single heat pump water heater that meets the requirements of NEEA Advanced Water Heater Specification Tier 3 or higher. The storage tank shall be located in the garage or conditioned space.
  - C. A solar water-heating system meeting the installation criteria specified in Reference Residential Appendix RA4 and either a minimum solar savings fraction of 0.60 or a minimum 40 square feet of collectors.
2. For systems serving multiple dwelling units, a central water-heating system that includes the following components shall be installed:
  - A. Gas or propane water heating system; and
  - B. A recirculation system that meets the requirements of Sections 110.3(c)2 and 110.3(c)5, includes two or more separate recirculation loops serving separate dwelling units, and is capable of automatically controlling the recirculation pump operation based on measurement of hot water demand and hot water return temperature; and

**EXCEPTION to Section 140.5(b)2B: Buildings with eight or fewer dwelling units may use a single recirculation loop.**

**C. A solar water-heating system meeting the installation criteria specified in Reference Residential Appendix RA4 and with a minimum solar savings fraction of either a or b below:**

**i. A minimum solar savings fraction of 0.60 or a minimum of 40 square feet of collectors; or**

**ii. A minimum solar savings fraction of 0.40. In addition, a drain water heat recovery system shall be installed.**

**3. A water-heating system serving multiple dwelling units determined by the Executive Director to use no more energy than the one specified in subsection B above.**

**Section 18.30.170 California Energy Code Subchapters 7 and 8 amended – Residential water heating requirements**  
**NOTE: Amends 2019 California Energy Code**

Add Section 18.30.170 as follows:

**18.30.170 California Energy Code Subchapters 7 and 8 amended – Residential water heating requirements.**

**A. Section 150.0(n) of the California Energy Code is amended to read as follows:**

**SECTION 150.0**  
**MANDATORY FEATURES AND DEVICES**

**(n) Water Heating System.**

1. Systems using gas or propane water heaters to serve individual dwelling units shall include the following components:
  - A. A dedicated 125 volt, 20 amp electrical receptacle that is connected to the electric panel with a 120/240 volt 3 conductor, 10 AWG copper branch circuit within 3 feet from the water heater and accessible to the water heater with no obstructions. In addition, all of the following:
    - i. Both ends of the unused conductor shall be labeled with the word "spare" and be electrically isolated; and

- ii. *A reserved single pole circuit breaker space in the electrical panel adjacent to the circuit breaker for the branch circuit in A above and labeled with the words "Future 240V Use"; and*
- B. *A Category III or IV vent, or a Type B vent with straight pipe between the outside termination and the space where the water heater is installed; and*
- C. *A condensate drain that is no more than 2 inches higher than the base of the installed water heater, and allows natural draining without pump assistance, and*
- D. *A gas supply line with a capacity of at least 200,000 Btu/hr.*
- 2. *Water heating recirculation loops serving multiple dwelling units shall meet the requirements of Section 110.3(c)5.*
- 3. *Solar water-heating systems and collectors shall be certified and rated by the Solar Rating and Certification Corporation (SRCC), the International Association of Plumbing and Mechanical Officials, Research and Testing (IAPMO R&T), or by a listing agency that is approved by the Executive Director.*
- 4. *Instantaneous water heaters with an input rating greater than 6.8 kBTU/hr (2kW) shall meet the requirements of Section 110.3(c)7.*
- 5. *Any newly constructed residential building shall derive its service water heating from a system that provides at least 60 percent of the energy needed for service water heating from on-site solar energy or recovered energy. Solar energy includes solar photovoltaics and solar-water heating systems.*

***EXCEPTION to Section 150.0(n)5: Buildings for which the Building Official has determined that service water heating from on-site solar energy or recovered energy is economically or physically infeasible. Applicant is responsible for demonstrating requirement infeasibility when applying for an exemption***

**B. Section 150.1(c)8 of the California Energy Code is amended to read as follows:**

**SECTION 150.1**

**PERFORMANCE AND PRESCRIPTIVE COMPLIANCE APPROACHES FOR LOW-RISE RESIDENTIAL BUILDINGS**

- 8. **Domestic Water-Heating Systems.** *Water-heating systems shall meet the requirements of either A, B, or C. For recirculation distribution systems serving individual dwelling units, only Demand Recirculation Systems with manual on/off control as specified in the Reference Appendix RA4.4.9 shall be used:*

- A. For systems serving individual dwelling units, the water heating system shall meet the requirement of either i, ii, or iii; ~~iv, or v~~:
- ~~i. One or more gas or propane instantaneous water heater with an input of 200,000 Btu per hour or less and no storage tank.~~
  - ~~ii. A single gas or propane storage type water heater with an input of 75,000 Btu per hour or less, rated volume less than or equal to 55 gallons and that meets the requirements of Sections 110.1 and 110.3. The dwelling unit shall have installed fenestration products with a weighted average U factor no greater than 0.24, and in addition one of the following shall be installed:
 
    - ~~a. A compact hot water distribution system that is field verified as specified in the Reference Appendix RA4.4.16; or~~
    - ~~b. A drain water heat recovery system that is field verified as specified in the Reference Appendix RA3.6.9.~~~~
  - ~~iii. A single gas or propane storage type water heater with an input of 75,000 Btu per hour or less, rated volume of more than 55 gallons.~~
  - iv.i. A single heat pump water heater. The storage tank shall be located in the garage or conditioned space. In addition, one of the following:
    - a. A compact hot water distribution system as specified in the Reference Appendix RA4.4.6 and a drain water heat recovery system that is field verified as specified in the Reference Appendix RA3.6.9; or
    - ~~b. For Climate Zones 2 through 15, a photovoltaic system capacity of 0.3 kWdc larger than the requirement specified in Section 150.1(c)14; or~~
    - ~~c.b. For Climate Zones 1 and 16, a photovoltaic system capacity of 1.1 kWdc larger than the requirement specified in Section 150.1(c)14.~~
  - ii. A single heat pump water heater that meets the requirements of NEEA Advanced Water Heater Specification Tier 3 or higher. The storage tank shall be located in the garage or conditioned space. ~~In addition, for Climate Zones 1 and 16, a photovoltaic system capacity of 0.3 kWdc larger than the requirement specified in Section 150.1(c)14 or a compact hot water distribution system as specified in the Reference Appendix RA4.4.6.~~

~~iv.iii.~~ A solar water-heating system meeting the installation criteria specified in Reference Residential Appendix RA4 and either a minimum solar savings fraction of 0.60 or a minimum 40 square feet of collectors.

- B. For systems serving multiple dwelling units, a central water-heating system that includes the following components shall be installed:
- i. Gas or propane water heating system; and
  - ii. A recirculation system that meets the requirements of Sections 110.3(c)2 and 110.3(c)5, includes two or more separate recirculation loops serving separate dwelling units, and is capable of automatically controlling the recirculation pump operation based on measurement of hot water demand and hot water return temperature; and
 

**EXCEPTION to Section 150.1(c)8Bii:** Buildings with eight or fewer dwelling units may use a single recirculation loop.
  - iii. A solar water-heating system meeting the installation criteria specified in Reference Residential Appendix RA4 and with a minimum solar savings fraction of either a or b below:
    - a. ~~A minimum solar savings fraction of 0.20-60 in Climate Zones 1 through 9 or a minimum solar savings fraction of 0.35 in Climate Zones 10 through 16 of 40 square feet of collectors; or~~
    - b. ~~A minimum solar savings fraction of 0.15-40 in Climate Zones 1 through 9 or a minimum solar savings fraction of 0.30 in Climate Zones 10 through 16.~~ In addition, a drain water heat recovery system that is field verified as specified in the Reference Appendix RA3.6.9.
- C. A water-heating system serving multiple dwelling units determined by the Executive Director to use no more energy than the one specified in subsection B above.

Section 18.30.190 California Energy Code Subchapter 9 amended – Energy efficiency in existing residential buildings

Add Section 18.30.190 as follows:

**18.30.190 California Energy Code Section Subchapter 9 amended - Energy efficiency in existing residential buildings.**

Section 150.2 of the California Energy Code is amended to add paragraph (d) as follows:

(d) All additions and alterations of residential buildings with a building permit valuation of \$60,000 or higher shall include one of the following energy efficiency measures:

1. Additions and alterations of single family residential buildings built before 1978 shall include one of the following:

A. Duct sealing pursuant to 2016 Title 24 Section 150.2(b)1E without verification by a Home Energy Rating System (HERS) rater. All exceptions as stated in 2016 Title 24 Section 150.2(b)1E are allowed. Projects that require duct sealing as part of an HVAC alteration or replacement must meet all of the requirements of Title 24, Part 6, including HERS rater verification.

B. Attic insulation with a minimum of R-38 rating. Buildings without vented attic spaces and buildings with existing attic insulation levels greater than R-5 are exempt from this attic insulation energy efficiency measure.

C. Cool roof with an aged solar reflectance of greater than or equal to 0.25 and a thermal emittance of greater than or equal to 0.75. All exceptions as stated in 2016 Title 24 Section 150.2(b)1Hi for steep slope roofs and 150.2(b)1Hii for low slope roofs are allowed. Only areas of roof that are to be re-roofed subject to the cool roof upgrade. Projects that are not installing a new roof as part of the scope are exempt from this cool roof energy efficiency measure.

2. Additions and alterations of single family residential buildings built in 1978 or after shall include one of the following:

A. A lighting package consisting of:

i. replacement all interior and exterior screw-in (A-base) incandescent and halogen lamps with screw-in LED lamps; and,

ii. installation of manual-on automatic-off vacancy sensors that meet Title 24 Section 110.9(b)4C in all bathrooms, bedrooms, offices, laundry rooms, utility rooms, and garages. Spaces which already include vacancy sensors, motions sensors, or dimmers do not need to install new Title 24 Section 110.9(b)4C sensors.

B. A water heating package consisting of:

- i. addition of exterior insulation meeting a minimum of R-6 to storage water heaters 20 gallons or larger in size, except if insulation installation would void the water heater warranty; and,
  - ii. insulation of all accessible hot water pipes with pipe insulation a minimum of 0.75 inches in thickness. This includes insulating the supply pipe leaving the water heater, piping to faucets underneath sinks, and accessible pipes in attic spaces and crawlspaces; and,
  - iii. upgrading of fitting in sinks and showers to meet current CALGreen (Title 24, Part 11 of the California Building Code) standards, except for fixtures with rated flow rates no more than 10 percent greater than current CALGreen standards.
- 3. Additions and alterations of multi-family residential buildings built before 1978 shall include attic insulation with a minimum of R-38 rating. Buildings without vented attic spaces and buildings with existing attic insulation levels greater than R-5 are exempt from this attic insulation energy efficiency measure.
- 4. Additions and alterations of multi-family residential buildings built between 1978 and 1990 shall include one of the following:
  - A. Duct sealing pursuant to 2016 Title 24 Section 150.2(b)1E without verification by a HERS rater. All exceptions as stated in 2016 Title 24 Section 150.2(b)1E are allowed. Projects that require duct sealing as part of an HVAC alteration or replacement must meet all of the requirements of Title 24, Part 6, including HERS rater verification.
  - B. Attic insulation with a minimum of R-38 rating. Buildings without vented attic spaces and buildings with existing attic insulation levels greater than R-5 are exempt from this attic insulation energy efficiency measure.
  - C. Cool roof with an aged solar reflectance of greater than or equal to 0.25 and a thermal emittance of greater than or equal to 0.75. All exceptions as stated in 2016 Title 24 Section 150.2(b)1Hi for steep slope roofs and 150.2(b)1Hii for low slope roofs are allowed. Only areas of roof that are to be re-roofed are subject to the cool roof upgrade. Projects that are not installing a new roof as part of the scope are exempt from this cool roof energy efficiency measure.
- 5. Additions and alterations of multi-family residential buildings built after 1991 shall include one of the following:
  - A. A lighting package consisting of:
    - i. replacement all interior and exterior screw-in (A-base) incandescent and halogen lamps with screw-in LED lamps; and,

ii. installation of manual-on automatic-off vacancy sensors that meet Title 24 Section 110.9(b)4C in all bathrooms, bedrooms, offices, laundry rooms, utility rooms, and garages. Spaces which already include vacancy sensors, motions sensors, or dimmers do not need to install new Title 24 Section 110.9(b)4C sensors.

B. A water heating package consisting of:

i. addition of exterior insulation meeting a minimum of R-6 to storage water heaters 20 gallons or larger in size, except for buildings with central water heating systems or if insulation installation would void the water heater warranty; and,

ii. insulation of all accessible hot water pipes with pipe insulation a minimum of 0.75 inches in thickness. This includes insulating the supply pipe leaving the water heater, piping to faucets underneath sinks, and accessible pipes in attic spaces and crawlspaces; and,

iii. upgrading of fittings in sinks and showers to meet current CALGreen standards, except for fixtures with rated flow rates no more than ten percent greater than current CALGreen standards.

**Note:** To the extent the provisions of Section 150.2(d) conflict with any other provisions of the California Energy Code, then the most energy conserving provisions shall supersede and control.

**Exception to Section 150.2(d):** The requirement for inclusion of energy efficiency measures does not apply to residential buildings that receive a rating of seven (7) or higher on the U.S. Department of Energy's Home Energy Score rating system based upon an assessment by a Home Energy Score Certified Assessor, to the satisfaction of the Building Official.

**PROPOSED TEXT CHANGES TO  
CARLSBAD MUNICIPAL CODE CHAPTER 18.21  
ELECTRIC VEHICLE INFRASTRUCTURE**

**Legend to proposed text amendments:**

1. Existing Carlsbad Municipal Code (CMC) language appears as regular upright text.
2. New CMC language is underlined.
3. Excerpts from the California Green Building Standards Code (CALGreen) added to the CMC are shown in *italics*.
4. Carlsbad additions to CALGreen are underlined, and deletions are shown in ~~strikeout~~.

**Chapter 18.21 List of Sections**

Amend Chapter 18.21 List of Sections to add references to new sections as follows:

**Sections:**

- 18.21.010** Adoption.
- 18.21.020** Building official designated.
- 18.21.030** Permit fees.
- 18.21.120** California Green Building Standards Code Chapter 2 amended - Definitions
- 18.21.140** California Green Building Standards Code Chapter 4 amended – Residential electric vehicle charging
- 18.21.150** California Green Building Standards Code Chapter 5 amended – Nonresidential electric vehicle charging

**Section 18.21.010**

Amend Section 18.21.010 as follows:

**18.21.010 Adoption.**

The 2016 California Green Building Standards Code copyrighted by the California Building Standards Commission, together with those amendments, exceptions, additions and deletions incorporated into this chapter, is adopted by reference as the Green Building Standards Code of the City of Carlsbad.

**Section 18.21.120**

Add Section 18.21.120 as follows:

**18.21.120** California Green Building Standards Code Chapter 2 amended – Definitions. Section 202 of the California Green Building Standards Code is amended to add the following definitions:

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

EVSE INSTALLED. An electric vehicle charging space (EV space) installed with a dedicated 208/240-volt branch circuit, including a listed raceway, electrical panel capacity, overcurrent protective device, wire, and receptacle. Receptacle shall be equipped with electric vehicle supply equipment (EVSE). The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter) and is required to be continuous at enclosed, inaccessible or concealed areas and spaces. The branch circuit and associated overcurrent protective device shall be rated at 40 amperes minimum. Other electrical components, including receptacle and EVSE, related to this section shall be installed in accordance with the California Electrical Code.

EVSE READY. An electric vehicle charging space (EV space) installed with a dedicated 208/240-volt branch circuit, including a listed raceway, electrical panel capacity, overcurrent protective device, wire, and termination point such as a receptacle or blank cover. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter) and is required to be continuous at enclosed, inaccessible or concealed areas and spaces. The termination point shall be in close proximity to the proposed location of an EV charger. The branch circuit and associated overcurrent protective device shall be rated at 40 amperes minimum. Other electrical components, including a receptacle or blank cover, related to this section shall be installed in accordance with the California Electrical Code.

MAJOR RESIDENTIAL RENOVATIONS. Alterations and additions to existing residential structures and construction sites where: (A) for one and two family dwellings and townhouses with attached private garages, alterations have a building permit valuation equal to or greater than \$60,000 or include an electrical service panel upgrade; or (B) for multifamily dwellings (three dwelling units or more), alterations have a building permit valuation equal to or greater than \$200,000, interior finishes are removed and significant site work and upgrades to structural and mechanical, electrical, and/or plumbing systems are proposed. Significant site work as used herein means site alterations that: require a grading permit pursuant to Carlsbad Municipal Code Chapter 15.16; rehabilitate or install 2,500 square feet or more of landscaping; or repave, replace or add 2,500 square feet or more of vehicle parking and drive area.

Section 18.21.140

Add Section 18.21.140 as follows:

**18.21.140 California Green Building Standards Code Chapter 4 amended – Residential electric vehicle charging.**

A. Section 4.102 of the California Green Building Standards Code is amended to read as follows:

**SECTION 4.102 DEFINITIONS**

**4.102.1 Definitions.** *The following terms are defined in Chapter 2.*

EVSE CAPABLE.

EVSE INSTALLED.

EVSE READY.

FRENCH DRAIN.

MAJOR RESIDENTIAL RENOVATIONS.

WATTLES.

B. Section 4.106.4 of the California Green Building Standards Code is amended to read as follows:

**4.106.4 Electric vehicle (EV) charging for new construction and major residential renovations.** *New construction and major residential renovations shall comply with Sections 4.106.4.1, 4.106.4.2, or 4.106.4.3, to facilitate ~~future~~ installation and use of EV chargers. Electric vehicle supply equipment (EVSE) shall be installed in accordance with the California Electrical Code, Article 625.*

**Exceptions:**

1. On a case-by-case basis, where the local enforcing agency has determined EV charging and infrastructure are not feasible based upon one or more of the following conditions:
  - 1.1. \_\_\_\_\_ Where there is no commercial power supply.
  - 1.2. \_\_\_\_\_ Where there is evidence substantiating that meeting the requirements will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the homeowner or the developer by more than \$400.00 per ~~dwelling-~~unit parking space.
2. Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without additional parking facilities.
3. Where major residential renovations for one and two family dwellings, and townhouses with attached private garages, do not include an electrical service panel upgrade, the requirements of Section 4.106.4.1 shall apply to

the maximum extent that does not require an electrical service panel upgrade.

4. In major residential renovations, where there is evidence substantiating that meeting the requirements of this section presents an unreasonable hardship or is technically infeasible, the Building Official may consider an appeal from the project sponsor to reduce the number of EV spaces required or provide for EV charging elsewhere.

**4.106.4.1 New one- and two-family dwellings and townhouses with attached private garages and major residential renovations.** For each dwelling unit, install one EVSE Ready space. For each dwelling unit, install a listed raceway to accommodate a dedicated 208/240-volt branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or other enclosure in close proximity to the proposed location of an EV charger. Raceways are required to be continuous at enclosed, inaccessible or concealed areas and spaces. The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit over current protective device.

**4.106.4.1.1 Identification.** The service panel or subpanel circuit directory shall identify the overcurrent protective device ~~space(s) reserved~~ designated for future EV charging purposes as "EV CAPABLE READY" in accordance with the California Electrical Code. The ~~raceway termination location, receptacle or blank cover shall be identified shall be permanently and visibly marked~~ as "EV CAPABLE READY".

**4.106.4.2 New multifamily dwellings and major residential renovations.** Where 17 or more multifamily dwelling units are constructed on a building site, 3-If residential parking is available, ten (10) percent of the total number of parking spaces on a building site provided for all types of parking facilities, but in no case less than one, shall be electric vehicle charging spaces (EV spaces) capable of supporting installed and future EVSE. Calculations for the required number of EV spaces and EVSE Installed spaces shall be rounded up to the nearest whole number.

**Note:** Construction documents are intended to demonstrate the project's capability and capacity for facilitating future EV charging. Except for EVSE Installed spaces, there is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.

**4.106.4.2.1 Electric vehicle charging space (EV space) locations.** Construction documents shall indicate the location of proposed EV spaces. Where common use parking is provided At least one EVSE Installed space shall be located in the common use parking areas and shall be available for use by all residents.

**4.106.4.2.1.1 Electric vehicle charging stations (EVCS).** When EV chargers are installed, EV spaces required by Section 4.106.4.2.2, Item 3, shall comply with at least one of the following options:

1. The EV space shall be located adjacent to an accessible parking space meeting the requirements of the California Building Code, Chapter 11A, to allow use of the EV charger from the accessible parking space.
2. The EV space shall be located on an accessible route, as defined in the California Building Code, Chapter 2, to the building.

**Exception:** Electric vehicle charging stations designed and constructed in compliance with the California Building Code, Chapter 11B, are not required to comply with Section 4.106.4.2.1.1 and Section 4.106.4.2.2, Item 3.

**4.106.4.2.2 Electric vehicle charging space (EV space) dimensions.** The EV spaces shall be designed to comply with the following:

1. The minimum length of each EV space shall be 18 feet (5486 mm).
2. The minimum width of each EV space shall be 9 feet (2743 mm).
3. One in every 25 EV spaces, but not less than one, shall also have an 8-foot (2438 mm) wide minimum aisle. A 5-foot (1524 mm) wide minimum aisle shall be permitted provided the minimum width of the EV space is 12 feet (3658 mm).
  - a. Surface slope for this EV space and the aisle shall not exceed 1 unit vertical in 48 units horizontal (2.083 percent slope) in any direction.

**4.106.4.2.3 Single EV space required.** When a single EV space is required, it shall be an EVSE Installed space.

**4.106.4.2.4 Multiple EV spaces required.** When multiple EV spaces are required, fifty (50) percent, but in no case less than one, shall be EVSE Installed spaces. The remainder of the required EV spaces may be EVSE Installed, EVSE Ready, or EVSE Capable spaces.

**4.106.4.2.4.1 Construction Documents.** Construction documents shall indicate the raceway termination point and proposed location of future EV spaces and EV chargers. Construction documents shall also provide information on amperage of future EVSE, raceway method(s), wiring schematics and electrical load calculations to verify that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at the full rated amperage of the EVSE. Plan design shall

be based upon a 40-ampere minimum branch circuit. Raceways and related components that are planned to be installed underground, enclosed, inaccessible or in concealed areas and spaces shall be installed at the time of original construction.

**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 "EV CAPABLE" in accordance with the California Electrical Code.

**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/trafficops/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>.~~

**4.106.4.3 New hotels and motels.** All newly constructed hotels and motels shall provide EV spaces capable of supporting installed and future installation of EVSE. The construction documents shall identify the location of the EV spaces.

**Notes: -**

- ~~1. Construction documents are intended to demonstrate the project's capability and capacity for facilitating future EV charging. Except for EVSE Installed spaces.~~
- ~~2. There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.~~

**4.106.4.3.1 Number of required EV spaces.** The number of required EV spaces and EVSE Installed spaces shall be based on the total number of parking spaces provided for all types of parking facilities in accordance with Table 4.106.4.3.1. Calculations for the required number of EV spaces and EVSE Installed spaces shall be rounded up to the nearest whole number.

TABLE 4.106.4.3.1

TOTAL NUMBER OF PARKING SPACES	NUMBER OF REQUIRED EV SPACES	<u>NUMBER OF REQUIRED EVSE INSTALLED SPACES</u>
0-9	<del>0</del> <u>1</u>	<u>1</u>
10-25	<del>1</del> <u>2</u>	<u>1</u>
26-50	<del>2</del> <u>4</u>	<u>2</u>
51-75	<del>3</del> <u>6</u>	<u>3</u>
76-100	<del>4</del> <u>8</u>	<u>5</u>
101-150	<del>6</del> <u>12</u>	<u>6</u>
151-200	<del>8</del> <u>17</u>	<u>9</u>
201 and over	<del>6-10</del> percent of total	<u>50 percent of required EV spaces</u>

**4.106.4.3.2 Electric vehicle charging space (EV space) dimensions.** The EV spaces shall be designed to comply with the following:

1. The minimum length of each EV space shall be 18 feet (5486 mm).
2. The minimum width of each EV space shall be 9 feet (2743 mm).

**4.106.4.3.3 Single EV space required.** When a single EV space is required, it shall be an EVSE Installed space ~~shall be designed in accordance with Section 4.106.4.2.3.~~

**4.106.4.3.4 Multiple EV spaces required.** When multiple EV spaces are required per Table 4.106.4.3.1, the corresponding number of EVSE Installed spaces are required to be installed at the time of construction. ~~the EV spaces shall be designed in accordance with Section 4.106.4.2.4. The remainder of the EV spaces required per Table 4.106.4.3.1 may be EVSE Installed, EVSE Ready, or EVSE Capable spaces.~~

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

**4.106.4.3.5 Identification.** *The service panels or subpanels shall be identified in accordance with Section 4.106.4.2.5.*

**4.106.4.3.6 Accessible EV spaces.** *In addition to the requirements in Section 4.106.4.3, EV spaces for hotels/motels and all EVSE, when installed, shall comply with the accessibility provisions for EV charging stations in the California Building Code, Chapter 11B.*

**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/trafficops/policy.html>.*
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: [https://opr.ca.gov/docs/ZEV\\_Guidebook.pdf](https://opr.ca.gov/docs/ZEV_Guidebook.pdf).*
4. *The Governor's Interagency Working Group on Zero-Emission Vehicles, 2016, "2016 ZEV Action Plan, An Updated Roadmap toward 1.5 Million Zero-Emission Vehicles on California Roadways by 2025." [https://www.gov.ca.gov/docs/2016\\_ZEV\\_Action\\_Plan.pdf](https://www.gov.ca.gov/docs/2016_ZEV_Action_Plan.pdf).*

**Section 18.21.150**

Add Section 18.21.150 as follows:

**18.21.150 California Green Building Standards Code Chapter 5 amended – Nonresidential electric vehicle charging.**

**A. Section 5.102 of the California Green Building Standards Code is amended to read as follows:**

**SECTION 5.102 DEFINITIONS**

**5.102.1 Definitions.** *The following terms are defined in Chapter 2.*

**CUTOFF LUMINAIRES.**

EVSE CAPABLE.

EVSE INSTALLED.

EVSE READY.

LOW-EMITTING AND FUEL EFFICIENT VEHICLES.

NEIGHBORHOOD ELECTRIC VEHICLES.

TENANT-OCCUPANTS.

VANPOOL VEHICLE.

ZEV.

B. Section 5.106.5.3 of the California Green Building Standards Code is amended to read as follows:

**5.106.5.3 Electric vehicle (EV) charging. [N]** Construction shall comply with Section 5.106.5.3.1 or Section 5.106.5.3.2 to facilitate installation and future installation of electric vehicle supply equipment (EVSE). When EVSE(s) is/are installed, it shall be in accordance with the California Building Code, the California Electrical Code and as follows:

**5.106.5.3.1 Single charging space requirements. [N]** When only a single charging space is required per Table 5.106.5.3.3, ~~a dedicated 208/240-volt branch circuit, including raceway, electrical panel capacity, overcurrent protectives, wire, and receptacle is required. Receptacle shall be equipped with electric vehicle supply equipment (EVSE) a raceway is required to be installed at the time of construction and one EVSE Installed space shall be installed in accordance with the California Electrical Code. Construction plans and specifications shall include, but are not limited to, the following:~~

- ~~1. The type and location of the EVSE.~~
- ~~2. A listed raceway capable of accommodating with a 208/240-volt dedicated branch circuit.~~
- ~~3. The raceway shall not be less than trade size 1."~~
- ~~4. The raceway shall originate at a service panel or a subpanel serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and into a listed suitable cabinet, box, enclosure or equivalent.~~
- ~~5. The service panel or subpanel shall have sufficient capacity to accommodate a minimum 40-ampere dedicated branch circuit for the future installation of the EVSE.~~

**5.106.5.3.2 Multiple charging space requirements. [N]** When multiple ~~charging~~ EV spaces are required per Table 5.106.5.3.3, raceway(s) is/are the corresponding

number of EVSE Installed spaces are required to be installed at the time of construction and shall be installed in accordance with the California Electrical Code. The remainder of the EV spaces required per Table 5.106.5.3.3 may be EVSE Installed, EVSE Ready, or EVSE Capable spaces.

**5.106.5.3.2.1 Construction documents.** Construction plans and specifications shall include, but are not limited to, the following:

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

**5.106.5.3.3 EV charging space calculation.** [N] Table 5.106.5.3.3 shall be used to determine if single or multiple charging space requirements apply for the installation and future installation of EVSE.

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

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

**TABLE 5.106.5.3.3**

TOTAL NUMBER OF ACTUAL PARKING SPACES	NUMBER OF REQUIRED EV CHARGING SPACES	<u>NUMBER OF REQUIRED EVSE INSTALLED SPACES-EQUIPPED WITH EVSE</u>
0-9	<u>0</u> <sub>1</sub>	<u>1</u>

10-25	<u>12</u>	<u>1</u>
26-50	<u>24</u>	<u>2</u>
51-75	<u>46</u>	<u>3</u>
76-100	<u>59</u>	<u>5</u>
101-150	<u>712</u>	<u>6</u>
151-200	<u>1017</u>	<u>9</u>
201 and over	<u>6-10 percent of total<sup>1</sup></u>	<u>50 percent of required EVSE Installed-charging spaces<sup>1</sup></u>

1. Calculation for EV spaces and EVSE Installed spaces shall be rounded up to the nearest whole number.

**5.106.5.3.4 [N] Identification.** The service panel or subpanel(s) circuit directory shall identify the reserved overcurrent protective device space(s) for future EV charging as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE."

**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:**

~~6-1.~~ 6-1. 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](http://www.dot.ca.gov/hq/traffops/policy/13-01.pdf).

~~7-2.~~ 7-2. See Vehicle Code Section 22511 for EV charging spaces signage in off-street parking facilities and for use of EV charging spaces.

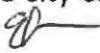
~~8-3.~~ 8-3. The Governor's Office of Planning and Research published a Zero-Emission Vehicle Community Readiness Guidebook which provides helpful information for local governments, residents and businesses. [www.opr.ca.gov/docs/ZEV\\_Guidebook.pdf](http://www.opr.ca.gov/docs/ZEV_Guidebook.pdf).

To the members of the:  
CITY COUNCIL  
ACM ✓ CA ✓ CC ✓  
Date 2/26/19 CM ✓ COO ✓



## Council Memorandum

Feb. 26, 2019

**To:** Honorable Mayor Hall and Members of the City Council  
**From:** for Gary T. Barberio, Assistant City Manager   
**Via:** Scott Chadwick, City Manager  
**Re:** Responses to Questions from February 25 City Council Briefings

---

**Agenda Item No. 2 –** Agreements with Northstar Utilities Solutions and Invoice Cloud for Utility Billing System Upgrade and Payment Services

**Question 1:** Per our CMC, why was this not pursued through a RFP process?

**Answer:** An RFP process was not used as the city is upgrading software it already has a license for from the company that created the software. The software upgrade can only be obtained from the company that created the software. During the contract process, city IT staff investigated whether the upgrade could be obtained from any other source and was unable to find any other vendors. Therefore, the city IT Department is bringing forward the contracts for City Council consideration pursuant to CMC 3.28.060(A)(2), as there is only one firm that can reasonably provide the services.

**Agenda Item No. 3 –** Energy Conservation and Electric Vehicle Charging Infrastructure Ordinances

**Question 1:** Please provide the link to the costing and technical studies referenced.

**Answer:** <http://carlsbadca.gov/services/depts/pw/environment/cap/ordinances.asp>

**Question 2:** What outreach specifically to residents was conducted?

**Answer:** Two of the proposed CAP ordinances affect residents directly, the energy efficiency and EV charging ordinances. Based on past permit data, the number of projects that would meet the threshold in a typical year is between 30 and 50. Since it was not possible to identify those residents potentially considering major remodels in the future, the project team prepared informational materials about the proposed ordinances and made them available on the city website, at the Faraday Center building counter, the City Clerk's Office and Dove Library. In addition, the project team reached out to the architects, builders and contractors who have worked with residents on projects of this size in recent years and who generally do business in Carlsbad.

File No. 190708 Committee Item No. 1  
 Board Item No. 15

**COMMITTEE/BOARD OF SUPERVISORS**  
 AGENDA PACKET CONTENTS LIST

Committee: Land Use and Transportation Committee Date September 9, 2019

Board of Supervisors Meeting  
 Cmte Board

Date September 17, 2019

- |                                     |                                     |  |
|-------------------------------------|-------------------------------------|--|
| <input type="checkbox"/>            | <input type="checkbox"/>            | Motion                                       |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Resolution                                   |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Ordinance                                    |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Legislative Digest                           |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Budget and Legislative Analyst Report        |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Youth Commission Report                      |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Introduction Form                            |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Department/Agency Cover Letter and/or Report |
| <input type="checkbox"/>            | <input type="checkbox"/>            | MOU  |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Grant Information Form                       |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Grant Budget                                 |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Subcontract Budget                           |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Contract/Agreement                           |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Form 126 – Ethics Commission                 |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Award Letter                                 |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Application                                  |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Public Correspondence                        |

OTHER (Use back side if additional space is needed)

- |                                     |                                     |                                  |
|-------------------------------------|-------------------------------------|----------------------------------|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <u>Referral CEQA 062519</u>      |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <u>Referral FYI 062519</u>       |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <u>CEQA Determination 072519</u> |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <u>DOE POWER POINT 090919</u>    |
| <input type="checkbox"/>            | <input type="checkbox"/>            |                                  |

Completed by: Erica Major Date September 6, 2019  
 Completed by: Erica Major Date 9/11/19

1 [Environment Code - Use of 100% Renewable Energy Required for On-site Electricity  
2 Demands in Nonresidential Buildings of 50,000 Square Feet or More]

3 **Ordinance amending the Environment Code to require all nonresidential buildings of**  
4 **50,000 square feet or more to provide all on-site electricity demands from 100%**  
5 **greenhouse gas-free or renewable sources and to authorize the Director of the**  
6 **Department of the Environment to adopt rules and regulations for implementation of**  
7 **the requirements; and affirming the Planning Department's determination under the**  
8 **California Environmental Quality Act.**

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

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

17 Section 1. CEQA Finding. The Planning Department has determined that the actions  
18 contemplated in this ordinance comply with the California Environmental Quality Act  
19 (California Public Resources Code Sections 21000 et seq.). Said determination is on file with  
20 the Clerk of the Board of Supervisors in File No. 190708 and is incorporated herein by  
21 reference. The Board affirms this determination.

22 Section 2. The Environment Code is hereby amended by adding Chapter 30,  
23 consisting of Sections 3000-3008, to read as follows:  
24  
25



1 the Environment Code, which set additional GHG emissions reduction targets of 40% below 1990  
2 levels by 2025 and 80% below 1990 levels by 2050. The City's efforts to reduce GHG emissions have  
3 focused on using less energy, improved efficiency, and energy recovery as well as de-carbonizing the  
4 energy supply by replacing fossil fuels sources with renewable energy sources – micro-hydro, wind,  
5 geothermal, solar, wave, and biomass.

6 (e) Chapter 9 of the Environment Code requires a GHG emissions reduction plan for the  
7 City, mandates that City departments take certain steps to reduce the City's GHG emissions, and  
8 requires City departments to submit annual reports to the Department of the Environment. As of 2017,  
9 just under 3% of San Francisco's GHG emissions were generated by energy consumed in municipal  
10 government buildings and fleet vehicles. Moving to 100% renewable electricity in the private sector is  
11 a significant step the City can take to continue reducing GHG emissions and meet Climate Action  
12 Strategy goals.

13  
14 **SEC. 3002. DEFINITIONS.**

15 For purposes of this Chapter 30, the following terms have the following meanings:

16 **Building Owner.** A person, as defined by California Public Resources Code Section 25116 or  
17 any successor law, possessing title to the building.

18 **Director.** The Director of the Department of the Environment or the Director's designee.

19 **Energy.** Electricity, natural gas, steam, heating oil, or other product sold by a utility to a  
20 customer of a nonresidential building, or renewable on-site electricity generation, for purposes of  
21 providing heat, cooling, lighting, water heating, or for powering or fueling other end-uses in the  
22 building and related facilities.

23 **Energy Professional.** An individual qualified to perform an energy efficiency audit required by  
24 Chapter 20 of the Environment Code.

1           Greenhouse Gas gas (GHG)-free or renewable energy resources. Energy resources  
2 qualifying as renewable pursuant to California Public Resources Code Chapter 8.6, Section 25741(a)  
3 and California Public Utilities Code Chapter 2.3, Article 16, Section 399.16(b)(1) or (2), as  
4 amended from time to time, or provided by a local publicly owned electric utility subject to  
5 California Public Utilities Code Chapter 2.3, Article 16, Section 399.30(j), as amended from  
6 time to time and from hydroelectric facilities of 30 megawatts or greater.

7           Gross floor area. The total number of square feet measured between the principal exterior  
8 surfaces of enclosing fixed walls.

9           Nonresidential Building. A facility composed of occupancy types(s) other than residential –  
10 including type A, B, E, I-1, I-2, I-3, M, R-1, and S, as defined in Chapter 3 of the California Building  
11 Code, as amended from time to time, and where a gross area of 10,000 square feet or more is heated or  
12 cooled in its interior.

13  
14 **SEC. 3003. 100% RENEWABLE ELECTRICITY USAGE AND COMPLIANCE.**

15           (a) Applicability and Schedule for Compliance. The date of applicability of the  
16 requirements of this Chapter 30 to Nonresidential Buildings is as follows, based on gross floor area:

17           (1) Buildings of 500,000 square feet in gross floor area or larger: December 31, 2022;

18           (2) Buildings of 250,000 square feet in gross floor area or larger, but below 500,000  
19 square feet: December 31, 2024;

20           (3) Buildings of 50,000 square feet in gross floor area or larger, but below 250,000  
21 square feet: December 31, 2030.

22           Nonresidential Buildings of less than 50,000 square feet in gross floor area are not subject to  
23 the requirements of this Chapter.

1           **(b) Renewable Electricity Requirement.** Each Nonresidential Building subject to this  
2 Chapter 30 shall, as of the date specified in subsection (a), ensure that all on-site electricity demands  
3 are met through any combination of:

4                   (1) on-site generation from ~~of~~ 100% greenhouse gas (GHG)-free electricity or  
5 renewable energy resources, and/or

6                   (2) purchase of electricity from 100% greenhouse gas (GHG)-free or renewable  
7 energy resources sources.

8           **(c) Tenants.** In buildings subject to the requirements of this Chapter 30, it shall be the  
9 responsibility of nonresidential building tenants to ensure that all meters for which they are the account  
10 holder are in compliance with the renewable electricity provisions of Section 3003(b), and the  
11 reporting requirements of Sections 2002(b) and (c). Nothing in this Section 3003 shall be construed to  
12 permit a building owner to use tenant utility subscription data or usage data for purposes other than  
13 compliance with Chapters 20 and 30 of the Environment Code.

14           **(d) Program Wait List.** A nonresidential building subject to this Chapter 30, as of the date  
15 specified in subsection (a), will be compliant if they are on a waitlist for enrollment in a program  
16 satisfying the conditions of subsection (b).

17           **(e) Existing Electricity Contracts.** A nonresidential building subject to this Chapter 30 will  
18 not be considered in violation of this Chapter 30 during the term of an existing long-term energy  
19 contract executed and dated prior to December 31, 2019.

20  
21 **SEC. 3004. IMPLEMENTATION.**

22           **(a)** The Director may adopt rules and regulations for the implementation of this Chapter 30,  
23 including rules for an electronic submittal of an Annual Statement of Sources of Electricity, and for the  
24 verification of compliance with the requirements of this Chapter.

1           **(b) The Director may modify or suspend any or all of the requirements of this Chapter 30 if**  
2 **the Director submits a written determination to the Board of Supervisors and the Mayor indicating:**

3                   **(1) lack of 100% greenhouse gas (GHG)-free or renewable energy market**  
4 **resources available to meet demand, and/or**

5                   **(2) the cost of all available 100% greenhouse gas (GHG)-free or renewable**  
6 **electricity energy resources options is more than 5% of each provider's default program offering,**  
7 **and/or**

8                   **(3) the requirement conflicts with or is similar or less comprehensive than a**  
9 **renewable energy requirement adopted by the State of California or the Federal government.**

10  
11 **SEC. 3005. ENFORCEMENT.**

12           **The enforcement procedures and use of proceeds provisions of Chapter 20, Section 2009, shall**  
13 **apply to violations of this Chapter 30.**

14  
15 **SEC. 3006. PROMOTION OF THE GENERAL WELFARE.**

16           **In adopting this Chapter 30, the City and County of San Francisco is assuming an undertaking**  
17 **only to promote the general welfare. It is not assuming, nor is it imposing on its officers and employees,**  
18 **an obligation for breach of which it is liable in money damages to any building owner who claims that**  
19 **such breach proximately caused injury.**

20  
21 **SEC. 3007. CONFLICT WITH STATE OR FEDERAL LAW.**

22           **The provisions of this Chapter 30 shall be construed so as not to conflict with applicable federal**  
23 **or state laws, rules, or regulations. Nothing in this Chapter shall authorize any City agency or**  
24 **department to impose any duties or obligations in conflict with limitations on municipal authority**  
25 **established by federal or state law at the time such agency or department action is taken.**

1 SEC. 3008. SEVERABILITY.

2 If any of the provisions of this Chapter 30 or the application thereof to any building owner or  
3 circumstance is held invalid, the remainder of those provisions, including the application of such part  
4 or provisions to building owners or circumstances other than those to which it is held invalid, shall not  
5 be affected thereby and shall continue in full force and effect. To this end, the provisions of this  
6 Chapter are severable.

7  
8 Section 3. Effective Date. This ordinance shall become effective 30 days after  
9 enactment. Enactment occurs when the Mayor signs the ordinance, the Mayor returns the  
10 ordinance unsigned or does not sign the ordinance within ten days of receiving it, or the Board  
11 of Supervisors overrides the Mayor's veto of the ordinance.

12  
13 APPROVED AS TO FORM:  
14 DENNIS J. HERRERA, City Attorney

15  
16 By:

 (for JAB)  
17 JUDITH A. BOYAJIAN  
18 Deputy City Attorney

19  
20 n:\legan\as2019\1900357\01390304.docx

**REVISED LEGISLATIVE DIGEST**  
(Amended in Committee, 9/9/2019)

[Environment Code - 100% Renewable Energy Required for On-Site Electricity Demands in Nonresidential Buildings of 50,000 Square Feet or More]

**Ordinance amending the Environment Code to require all nonresidential buildings of 50,000 square feet or more to provide all on-site electricity demands from 100% greenhouse gas-free or renewable sources and to authorize the Director of the Department of the Environment to adopt rules and regulations for implementation of the requirements; and affirming the Planning Department's determination under the California Environmental Quality Act.**

Existing Law

There are no amendments to existing law.

Amendments to Current Law

This ordinance would add Chapter 30 to the Environment Code. It requires that all nonresidential buildings of 50,000 square feet or more to meet all on-site electricity demands through any combination of (1) on-site generation of 100% greenhouse gas (GHG)-free or renewable sources and/or (2) the purchase of electricity from 100% GHG-free sources. Buildings of 500,000 gross square feet of floor area (as defined) or larger must meet the requirement by December 31, 2022; buildings of 250,000 gross square feet or larger must meet the requirement by December 31, 2024; and buildings of 50,000 gross square feet or larger must meet the requirement by December 31, 2030. The Director of the Department of Environment may adopt rules and regulations for the implementation of the requirements and may modify or suspend the requirements if the State of California or the Federal government adopts a similar or more comprehensive renewable energy requirement or a requirement that conflicts with the San Francisco requirements.

Background Information

While San Francisco has some of the most energy efficient new buildings in the nation, it is also one of the oldest urban areas in California and many of its buildings were built before energy efficiency codes were enacted. The City's older building stock uses electricity partially supplied by fossil-fuel burning power plants and heat that is primarily supplied by the combustion of natural gas – both of which emit carbon dioxide, one of several pollutants that contribute to global warming.

In 2011, the Mayor convened a Renewable Energy Task Force to develop recommendations to help San Francisco achieve its goal of 100% renewable electricity supply by 2020, and the

FILE NO. 190708

City's most recently completed 2017 community-wide inventory of GHG emissions found that the buildings sector is responsible for 42% of emissions, second only to transportation.

Chapter 9 of the Environment Code requires a GHG emissions reduction plan for the City, mandates that City departments take certain steps to reduce the City's GHG emissions, and requires City departments to submit annual reports to the Department of the Environment. By 2017, just under 3% of San Francisco's GHG emissions were generated by energy consumed in municipal government buildings and fleet vehicles. Moving to 100% renewable energy in the private sector is a significant step the City can take to continue reducing GHG emissions and meet its Climate Action Strategy goals.

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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

June 25, 2019

File No. 190708

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

Dear Ms. Gibson:

On June 18, 2019, Mayor Breed submitted the proposed legislation:

File No. 190708

**Ordinance amending the Environment Code to require all nonresidential buildings of 50,000 square feet or more to provide all on-site electricity demands from 100% greenhouse gas-free or renewable sources and to authorize the Director of the Department of the Environment to adopt rules and regulations for implementation of the requirements; and affirming the Planning Department's determination under the California Environmental Quality Act.**

This legislation is being transmitted to you for environmental review.

Angela Calvillo, Clerk of the Board

A handwritten signature in cursive script, appearing to read "Erica Major".

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

Attachment

c: Joy Navarrete, Environmental Planning  
Laura Lynch, Environmental Planning

Not defined as a project under CEQA Guidelines Sections 15378 and 15060(c)(2) because it would not result in a direct or indirect physical change in the environment. Individual project would need separate environmental review.

6/29/19 navarrete

Digitally signed by Joy Navarrete  
DN: cn=Joy Navarrete, o=City Planning and Environmental  
Planning, cn=Joy Navarrete,  
email=joy.navarrete@sfgov.org  
Date: 2019.07.25 14:36:36 -0700



**SF Environment**

Our home. Our city. Our planet.

A Department of the City and County of San Francisco

# Reducing Emissions with Renewable Electricity for Large Commercial Buildings

620

September 9, 2019

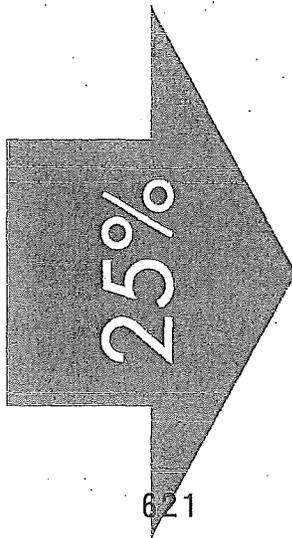
Barry Hooper, SF Environment

10/27/08  
9/19/2019  
SUBMIT  
+ presentation

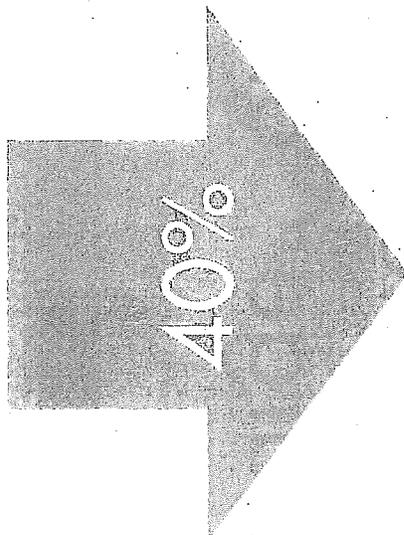


# GHG Reduction Targets

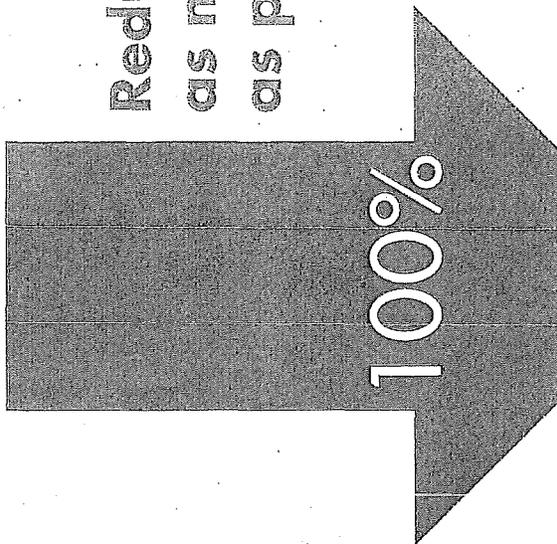
2017



2025



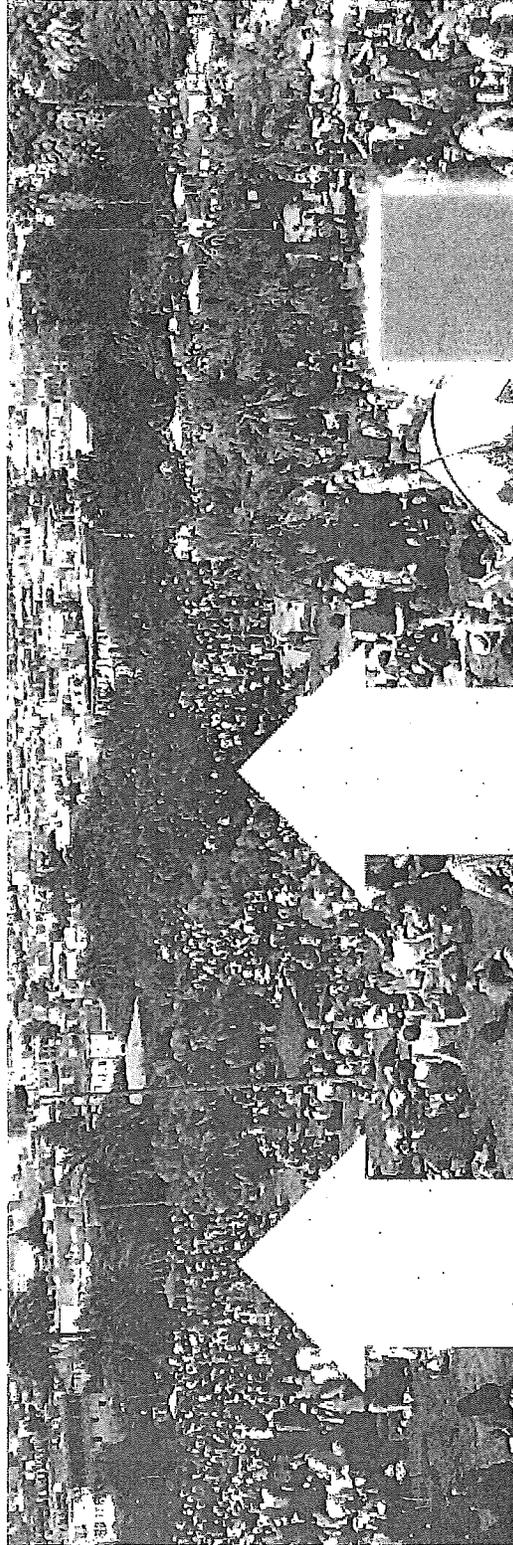
2050



Reduce  
as much  
as possible



# San Francisco: 1990 – 2017



22%

Population

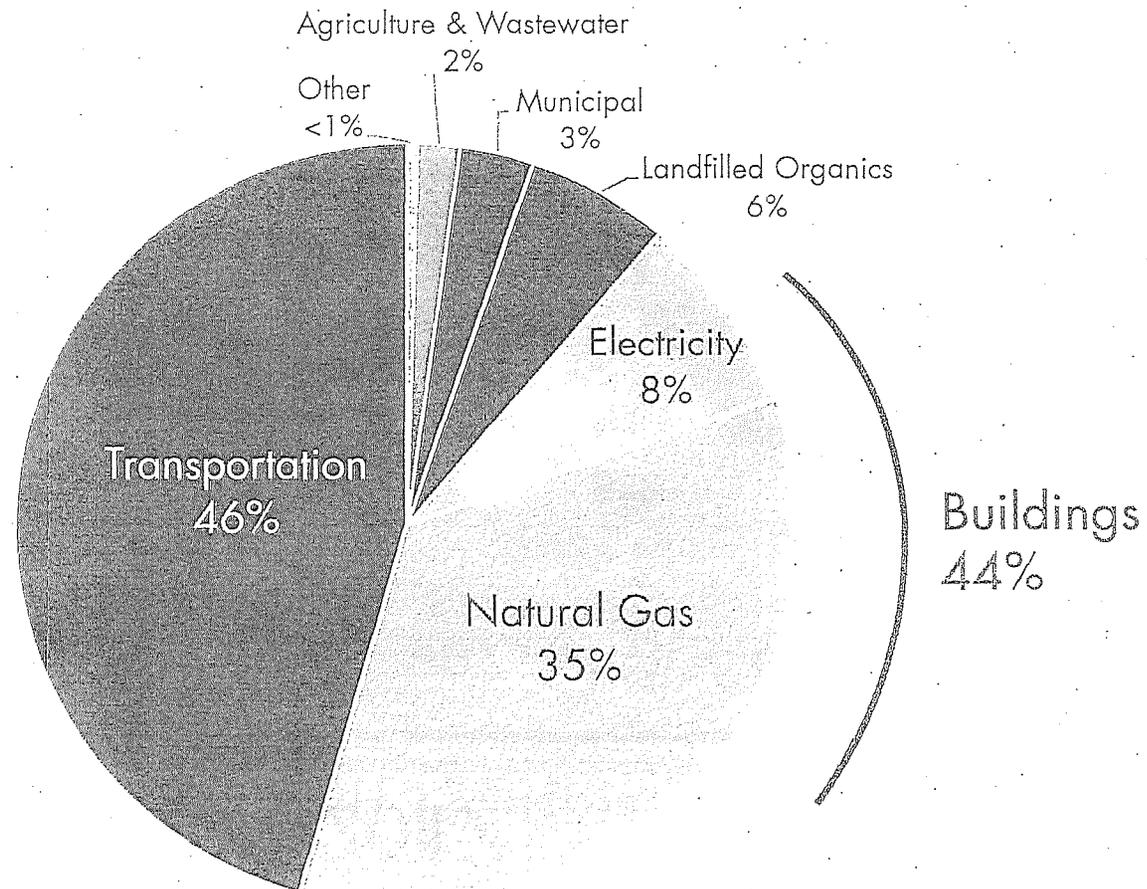
166%

GDP

36%

GHG Emissions

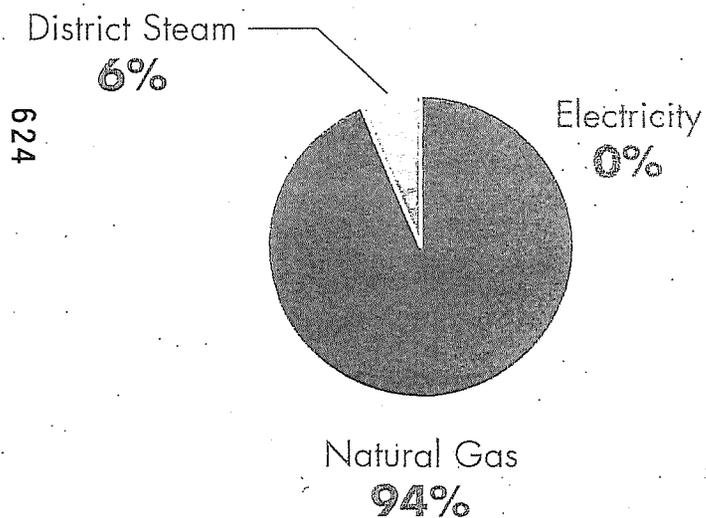
# San Francisco's GHG Sources



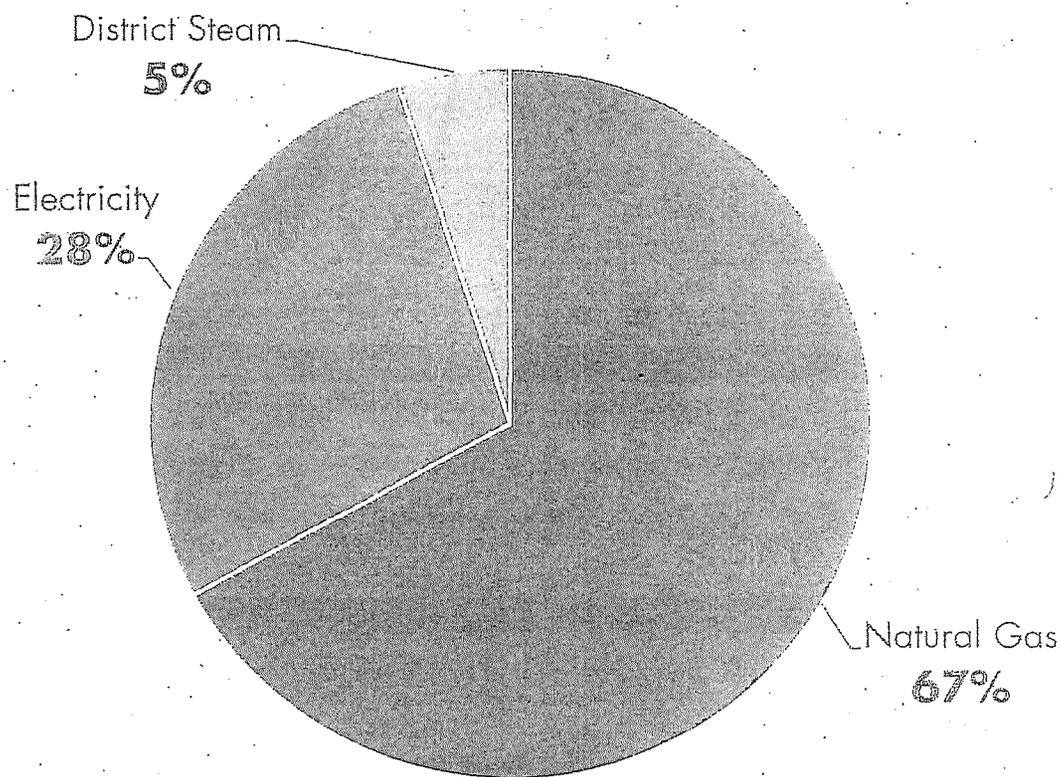
# GHG Emissions From San Francisco Buildings



## Municipal



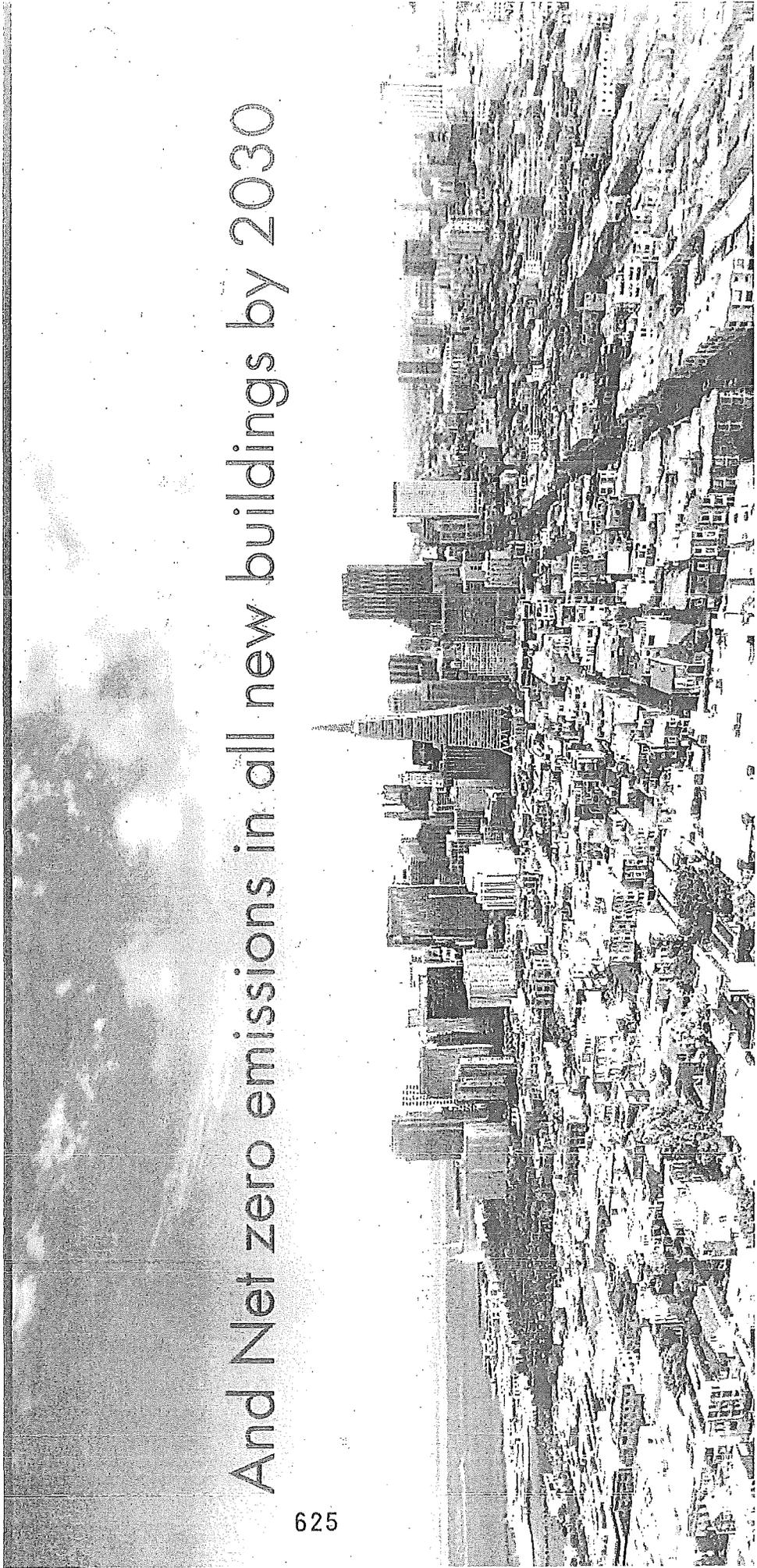
## Commercial

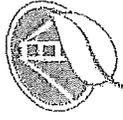




City Goal: Net Zero Emissions for all buildings by 2050

And Net zero emissions in all new buildings by 2030





# Zero Emissions In 3 Steps

1. Energy efficiency
2. Supply renewable electricity
3. Electrify appliances

626

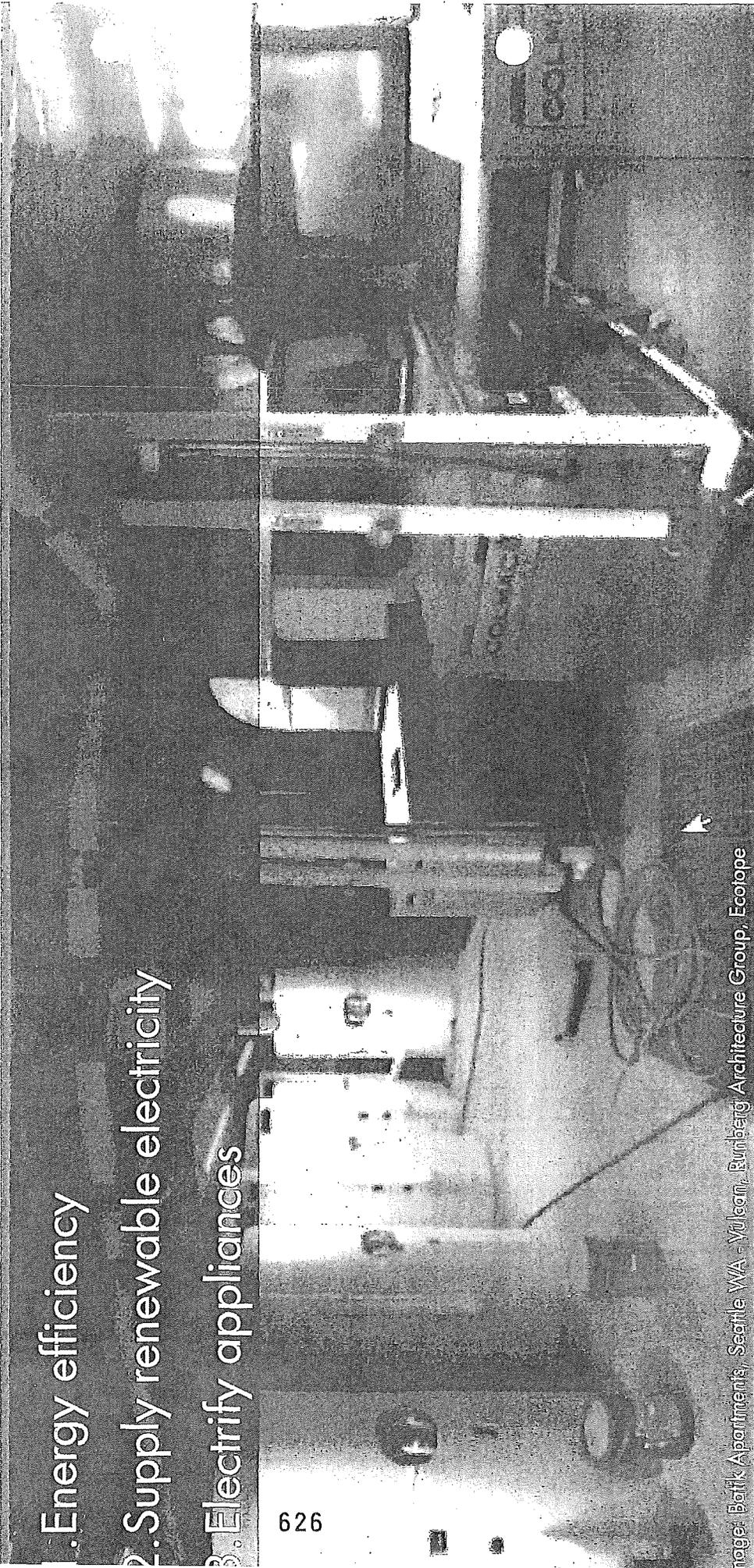


Image: Botik Apartments, Seattle WA - Vulcan, Burnberg Architecture Group, Ecofope

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# Existing Buildings Ordinance Supports Efficiency

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Applies to

- Non-Residential  $\geq 10,000$  square feet
- Residential  $\geq 50,000$  square feet

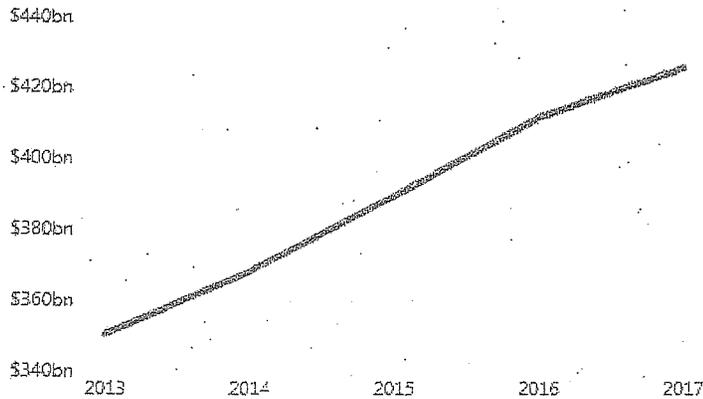
Requires energy use tracking and public disclosure



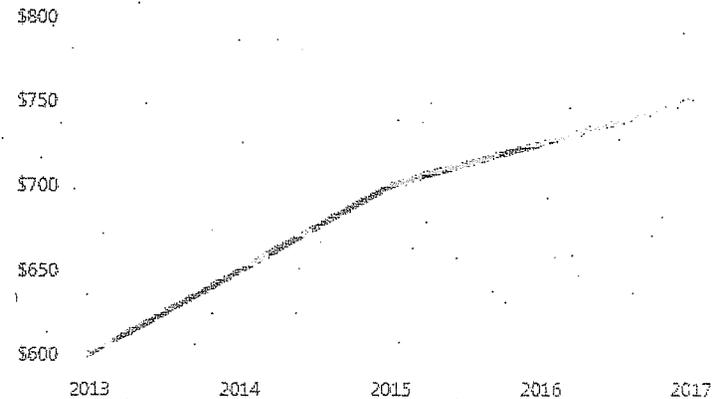
# Commercial Buildings: More Jobs, Growing Economy, Using Less Energy



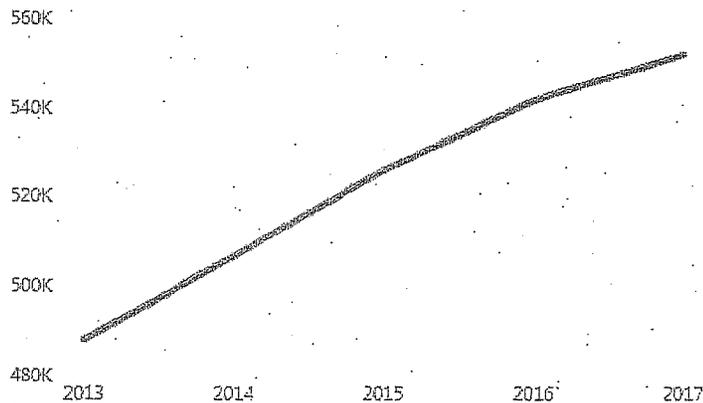
San Francisco-Oakland MSA GDP - Billions of Dollars



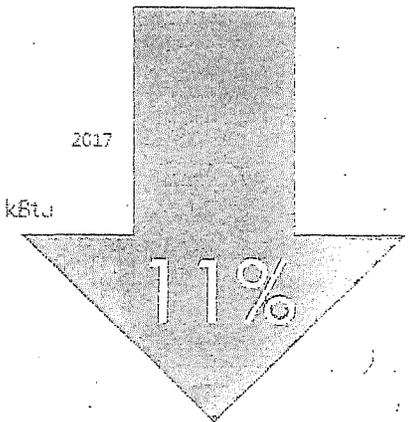
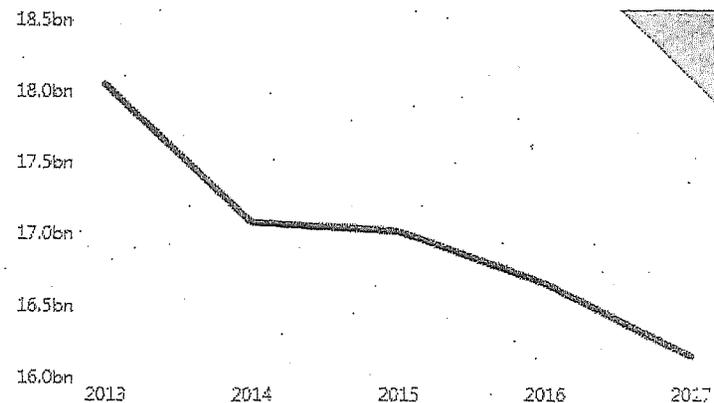
San Francisco Office Value Per Square Foot



San Francisco Total Employment



San Francisco Non-Residential Energy Sales - Billion kBtu



# Applicability

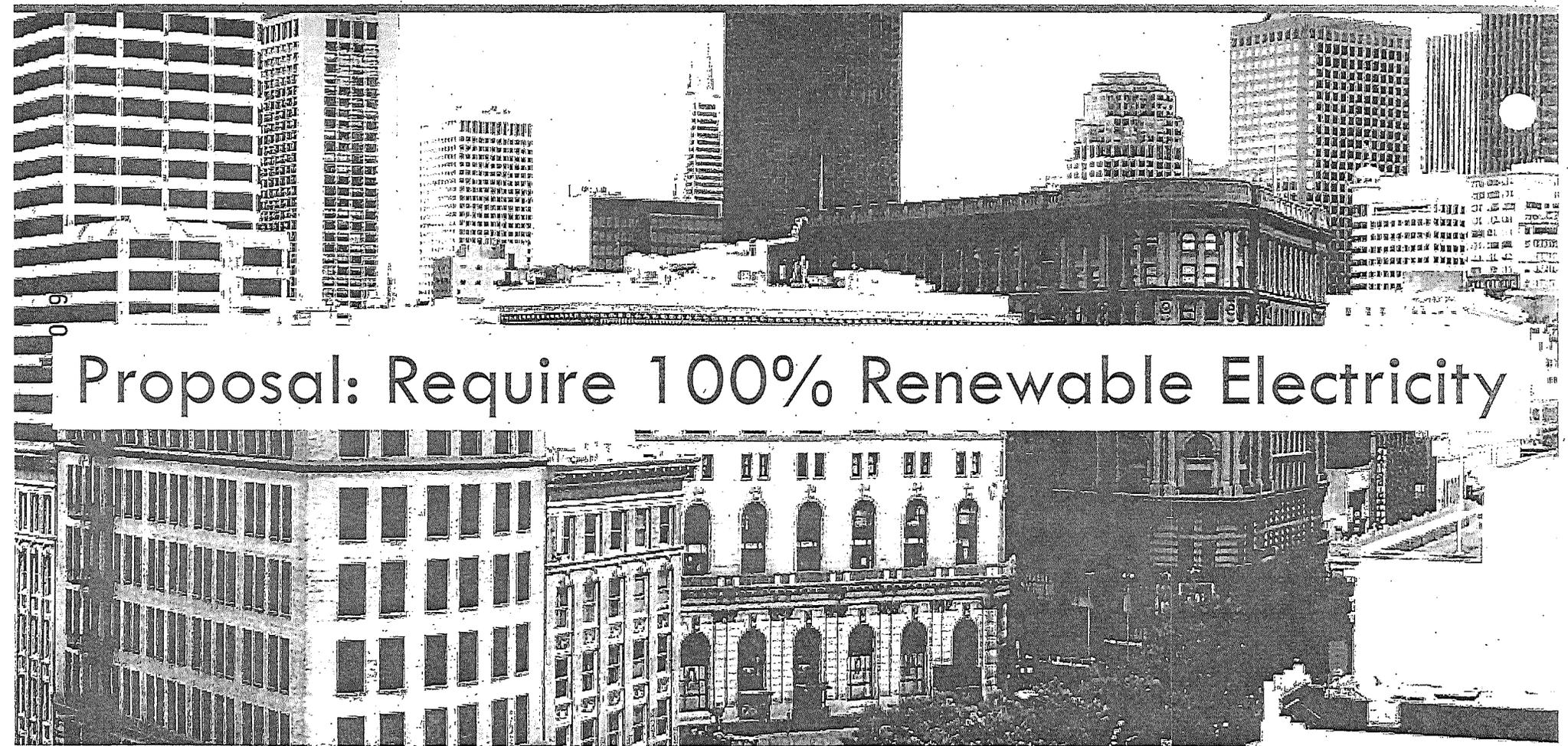


	Commercial ≥50,000 sq ft	Commercial 10,000 - 49,999 sq ft	Multifamily ≥50,000 sq ft
Benchmarking	✓	✓	✓
Adopted: Energy Audits	✓	✓	
Proposed: Renewable Electricity	✓		

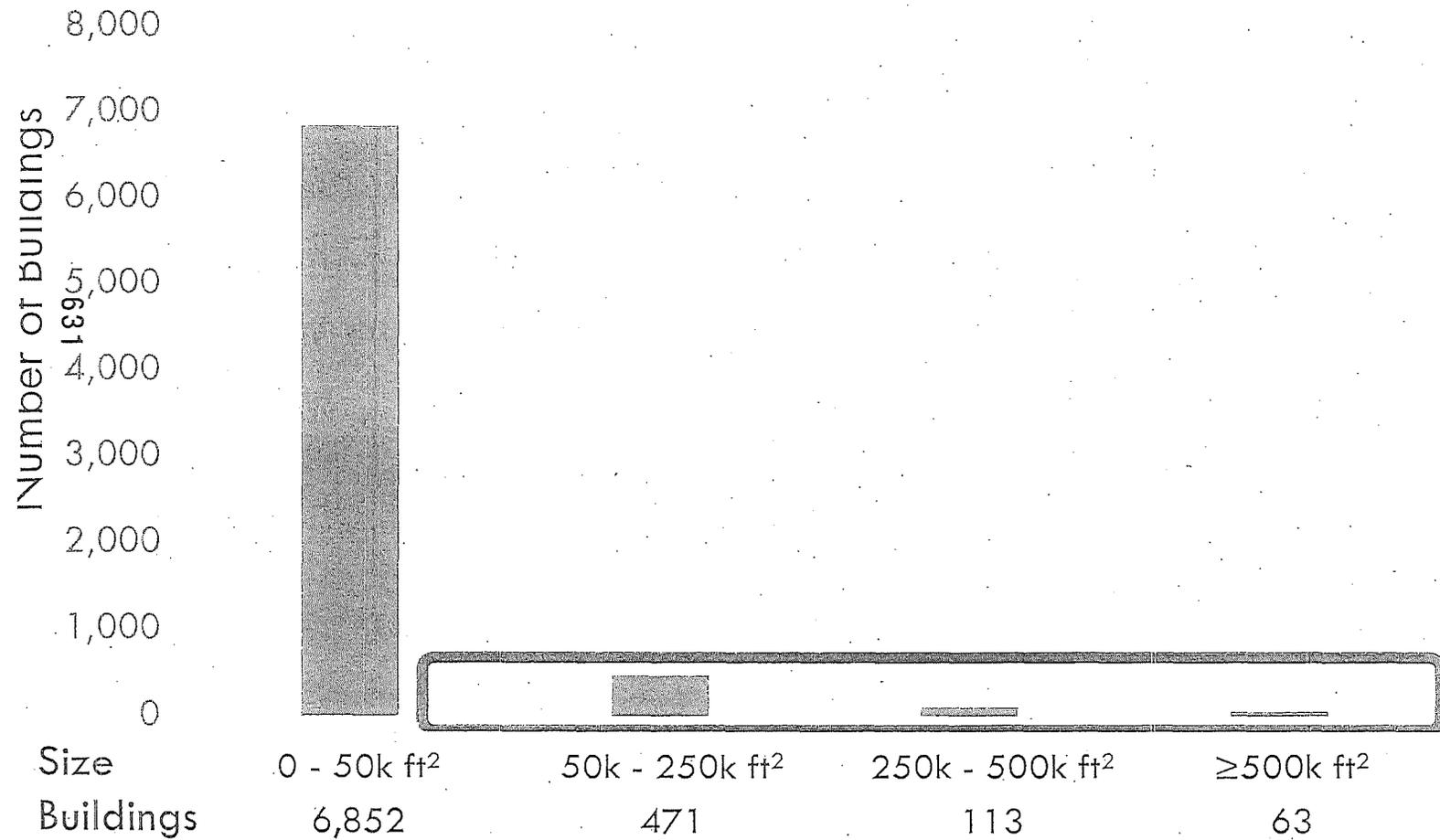
# Large Commercial Buildings



Proposal: Require 100% Renewable Electricity



# Impact



9%

Of Commercial Buildings Produce

73%

Of Commercial Electricity Emissions

=  
156,000  
Tons CO<sub>2</sub>e/year

# Phase-in



632

Phase	Size (square feet)	Number of Buildings	Annual Electricity Use (GWh)
2022	≥500k+	63	660
2024	250-500k	113	430
2030	50-250k	471	520

# Change in Cost (compared to PG&E Default)



	<b>Hetch Hetchy Power 100% GHG Free Energy</b>	<b>CleanPowerSF SuperGreen 100% Renewable Energy</b>	<b>PG&amp;E Solar Choice 100% Renewable Energy</b>
<b>\$\$\$</b> Medium (≥250,000 Sq Ft, PG&E A10SX Rate)	<b>-13.7%</b>	<b>0.5% - 1.7%</b>	<b>-1.2% - -0.2%</b>
Large (≥250,000 Sq Ft, PG&E E19S Rate)	<b>-11.5%</b>	<b>0.5% - 1.5%</b>	<b>0.9% - 1.7%</b>
Very Large (≥500,000 Sq Ft, PG&E E20S Rate)	<b>-12.5%</b>	<b>2.6% - 3.7%</b>	<b>3.0% - 3.9%</b>



# Buildings $\geq 500,000$ square feet

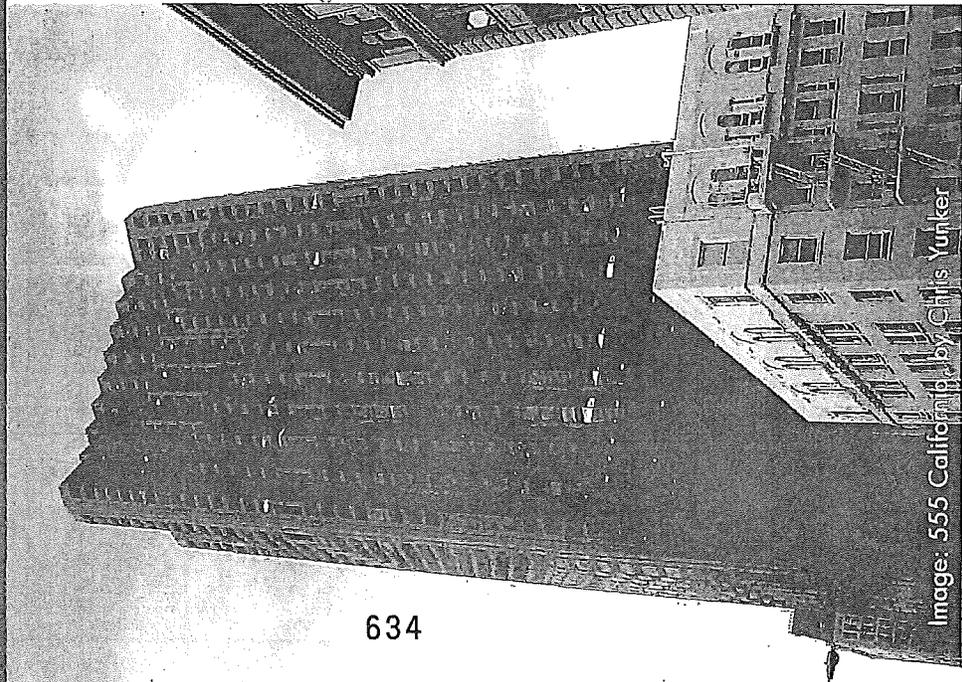


Image: 555 California by Chris Yunker



# Buildings 250,000 to 500,000 square feet

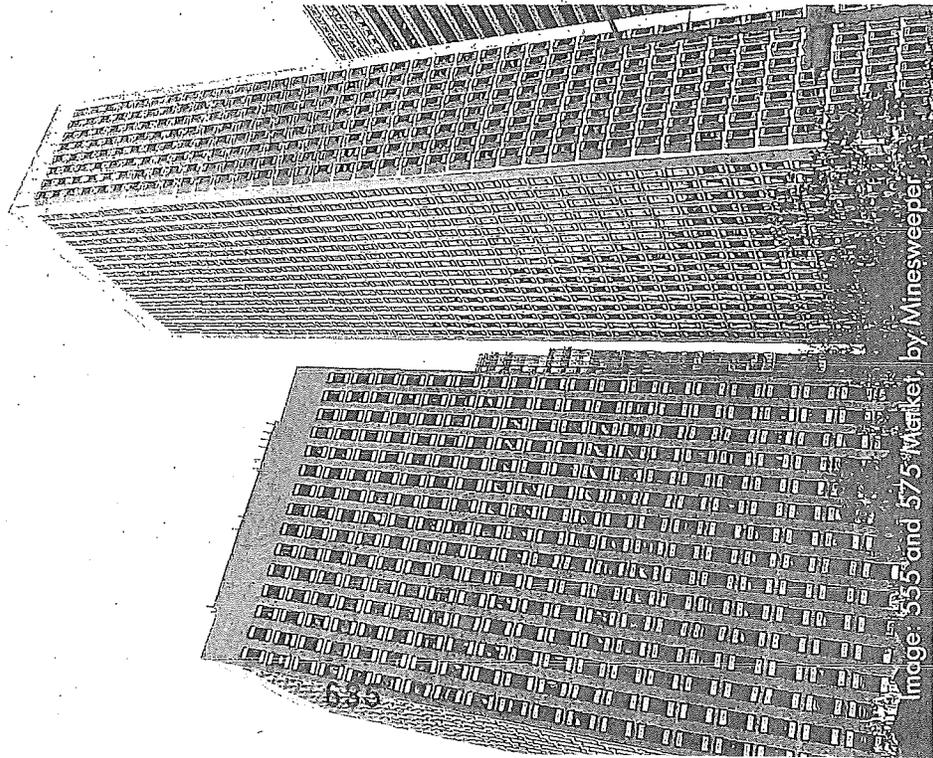
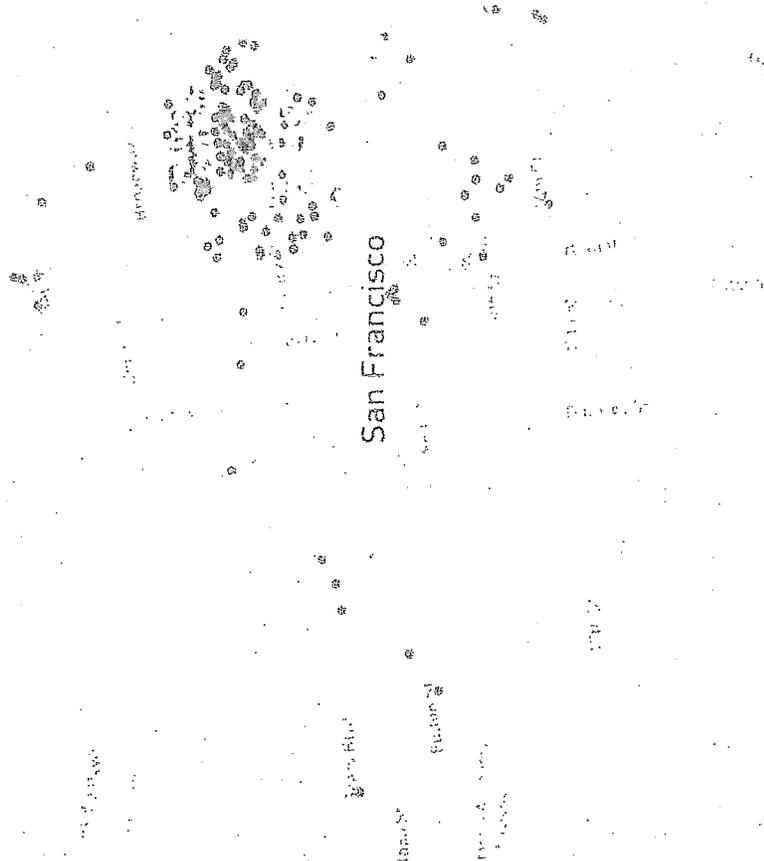


Image: 555 and 575 Market, by Minesweeper





# Buildings 50,000 to 250,000 square feet

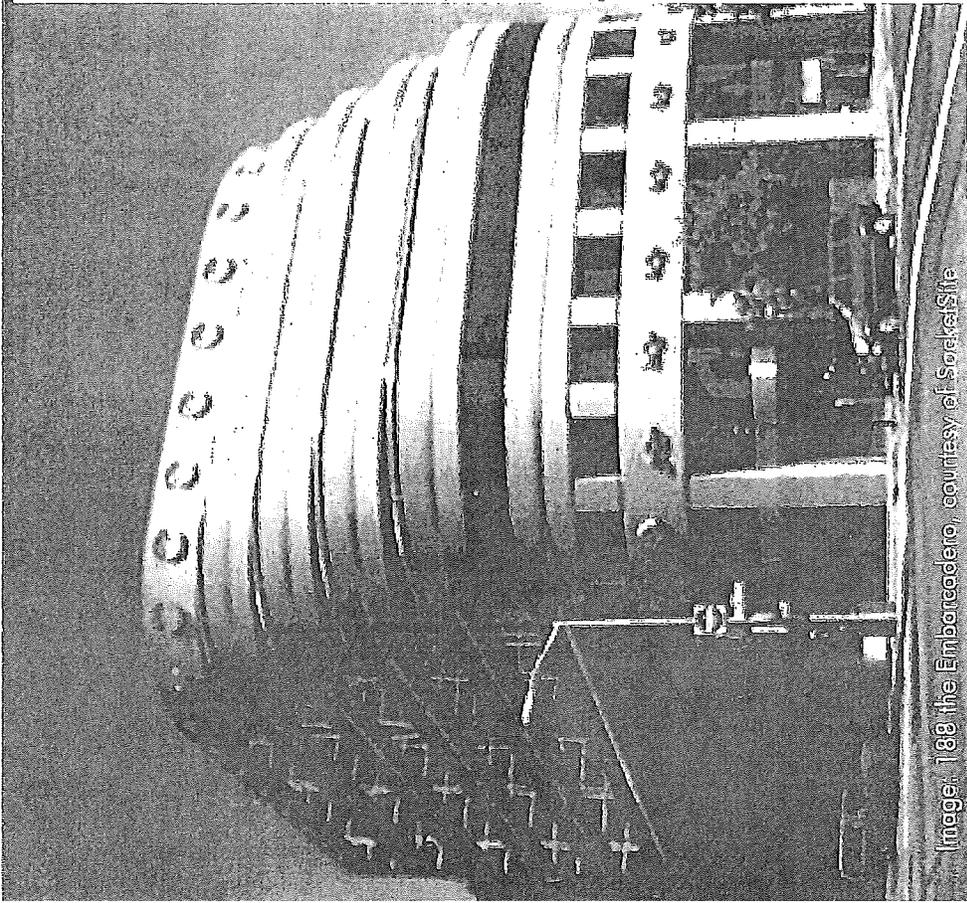


Image: 188 the Embrocadero, courtesy of SoresSite





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# Roles

---

## **SFE**

- Notify building owner of requirement
- Support SFPUC with outreach

637

## **SFPUC/ CleanPowerSF**

- Provide cost-effective renewable energy
- Assist SFE with notification
- Monitor compliance
- Outreach

---

## Definition: Greenhouse Gas-free or Renewable Energy

---



- Electricity qualifying for California Renewable Portfolio Standard, or
- Hetch Hetchy Power

### Examples:

- CleanPowerSF SuperGreen
- SFPUC Hetch Hetchy Power
- PG&E Solar Choice

---

Thank You

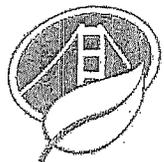
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**Barry Hooper**

Senior Green Building Coordinator

Barry.e.hooper@sfgov.org



**SF Environment**

**Our home. Our city. Our planet.**

A Department of the City and County of San Francisco

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190708

**From:** John Bozeman <johnb@boma.com>  
**Sent:** Monday, September 09, 2019 1:28 PM  
**To:** Major, Erica (BOS); Haney, Matt (BOS); Peskin, Aaron (BOS); Safai, Ahsha (BOS)  
**Cc:** Jue, Tyrone (MYR); Angulo, Sunny (BOS); RivamonteMesa, Abigail (BOS); Sandoval, Suhagey (BOS)  
**Subject:** San Francisco Board of Supervisors Land Use and Transportation Committee, September 9, 2019 - Item #1 (190708) 100% Renewable Electricity in Commercial Buildings

This message is from outside the City email system. Do not open links or attachments from untrusted sources.

Good Afternoon Honorable Members of the Land Use and Transportation Committee,

At your meeting today, you will consider Item #1 (190708) Environment Code - 100% Renewable Energy Required for On-Site Electricity Demands in Nonresidential Buildings of 50,000 Square Feet or More.

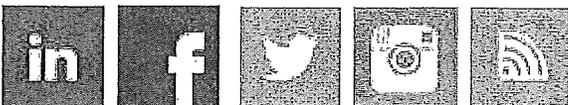
BOMA supports a more sustainable built environment generally through voluntary means as opposed to mandates. Measures addressing energy efficiency, water savings, resource usage reduction or any other environmental concerns should be well-vetted, realistic and cost-efficient.

With regard to this ordinance, we sincerely appreciate collaborating and working with me and our BOMA San Francisco Energy & Environment Committee leaders early in the process to determine the feasibility of implementing a well-intended policy objective. Indeed, there were a number of possible issues at the onset that would have made the requirements of the ordinance, without key amendments, difficult to implement if not for our member feedback and the understanding of City and County of San Francisco stakeholders.

Please let me know if you have any questions and thank you for your leadership.

Respectfully,

John M. Bozeman, CAE  
Director, Government and Industry Affairs  
Building Owners and Managers Association of San Francisco  
233 Sansome Street, 8th Floor  
San Francisco, CA 94104  
Cell: (415) 686-9652



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

June 25, 2019

File No. 190708

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

Dear Ms. Gibson:

On June 18, 2019, Mayor Breed submitted the proposed legislation:

**File No. 190708**

**Ordinance amending the Environment Code to require all nonresidential buildings of 50,000 square feet or more to provide all on-site electricity demands from 100% greenhouse gas-free or renewable sources and to authorize the Director of the Department of the Environment to adopt rules and regulations for implementation of the requirements; and affirming the Planning Department's determination under the California Environmental Quality Act.**

This legislation is being transmitted to you for environmental review.

Angela Calvillo, Clerk of the Board

A handwritten signature in cursive script, appearing to read "Erica Major".

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

Attachment

c: Joy Navarrete, Environmental Planning  
Laura Lynch, Environmental Planning

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## MEMORANDUM

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

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

DATE: June 25, 2019

SUBJECT: LEGISLATION INTRODUCED

---

The Board of Supervisors' Land Use and Transportation Committee has received the following proposed legislation, introduced by Mayor Breed on June 18, 2019:

**File No. 190708**

**Ordinance amending the Environment Code to require all nonresidential buildings of 50,000 square feet or more to provide all on-site electricity demands from 100% greenhouse gas-free or renewable sources and to authorize the Director of the Department of the Environment to adopt rules and regulations for implementation of the requirements; and affirming the Planning Department's determination under the California Environmental Quality Act.**

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: [erica.major@sfgov.org](mailto:erica.major@sfgov.org).

c: Scott Sanchez, Planning Department  
Corey Teague, Planning Department  
Lisa Gibson, Planning Department  
Devyani Jain, Planning Department  
AnMarie Rodgers, Planning Department  
Dan Sider, Planning Department  
Aaron Starr, Planning Department  
Joy Navarrete, Planning Department  
Laura Lynch, Planning Department  
William Strawn, Department of Building Inspection  
Carolyn Jayin, Department of Building Inspection

OFFICE OF THE MAYOR  
SAN FRANCISCO



LONDON N. BREED  
MAYOR

TO: Angela Calvillo, Clerk of the Board of Supervisors *SK*  
FROM: Sophia Kittler  
RE: [Environment Code - Use of 100% Renewable Energy, Required for On-Site Electricity Demands in Nonresidential Buildings of 50,000 Square Feet or More]  
DATE: June 18, 2019

---

**Ordinance amending the Environment Code to require all nonresidential buildings of 50,000 square feet or more to provide all on-site electricity demands from 100% greenhouse gas-free or renewable sources and to authorize the Director of the Department of the Environment to adopt rules and regulations for implementation of the requirements; and affirming the Planning Department's determination under the California Environmental Quality Act.**

Please note that Supervisors Brown and Safai are co-sponsors of this legislation.

Should you have any questions, please contact Sophia Kittler at 415-554-6153.

RECEIVED  
BOARD OF SUPERVISORS  
SAN FRANCISCO  
2019 JUN 18 PM 2:54  
AK





IDEAS Z2 Design Facility, San Jose (Credit: David Wakely)

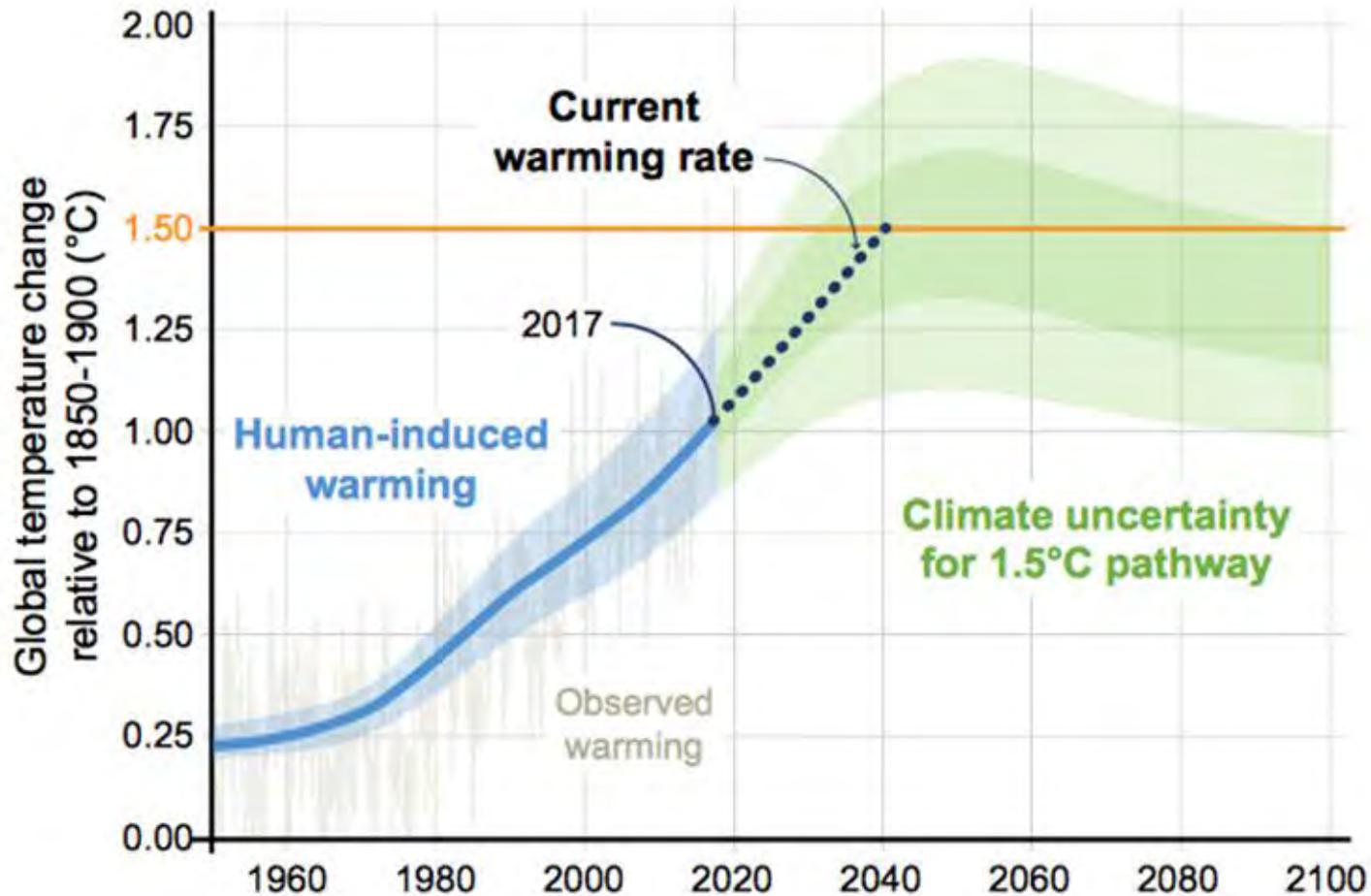
# San José Building Reach Code

**City Council Meeting, Item 7.2**  
**September 17, 2019**

Presented by: Kerrie Romanow, ESD Director; Ken Davies, ESD Deputy Director; James Son, PBCE Deputy Director; Sean Denniston, New Buildings Institute



# Global Temperatures are Rising

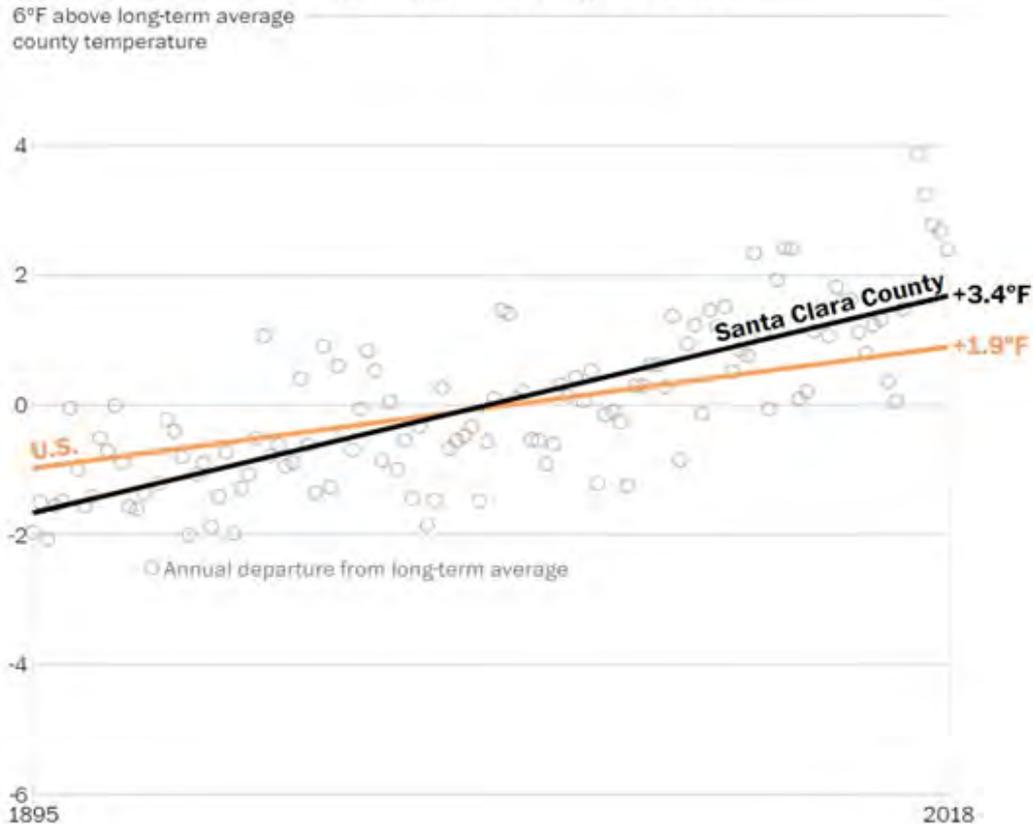


# Local Temperatures are Rising

Santa Clara County, California

+3.4° Fahrenheit

Annual temperature change, 1895-2018



# San José is a Committed Leader

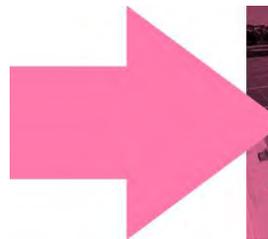
## CLIMATE SMART SAN JOSE

A People-Centered Plan for a  
Low-Carbon City



## AMERICAN CITIES CLIMATE CHALLENGE

HELPING AMERICA'S LEADING  
CLIMATE CITIES **GO THE DISTANCE**

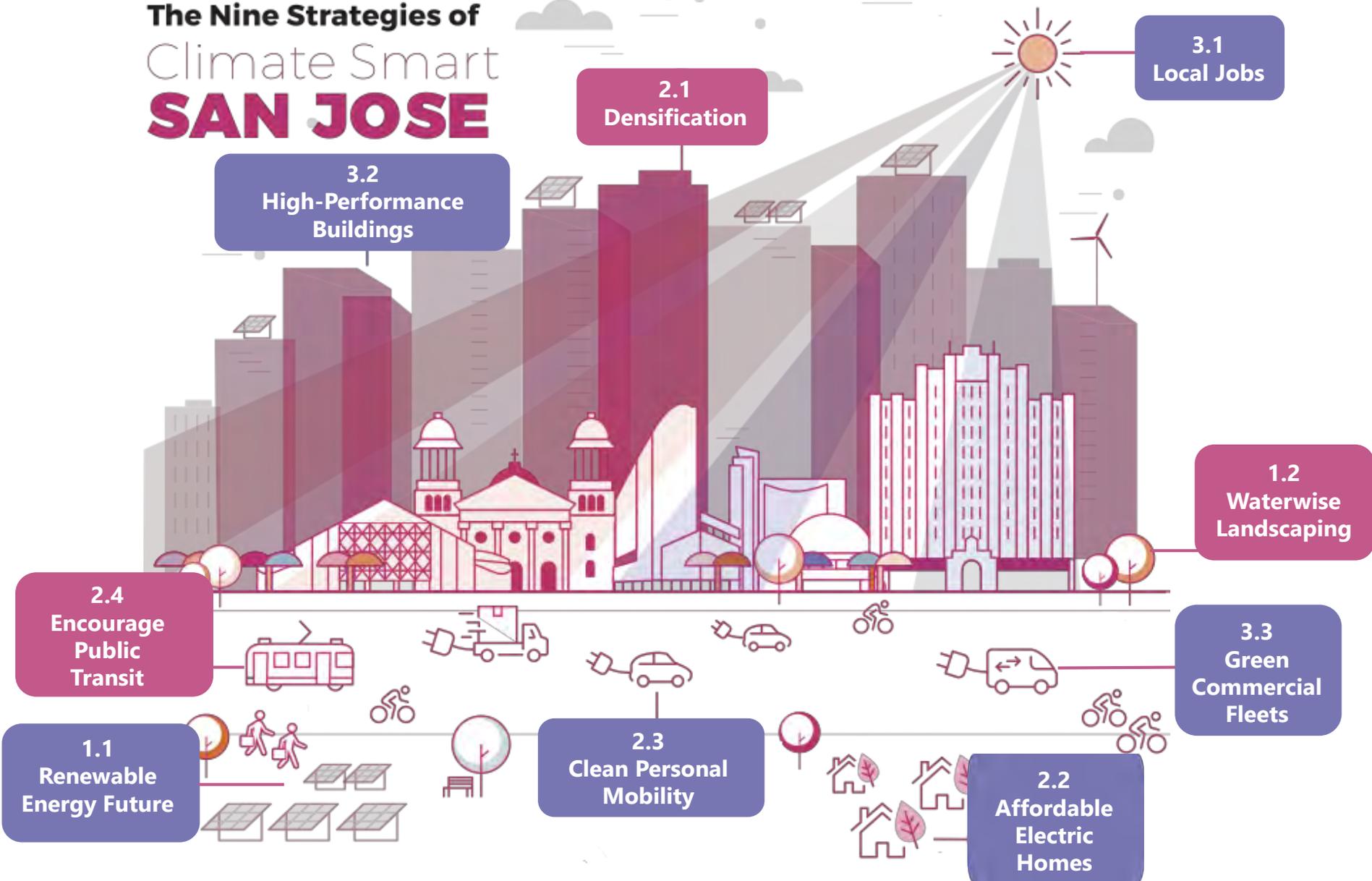


**The Net Zero Carbon  
Buildings Declaration**

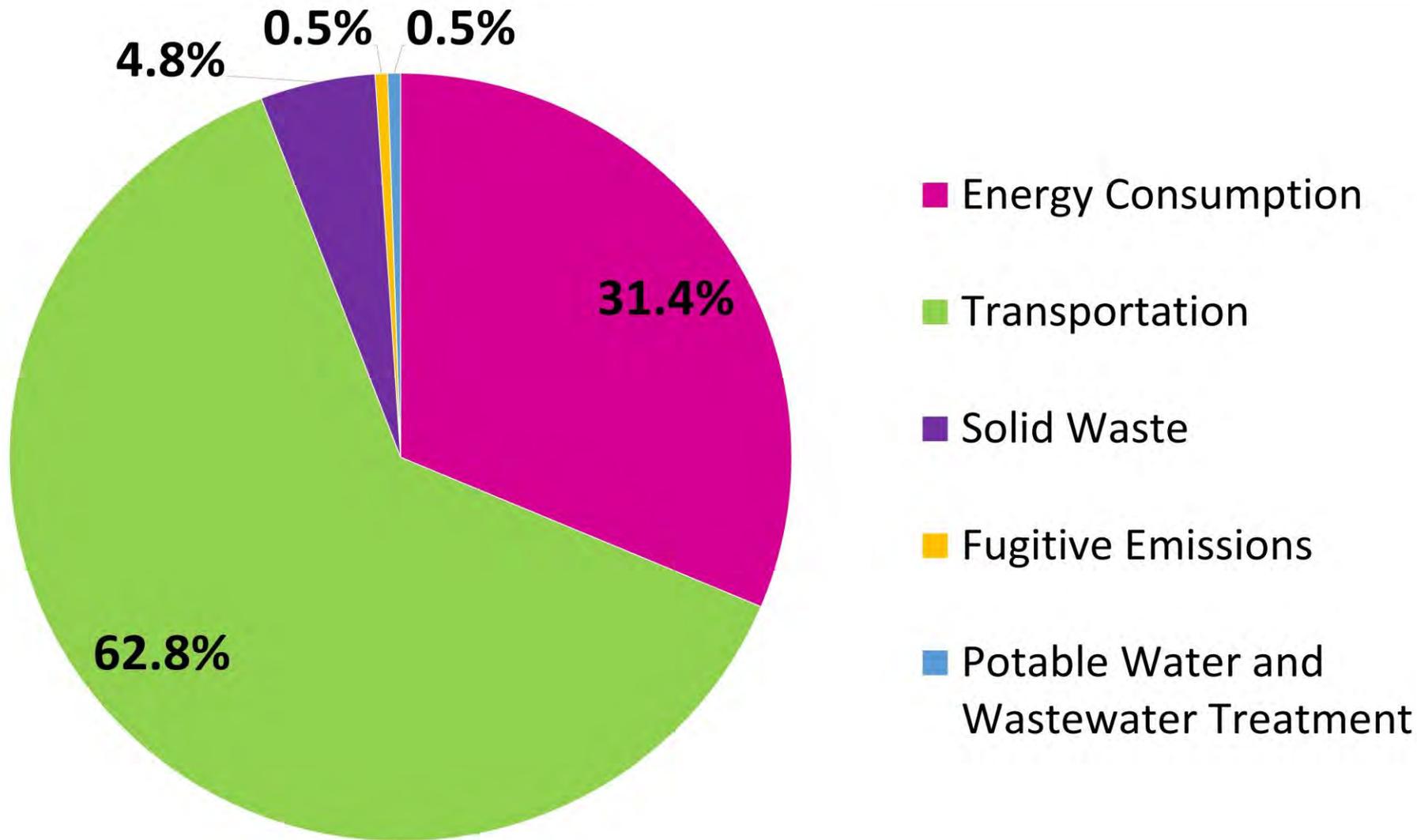
**C40  
CITIES**

# A Reach Code is Integral to Climate Smart

## The Nine Strategies of Climate Smart **SAN JOSE**



# San José 2017 GHG Emissions Profile



# GHG Impacts

Significant growth expected in the San José building stock in 2020 alone:

- 350 single-family units
- 2400 multi-family units
- 2.4M sq. ft. of commercial/ industrial

**Represents over 300,000 metric tons of CO<sub>2</sub> over building lifetime.**

# Base Code

- 2019 California Building Energy Efficiency Standards
- 2019 California Green Building Standards
- Sets minimum levels of efficiency for building design and construction
- Increasingly stringent in each iteration (every 3 yrs.)
- 2019 California Code in effect January 1, 2020
- Adoption of overall 2019 California Codes in October, 2019



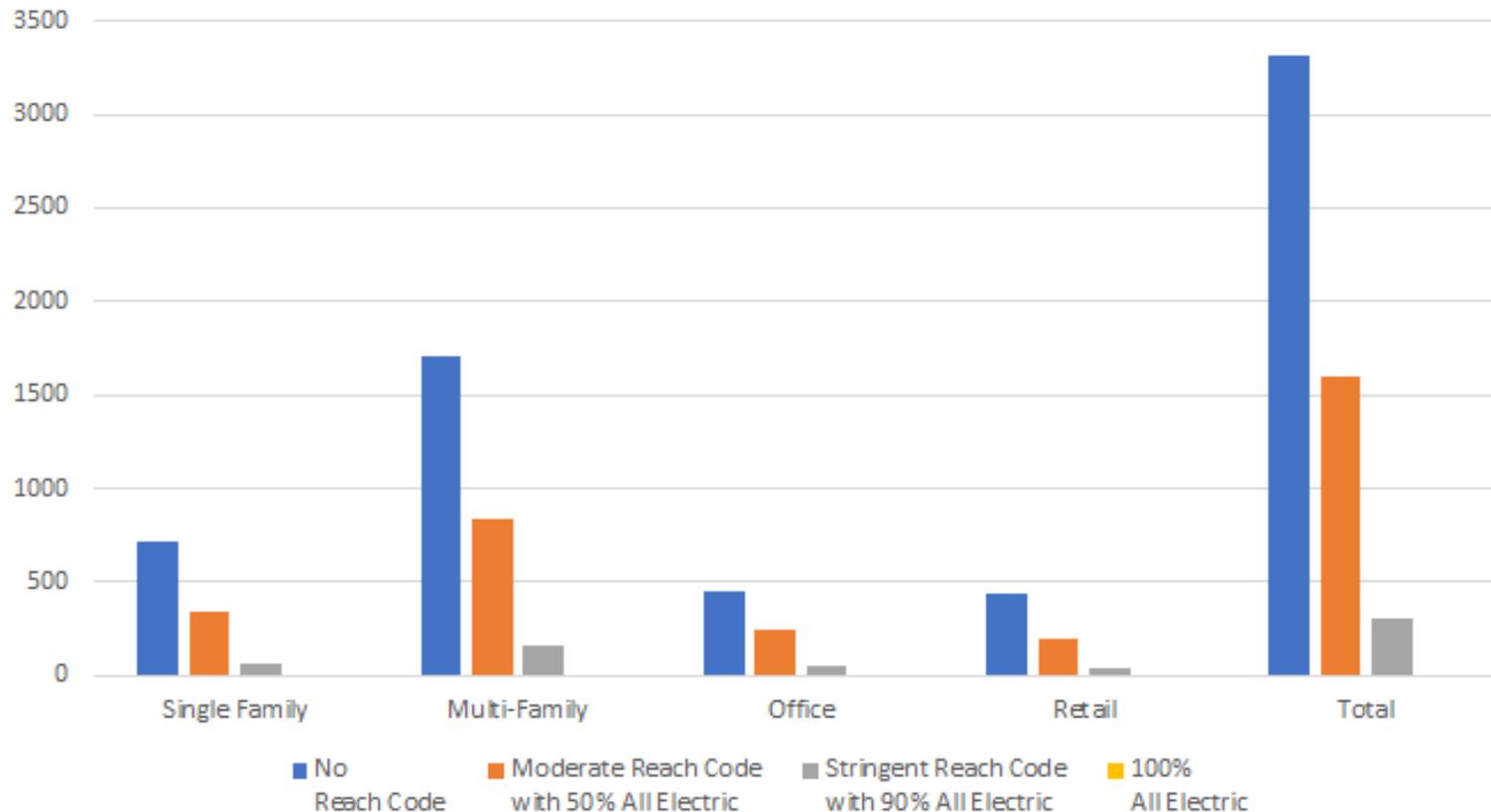
# Reach Code

- Local amendment to include additional requirements
  - Building energy efficiency
  - Building electrification
  - Solar PV readiness
  - Green building
  - Electric Vehicle Charging Infrastructure (EVCI)
- Must be approved by CEC
  - Meet cost effectiveness requirement
  - 60-day comment period



# Electrification-focused Reach Code as a Solution

Annual Emissions of Projected New Construction with a San José Carbon-Free Grid (MTCO<sub>2</sub>e/yr - SJCE in 2021)



# Financial Benefits

- All-electric buildings are low-cost construction option

Many are already being built in California...



Quetzal Gardens, San Jose



Plaza Point, Arcata



The Grove, Scotts Valley



Valley Glen, Dixon

Santana Row, San Jose



Sol Lux Alpha, San Francisco



Linda Vista, Mountain View



# Financial Benefits (cont'd)

- Cheaper at time of construction vs. retrofit



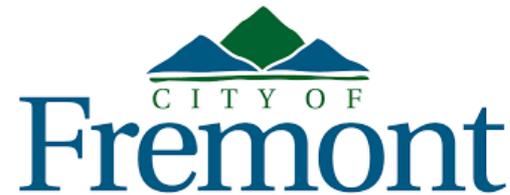
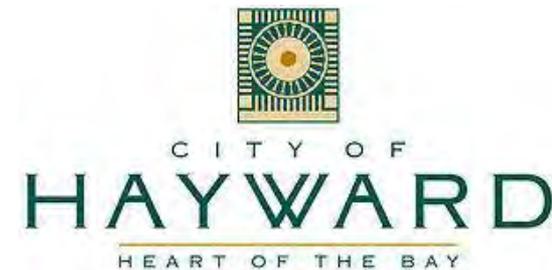
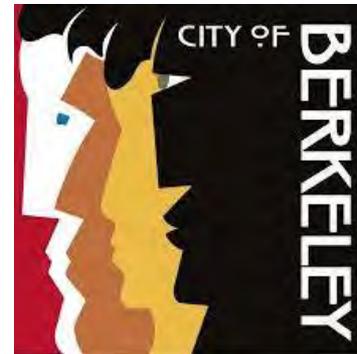
- Lower operational cost for EVs

# Health & Safety Benefits



# Regional Reach Code Efforts

- Facilitated Pro
- \$10k Staff Sup
- I Assis
- option
- pleme



# Stakeholder Engagement Summary

- City reach code webpage
- Over 65 stakeholders and 200 Neighborhood Associations included in outreach efforts
- Four stakeholder engagement workshops (May-July 2019)
- Five additional public presentations
- Several individual meetings, as requested



# Stakeholder Input on Draft Reach Code

## Requests to Do More

- Electrification-ready
- Battery storage
- Require all-electric
- More EV Ready spaces (multi-family focus)
- Provide incentives for EVCI

## Concerns Over

- Ability of the grid infrastructure to handle electrification
- Using highest Energy Design Rating/Compliance Margins for mixed fuel buildings
- Cost of all-electric building and EVCI



# Proposed Reach Code Components

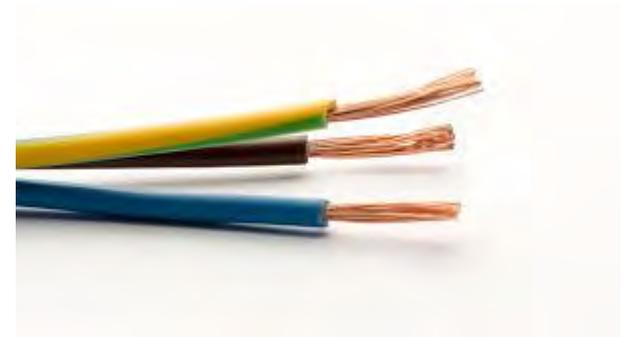
	Reach Code Compliance Pathways*		
Occupancy Type	All-Electric (Draft/Proposed)	Mixed Fuel (Draft)	Mixed Fuel (Proposed)
Single-family & Low-rise Multi-family 	<b>Efficiency:</b> To code  <b>EVCI:</b> Same as mixed fuel	<b>Efficiency:</b> Energy Design Rating (EDR) = min. 10 point reduction  <b>EVCI:</b> Single-family: 1 EV Ready; Low-rise Multi-family: 0% EVSE, 50% EV Ready, 50% EV Capable	<b>Efficiency:</b> EDR = min. 10 point reduction, <b>electrification-ready</b>  <b>EVCI:</b> Single-family: 1 EV Ready; Low-rise Multi-family: <b>10% EVSE, 0% EV Ready, 50% EV Capable</b>
High-rise Multi-family & Hotel 	<b>Efficiency**:</b> To code  <b>EVCI:</b> Same as mixed fuel	<b>Efficiency**:</b> 7%  <b>EVCI:</b> 0% EVSE, 50% EV Ready, 50% EV Capable	<b>Efficiency**:</b> <b>5%; electrification-ready</b>  <b>EVCI:</b> <b>10% EVSE; 0% EV Ready, 50% EV Capable</b>
Non-residential 	<b>Efficiency**:</b> To code  <b>EVCI:</b> Same as mixed fuel	<b>Efficiency**:</b> Office 14%, Retail: 15%, All other occupancies: 7%  <b>EVCI:</b> 10% EVSE, 40% EV Capable	<b>Efficiency**:</b> Office & Retail: <b>10%, electrification-ready; Industrial/Manufacturing: 0%; All other occupancies: 5%; electrification-ready</b>  <b>EVCI:</b> 10% EVSE, 40% EV Capable

\*Solar-readiness required for all buildings.

\*\* Efficiency for non-residential occupancies refers to an energy performance requirement or “compliance margin” (%) above the 2019 Building Energy Code.

# Electrification-readiness

- Electric infrastructure components to convert gas loads to electric in the future, such as:
  - Wiring
  - Plugs
  - Breakers
  - Panel Capacity
  - Raceways
- 2019 T24 includes electrification-readiness for residential water heaters



# Proposed Reach Code: Solar-readiness

- “Solar-readiness” includes:
  - Identification of solar ready zone
  - Documentation of structural load including solar
  - Interconnection pathway
- 2019 Code includes solar-readiness for most building types
- Proposed reach code extends solar-readiness requirement to excluded non-residential buildings
- Solar-ready saves about 10% of the total installed cost of a system versus non-solar-ready
- Nominal associated design and construction costs



# Reach Code Building Costs vs. 2019 Base Code

	Costs <sup>1</sup> of a Reach Code All-Electric Building over 2019 Base Code			Costs <sup>1</sup> of a Reach Code Mixed Fuel Building over 2019 Base Code		
	First Cost	Annual Utility	Life-Cycle <sup>2</sup>	First Cost	Annual Utility	Life-Cycle <sup>2</sup>
Single-family	\$0/unit	\$0/unit	\$0/unit	+\$5,434/unit	-\$17.43/unit	+\$4,911/unit
Low-rise Multi-family	\$0/unit	\$0/unit	\$0/unit	+\$2,429/unit	-\$9.60/unit	+\$2,141/unit
Office	\$0/sf	\$0/sf	\$0/sf	+1.24/sf	-\$0.10/sf	-\$1.78/sf
Retail	\$0/sf	\$0/sf	\$0/sf	+\$0.23/sf	-\$0.10/sf	-\$2.85/sf
Small Hotel	\$0/sf	\$0/sf	\$0/sf	+\$0.51/sf	-\$0.02/sf	-\$0.06/sf

1. Utility & Life Cycle Costs do not reflect anticipated gas rate increases due to infrastructure costs
2. Lifecycle Costs include factors in addition to just first costs and annual energy costs.

# Base Code All-Electric vs. Mixed Fuel

	Cost <sup>1</sup> of an All-Electric Building vs. Mixed-Fuel Building under 2019 Base Code		
	First Cost	Annual Utility	Life-Cycle <sup>2</sup>
Single-family	-\$6,171/unit	+\$322/unit	+\$4,322/unit
Low-rise Multi-family	-\$3,361/unit	+\$120/unit	+\$1,258/unit
Office	-\$1.29/sf	+\$0.06/sf	+\$0.40/sf
Retail	-\$0.93/sf	+\$0.01/sf	-\$0.57/sf
Small Hotel	-\$30.54/sf	+\$0.18/sf	-\$25.25/sf

1. Utility & Life Cycle Costs do not reflect anticipated gas rate increases due to infrastructure costs
2. Lifecycle Costs include factors in addition to just first costs and annual energy costs.

# Base Code All-Electric vs. Mixed Fuel

BIZ & TECH // BUSINESS

## PG&E gas bills could rise in 2019



David R. Baker

Nov. 17, 2017

Updated: Nov. 17, 2017 4:06 p.m.

Building

Cycle<sup>2</sup>

Single-family

Low-rise Multi-Family

Office

Retail

## The PG&E Rate Increase of 2019: What you Need to Know

By Tim Henderson

Last Updated on June 26, 2019

-\$0.93/ST

+\$0.01/ST

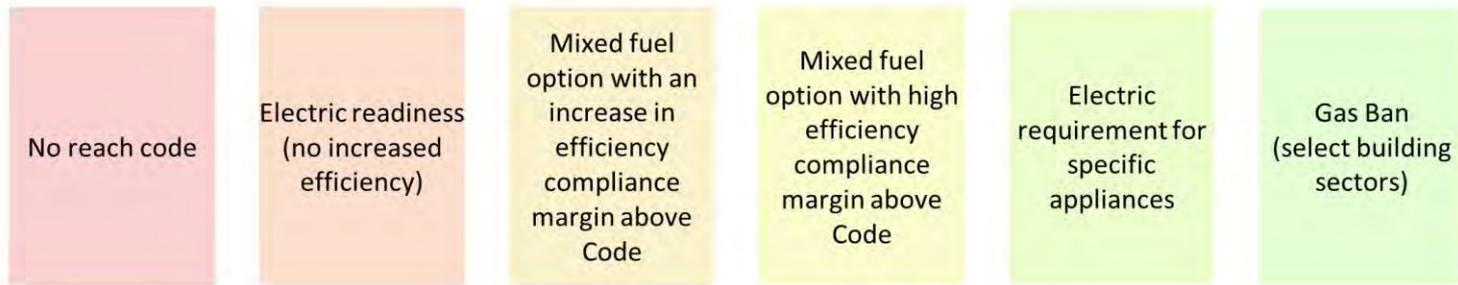
-\$0.57/ST

## PG&E seeking residential rate increase to support pipeline, storage upgrades in 2019

Published on November 22, 2017 by [Aaron Martin](#)

# San José Reach vs. Other Cities: Building Electrification

City Reach Codes - Building Electrification



Note: All information in this chart is tentative, based on information obtained to date.

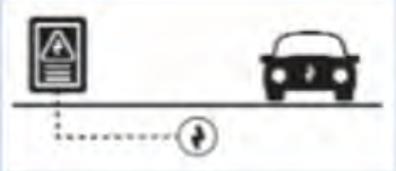
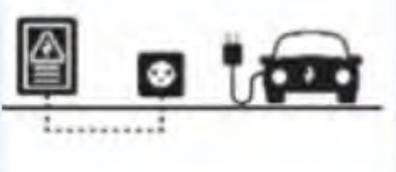
# Proposed Reach Code Components

Reach Code Compliance Pathways*			
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\*Solar-readiness required for all buildings.

\*\* Efficiency for non-residential occupancies refers to an energy performance requirement or “compliance margin” (%) above the 2019 Building Energy Code.

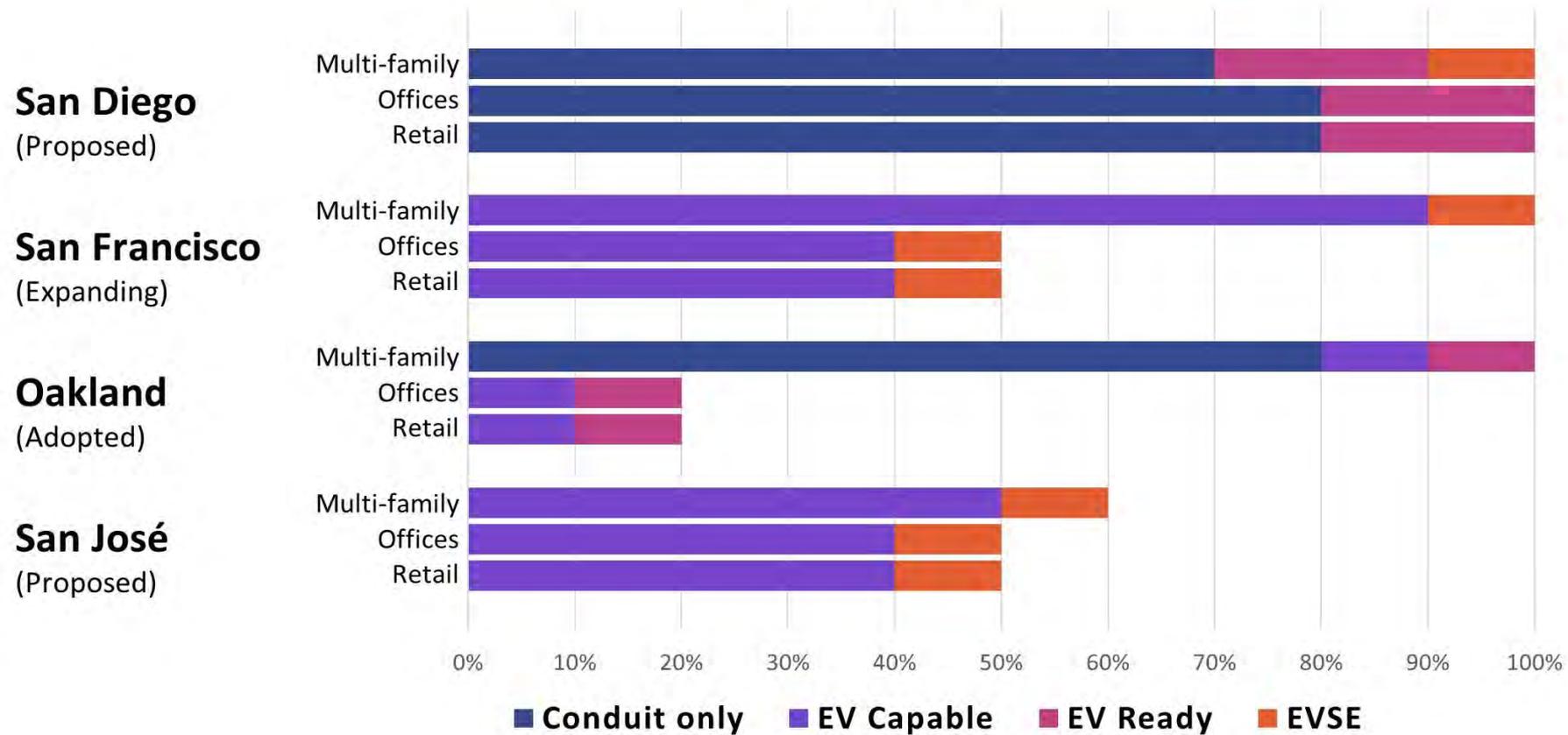
# EVCI Definitions

<p>EV Capable <i>(Some assembly required)</i></p>	 A schematic diagram showing an electrical panel on the left connected to a car on the right. A horizontal line represents a raceway. A dashed line goes from the panel down to a plug icon, which then connects to the car.	<p>Raceway (conduit), electrical capacity (breaker space)</p>
<p>EV Ready <i>(Plug &amp; Play)</i></p>	 A schematic diagram showing an electrical panel on the left connected to a car on the right. A horizontal line represents a raceway. A dashed line goes from the panel down to a breaker icon, which then connects to the car.	<p>Raceway (conduit), electrical service capacity, overcurrent protection devices, wire and outlet (i.e. full circuit)</p>
<p>EV Supply Equipment (EVSE) Installed <i>(Level 2 Charge!)</i></p>	 A photograph of a black Level 2 EV charging station with a charging cable attached.	<p>All the equipment needed to deliver electrical energy from an electricity source to the EV</p>

# EV Charging Infrastructure Costs

	Multi-family 2019 Base Code	Multi-family Reach Code	Non-Res 2019 Base Code	Non-Res Reach Code
EV Capable Spaces	0	50	0	40
EV Ready Spaces	10	0	10	0
EVSE Spaces	0	10	0	10
Total Cost of EV Capable (w/8A capacity)	\$ -	\$ 49,500	\$ -	\$ 39,600
Total Cost of EV Ready	\$ 13,300	\$ -	\$ 13,300	\$ -
Total Cost of EVSE	\$ -	\$ 23,300	\$ -	\$ 23,300
Total EVCI Cost	\$ 13,300	\$ 72,800	\$ 13,300	\$ 62,900
Total Project Cost		\$ 23,000,000		\$ 30,000,000
Incremental Cost of Reach Code over 2019 Base Code		0.26%		0.17%

# San José Reach vs. Other Cities: EVCI



Note: All information in this chart is tentative, based on information obtained to date.

# Why This Reach Code? Why Now?

- Proposed reach code:
  - Responds to stakeholder support and concerns
  - Seizes the opportunity to electrify buildings and transportation at a lower cost than retrofit
  - Maintains a significant reduction in GHG emissions
- Timing ensures:
  - Alignment with 2019 California Code effective date of January 1, 2020
  - Maximum impact due to implementation date
  - Progress on Climate Smart and American Cities Climate Challenge goals

“There is a growing consensus that building electrification is the most viable and predictable path to zero-emission buildings.”

California Energy  
Commission

*2018 Integrated Energy Policy  
Report Update (Jan. 2019)*

# Reach Code Implementation

## *Next Steps*

- Submit reach code to the CEC for approval
- Provide trainings and resources for City staff and the public
- Implement San José's reach code starting January 1, 2020
- Pursue funding opportunities to incentivize all-electric buildings, EVs, and EVCI in San José
- Collect and report data on the reach code impact
- Future City buildings will pursue Zero Net Carbon building design
- Continue building electrification efforts related to existing buildings



# Questions?

## ***Reach Code Highlights***

- Significant reduction in GHG emissions
- Aggressive removal of fossil fuel from new construction
- Facilitates transition to electric vehicles
- Improves indoor and outdoor air quality
- Seamless transition with 2019 Building Codes on January 1, 2020



**Presented by: Kerrie Romanow, ESD Director; Ken Davies, ESD Deputy Director; James Son, PBCE Deputy Director; Sean Denniston, New Buildings Institute**

## RESIDENTIAL MANDATORY MEASURES

3. Compliance with a lawfully enacted storm water management ordinance.

**Note:** Refer to the State Water Resources Control Board for projects which disturb one acre or more of soil, or are part of a larger common plan of development which in total disturbs one acre or more of soil.

(Website: [https://www.waterboards.ca.gov/water\\_issues/programs/stormwater/construction.html](https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html))

**4.106.3 Grading and paving.** Construction plans shall indicate how the site grading or drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include, but are not limited to, the following:

1. Swales
2. Water collection and disposal systems
3. French drains
4. Water retention gardens
5. Other water measures which keep surface water away from buildings and aid in groundwater recharge.

**Exception:** Additions and alterations not altering the drainage path.

**4.106.4 Electric vehicle (EV) charging for new construction.** New construction shall comply with Section 4.106.4.1, 4.106.4.2, or 4.106.4.3, to facilitate future installation and use of EV chargers. Electric vehicle supply equipment (EVSE) shall be installed in accordance with the *California Electrical Code*, Article 625.

### Exceptions:

1. On a case-by-case basis, where the local enforcing agency has determined EV charging and infrastructure are not feasible based upon one or more of the following conditions:
  - 1.1. Where there is no commercial power supply.
  - 1.2. Where there is evidence substantiating that meeting the requirements will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the homeowner or the developer by more than \$400.00 per dwelling unit.
2. Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without additional parking facilities.

**4.106.4.1 New one- and two-family dwellings and townhouses with attached private garages.** For each dwelling unit, install a listed raceway to accommodate a dedicated 208/240-volt branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or other enclosure in close proximity to the proposed location of an EV charger. Raceways are required to be continuous at enclosed, inaccessible or concealed areas and spaces. The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s)

reserved to permit installation of a branch circuit overcurrent protective device.

**4.106.4.1.1 Identification.** The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging as “EV CAPABLE”. The raceway termination location shall be permanently and visibly marked as “EV CAPABLE”.

**4.106.4.2 New multifamily dwellings.** If residential parking is available, ten (10) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future EVSE. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.

### Notes:

1. Construction documents are intended to demonstrate the project’s capability and capacity for facilitating future EV charging.
2. There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.

**4.106.4.2.1 Electric vehicle charging space (EV space) locations.** Construction documents shall indicate the location of proposed EV spaces. Where common use parking is provided at least one EV space shall be located in the common use parking area and shall be available for use by all residents.

**4.106.4.2.1.1 Electric vehicle charging stations (EVCS).** When EV chargers are installed, EV spaces required by Section 4.106.4.2.2, Item 3, shall comply with at least one of the following options:

1. The EV space shall be located adjacent to an accessible parking space meeting the requirements of the *California Building Code*, Chapter 11A, to allow use of the EV charger from the accessible parking space.
2. The EV space shall be located on an accessible route, as defined in the *California Building Code*, Chapter 2, to the building.

**Exception:** Electric vehicle charging stations designed and constructed in compliance with the *California Building Code*, Chapter 11B, are not required to comply with Section 4.106.4.2.1.1 and Section 4.106.4.2.2, Item 3.

**Note:** Electric vehicle charging stations serving public housing are required to comply with the *California Building Code*, Chapter 11 B.

**4.106.4.2.2 Electric vehicle charging space (EV space) dimensions.** The EV spaces shall be designed to comply with the following:

1. The minimum length of each EV space shall be 18 feet (5486 mm).

- 2. The minimum width of each EV space shall be 9 feet (2743 mm).
- 3. One in every 25 EV spaces, but not less than one, shall also have an 8-foot (2438 mm) wide minimum aisle. A 5-foot (1524 mm) wide minimum aisle shall be permitted provided the minimum width of the EV space is 12 feet (3658 mm).
  - a. Surface slope for this EV space and the aisle shall not exceed 1 unit vertical in 48 units horizontal (2.083 percent slope) in any direction.

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

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

**4.106.4.2.5 Identification.** The service panel or sub-panel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging purposes as "EV CAPABLE" in accordance with the *California Electrical Code*.

**4.106.4.3 New hotels and motels.** All newly constructed hotels and motels shall provide EV spaces capable of supporting future installation of EVSE. The construction documents shall identify the location of the EV spaces.

**Notes:**

- 1. Construction documents are intended to demonstrate the project's capability and capacity for facilitating future EV charging.

- 2. There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.

**4.106.4.3.1 Number of required EV spaces.** The number of required EV spaces shall be based on the total number of parking spaces provided for all types of parking facilities in accordance with Table 4.106.4.3.1. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.

**TABLE 4.106.4.3.1**

TOTAL NUMBER OF PARKING SPACES	NUMBER OF REQUIRED EV SPACES
0–9	0
10–25	1
26–50	2
51–75	4
76–100	5
101–150	7
151–200	10
201 and over	6 percent of total

**4.106.4.3.2 Electric vehicle charging space (EV space) dimensions.** The EV spaces shall be designed to comply with the following:

- 1. The minimum length of each EV space shall be 18 feet (5486 mm).
- 2. The minimum width of each EV space shall be 9 feet (2743 mm).

**4.106.4.3.3 Single EV space required.** When a single EV space is required, the EV space shall be designed in accordance with Section 4.106.4.2.3.

**4.106.4.3.4 Multiple EV spaces required.** When multiple EV spaces are required, the EV spaces shall be designed in accordance with Section 4.106.4.2.4.

**4.106.4.3.5 Identification.** The service panels or sub-panels shall be identified in accordance with Section 4.106.4.2.5.

**4.106.4.3.6 Accessible EV spaces.** In addition to the requirements in Section 4.106.4.3, EV spaces for hotels/motels and all EVSE, when installed, shall comply with the accessibility provisions for EV charging stations in the *California Building Code*, Chapter 11B.

ing for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as follows:

TABLE 5.106.5.2

TOTAL NUMBER OF PARKING SPACES	NUMBER OF REQUIRED SPACES
0-9	0
10-25	1
26-50	3
51-75	6
76-100	8
101-150	11
151-200	16
201 and over	At least 8 percent of total

**5.106.5.2.1 Parking stall marking.** Paint, in the paint used for stall striping, the following characters such that the lower edge of the last word aligns with the end of the stall striping and is visible beneath a parked vehicle:

CLEAN AIR/  
VANPOOL/EV

**Note:** Vehicles bearing Clean Air Vehicle stickers from expired HOV lane programs may be considered eligible for designated parking spaces.

**5.106.5.3 Electric vehicle (EV) charging.** [N] Construction shall comply with Section 5.106.5.3.1 or Section 5.106.5.3.2 to facilitate future installation of electric vehicle supply equipment (EVSE). When EVSE(s) is/are installed, it shall be in accordance with the *California Building Code*, the *California Electrical Code* and as follows:

**5.106.5.3.1 Single charging space requirements.** [N] When only a single charging space is required per Table 5.106.5.3.3, a raceway is required to be installed at the time of construction and shall be installed in accordance with the *California Electrical Code*. Construction plans and specifications shall include, but are not limited to, the following:

1. The type and location of the EVSE.
2. A listed raceway capable of accommodating a 208/240-volt dedicated branch circuit.
3. The raceway shall not be less than trade size 1.”
4. The raceway shall originate at a service panel or a subpanel serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and into a listed suitable cabinet, box, enclosure or equivalent.
5. The service panel or subpanel shall have sufficient capacity to accommodate a minimum 40-ampere dedicated branch circuit for the future installation of the EVSE.

**5.106.5.3.2 Multiple charging space requirements.** [N] When multiple charging spaces are required per Table 5.106.5.3.3 raceway(s) is/are required to be installed at the time of construction and shall be installed in accordance with the *California Electrical*

*Code*. Construction plans and specifications shall include, but are not limited to, the following:

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

**5.106.5.3.3 EV charging space calculation.** [N] Table 5.106.5.3.3 shall be used to determine if single or multiple charging space requirements apply for the future installation of EVSE.

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

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

TABLE 5.106.5.3.3

TOTAL NUMBER OF ACTUAL PARKING SPACES	NUMBER OF REQUIRED EV CHARGING SPACES
0-9	0
10-25	1
26-50	2
51-75	4
76-100	5
101-150	7
151-200	10
201 and over	6 percent of total <sup>1</sup>

1. Calculation for spaces shall be rounded up to the nearest whole number.

**5.106.5.3.4 [N] Identification.** The service panel or subpanel(s) circuit directory shall identify the reserved overcurrent protective device space(s) for future EV charging as “EV CAPABLE”. The raceway termination location shall be permanently and visibly marked as “EV CAPABLE.”

**5.106.5.3.5 [N] Future charging spaces.** Future charging spaces qualify as designated parking as

## NONRESIDENTIAL MANDATORY MEASURES

described in Section 5.106.5.2 Designated parking for clean air vehicles.

**5.106.8 Light pollution reduction.** [N] Outdoor lighting systems shall be designed and installed to comply with the following:

1. The minimum requirements in the *California Energy Code* for Lighting Zones 0-4 as defined in Chapter 10, Section 10-114 of the *California Administrative Code*; and
2. Backlight (B) ratings as defined in IES TM-15-11 (shown in Table A-1 in Chapter 8);
3. Uplight and Glare ratings as defined in *California Energy Code* (shown in Tables 130.2-A and 130.2-B in Chapter 8) and
4. Allowable BUG ratings not exceeding those shown in Table 5.106.8 [N], or

Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent.

### Exceptions: [N]

1. Luminaires that qualify as exceptions in Section 140.7 of the *California Energy Code*.
2. Emergency lighting.
3. Building facade meeting the requirements in Table 140.7-B of the *California Energy Code*, Part 6.
4. Custom lighting features as allowed by the local enforcing agency, as permitted by Section 101.8

Alternate materials, designs and methods of construction.

### Notes:

1. [N] See also *California Building Code*, Chapter 12, Section 1205.7 for college campus lighting requirements for parking facilities and walkways.
2. Refer to Chapter 8 (Compliance Forms, Worksheets and Reference Material) for IES TM-15-11 Table A-1, *California Energy Code* Tables 130.2-A and 130.2-B.
3. Refer to the *California Energy Code* for requirements for additions and alterations.

**5.106.10 Grading and paving.** Construction plans shall indicate how site grading or a drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include, but are not limited to, the following:

1. Swales.
2. Water collection and disposal systems.
3. French drains.
4. Water retention gardens.
5. Other water measures which keep surface water away from buildings and aid in groundwater recharge.

**Exception:** Additions and alterations not altering the drainage path.

**TABLE 5.106.8 [N]**  
**MAXIMUM ALLOWABLE BACKLIGHT, UPLIGHT AND GLARE (BUG) RATINGS<sup>1,2</sup>**

ALLOWABLE RATING	LIGHTING ZONE LZ0	LIGHTING ZONE LZ1	LIGHTING ZONE LZ2	LIGHTING ZONE LZ3	LIGHTING ZONE LZ4
<b>Maximum Allowable Backlight Rating<sup>3</sup> (B)</b>					
Luminaire greater than 2 mounting heights (MH) from property line	N/A	No Limit	No Limit	No Limit	No Limit
Luminaire back hemisphere is 1 – 2 MH from property line	N/A	B2	B3	B4	B4
Luminaire back hemisphere is 0.5 – 1 MH from property line	N/A	B1	B2	B3	B3
Luminaire back hemisphere is less than 0.5 MH from property line	N/A	B0	B0	B1	B2
<b>Maximum Allowable Uplight Rating (U)</b>					
For area lighting <sup>4</sup>	N/A	U0	U0	U0	U0
For all other outdoor lighting, including decorative luminaires	N/A	U1	U2	U3	U4
<b>Maximum Allowable Glare Rating<sup>5</sup> (G)</b>					
Luminaire greater than 2 MH from property line	N/A	G1	G2	G3	G4
Luminaire front hemisphere is 1 – 2 MH from property line	N/A	G0	G1	G1	G2
Luminaire front hemisphere is 0.5 – 1 MH from property line	N/A	G0	G0	G1	G1
Luminaire front hemisphere is less than 0.5 MH from property line	N/A	G0	G0	G0	G1

1. IESNA Lighting Zones 0 are not applicable; refer to Lighting Zones as defined in the *California Energy Code* and Chapter 10 of the *California Administrative Code*.
2. For property lines that abut public walkways, bikeways, plazas and parking lots, the property line may be considered to be 5 feet beyond the actual property line for purpose of determining compliance with this section. For property lines that abut public roadways and public transit corridors, the property line may be considered to be the centerline of the public roadway or public transit corridor for the purpose of determining compliance with this section.
3. If the nearest property line is less than or equal to two mounting heights from the back hemisphere of the luminaire distribution, the applicable reduced Backlight rating shall be met.
4. General lighting luminaires in areas such as outdoor parking, sales or storage lots shall meet these reduced ratings. Decorative luminaires located in these areas shall meet *U*-value limits for "all other outdoor lighting."
5. If the nearest property line is less than or equal to two mounting heights from the front hemisphere of the luminaire distribution, the applicable reduced Glare rating shall be met.