

Residential Energy Efficiency Requirements

The HVAC contractor shall size heating/cooling equipment and appliances in accordance with ACCA Manual S, based on building loads calculated per ACCA Manual J, 8th Edition.



Manual J and S reports shall be submitted with plans for new residences. Heat loss calculations using approved software (Wrightsoft, Adtek, Elite, Carmelsoft, Avenir HeatCAD/LoopCAD, Cool Calc, or Florida Solar Energy Center’s Energy Gauge) are required. Calculations shall show the size, make, model, and BTU’s/SEER Rating (A/C) for furnaces, air conditioners and boilers. Electric baseboard heater manufacturer’s specs must be provided. Duct systems for heating, cooling and ventilation shall be sized in accordance with ACCA Manual D.

The following thermal design parameters shall be used for Larimer County:

Winter Outdoor Design Dry-bulb (4 ⁰ F)	Winter Indoor Design Dry-bulb (72 ⁰ F)
Summer Outdoor Design Dry-bulb (91 ⁰ F)	Summer Indoor Design Dry-bulb (75 ⁰ F)
Summer Design Wet-bulb (62 ⁰ F)	6368 Degree Days Heating 479 Degree Days Cooling

There are four options to comply with the 2018 energy code (below).

Please indicate which option you are choosing by marking 1, 2, 3 or 4 below.

- 1) **Prescriptive Package:** see chart on reverse side for insulation and glazing requirements. Decide if you will be installing 2x6 stud walls with R-20 insulation or using footnote (f), and make sure that detail is on your plans. All window NFRC (U-factor) labels must be left on windows until the insulation inspection has been approved.
- 2) **Total UA Alternative (REScheck):** Provide REScheck Compliance Certification showing you pass the 2012 or newer IECC; an architect or HVAC contractor may be able to assist you. Heating/AC equipment to be sized per Manual J & S and provided with REScheck report. Input data must match both reports and building plans. Free software is at energycodes.gov (click on REScheck). In addition, must comply with IECC Mandatory requirements.
- 3) **Simulated Performance Alternative (HERS)** done by a certified energy rater: go to resnet.us to find certified raters. Larimer County allows a \$75 rebate on permit fee if a certified energy rater inspects and documents with a compliance report showing how the home pass the 2012 or newer IECC residential requirements. In addition, must comply with IECC Mandatory requirements.
- 4) **Energy Rating Index (ERI):** The rated design shall have an ERI less than 61 compared to the *reference design*, using approved software tools in accordance with RESNET/ICC 301, with compliance verification documentation provided by an approved third party. In addition, must comply with IECC Mandatory requirements.

IRC Table N1102.1.2 - Larimer County Single-Family Prescriptive Package ^(h)

	Maximum	Maximum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum
Climate Zone	Fenestration U-Factor ^(b)	Skylight U-factor ^(b)	Ceilings R-value ^(e)	frame wall R-value	Mass Wall R-value ^(g)	Floor R-value over unheated space	Basement Wall R-Value continuous /cavity ^(c)	Slab perimeter R-value/ Depth ^(d)	Crawl Space R-value Cont./cavity ^(c)
5	0.32	0.55	49	20^(a) or 13+5^(f)	13/17	30⁽ⁱ⁾	10/13	10, 2ft.	10/13

- (a)** R-19 permitted to be compressed into a 2x6 cavity such that the R-value is reduced by R-1 or more shall be marked with the compressed batt R-value in addition to the full thickness R-value. If this method is used, supplement with insulated sheathing of at least R-2.
- (b)** The fenestration U-factor column excludes skylights; use the Skylight U-factor column.
- (c)** The first R-value applies to continuous insulation, the second to framing cavity insulation; either insulation method meets the requirement.
- (d)** R-5 insulation shall be added to the required slab edge R-values for heated slabs.
- (e)** R-38 shall be deemed to satisfy the requirements of R-49 wherever full height R-38 insulation extends over the wall top plate at the eaves.
- (f)** 13+5 means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25% or less of the exterior, R-5 sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25% of the exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.
- (g)** The second R-value applies when more than half the insulation is on the interior.
- (h)** Larimer County will also accept a REScheck Compliance Report that passes using 2012 International Energy Conservation Code (IECC), any “Home Energy Rating Score (HERS) by a certified energy rater showing the home passes the 2012 IECC, or a maximum 61 Energy Rating Index provided by an approved third party using RESNET/ICC 301 software. For additional information on energy codes or free REScheck download, go to energycodes.gov.
- (i)** Or insulation sufficient to fill the framing cavity, R-19 minimum.

Other Residential Energy Code Provisions of Note

- All heating and cooling equipment shall be sized such that the total sensible capacity of the cooling equipment does not exceed the total sensible load by more than 25% for cooling-only applications, or by more than 40% for heating applications
- At least 75 percent of lamps in permanently installed lighting fixtures shall be *high-efficacy* lamps.
- A signed air leakage testing report by an approved third party showing a maximum rate of three air changes per hour at 50 Pascals pressure must be provided to the building official. Testing must be conducted in accordance with RESNET/ICC 380, ASTM E779 or ASTM E1827.
- All ductwork outside the building thermal envelope requires a passing duct leakage test report be turned in to the building official by final inspection per IRC Section N1103.3.3.
- Manuals J & S are required for **ALL** methods. Manual D is required for **ALL** ducted heating/cooling systems.