



2013 Building Energy Efficiency Standards Residential HVAC Alterations Climate Zones 10 to 15

BUSINESS AND PROFESSIONS CODE, SECTION 7110

Willful or deliberate disregard and violation of the building laws, including the California Building Code, and local permit requirements constitutes a cause for disciplinary action from the Contractors State License Board working in conjunction with the local building department. This action may consist of fines up to \$5,000 per violation or suspension/revocation of a contractor's license.

WHEN IS A PERMIT REQUIRED?

A written construction permit shall be obtained from the enforcement agency prior to the erection, construction, reconstruction, installation, relocation, alteration, repair, or replacement of any mechanical system, except as permitted in Chapter 1, Section 111.1 of the 2013 California Mechanical Code. Projects requiring permits include, but are not limited to:

- New HVAC installation
- HVAC change out
- Replacement of furnace, coil, FAU, or condenser
- Relocation of an existing HVAC unit
- Adding or replacing more than 40 ft. ducting in unconditioned space.

2013 BUILDING ENERGY EFFICIENCY STANDARDS (Title 24, Part 6) REQUIREMENTS INCLUDE:

1. Heating equipment must have a minimum 78% AFUE (Exception: Wall & floor furnaces; room heaters).
2. Central air conditioners & heat pumps less than 65,000 BTU/hr. must have a minimum 13 SEER.
3. Newly installed or replaced ducts must have a minimum insulation value of R-6. When more than 40 ft. of ducting will be installed or replaced, the duct insulation value must be R-6 (CZ 10-13), or R-8 (CZ 14 and 15).
4. A setback type thermostat (24 hr. clock with 4 set points) is required for all alterations.
5. New or replacement ducts must meet the mandatory requirement of Section 150(m).
 - All joints and openings in the HVAC system must be sealed.
 - Only UL 181, UL 181A or UL 181B approved tapes or mastic shall be used to seal duct openings.
 - Connections of metal ducts and the inner core of flex ducts shall be mechanically fastened. Flex ducts must be connected using a metal sleeve/coupling.
 - Flex ducts that are suspended must be supported every 4 ft. max for horizontal runs with no more than 2" sag between supports and 6 ft. max for vertical runs.

WHEN IS HERS VERIFICATION REQUIRED AND WHAT FORMS ARE REQUIRED?

HERS verification is required for **all** HVAC alterations in Climate Zone 10 to 15. A HERS rater is a special inspector for the building department. The building inspector may also request to be on site to witness testing by the contractor and/or HERS rater. The installer picks one of the four options on the CF-1R-ALT-04-E form that describes the work being conducted. Each option lists the forms required to be at the job site for final inspection.

- CF-2R Forms shall be completed and submitted by the installing contractor for final inspection.¹
- CF-3R Forms shall be completed, registered with an approved HERS provider (cannot be completed by hand), and submitted by the HERS rater for final inspection.

¹ For final inspection, ALL compliance forms (CF-1R, CF2R, and CF3R) shall be registered with an approved HERS provider for building permit applications submitted on or after June 14, 2014.

WHEN IS HERS VERIFICATION REQUIRED AND WHAT FORMS ARE REQUIRED? (continued)

DESCRIPTION OF HERS TESTS BELOW (Full descriptions found in Residential Appendix RA3 and Residential Manual).

Duct Sealing – The installer is to insure leakage of the HVAC system is less than 6% for new air conditioning system (new equipment and all new ducts) or 15%, 60% reduction, seal all accessible leaks, etc. for alterations to existing HVAC systems. When the contractor uses the option to seal all accessible leaks, all easily movable objects must be moved to seal existing ducting. New ducting installed by the contractor is not allowed to have any leaks even if it is no longer accessible. In example 3 of the CF-1R “all new ducts” means that all ducting was changed. The original boots, plenums, etc. do not need to be changed.

Cooling Coil Airflow (CCA) – There are two different minimum air flow requirements that must be met. These are 300 CFM and 350 CFM. The minimum 300 CFM per ton of cooling is required in order to conduct a refrigerant charge test. For new HVAC systems (new equipment and new ducts) the HVAC system must move a minimum 350 CFM of air for each ton of cooling.

Refrigerant Charge (RC) – The installer is required to verify the charge is correct. If the outside temperature is below 55 degrees, then the weigh-in method must be used by the installer. When the weigh-in method is used, the HERS rater must retest when the temperature is 55 and above. A charge indicator display (CID) can be used in place of conducting an RC. Manufacturers are currently developing this device.

Temperature Measurement Access Holes (TMAH) – Installer must drill and mark holes to measure temperature split.

Hole for the Placement of a Static Pressure Probe (HSP) or Permanently Installed Static Pressure Probe (PSPP) – Either the installer must drill and mark holes to measure static pressure or a permanently installed pressure probe must be installed and marked.

Saturation Temperature Measurement Sensors (STMS) – Permanently installed type K thermocouple are installed on the indoor and outdoor coil so that the HERS rater can verify charge without attaching gauges. Instructions are found in Chapter 4 of the Residential Manual.

Fan Watt Draw (FWD) – Installer verifies that the furnace fan draw is less than 0.58 Watts/CFM.

NOTE: The CF-6R-MECH-04 is required for all HVAC alterations.