



2005 California Energy Code (CEC) - New Provisions Climate Zone 9

Effective October 1, 2005, the requirements for high efficacy lighting (fluorescent) in residences have been revised. A summary of the changes are shown below:

Electrical Requirements for Lighting, CEC Sec. 150(k)

Residential

- 1) **Kitchens** – Minimum 50% of lighting wattage in kitchens must be fluorescent (high efficacy). A separate switch for fluorescents is required. Lights adjacent to kitchen (dining and nook areas, etc.) are considered kitchen lighting if they are on same switch as kitchen lighting.
 - 2) **Bathrooms, Garages, Laundry Rooms and Utility Rooms** – All lighting must be fluorescent (high efficacy) or controlled by occupant sensors. Occupant sensors must turn off lights in an area no more than 30 minutes after the area is vacated. Sensors can not turn on lights automatically and can not have an override switch.
 - 3) **All other rooms** – All lights must be fluorescent (high efficacy) or controlled by dimmer switches or occupant sensors. Occupant sensors must turn off lights in an area no more than 30 minutes after the area is vacated. Sensors can not turn on lights automatically and can not have an override switch.
Exception-Closets less than 70 sq. ft.
 - 4) **Outdoor Lighting Mounted on Buildings** - All lighting must be fluorescent (high efficacy) or controlled by motion sensors with integral photo control. Motion sensors must turn off lights soon after an area is vacated and may also turn lights on when motion is detected.
Exception-Lights in or around swimming pools or water features.
- Lights in ceilings required to be insulated shall be AT (“air-tight”) in addition to being IC. The light must be sealed with a gasket between the housing and the ceiling.

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Effective October 1, 2005 duct leakage testing is required for most new air conditioning installations as well as most equipment and/or duct change outs. A summary of the new requirements is shown below:

Mechanical Requirements for Duct Leakage Testing

Residential - CEC 152(b)

- 1) Ducts must be tested for leakage if:
New HVAC system installation, or
Replacement of air handler, furnace, condenser, heating or cooling coil, package unit, or
Installation of a minimum of 40 linear ft. of new duct in unconditioned space.
Exceptions - Duct testing not required:
 - i) There is less than 40 linear ft. of duct in unconditioned space.
 - ii) Ducts contain asbestos.

- iii) Ducts have been previously tested by HERS.
- 2) Max leakage rate for new ducts or new construction- 6 %
- 3) Max leakage rate for existing ducts:
 - a) 15%, or
 - b) 60% reduction in leakage rate from original duct test before any sealing done (provide smoke test), or
 - c) 10% max leakage to outside of house, or
 - d) If a), b) or c) is not possible: test with smoke by HERS rater (all accessible leaks must be sealed).
- 4) Alternate Option in lieu of testing:
 - a) Use min SEER14 or EER12 condenser with TXV (thermostatic expansion valve), and
 - b) Use 0.92 AFUE furnace (or 0.82 AFUE furnace and increased duct insulation (add R-4 insulation to existing duct or provide R-8 insulation on new duct)).
 - c) HERS rater must verify TXV and EER.
 - d) Package systems do not need to meet TXV requirement.
 - e) A refrigeration charge measurement can be used as an alternative to TXV.

Commercial, High Rise Residential, and Hotel - CEC 144(k), 149(b)1

- 1) Ducts must be tested for leakage if:
 - New HVAC system installation, or
 - Replacement of air handler, furnace, condenser, heating or cooling coil, package unit, or
 - Installation of a minimum of 40 linear ft. of new duct in unconditioned space.

Exceptions - Duct testing not required:

 - i) Less than 25% of ducts are outdoors or in unconditioned space.
 - ii) Ducts contain asbestos.
 - iii) VAV or multi-zone systems (CEC 125(a)).
 - iv) Air handling unit serving more than 5,000 sq ft.
- 2) Max leakage new ducts: 6%.
- 3) Max leakage existing ducts:
 - a) 15%, or
 - b) 60 % reduction in leakage rate from original duct test before any sealing done (provide smoke test), or
 - c) If a) or b) is not possible: seal all accessible leaks (verified by HERS tester usually with smoke).
- 4) Alternate Option in Liu of testing:
 - Use minimum SEER 13.7 or EER 11.4 condenser.
 - HERS rater is required to verify SEER/EER.

Methods of Verifying Duct Leakage – CEC 151(f)10

- 1) Contractor tests ducts-completes form CF-6R, and
- 2) Provide Independent HERS Rater Verification
 - a) HERS rater tests and completes form CF-4R, or
 - b) Homeowner can ask that their home be included in a random sample group (one of seven houses will be tested.).
- 3) HERS providers- www.cheers.org; www.calcerts.com
- 4) CF-4R must be presented to inspector prior to final.