New 2010 Residential
Energy Conservation Requirements

The following is an overview of some of the new requirements of the 2010 Residential Energy Conservation Code. There are other requirements, not listed, that may affect your project and can be found in the 2010 Energy Conservation Code.

3 Methods of Compliance

#1- Prescriptive Method
(see Page 2 and mandatory requirements below)

#2- Res-Check for Zone 5
(see www.energycodes.gov/rescheck.com and mandatory requirements below)

#3- Simulated Performance Method
(see Section 405 of the 2010 Energy Conservation Code)

Prior to acceptance of your plans for review, your application must be accompanied by a detail illustrating compliance with the prescriptive criteria or a Res-Check or a Simulated Performance Analysis.

All 3 methods must also comply with the Mandatory Requirements Below!

Mandatory Requirements:

401.3 Energy Certificate – A permanent energy certificate shall be posted at the electric panel (see pg. 3)

402.4 Air Leakage - Verified by either:
1 – Blower door test or
2 – Visual inspection of all items in table 402.4.2 (see page 4)

402.4.3 Fireplaces – New wood burning fireplaces shall have gasketed doors and outdoor combustion air

402.4.5 Recessed Lighting – All recessed lights must be IC rated, air tight and sealed to drywall/ceiling
   Exception: Fixtures completely in conditioned space

403.1 Programmable Thermostat – One programmable thermostat required for forced-air heating system

403.2.2 Ducts (Sealing) - Duct sealing and tightness must be verified by either:
1 – Post construction test or
2 – Rough in test
   Exception: Testing not required if air handler and all ducts are located in conditioned space

403.3 Mechanical Piping – Piping capable of carrying fluids above 105 F or below 55 F shall be insulated to a minimum of R3

403.4 Hot Water Piping – All circulating service hot water piping shall be insulated to a minimum of R2 and shall include an automatic or readily accessible switch to turn off the pump when not in use

403.5 Mechanical Ventilation – Outdoor air intakes and exhausts shall have automatic or gravity dampers

403.6 Equipment Sizing – Heating and cooling equipment shall be sized in accordance with Section M1401.3 of the International Residential Code
Prescriptive Method

### TABLE 402.1.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT (note a)

<table>
<thead>
<tr>
<th>Climate Zone</th>
<th>Fenestration U-Factor Note b</th>
<th>Skylight U-Factor Note b</th>
<th>Glazed Fenestration SHGC Note b</th>
<th>Ceiling R-Value</th>
<th>Wood Frame Wall R-Value</th>
<th>Mass Wall R-Value Note g</th>
<th>Floor R-Value</th>
<th>Basement Wall R-Value Note e</th>
<th>Slab R-Value &amp; Depth Note d</th>
<th>Crawl Space Wall R-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>0.35</td>
<td>0.60</td>
<td>NR</td>
<td>38</td>
<td>20 or 13 + 5 Note f</td>
<td>13/17</td>
<td>30</td>
<td>10/13</td>
<td>10 ft</td>
<td>10/13</td>
</tr>
</tbody>
</table>

For SI: 1 foot = 304.8 mm.

- a. **R-values are minimums**; U-factors and SHGC are maximums. R-19 bars comprised into a nominal 2 x 6 framing cavity such that the R-value is reduced by 2-1/2 or more shall be marked with the compressed bar R-value in addition to the full thickness R-value.
- b. The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
- c. "10/13" means R-10 continuous insulated sheathing on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.
- d. R-5 shall be added to the required slab edge R-values for heated slabs.
- e. Or insulation sufficient to fill the framing cavity, R-19 minimum.
- f. "13+5" means R-13 cavity insulation plus R-5 insulating sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with insulating sheathing of at least R-5.
- g. The second R-value applies when more than half the insulation is on the interior of the mass wall.

See Section 402 of the 2010 Energy Conservation Code for U-Factor and Total UA Alternatives.

### Additional Requirements if using the Prescriptive Method

402.2.3 Access hatches and doors. Access doors from conditioned spaces to unconditioned spaces (e.g., attics and crawl spaces) shall be weatherstripped and insulated to a level equivalent to the insulation on the surrounding surfaces. Access shall be provided to all equipment that prevents damaging or compressing the insulation.

402.2.6 Floors. Floor insulation shall be installed to maintain permanent contact with the underside of the subfloor decking.

402.2.7 Basement walls. Walls associated with conditioned basements shall be insulated from the top of the basement wall down to 10 feet below grade or to the basement floor, whichever is less. Walls associated with unconditioned basements shall meet this requirement unless the floor overhead is insulated in accordance with Table 402.1.1 and Section 402.2.6.

403.2.1 Duct insulation (Prescriptive). Supply ducts in attics shall be insulated to a minimum of R-8. All other ducts shall be insulated to a minimum of R-6.

**Exception:** Ducts or portions thereof located completely inside the building thermal envelope.

404.1 Lighting equipment. A minimum of 50 percent of the lamps in permanently installed lighting fixtures shall be high-efficiency lamps.
401.3 **Certificate.** A permanent certificate shall be posted on or in the electrical distribution panel.
The certificate shall not cover or obstruct the visibility of the circuit directory label, service disconnect label or other required labels. The certificate shall list the predominant R-values of insulation installed in or on ceiling/roof, walls, foundation (slab, basement wall, crawl space wall and/or floor) and ducts outside conditioned spaces; U-factors for fenestration and the solar heat gain coefficient (SHGC) of fenestration. Where there is more than one value for each component, the certificate shall list the value covering the largest area. The certificate shall list the types and efficiencies of heating, cooling and service water heating equipment. Where a gas-fired unvented room heater, electric furnace, or baseboard electric heater is installed in the residence, the certificate shall list “gas-fired unvented room heater”, “electric furnace” or “baseboard electric heater,” as appropriate. An efficiency shall not be listed for gas-fired unvented room heaters, electric furnaces or electric baseboard heaters.

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**Energy Certificate**

**Street Address:**

**Town:**

**Predominant Values:**

<table>
<thead>
<tr>
<th>R Value Ceiling/ Roof</th>
<th>R Value Walls</th>
<th>R Value Foundation</th>
<th>R Value Ducts</th>
<th>U Factor Fenestration</th>
<th>SHGC Fenestration</th>
<th>U Factor Skylights</th>
<th>SHGC Skylights</th>
</tr>
</thead>
</table>

**Efficiency and Type of Heating Equipment**

**Efficiency and Type of Cooling Equipment**

**Efficiency and Type of Service Water Heater**

**Gas Fired Un-Vented Room Heater Installed** Yes / No

**Baseboard Electric Heater Installed** Yes / No

**Electric Furnace Installed** Yes / No

**Certificate completed by Builder/Registered Design Professional** Signature
Mandatory Requirement 402.4 Air Leakage must be verified by either a blower door test after building rough in or by visual inspection of all items in Table 402.4.2.

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air barrier and thermal barrier</td>
<td>Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier. Breaks or joints in the air barrier are filled or repaired. Air-permeable insulation is not used as a sealing material. Air-permeable insulation is inside of an air barrier.</td>
</tr>
<tr>
<td>Ceiling/Attic</td>
<td>Air barrier in any dropped ceiling/soffit is substantially aligned with insulation and any gaps are sealed. Attic access (except unvented attic), knee wall door, or drop down stair is sealed.</td>
</tr>
<tr>
<td>Walls</td>
<td>Corners and headers are insulated. Junction of foundation and sill plate is sealed.</td>
</tr>
<tr>
<td>Windows and Doors</td>
<td>Space between window/door jamb and framing is sealed.</td>
</tr>
<tr>
<td>Rims Joists</td>
<td>Rims joists are insulated and include an air barrier.</td>
</tr>
<tr>
<td>Floors (including above garage and cantilevered floors)</td>
<td>Insulation is installed to maintain permanent contact with underside of subfloor decking. Air barrier is installed at any exposed edge of insulation.</td>
</tr>
<tr>
<td>Crawl space walls</td>
<td>Insulation is permanently attached to walls. Exposed earth in unvented crawl spaces is covered with Class I vapor retarder with overlapping joints taped.</td>
</tr>
<tr>
<td>Shafts, Penetrations</td>
<td>Duct shafts, utility penetrations, knee walls and floor shafts opening to exterior or unconditioned space are sealed.</td>
</tr>
<tr>
<td>Narrow cavities</td>
<td>Batts in narrow cavities are cut to fit, or narrow cavities are filled by sprayed/blown insulation.</td>
</tr>
<tr>
<td>Garage separation</td>
<td>Air sealing is provided between the garage and conditioned spaces.</td>
</tr>
<tr>
<td>Recessed lighting</td>
<td>Recessed light fixtures are air tight, IC rated, and sealed to drywall. Exception—fixtures in conditioned space.</td>
</tr>
<tr>
<td>Plumbing and Wiring</td>
<td>Insulation is placed between outside and pipes. Batt insulation is cut to fit around wiring and plumbing, or sprayed/blown insulation extends behind piping and wiring.</td>
</tr>
<tr>
<td>Shower/Tub on exterior wall</td>
<td>Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.</td>
</tr>
<tr>
<td>Electrical/Phone box on exterior walls</td>
<td>Air barrier extends behind boxes or air sealed-type boxes are installed.</td>
</tr>
<tr>
<td>Common wall</td>
<td>Air barrier is installed in common wall between dwelling units.</td>
</tr>
<tr>
<td>HVAC register boots</td>
<td>HVAC register boots that penetrate building envelope are sealed to subfloor or drywall.</td>
</tr>
<tr>
<td>Fireplace</td>
<td>Fireplace walls include an air barrier.</td>
</tr>
</tbody>
</table>