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Please contact the Codes and Standards Reach Codes Team at info@LocalEnergyCodes.com for additional information.

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# **Model Ordinances**

# **Energy Reach Code for New Buildings**

# **and**

# **All-Electric New Buildings and Renovations Code**

Version 1.2

August 10, 2022

Changes from Prior Versions

Please check [LocalEnergyCodes.com](https://localenergycodes.com/content/resources) to obtain the latest version of this document. This document will be updated frequently to comport with new features in the [Cost Effectiveness Explorer](http://explorer.localenergycodes.com/).

Changes since Version 1.0:

* Inserted placeholders for section references in all-electric amendments to CALGreen pending review to identify suitable sections for amended language.
* Modified definition of All-Electric definition to extend to gas lines within the property lines and enumerated additional end uses.

# **Scope**

* Requires an energy performance margin for new buildings. The energy performance requirements in the current draft apply to single family buildings only. Other occupancies will be added as cost-effectiveness analyses are completed.
* Prohibits natural gas in new buildings and substantial remodels.
* Requires additional PV in new buildings (optional)
* Any new buildings that are not subject to all-electric requirements (e.g., exceptions) can be required to comply with stricter performance margins

## Introduction

This document is supported by the [Cost Effectiveness Explorer](https://explorer.localenergycodes.com/), an interactive tool that allows users to customize requirements and estimate the projected impacts in their community.

This document contains two different mechanisms for the all-electric requirements: 1) amending the Building Code, Title 24, Part 11, California Green Building Code; and, 2) adopting the requirements in another part of the local code. These mechanisms have not been thoroughly tested; local jurisdictions should consult with their attorneys before proceeding.

The model reach code provides a performance compliance pathway for efficiency and an optional prescriptive pathway for PV. Prescriptive compliance pathways for efficiency may also be provided for nonresidential and multifamily buildings once the studies are complete. A prescriptive pathway for single family buildings is available upon request but is not included in this template.

The model reach code amends the 2022 California Energy Code, effective January 1, 2023 through December 31, 2025. It is based on the latest cost-effectiveness studies, which may be downloaded from [LocalEnergyCodes.com](https://localenergycodes.com/content/resources).

Any amendments to the Energy Code (Title 24, Part 6) appear in strikeouts (deletions) and underlines (additions). These amendments must be approved by the [California Energy Commission](https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2019-building-energy-efficiency-3) (CEC) and must also be filed with the [California Building Standards Commission](https://www.dgs.ca.gov/BSC/Codes/Local-Amendments-to-Building-Standards---Ordinances).

Jurisdictions may wish to modify elements of the ordinance, such as those marked with the text “[Optional]”. When modifying the language, ensure all references are maintained and that the ordinance still meets the CEC requirements. Also, edit the Purpose section to reflect the changes.

The headings, footnotes and instructions (in blue) are for staff reference and should be removed from the final ordinance.

The draft ordinance text and CEQA determination language are provided as examples only. Ensure all ordinance materials are reviewed and verified by relevant jurisdiction staff and the city/county attorney.

# Sample Energy **Reach Code for New Buildings**

ORDINANCE AMENDING THE [City/County of Jurisdiction] BUILDING CODE TO REQUIRE HIGHER ENERGY PERFORMANCE FOR NEW CONSTRUCTION

DELETE ALL BLUE TEXT AND FOOTNOTES

The California Building Code, Title 24, Part 6, adopted by the [City/County of jurisdiction] codified under Chapter [municipal/county code reference (if not adopted in entirety, include local code references for each section)], is amended as specified below.

## Purpose and Intent

Section 100.0(e)2A is modified as follows:

All newly constructed buildings. Sections 110.0 through 110.12 apply to all newly constructed buildings within the scope of Section 100.0(a). In addition, newly constructed buildings shall meet the requirements of Subsections B, C, D or E, as applicable, as well as Subsection G.

A new section, 100.0(e)2.G, is added as follows:

1. New Construction Energy Reach Code - Purpose and Intent.

In addition to all the requirements of the California Energy Code applicable to new construction, the following shall apply:

1. All newly constructed buildings shall be subject to stricter energy standards than are otherwise required under the California Energy Code.
2. [Optional] All newly constructed buildings shall be required to install a solar PV system.

**EXCEPTIONS to 100.0(e)2.G.** [insert exceptions by occupancy/building type, such as ADUs, if applicable]

## Definitions

Section 100.1(b) is modified by adding the following definitions:

[Optional: include if specifying a different compliance margin for All-Electric Buildings] **ALL-ELECTRIC BUILDING** is a building that contains no combustion equipmentor plumbing for combustion equipment (except for abandoned gas lines) serving space heating (including fireplaces), water heating (including pools and spas), cooking appliances (including barbeques), and clothes drying, within the building or building property lines, and instead uses electric heating appliances for service. An All-Electric Building may include solar thermal collectors. [Modify end uses as needed. The reference to abandoned gas plumbing makes this definition compatible with the model renovation ordinance. The reference to solar thermal panels clarifies that solar thermal is an allowed energy source for heating.]

[Optional] **CERTIFIED ENERGY ANALYST** is a person registered as a Certified Energy Analyst with the California Association of Building Energy Consultants as of the date of submission of a Certificate of Compliance as required under Section 10.103.[[1]](#footnote-2)

[ADUs can either be excepted or subject to specific requirements supported by the Cost Effectiveness Study. In either case, the definition should be modified to conform to local code, as applicable] **FREE-STANDING ACCESSORY DWELLING UNIT** is a detached building that is not intended for sale separate from the primary residence, on a lot that is zoned for single family or multifamily use, located on the same lot as an existing dwelling, and does not exceed 1,200[[2]](#footnote-3) square feet of total floor area.

## Energy Efficiency Requirements

### Single Family Residential Buildings

#### Performance Requirements

**A new section, 150.1(b)1A, is added as follows:**

In addition, the Efficiency Energy Design Rating 2 (EDR2-eff) for the Proposed Building shall have a compliance margin of at least X [insert value for the appropriate climate zone from the Cost Effectiveness Explorer. Add values for additional climate zones if applicable. Add reference and separate values for All-Electric buildings if applicable] points less than the Efficiency Energy Design Rating 2 (EDR2-eff) for the Standard Design Building. [Optional, if ADUs are not excepted] Free-Standing Accessory Dwelling Units shall have an Efficiency Energy Design Rating 2 (EDR2-eff) compliance margin of at least Y.

[Optional] **EXCEPTION 1 to Section 150.1(b)1.A.** If the Certificate of Compliance is prepared and signed by a Certified Energy Analyst, the Efficiency Energy Design Rating (EDR2-eff) compliance margin may be reduced to [X from above less one but not less than zero].

[Optional] **EXCEPTION 2 to Section 150.1(b)1.A.** A Free-Standing Accessory Dwelling Unit.

#### Prescriptive Requirements

There are no prescriptive requirements included in the model ordinance. A set of prescriptive measures can be provided upon request. Please contact the Reach Codes Program at info@localenergycodes.com.

## Additional Solar PV Requirements (optional)

### Single Family Buildings

**The first two paragraphs of Section 150.0 - MANDATORY FEATURES AND DEVICES, are modified as follows:**

Single-family residential buildings shall comply with the applicable requirements of Sections 150(a) through 150.0(~~v~~x).

**NOTE:** The requirements of Sections 150.0(a) through 150.0(~~v~~x) apply to newly constructed buildings. Sections 150.2(a) and 150.2(b) specify which requirements of Sections 150.0(a) through 150.0(~~v~~x) also apply to additions or alterations.[[3]](#footnote-4)

**New sections, 150.0(w) and 150.0(x) – are added as follows:**

**150.0(w) Reserved for future use** [renovation reach code]

**150.0(x) Mandatory Requirements for Solar**

The requirements of Section 150.1(c)14 are mandatory. In addition, the PV system size shall be the larger of the requirements in Section 150.1(c)14 or X% [specify a value no greater than 100%] of the projected electrical consumption.

**Exception to 150.0(x):** All of the exceptions in Section 150.1(c)14 apply.

# Sample **All-Electric New Buildings and Renovations Code**

***The text below is based on a model code from BayAreaReachCodes.org and ordinances from Berkeley, San Luis Obispo, Santa Cruz, and San Francisco.***

DELETE ALL BLUE TEXT AND FOOTNOTES

## Option **1: Amend CALGreen**

ORDINANCE AMENDING THE [City/County of Jurisdiction] BUILDING CODE TO
REQUIRE ALL ELECTRIC BUILDINGS

### Amendments

The California Building Code, Title 24, Part 11, adopted by the ***[City/County of jurisdiction]*** codified under Chapter ***[municipal/county code reference (if not adopted in entirety, include local code references for each section)]***, is amended as specified below.

**Section 202 DEFINITIONS, is modified by adding the following definitions:**

**ALL-ELECTRIC BUILDING** is a building that contains no combustion equipmentor plumbing for combustion equipment (except for abandoned gas lines) serving space heating (including fireplaces), water heating (including pools and spas), cooking appliances (including barbeques), and clothes drying, within the building or building property lines, and instead uses electric heating appliances for service. An All-Electric Building may include solar thermal collectors. [Modify end uses as needed. The reference to abandoned gas plumbing makes this definition compatible with the model renovation ordinance. The reference to solar thermal panels clarifies that solar thermal is an allowed energy source for heating.]

***[Optional]* COMMERCIAL FOOD HEAT-PROCESSING EQUIPMENT** isequipment used in a food establishment for heat-processing food or utensils and that produces grease vapors, steam, fumes, smoke, or odors that are required to be removed through a local exhaust ventilation system, as defined in the California Mechanical Code.

**FUEL GAS.** A gas that is natural, manufactured, liquefied petroleum, or a mixture of these.

**FUEL GAS INFRASTRUCTURE** is Fuel Gas piping in or in connection with a building, structure or within the property lines of premises, extending from the point of delivery at the gas meter or gas tank as specified in the California Mechanical Code and Plumbing Code.

***The definition of Substantial Remodel should be carefully crafted to ensure that it does not have unintended consequences elsewhere in the local code. Sample text is provided below. For a more thorough discussion see*** [Substantial Remodels and New Construction Definitions](https://localenergycodes.com/download/1155/file_path/fieldList/Review%20of%20Substantial%20Improvement%20Definitions-2022-06-08.pdf)***.***

**SUBSTANTIAL REMODEL** [***Examples below]***

* is any repair, reconstruction, rehabilitation, alteration, addition, or other improvement of a building structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair is started. If the structure has sustained substantial damage, any repairs are considered substantial improvement regardless of the actual repair work performed.*3*
* is any alteration(s) made within any three-year period that includes replacement of over 50 percent of the existing foundation for purposes other than a repair or reinforcement as defined in California Existing Building Code Section 202; or where over 50 percent of the existing framing above the sill plate is removed or replaced for purposes other than repair.
* is any project that requires an electrical permit, a mechanical permit and a plumbing permit, with the exception of projects with a total valuation of less than $XX,XXX [specify value].

**Residential Requirements**

**Section XXX: YYYYYY is amended to add a new subsection, XXX as follows:**

XXX All-Electric Buildings. Newly Constructed Buildings and Substantial Remodels shall be designed and constructed as All-Electric Buildings.

**Exception** 1 **to XXX:** Any project for improvement of a building required to correct existing health, sanitary or safety code violations identified by the building official and that are the minimum necessary to assure safe living conditions.

***[Optional. If used, add ADU to definitions.]*** **Exception 2** **to XXX:** Water heating or space heating in an attached Accessory Dwelling Unit in which new services are provided by existing systems from an existing mixed fuel building.

***[Optional]* Exception to XXX:**

* Spas.

**Non-Residential Requirements (including high-rise residential)**

**Section XXX: YYYYYY is amended to add a new subsection, XXX as follows:**

XXX All-Electric Buildings. Newly Construction Buildings and Substantial Remodels shall be designed and constructed as All-Electric Buildings.

Any buildings exempted from these requirements shall nonetheless be required at a minimum to have sufficient reserved circuit breakers and electrical conduit to facilitate future full building electrification as certified by affidavit of either a Registered Design Professional or a Licensed Electrical Contractor.

**Exception 1 to XXX:** If the applicant establishes that there is not an all-electric prescriptive compliance pathway for the building under the California Building Energy Efficiency Standards, and that the building is not able to achieve the performance compliance standard applicable to the building under the Energy Efficiency Standards using commercially available technology and an approved calculation method, or if it is not technically feasible to meet the requirements of this Section, then the local enforcing agency may grant a modification.

***Alternative:*** If the applicant demonstrates that it is physically or technically infeasible to build without Fuel Gas Infrastructure the local enforcing agency may grant a modification.

**Exception 2 to XXX:** Provision of Natural Gas Infrastructure for certain end uses when no all-electric alternative is commercially available or viable. End uses eligible for technical exemptions are:

1. Back-up power for Critical Facilities necessary to protect public health or safety in the event of an electric grid outage.
2. Process Loads in a Newly Constructed Manufacturing and Industrial Facility. For Manufacturing and Industrial facilities with unknown tenants, exemptions may be provided pending review of initial tenant occupancy.

**Exception 3 to XXX:** Inactive Fuel Gas Infrastructure may be extended to spaces that are anticipated to qualify for the exceptions contained in this chapter. The inactive Fuel Gas Infrastructure shall not be activated or otherwise used unless the exemptions specified in this chapter have been confirmed as part of the issuance of a building permit.

**Exception 4 to XXX:** Any project for improvement of a building required to correct existing health, sanitary or safety code violations identified by the building official and that are the minimum necessary to assure safe living conditions.

**Exception 5 to XXX:** The local enforcing agency may grant a modification for Substantial Remodels to a tenant-occupied portion of a building that was originally permitted before the effective date of this ordinance. [The intent is to exempt a tenant improvement from triggering electrification of the entire building].

***[Optional]* Exception** X **to XXX:** Spas.

***[Optional]* Exception** X **toXXX:** Notwithstanding the requirements of this Chapter, minimally necessary and specifically tailored Fuel Gas Infrastructure shall be allowed in a Newly Constructed Building or Substantial Remodel on a revocable basis until the excepted uses below no longer exist in the building. At such time, the Fuel Gas Infrastructure shall be capped, otherwise terminated or removed, and the gas meter shall be removed, by the entity previously entitled to the exemption in a manner pursuant to all applicable Codes. The following uses are subject to this exception:

* Commercial Food Heat-Processing Equipment
* A swimming pool that is provided as a public amenity
* Spas
* [List of any other occupancies that are to be subject to this exemption]

## Option 2: Other Local Code Adoption

ORDINANCE AMENDING THE [City/County of Jurisdiction] CODE TO REQUIRE ALL ELECTRIC BUILDINGS

[Cite section of municipal code] **is amended by adding a new subchapter as follows:**

**Section 1: Intent**

It is the intent of this Section to require that all newly constructed buildings and substantially remodeled buildings have no gas appliances or gas infrastructure.

**Section 2: Definitions**

[Optional] **COMMERCIAL FOOD HEAT-PROCESSING EQUIPMENT** isequipment used in a food establishment for heat-processing food or utensils and that produces grease vapors, steam, fumes, smoke, or odors that are required to be removed through a local exhaust ventilation system, as defined in the California Mechanical Code.

**FUEL GAS is a** gas that is natural, manufactured, liquefied petroleum, or a mixture of these.

**FUEL GAS INFRASTRUCTURE** is Fuel Gas piping in or in connection with a building, structure or within the property lines of premises, extending from the point of delivery at the gas meter or gas tank as specified in the California Mechanical Code and Plumbing Code.

The definitions of newly constructed building and Substantial Remodel should be carefully crafted to ensure that they do not have unintended consequences elsewhere in the local code. Sample text is provided below. For a more thorough discussion see [Substantial Remodels and New Construction Definitions](https://localenergycodes.com/download/1155/file_path/fieldList/Review%20of%20Substantial%20Improvement%20Definitions-2022-06-08.pdf).

**NEWLY CONSTRUCTED BUILDING** is a building that has never been used or occupied for any purpose.

**PROCESS** is an activity or treatment that is not related to the space conditioning, lighting, service water heating, or ventilating of a building as it relates to human occupancy.

**PROCESS LOAD** is an energy load resulting from a Proces.

**SUBSTANTIAL REMODEL** [Examples below]

* is any repair, reconstruction, rehabilitation, alteration, addition, or other improvement of a building structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair is started. If the structure has sustained substantial damage, any repairs are considered substantial improvement regardless of the actual repair work performed.*[[4]](#footnote-5)*
* is any alteration(s) made within any three-year period that includes replacement of over 50 percent of the existing foundation for purposes other than a repair or reinforcement as defined in California Existing Building Code Section 202; or where over 50 percent of the existing framing above the sill plate is removed or replaced for purposes other than repair.
* is any project that requires an electrical permit, a mechanical permit and a plumbing permit, with the exception of projects with a total valuation of less than $XX,XXX [specify value].

**Section 3: Requirements**

No building permit shall be issued for a Newly Constructed Building or Substantial Remodel that includes Fuel Gas Infrastructure. These requirements shall apply to Zoning permit [use appropriate local term] applications for new buildings submitted on or after the effective date of this ordinance and building permit applications for new buildings that do not require Zoning permits [use appropriate local term] submitted 120 days after the effective date of this chapter.

These requirements shall remain in perpetuity unless granted an exemption to the requirements of this Chapter. Any buildings exempted from these requirements shall nonetheless be required at a minimum to have sufficient reserved circuit breakers and electrical conduit to facilitate future full building electrification as certified by affidavit of either a Registered Design Professional or a Licensed Electrical Contractor.

**Section 4: Exemptions** [modify as needed]

1. If the applicant establishes that there is not an all-electric prescriptive compliance pathway for the building under the California Building Energy Efficiency Standards, and that the building is not able to achieve the performance compliance standard applicable to the building under the Energy Efficiency Standards using commercially available technology and an approved calculation method, or if it is not technically feasible to meet the requirements of this Section, then the local enforcing agency may grant a modification.

Alternative: If the applicant demonstrates that it is physically or technically infeasible to build without Fuel Gas Infrastructure the local enforcing agency may grant a modification.

1. Provision of Natural Gas Infrastructure for certain end uses is allowed when no all-electric alternative is commercially available or viable. End uses eligible for technical exemptions are:
	1. Back-up power for Critical Facilities necessary to protect public health or safety in the event of an electric grid outage.
	2. Process Loads in a Newly Constructed Manufacturing and Industrial Facility. For Manufacturing and Industrial facilities with unknown tenants, exemptions may be provided pending review of initial tenant occupancy.
2. Inactive Fuel Gas Infrastructure may be extended to spaces that are anticipated to qualify for the exceptions contained in this chapter. The inactive Fuel Gas Infrastructure shall not be activated or otherwise used unless the exemptions specified in this chapter have been confirmed as part of the issuance of a building permit.
3. Any project for improvement of a building required to correct existing health, sanitary or safety code violations identified by the building official and that are the minimum necessary to assure safe living conditions.
4. The local enforcing agency may grant a modification for Substantial Remodels to a tenant-occupied portion of a building that was originally permitted before the effective date of this ordinance. [The intent is to exempt a tenant improvement from triggering electrification of the entire building].
5. ***[Optional] Spas.***
6. ***[Optional. If used, add ADU to definitions.]*** Water heating or space heating in an attached Accessory Dwelling Unit in which new services are provided by existing systems from an existing mixed fuel building.

**Section 5: Revocable Exemptions**

***[Optional]* Exception 6 to 5.106.13:** Notwithstanding the requirements of this Chapter, minimally necessary and specifically tailored Fuel Gas Infrastructure shall be allowed in a Newly Constructed Building or Substantial Remodel on a revocable basis until the excepted uses below no longer exist in the building. At such time, the Fuel Gas Infrastructure shall be capped, otherwise terminated or removed, and the gas meter shall be removed, by the entity previously entitled to the exemption in a manner pursuant to all applicable Codes. The following uses are subject to this exception:

* + Use of Commercial Food Heat-Processing Equipment
	+ A swimming pool that is provided as a public amenity
	+ Spas
	+ [List of any other occupancies that are to be subject to this exemption]

# Other Sample Ordinance Sections

Section 2: CEQA

This ordinance is exempt from CEQA under 15061(b)(3) on the grounds that these standards are more stringent than the State energy standards, there are no reasonably foreseeable adverse impacts and there is no possibility that the activity in question may have a significant effect on the environment.

Section 3: Severability

If any word, phrase sentence part, section, subsection or other portion of this amendment or any application thereof to any person or circumstance is declared void, unconstitutional, or invalid for any reason, then such word, phrase, sentence, part, section, subsection, or other portion, or the prescribed application thereof, shall be severable, and the remaining provisions of this amendment, and all applications thereof, not having been declared void, unconstitutional or invalid, shall remain in full force and effect.  The *[name of governing body]* hereby declares that it would have passed this amendment and each section, subsection sentence, clause and phrase of this amendment, irrespective of the fact that any one or more sections, subsection, sentences, clauses or phrases is declared invalid or unconstitutional.

Section 4: Violations

Violation of the requirements of this Chapter shall be considered an infraction of the *[jurisdiction Municipal/County Code]*, punishable by all the sanctions prescribed in *[cite local reference to infractions]*.

Section 5: Effective Date [exclude reference to CBSC if not amending Title 24]

This ordinance shall become effective as of ***[DATE]***, except that the amendments to California Building Code, Title 24, Part 6 shall become effective as of ***[DATE]*** or upon the date the California Building Standards Commission (CBSC) accepts the ordinance for filing, whichever is later.

1. From [Government Code Section 65852.22](https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=GOV&sectionNum=65852.22). [↑](#footnote-ref-2)
2. This is the default maximum ADU size under [State law](https://www.hcd.ca.gov/policy-research/docs/adu_december_2020_handbook.pdf). Cities may limit ADUs to as small as 850 square feet or as large as they wish. [↑](#footnote-ref-3)
3. Note, the Express Terms for Part 6 reference 150.0(r), but this appears to be an error that will be corrected to 150.0(v) in the final printing to include the new sections s, t, u and v. [↑](#footnote-ref-4)
4. Based on definition in the California Building Code (Title 24, Part 2). [↑](#footnote-ref-5)