



Alterations to Space Heating Systems

What is required to replace or install a heating system?

Space heating alterations, such as replacing an old heating system or installing a new system, require a building permit. Note that if you are repairing an existing system (no new replacement parts), a building permit will not be required. If a building permit is required it can be issued over the counter without construction documents (building application only), however, if you are proposing to alter a ducted HVAC system you may need to submit a registered certificate of compliance (CF1R) per CA Administrative Code §10-103(A)(1). Additionally, the proposed HVAC appliance must be certified on the [Modernized Appliance Efficiency Database](#) (see Website Links on the next page for all web addresses).

What is a registered CF1R and how do I provide this?

A CF1R, or the certificate of compliance, is a construction document used to demonstrate compliance with the CA Energy code. A *registered* CF1R is a CF1R that requires Home Energy Rating System (HERS) verification and is therefore required to be registered with a [HERS provider](#). Because the Humboldt County Building Department only requires a CF1R for projects that require HERS verification (CA Administrative Code §10-103(A)(1)(C)), all requested CF1R's will need to be registered. Note that exemptions from submitting CF1R's shall not be deemed to grant authorization for any work to be done in any manner in violation of the energy code or other provisions of law.

You can provide a registered CF1R prescriptively with forms provided on the [CA Energy Commissions website](#) or you can take the "performance route" and produce the CF1R using [software approved by the Energy Commission](#). Once produced it will need to be registered with a HERS provider before submitting to the building department.

- Note that the CF1R will indicate if a CF2R (certificate of installation from installing contractor) will be required during construction or if a CF3R (certificate of verification from a HERS rater) will be required before final.

How do I know if a registered CF1R is required for my project?

Refer to the [CalCERTS Single-Family Alterations HERS Verification Summary Table](#). If any of the HERS verifications are required for your project per that table you will need to supply a CF1R. Keep in mind Humboldt County is within Climate Zone 1.

Can I install an electric resistance heater?

Per CA Energy Code §150.2(b)1G, if the space heating system is being replaced, the replacement system must not use electric resistance as the primary heat source unless one of the following exceptions is met:

- The existing system is electric resistance, and the replacement system is non-ducted.
- The existing system is electric resistance, and a ducted space cooling system is not being replaced or installed.

What is required to install a woodstove or wood burning fireplace?

Fireplace stove and pellet stove models shall be listed on the [EPA Wood Stove Database Website](#). Factory-built fireplace models shall be listed on the [EPA List of Qualified Fireplaces Website](#). These non-ducted wood burning appliances do not require a registered CF1R, however, current California Title 24 building codes still apply.

Additional Requirements

All the following requirements likely apply to your project.

- **Building Cooling and Heating Loads CA Energy Code §150.0(h).** Building heating and cooling loads shall be determined using a method based on any one of the following:
 - The ASHRAE Handbook, Equipment Volume, Applications Volume and Fundamentals Volume; or
 - The SMACNA Residential Comfort System Installation Standards Manual; or
 - The ACCA Manual J.
- **Setback Thermostat CA Energy Code §110.2(C), §150.0(i) & §150.2(b)1F.** All thermostats associated with the altered system shall be replaced with a setback thermostat. The setback thermostat shall have a clock mechanism that allows the building occupant to program the temperature setpoints for at least four periods within 24 hours. Not required for gravity gas wall heaters, gravity floor heaters, gravity room heaters, non-central electric heaters, fireplaces or decorative gas appliances, wood stoves, room air conditioners and room air conditioner heat pumps.
- **Duct Insulation CA Energy Code §150.2(b)1D.** Altered duct systems (< 75% New Ducts) AND new duct systems (≥ 75% New Ducts) in conditioned & unconditioned spaces require minimum R-8 duct insulation. An HVAC system is considered to have “all new” ducts when 75% or more of the ducts are new material. Up to 25% of existing duct system components (such as registers, grilles, boots, air handler, coil, plenums and duct material) may be reused if those parts are accessible and can be sealed to prevent leakage.
- **Manufacturer’s Instructions CMC §303.** The installation of all appliances regulated by this code shall be in accordance with the conditions of the listing. The appliance installer shall leave the manufacturer’s installation and operating instructions attached to the appliance. Clearances of listed appliances from combustible materials shall be as specified in the listing or on the rating plate.
- **Located in an Attic CMC §304.4, §904.10 & §310.** Furnace installed in attic or furred space shall be accessible for inspection, service, repair and replacement without removing permanent construction. A permanent 120V receptacle outlet and a lighting fixture shall be installed near the appliance. The switch controlling the lighting fixture shall be located at the entrance to the passageway. A drain line shall be provided in accordance with CMC 310.1 as well as an additional protection method described in CMC 310.2 such as a water level detecting device or an additional watertight pan. Refer to CMC 310.2 for other options.

Website Links

- Modernized Appliance Efficiency Database (<https://cacertappliances.energy.ca.gov/>).
- Prescriptive Residential CF1R Forms (<https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency-3>).
- Prescriptive Non-Residential Forms (<https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency-5>).
- HERS Providers (<https://www.energy.ca.gov/programs-and-topics/programs/home-energy-rating-system-hers-program/home-energy-rating-system>).
- Energy Commission Approved Compliance Software (<https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency-1>).
- EPA Woodstove Database (<https://cfpub.epa.gov/oarweb/woodstove/index.cfm?fuseaction=app.search>).
- EPA List of Qualified Fireplaces (<https://www.epa.gov/burnwise/list-qualified-fireplaces-and-fireplace-retrofit-devices>).
- CalCERTS Single-Family Alterations HERS Verification Summary Table (https://www.calcerts.com/forms/public/CalCERTS_Single-Family_HERS_Alterations_Summary_Table_2022.pdf)