



## Residential T-24 State Energy General Guidelines Effective October 1, 2005

See "2005 Building Energy Efficiency Standards" for complete requirements  
CLIMATE ZONE 2

### Lighting

- a. **Kitchens.** At least 50% of the installed wattage (maximum wattage labeled on the fixture) in kitchens must be high efficacy\* (fluorescent). Any other types of permanent lighting fixtures in the kitchen must be switched separately from the high efficacy fixtures.
- b. **Lighting in Bathrooms Garages, Laundry Rooms and Utility Rooms.** All light fixtures must either be high efficacy or must be controlled by a manual-on occupancy sensor switch\*\*.
- c. **Other Rooms.** All lighting fixtures must be high efficacy or must be controlled by a manual-on occupancy sensor or dimmer switch. Closets that are less than 70 square feet in area are exempt from this requirement.
- d. **Outdoor Lighting.** All lighting mounted to the building or to other buildings on the same lot must be high efficacy luminaires (metal halide and high pressure sodium qualify as high efficacy) or must be controlled by a photo-control/motion sensor combination.
- e. **Common Areas of Multifamily Buildings.** All luminaires in the common area of multifamily buildings must either be high efficacy or must be controlled by an occupancy sensor.

\***High efficacy luminaire** is one that contains pin-based socket such as compact or linear fluorescent lamps. Luminaires that contain screw-base sockets such as incandescent, halogen, low voltage, are not considered high efficacy. All fluorescent luminaires that are more than 13 watts must be electronic ballast.

\*\***Manual-on occupancy sensor switch** turns lighting off automatically when no one is present. When lighting is needed it must be turned on manually with a switch.

**Recessed Can Lighting.** Can lights that are recessed into insulated ceilings are required to be rated for Insulation Contact (IC) so that insulation can be placed over them. In addition, the light can must be labeled Air Tight (AT). The luminaire must be sealed with a gasket or caulked between the housing and ceiling.

### Insulation: (form CF-6R page 12)

- Walls – R-13
- Attic – R-30
- Floor – R-19
- Ducts – R-4.2

Installation Certificate CF-6R page 12, certifies R-value of insulation installed in roof, ceiling walls, floor slab and foundation walls, including the brand, thermal resistance (R-

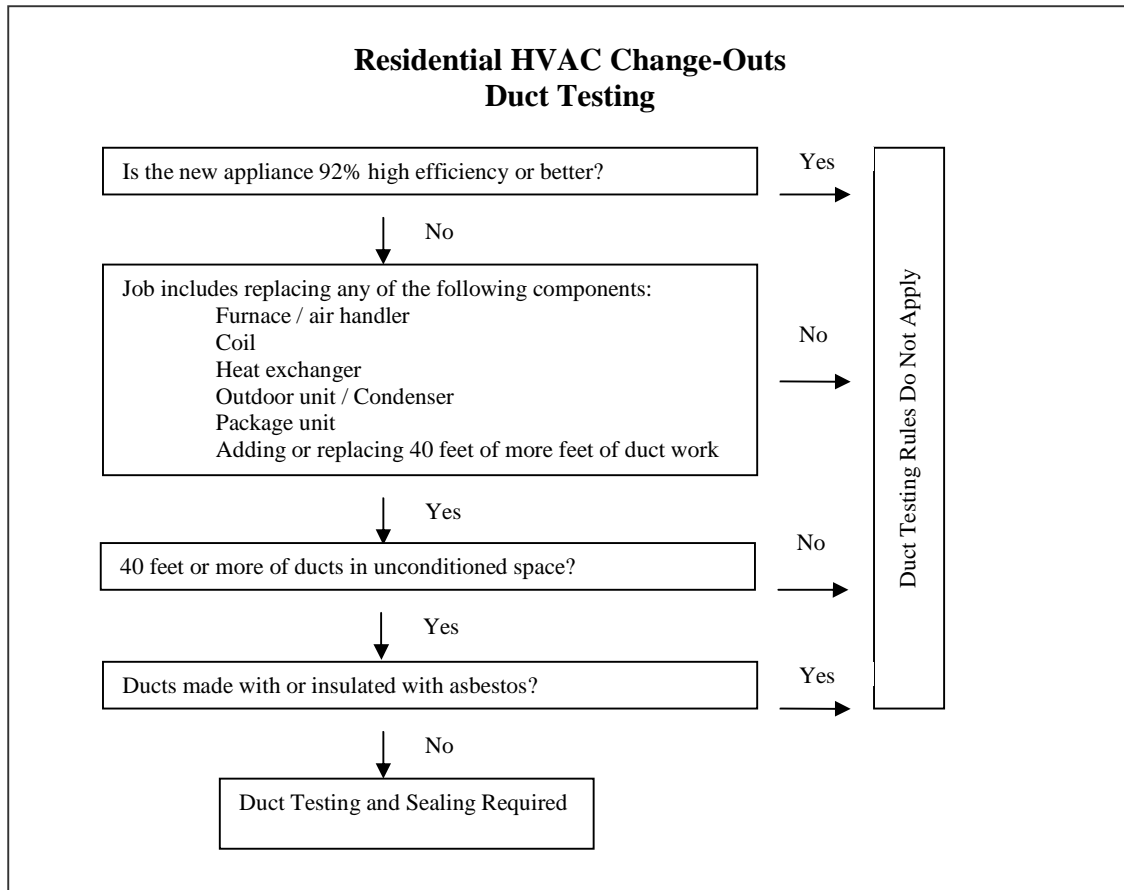
value), and the thickness. Mandatory measures also require sealing or caulking of cracks and holes through the framing and around piping and electrical penetrations, including weather stripping around doors.

**HVAC:** (form CF-6R page 3)

In all new HVAC and Change-outs the thermostat must be an automatic setback type.

**Air Conditioning:** Equipment type must meet or exceed what is indicated on the CF-1R value. Piping insulation on the suction line that carries refrigerant must be insulated. Pipe insulation in outdoor locations must be protected from physical damage and UV deterioration

**Compliance forms:** Some applications require some sort of field verification and/or diagnostic testing by a third party inspector known as a California Energy Commission certified HERS rater. Typical measures that require field verification and/or diagnostic testing are split system air conditioner refrigerant charge, thermostatic expansion valve (TXV), and duct sealing. Ultimately it is the builder’s responsibility to ensure that the Installation Certificate CF-6R is provided to the HERS rater.



**Fenestration (glazing):** (form CF-6R page 2)

The Energy Standards set a maximum U-factor of 0.57 and a maximum solar heat gain coefficient (SHGC) of 0.40. All fenestration products must have a temporary label indicating U-factor, SHGC, and air infiltration rate. The temporary U-factor/SHGC/air infiltration rate label must remain on the windows until the Building Department has verified compliance.

**Water Heater:** (form CF-6R page 1)

Insulation is required on the first 5 feet of piping on both the inlet and outlet at the water heater. Keep insulation at least 6 inches away from the water heater draft hood and vent. Insulation is required on the hot water piping to the kitchen when the hot water line is  $\frac{3}{4}$  inch or larger. When a recirculating pump is installed, the entire length of recirculation loops must be insulated.

**Roof:**

Radiant Barrier – If choosing to use prescriptive measure C, a roof radiant barrier must be installed. The most common way of meeting the radiant barrier requirement is to use roof sheathing that has a radiant barrier bonded to it in the factory. The radiant barrier is a reflective material that reduces radiant heat transfer caused by solar heat gain in the roof.

Cool roofs – not applicable

**Building Permit Phase Documentation:**

Certificate of Compliance CF-1R form (must be printed on the plan set) – is a summary of the minimum energy specifications needed for compliance including the results of heating and cooling load calculations.

Mandatory Features Checklist MF-1R form (must be printed on the plan set) – the designer must ensure and clearly detail on the plans that all applicable mandatory features are indicated on the plans and specifications.

**Construction Phase Documentation:**

Installation Certificate CF-6R form – actually several documents in one, this document is completed by the contractor responsible for installing windows (fenestration), the air distribution ducts and HVAC equipment, water heating system, the measures that affect building envelope tightness, the lighting system, and the insulation. Persons signing these CF-6R forms are verifying that the installed efficiencies or requirements meet or exceed those used for compliance with the standards as shown on the design documents. The CF-6R must be posted on the job site in a conspicuous location or kept with the building permit. The CF-6R is required to be provided to the homeowner.

**Final Approval:**

Certificate of Field Verification and Diagnostic Testing CF-4R form – When required, prior to final approval a signed Certificate of Field Verification and Diagnostic Testing CF-4R must be provided to the Building Official by the HERS rater. The Building Department's obligation is to corroborate the results documented in the installer's certifications and in the CF-4R. The builder is ultimately responsible for ensuring that the Building Department has received the CF-4R prior to the occupancy permit or final inspection.