



Energy Efficient Renovation Requirements for Major Residential Additions and Alterations

PROJECT INFORMATION (ADDRESS, ETC)

ADDITIONS AND ALTERATIONS

The mandatory provisions of Chapter 4 shall be applied to additions or alterations of existing residential buildings where the addition or alteration increases the building's conditioned area, volume, or size. The requirements shall apply only to and/or within the specific area of the addition or alteration.

Applicability - Select One

- Major Addition
- Major Alteration
- Combination Major Addition and Alteration

Definitions

Major Addition: Any change to an existing building that increases conditioned floor area by 500 or more square feet in a one-year period.

Major Alteration: Any construction or renovation to an existing structure other than a repair or alteration whose work area covers 500 or more square feet in a one-year period. A project that consists only of roof and/or window replacement is not considered a Major Alteration.

Combination Major Addition and Alteration: Any project that includes an addition and alteration that has a work area equal to or greater than 500 square feet.

Details about REQUIREMENT 2 are on the following pages.

REQUIREMENT 1:

Ref. Sheet # _____

LED Lighting Upgrade

Measure applies to whole house

Upgrade all internal and external lighting to LED lighting and upgrade external fixtures to include photocells (with timer or motion sensor), or a astronomical clock, so that they are not operated during the daytime.

REQUIREMENT 2:

Efficiency Upgrade - Choose at least one from below or select multiple from Envelope Combo below. See Table 150.0-I

Measures apply to whole house

- A heat pump hot water heater Ref. Sheet # _____
- A heat pump HVAC system Ref. Sheet # _____
- Solar PV + Electric Ready Pre-Wire Ref. Sheet # _____
- Whole House R-19 Floor Insulation Minimum Ref. Sheet # _____
- Envelope Combo 8 points, see below Ref. Sheet # _____

Envelope Combo:

Select multiple for a total of 8 points

- Water Insulation Package (1 point) Ref. Sheet # _____
- Air Sealing (1 point) Ref. Sheet # _____
- R-49 Attic Insulation (2 points) Ref. Sheet # _____
- Duct Sealing (2 points) Ref. Sheet # _____
- New Ducts and Duct Sealing (4 points) Ref. Sheet # _____
- Window (3 points) Ref. Sheet # _____

REQUIREMENT 3:

Ref. Sheet # _____

If upgrading to a 200A panel the project is required to meet Electric Readiness

Any major addition, major alteration, or combination major addition and alteration that includes a new electrical panel and electrical service upgrade to 200A or more shall include electric readiness components per 150.0(n)1(A)-(B) and 150.0(t)

Not Applicable - No panel upgrade to 200A



Measure	Definition
Heat Pump Water Heater (HPWH)	Replace existing electric resistance or natural gas storage water heater with a heat pump water heater.
Heat Pump Space Heater	Replace all existing gas and electric resistance space heating systems with an electric-only heat pump system.
Solar PV + Electric Ready Pre-Wire	Install a solar PV system that meets the requirements of 2022 Title 24 Section 150.1(c)14.; In addition to the solar PV system, include electric readiness components per 150.0(n)1(A)-(B) and 150.0(t) and one of: A. Energy Storage Systems (ESS) Ready, as specified in Section 150.0(s), or B. EV Charger Ready as specified in the California Green Building Code, Title 24, Part 11, Section A4.106.8.1, which otherwise applies to new construction.
Whole House R-19 Floor Insulation Minimum	Raised-floors shall be insulated such that the floor assembly has an assembly U-factor equal to or less than U-0.037, or shall be insulated between wood framing with insulation having an R- value equal to or greater than R-19.
Envelope Combo (See options below)	Must total 8 points
Envelope Combo - 8 points minimum	
Water Heating Insulation Package (1 point)	Add exterior insulation meeting a minimum of R-6 to existing storage water heaters. Insulate all accessible hot water pipes with pipe insulation a minimum of 3/4 inch thick. This includes insulating the supply pipe leaving the water heater, piping to faucets underneath sinks, and accessible pipes in attic spaces or crawlspaces. Upgrade fittings in sinks and showers to meet current California Green Building Standards Code (Title 24, Part 11) Section 4.303 water efficiency requirements. Water heaters 20 gallons or less, or water heaters that are not able to add exterior insulation may not take credit for this measure.
Air Sealing (1 point)	Seal all accessible cracks, holes, and gaps in the building envelope at walls, floors, and ceilings. Pay special attention to penetrations including plumbing, electrical, and mechanical vents, recessed can light luminaires, and windows. Weather-strip doors if not already present. Compliance shall be demonstrated with blower door testing conducted by a certified HERS Rater no more than three years prior to the permit application date that either: a) shows at least a 30 percent reduction from pre-retrofit conditions; or b) shows that the number of air changes per hour at 50 Pascals pressure difference (ACH50) does not exceed ten for Pre-1978 vintage buildings, seven for 1978 to 1991 vintage buildings and five for 1992-2010 vintage buildings. If combustion appliances are located within the pressure boundary of the building, conduct a combustion safety test by a professional certified by the Building Performance Institute in accordance with the ANSI/BPI-1200-S-2017 Standard Practice for Basic Analysis of Buildings, the Whole House Combustion Appliance Safety Test Procedure for the Comfortable Home Rebates Program 2020 or the California Community Services and Development Combustion Appliance Safety Testing Protocol.

R-49 Attic Insulation (2 points)	Attic insulation shall be installed to achieve a weighted assembly U-factor of 0.020 or insulation installed at the ceiling level shall have a thermal resistance of R-49 or greater for the insulation alone. Recessed downlight luminaires in the ceiling shall be covered with insulation to the same depth as the rest of the ceiling. Luminaires not rated for insulation contact must be replaced or fitted with a fire-proof cover that allows for insulation to be installed directly over the cover. In buildings where existing R-30 is present and existing recessed downlight luminaires are not rated for insulation contact, insulation is not required to be installed over the luminaires.
Duct Sealing (2 points)	Air seal all space conditioning ductwork to meet the requirements of the 2022 Title 24 Section 150.2(b)1E. The duct system must be tested by a HERS Rater no more than three years prior to the alteration or addition permit application date to verify the duct sealing and confirm that the requirements have been met. This measure may not be combined with the New Ducts and Duct Sealing measure in this Table. Buildings without ductwork or where the ducts are in conditioned space may not take credit for this measure.
New Ducts and Duct Sealing (4 points)	Replace existing space conditioning ductwork with new R-8 ducts that meet the requirements of 2022 Title 24 Section 150.0(m)11. This measure may not be combined with the Duct Sealing measure in this Table. To qualify, a preexisting measure must have been installed no more than three years before the alteration or addition permit application date.
Windows (3 points)	Replace at least 50% of existing windows with high performance windows with an area-weighted average U-factor no greater than 0.30.
Electric Readiness	
150.0(n)1(A-B)	Code Section on Electric readiness for future installation of Heat Pump Water Heater
150.0(t)	Code Section on Electric readiness for future installation of electric space heater