



**Building and Safety
Permit Service Center**

In addition to all requirements of the California Energy Code, newly constructed buildings shall comply with the performance standards associated with the building energy type (all-electric building or mixed-fuel building). Buildings designed to utilize mixed-fuel can choose between the prescriptive or performance requirements as stated herein.

This checklist is provided by the City of Berkeley in order to demonstrate compliance with the Energy Code and facilitate permit approval.

Numbers in parenthesis refer to code sections of the California Energy Code (CEnC).

Building and Safety
1947 Center St. 3rd floor
Berkeley, CA 94704
510-981-7440 TTY 6903
buildingandsafety@cityofberkeley.info

Code Compliance Checklist

REACH CODE

LOW-RISE RESIDENTIAL

Project Information

Project Address:

Permit Number:

Note: *The Reach Code only applies to newly constructed buildings. Electric Vehicle Charging standards are covered in the CALGreen Residential Code Compliance Checklist (Form #164).*

Buildings Covered

Single-family	Detached Accessory Dwelling Unit	Townhome	Low-rise Multifamily (3 stories or less)
---------------	----------------------------------	----------	--

Performance Standards

All-Electric Buildings. An All-Electric Building complies with the performance standards if both the Total Energy Design Rating (EDR) and the Energy Efficiency EDR for the proposed building are no greater than the corresponding EDR for the Standard Design Building. [CEnC 150.1(b)1A].

Mixed-Fuel Buildings. A Mixed-Fuel Building complies with the performance standards if: [CEnC 150.1(b)1B]

- The Energy Efficiency EDR of the proposed building is no greater than the Energy Efficiency EDR for the Standard Design Building; and
- The Total EDR for the proposed building is at least 10 points less than the Total EDR for the Standard Design Building, or at least 9 points less than the Total EDR if the Certificate of Compliance is prepared and signed by a Certified Energy Analyst.

Buildings with limited solar access are exempt if all of the following are met:

- The Total EDR for the Proposed Building is no greater than the Standard Design Building; and
- A photovoltaic (PV) system meeting the minimum qualification requirements as specified in Joint Appendix JA 11 is installed on all available areas with 80 contiguous square feet or more of effective annual solar access. Effective annual solar access shall be 70 percent or greater of the output of an unshaded PV array on an annual basis; and
- The Energy Efficiency EDR for the Proposed Building is no greater than 2 for single family and 0 for multifamily.

Prescriptive Standards

Prescriptive standards/component packages. Buildings that comply with the prescriptive standards shall be designed, constructed, and equipped to meet all of the requirements in Table 150.1-A or B as well as all of the requirements of CEnC 150.1(c)15 and 16, whichever are more stringent. [CEnC 150.1(c)]

Newly Constructed Single Family Mixed-Fuel Buildings:

- **Duct System Sealing and Leakage Testing.** The total duct system leakage shall not exceed 2 percent of the nominal system air handler air flow. [CEnC 150.1(c)15A]
- **Insulation for a Heated Slab.** Perimeter insulation for a heated slab shall be installed with an R-value equal to or greater than R-10. [CEnC 150.1(c)15B]
- **Compact Hot Water.** The hot water distribution system shall

be designed and installed to meet minimum requirements for the basic compact hot water distribution credit according to the procedures outlined in the 2019 Reference Appendices RA4.4.6. [CEnC 150.1(c)15C]

- **Ducted Central Forced Air Heating Systems.** The duct distribution system shall be designed to reduce external static pressure to meet a maximum fan efficacy equal to 0.35 Watts per cfm for Gas Furnaces or 0.45 Watts per cfm for Heat Pumps according to the procedures outlined in the 2019 Reference Appendices RA3.3. [CEnC 150.1(c)15D]
- **Energy Storage.** A battery energy storage system with a minimum capacity equal to 5 kWh shall be installed. The system shall have automatic controls programmed to have the ability to charge anytime PV generation is greater than the building load and discharge to the electric grid, during the highest priced hours of the day. [CEnC 150.1(c)15E]

Newly Constructed Multifamily Mixed-Fuel Buildings:

- **Insulation for a Heated Slab.** Perimeter insulation for a heated slab shall be installed with an R-value equal to or greater than R-10. [CEnC 150.1(c)16A]
- **Compact Hot Water.** The hot water distribution system shall be designed and installed to meet minimum requirements for the basic compact hot water distribution credit according to the procedures outlined in the 2019 Reference Appendices RA4.4.6. [CEnC 150.1(c)16B]
- **Central Fan Integrated Ventilation Systems.** Central forced air system fans used to provide outside air, shall have an air-handling unit fan efficacy less than or equal to 0.35 W/CFM. The airflow rate and fan efficacy requirements in this section shall be confirmed through field verification and diagnostic testing in accordance with all applicable procedures specified in Reference Residential Appendix RA3.3. Central Fan Integrated Ventilation Systems shall be certified to the Energy Commission as Intermittent Ventilation Systems as specified in Reference Residential Appendix RA3.7.4.2. [CEnC 150.1(c)16C]
- **Energy Storage.** A battery energy storage system with a capacity equivalent to the PV system shall be installed. The system shall have automatic controls programmed to have the ability to charge anytime PV generation is greater than the building load and discharge to the electric grid, during the highest priced hours of the day. [CEnC 150.1(c)16D]

Electric Readiness for Mixed-Fuel Buildings

Electric Readiness. Systems using gas or propane space heating equipment shall include the following components:

For equipment serving individual dwelling units, a dedicated 240 volt, 30 amp or greater electrical circuit shall be provided for a future electric heater. In addition, all of the following shall be required [CEnC 150.1(h)5A]:

- The circuit shall terminate within 3 feet from the designated future location of an electric heater with no obstructions into a listed cabinet, box or enclosure labelled "For Future Electric Space Heater"; and
- The circuit shall be served by a dedicated double pole circuit breaker in the electrical panel labeled with the words "For Future Electric Space Heater".
- If a condensate line is not attached to the heating equipment, a condensate line for future use shall be provided that is no less than $\frac{3}{4}$ inch in diameter (compliant with CPC 814), is no more than two inches higher than the base of the installed heating equipment, and located within 12 inches of the designated location of the heating equipment.

Equipment serving multiple dwelling units or common areas shall have conductors or a raceway installed with termination points at the main electrical panel (via subpanels panels, if applicable) and at a location no more than 3 feet from each gas outlet or a designated location of a future electric replacement appliance. The conductors or raceway and any intervening subpanels shall be sized to meet the future electric power requirements as specified below and in CEnC 150.0(u). [CEnC 150.0(h)5B]

- 24 amps at 240 volts per dwelling unit; or
- The electrical power required to provide equivalent functionality of the gas powered equipment as calculated and documented by a licensed design professional associated with the project.

Water heating system

Systems using gas or propane water heaters to serve individual dwelling units shall include the following components: [CEnC 150.1(n)1]

- 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:

- Both ends of the circuit and the unused conductor shall be labeled with the words “Hot Water Receptacle” and be electrically isolated; and
- 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 “For Future 240V Electric Water Heater”; and
- 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
- 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
- A gas supply line with a capacity of at least 200,000 Btu/hr; and
- Located in an area that is at least 3 feet by 3 feet by 7 feet high.

Water heating equipment serving multiple dwelling units or common areas shall have: [CEnC 150.0(n)5]

- If a condensate line is not attached to the water heater, a condensate line for future use shall be provided that is no less than $\frac{3}{4}$ inch in diameter (compliant with CPC 814), is no more than two inches higher than the base of the installed water heater, and located within 12 inches of the water heater; and
- Conductors or raceway installed with termination points at the main electrical panel (via subpanels panels, if applicable) and into a listed cabinet, box or enclosure at a location no more than 3 feet from each gas outlet or a designated location of a future electric replacement appliance labelled “For future water heater.” The conductors or raceway and any intervening subpanels shall be sized to meet the future electric power requirements as specified below and in CEnC 150.0(u).
 - 24 amps at 240 volts per dwelling unit or
 - The electrical power required to provide equivalent functionality of the gas powered equipment as calculated and documented by a licensed design professional associated with the project.

Other Gas Equipment. Buildings plumbed for all other natural gas or propane equipment shall include the following components for each gas terminal or stub out: [CEnC 150.0(s)]

Clothes Drying

- Equipment serving individual dwelling units shall have a dedicated 240- volt, 30 amp or greater electrical receptacle within 3 feet of the appliance and accessible with no obstructions. In addition, all of the following: [CEnC 150.0(s)1A]
 - The receptacle shall be labeled with the words “For Future Electric Clothes Dryer”; and
 - A double pole circuit breaker in the electrical panel labeled with the words “For Future Electric Clothes Dryer”.
- Equipment serving multiple dwelling units or common areas shall have conductors or raceway installed with termination points at the main electrical panel (via subpanels panels, if applicable) and at a location no more than 3 feet from each gas outlet or a designated location of a future electric replacement appliance. The conductors or raceway and any intervening subpanels shall be sized to meet the future electric power requirements as specified below and in CEnC 150.0(u). [CEnC 150.0(s)1B]
 - 24 amps at 240 volts per dwelling unit, or
 - The electrical power required to provide equivalent functionality of the gas powered equipment as calculated and documented by a licensed design professional associated with the project.

Combined Cooktop and Oven or Stand Alone Cooktop

- A dedicated 240-volt, 40 amp or greater circuit and 50 amp or greater electrical receptacle located within 3 feet of the appliance and accessible with no obstructions. In addition, all of the following: [CEnC 150.0(s)2A]
 - The electrical receptacle shall be labeled with the words “For Future Electric Range” and be electrically isolated; and
 - A double pole circuit breaker in the electrical panel labeled with the words “For Future Electric Range”.

Stand Alone Cooking Oven

- A dedicated 240-volt, 20 amp or greater receptacle within 3 feet of the appliance and accessible with no obstructions. In addition, all of the following: [CEnC 150.0(s)3A]

- The electrical receptacle shall be labeled with the words “For Future Electric Oven” and be electrically isolated; and
- A double pole circuit breaker in the electrical panel labeled with the words “For Future Electric Oven”.

Pools and Spas

- Gas or propane equipment pools or spas shall have conductors or raceway installed with termination points at the main electrical panel (via subpanels panels, if applicable) and at a location no more than 3 feet from each gas outlet or a designated location of a future electric replacement appliance. The conductors or raceway and any intervening subpanels shall be sized to meet the future electric power requirements as specified below and in CEnC 150.0(u). [CEnC 150.1(s)4A]
 - The electrical power required to provide equivalent functionality of the gas powered equipment as calculated and documented by a licensed design professional associated with the project.

Service Capacity

All newly installed electrical panels and subpanels serving loads in a Mixed-Fuel Building shall have space for additional overcurrent protective devices and adequate bus bar capacity to meet all of the building’s potential future electrical requirements as specified in CEnC 150.0(h), (n) and (s). [CEnC 150.0(t)1]

All newly installed raceways in a Mixed-Fuel Building between the utility service point and the main electric panel and any subpanels shall be adequately sized for conductors to serve all of the building’s potential future electrical requirements as specified in CEnC 150.0(h), (n) and (s). [CEnC 150.0(t)2]

The service capacity requirements of this section shall be determined in accordance with CEnC 150.0(u). [CEnC 150.0(t)3]

Conductor, Raceway and Subpanel Sizing

The capacity requirements may be adjusted for demand factors in accordance with the CEC 220. [CEnC 150.0(u)1]

Raceway and subpanel capacity shall be sized to be large enough to meet the requirements at the service voltage. [CEnC 150.0(u)2]

Additional:

I certify that I have read and acknowledged all of the Code Requirements noted above. I accept full responsibility for complying with all of the above requirements, as applicable to my project. I further agree that if I fail to comply with the code requirements, due to error or omission, I will correct all deficiencies prior to final inspection.

Name

Signature

Date

Check One: Contractor Owner Owner’s Agent