

Town of Durham, N.H.
Residential Energy Code Application
for Certification of Compliance for New Construction, Additions and/or Renovations
(EC-1 Form)
Minimum Provisions Effective Date: January 2012

| | | | | | |
|---|------------|--------|---|--------|------|
| Owner/Owner Builder: Company Name: (if applicable) | | | General Contractor: Company Name: | | |
| Name: | | | Name: | | |
| Mail Address: | | | Mail Address: | | |
| Town/City: | State: | Zip: | Town/City: | State: | Zip: |
| Phone: | Cell: | | Phone: | Cell: | |
| E-Mail: | | | E-Mail: | | |
| Location of Proposed Structure: | | | Type of Construction: | | |
| Tax Map #: | | Lot #: | <input type="radio"/> Residential <input type="radio"/> Small Commercial <input type="radio"/> New Building <input type="radio"/> Renovation <input type="radio"/> Addition <input type="radio"/> Thermally Isolated Sunroom <input type="radio"/> Modular Home: the site contractor must submit this form detailing supplementary rooms and Floor and/or Basement insulation unless the floor insulation is installed or provided by the manufacturer and no heated space is added. | | |
| Street: | | | Total New Conditioned* Floor Area: <div style="border: 1px solid black; width: 100px; height: 15px; background-color: yellow; display: inline-block;"></div> ft ² | | |
| DURHAM | Rockingham | | | | |
| Heating System: (if new system is being installed) Annual Fuel Use Efficiency (AFUE): _____ % Fuel Type(s): <input type="checkbox"/> Oil <input type="checkbox"/> Natural Gas <input type="checkbox"/> Propane (LP) <input type="checkbox"/> Electric <input type="checkbox"/> Wood <input type="checkbox"/> Other _____ Heating System Type: <input type="checkbox"/> Hot Water <input type="checkbox"/> Hot Air <input type="checkbox"/> Stove <input type="checkbox"/> Resistance <input type="checkbox"/> Heat Pump <input type="checkbox"/> Geothermal | | | Basement or Crawl Space: (*a conditioned space is one being heated or cooled, containing un-insulated ducts or with a fixed opening into a conditioned space. Walls must be insulated) Conditioned? <input type="radio"/> Yes (Walls must be insulated) <input type="radio"/> No <input type="checkbox"/> Full Basement <input type="checkbox"/> Walk Out Basement <input type="checkbox"/> Slab on Grade <input type="checkbox"/> Other _____ | | |
| Structure is EXEMPT because: <input type="checkbox"/> Mobile Home <input type="checkbox"/> On an historic register <input type="checkbox"/> Low energy use (less than 1 watt/ ft ²) | | | Form Submitted by: <input type="checkbox"/> Owner <input type="checkbox"/> Builder <input type="checkbox"/> Designer <input type="checkbox"/> Other _____ Architects must certify plans meet code; no form required | | |

08/11

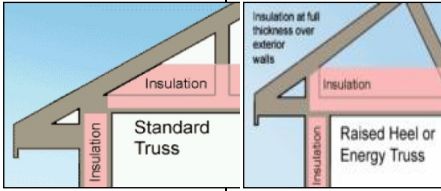
I hereby certify that all the information contained in this application is true and correct, and construction shall comply in all respects with the terms and specifications of the approval given by the town of Durham Building Department. and with the IECC 2012.

Signature _____ **Print Name** _____ **Date** _____

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|--|--|---|
| Official Use Only | | |
| Date Complete Application Received: | | Approved by: |
| Approval Number: | | Date: |
| | | Stamp: Reason: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> Other: _____ Notice: <input type="checkbox"/> e-mail <input type="checkbox"/> vm Date: _____ |

Directions: Complete the "Your Proposed Structure" columns. No measurements or calculations are needed. If you at least meet the New Hampshire Energy Code requirements, your project will be approved. Write N/A in any section that does not apply to your project. **Submit pages 1 and 2 only.** If your planned structure cannot meet these requirements, consider downloading REScheck from <http://www.energycodes.gov/rescheck/download.stm> and use trade-offs to prove compliance.

You are encouraged to build with higher R-values and lower U-values than you report here. The "Required R or U Values" are the worst permitted in NH.

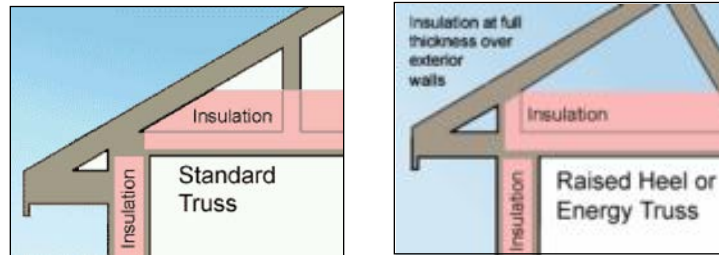
| Building Section | Required R or U Values | YOUR PROPOSED STRUCTURE | |
|---|---|---|--|
| | | Write Planned R and U Values | Brands / Models / insulation type and thickness (if known) |
| Window and Door U Factor (lower U is better) | U .32 (maximum) U-.28 (if log walls) U .45 (Thermally Isolated Sunrooms only) | Write in U-Value | Check if: <input type="checkbox"/> Sunroom <input type="checkbox"/> Log Walls |
| Skylights | U .60 | | |
| Flat Ceilingⁱ <i>or</i> Flat Ceiling with Raised or Energy Trusses R-value |  R-49 if using the above construction technique R-38 if maintaining the full R value over the plates | Write in R-Value → If using only R-38 you must check this box | NOTE: R-38 will be deemed to satisfy the requirement for R-49 if the full R-38 insulation value is maintained over the outside plates <input type="checkbox"/> By checking this box, I certify that this structure is being built with a raised energy truss or that the full R-value of the ceiling insulation will be maintained over the outside plates. |
| Sloped or Cathedral Ceiling | R-30 or 38 if more than 500 ft sq or 20% of total ceiling area R-24 (Thermally Isolated Sunrooms only) | Write in R-Value | <input type="checkbox"/> Check if Sunroom |
| Above Grade Wallⁱⁱ R-value | R-20 plus R-5 or R-13 plus R-10 R-13 (Thermally Isolated Sunrooms only) | Write in R-Value | Log walls must comply with ICC400, have an average minimum wall thickness of 5" or greater and must have overall glazing of U-.28 or lower and heating AFUE of 92% (gas) or 86% (oil) and meet all other energy code requirements. Check if <input type="checkbox"/> Sunroom <input type="checkbox"/> Log Walls |
| Floor R Value (Basement ceiling) | R-30 <i>or</i> Insulation sufficient to fill joist cavity | Write in R-Value | |
| Basement or Crawl Space Wall R Value | R-19 Cavity Insulation or R-15 Continuous Insulation or R-13 plus R-5 | Write in R-Value | If conditioning the basement you must insulate Basement Walls . If not, you may insulate either Floor or Basement Walls and/or Slab Edge |
| Slab Edgeⁱⁱⁱ R Value | R-10 4' down and/or under (Zone 6) (see drawing pg 3) <i>add R-5</i> if the Slab is heated | Write in R-Value | |
| Air Sealing | A blower door test is required for all new homes. That test must demonstrate an air exchange rate of <i>three</i> or fewer Air Changes per Hour (ACH) @ 50 Pa. | | |

Submit pages 1 and 2 to: NH Public Utilities Commission, 21 South Fruit Street Ste 10, Concord NH 03301

Fax: 603.271.3878 e-mail: energycodes@puc.nh.gov

Footnotes to Residential Energy Code Application for Certification of Compliance

ⁱ Ceilings with attic spaces: R-38 will be deemed to satisfy the requirement for R-49 wherever the full height of uncompressed R-38 insulation extends over the wall top plate at the eaves or the full R-value is maintained. This is accomplished by using a raised heel or energy truss as shown in the diagram below or by using higher R-value insulation over the plates.

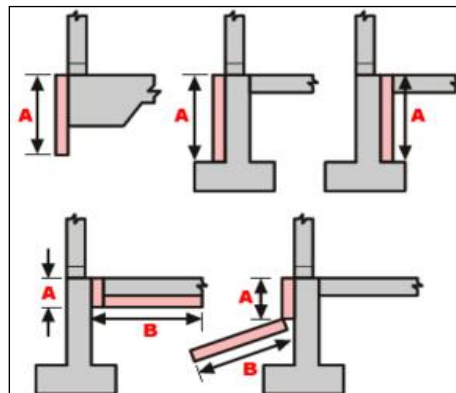


ⁱⁱ R-20 + R-5 means R-20 cavity insulation plus R-5 insulated sheathing. R-13 + R-5 or R-10 means R-13 cavity insulation plus R-5 or R-10 insulated sheathing. If structural sheathing covers 40 percent or less of the exterior, continuous insulation R-value shall be permitted to be reduced by no more than R-3 in locations where structural sheathing is used.

ⁱⁱⁱ Slab edge insulation must start at the top of the slab edge and extend a total of four feet. Insulation may go straight down, out at an angle away from the building, or along the slab edge and then under the slab. A slab is a concrete floor within 1' of grade level. See diagram below.

The top edge of insulation installed between the exterior wall and the interior slab may be mitered at a 45 degree angle away from the exterior wall.

Allowable Slab Insulation Configurations



A or A+ B must equal two feet in Zone 5 or four feet in Zone 6

MODULAR HOMES must be certified by the NH Department of Safety. Unless the floor insulation is provided by the manufacturer this form must be submitted. This form must also be submitted if the basement is to be insulated or supplementary heated space is added to the home upon or after it is set.

AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA
 Required Elements Check List (see page 2 AIR SEALING) IECC Code section R402.4.2

This page must be provided to the building inspector at final inspection.

✓ Check here

Certification No.:

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| Air barrier and thermal barrier | 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. |
| Ceiling/attic | 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. |
| Walls | Corners and headers are insulated. |
| | Junction of foundation and sill plate is sealed. |
| Windows and doors | Space between window/door jambs and framing is sealed. |
| Rim joists | Rim joists are insulated and include an air barrier. |
| Floors (including above-garage and cantilevered floors) | Insulation is installed to maintain permanent contact with underside of sub floor decking. |
| | Air barrier is installed at any exposed edge of insulation. |
| Crawl space walls | Insulation is permanently attached to walls. |
| | Exposed earth in unvented crawl spaces is covered with Class I vapor retarder with overlapping joints taped. |
| Shafts, penetrations | Duct shafts, utility penetrations, knee walls and flue shafts opening to exterior or unconditioned space are sealed. |
| Narrow cavities | Batts in narrow cavities are cut to fit, or narrow cavities are filled by sprayed/blown. |
| Garage separation | Air sealing is provided between the garage and conditioned spaces. |
| Recessed lighting | Recessed light fixtures are air tight, IC rated, and sealed to drywall. Exception—fixtures in conditioned space. |
| Plumbing and wiring | 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. |
| Shower/tub on exterior wall | Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall. |
| Electrical/phone box on exterior walls | Air barrier extends behind boxes or air sealed-type boxes are installed. |
| Common wall | Air barrier is installed in common wall between dwelling units. HVAC register boots HVAC register boots that penetrate building envelope are sealed to sub-floor or drywall. |
| Fireplace | Fireplace walls include an air barrier. |

NEW HAMPSHIRE ENERGY CODE

Summary of Basic Requirements See IECC 2009 Code Book for complete details

These 2 pages must be provided to the building inspector at final inspection or retained.

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| <p style="text-align: center;">Air Leakage Code section R402.4</p> <p>The building thermal envelope must be durably sealed to limit infiltration</p> | <p>All joints, seams, penetrations and openings in the thermal envelope including those around window and door assemblies, utility penetrations, dropped ceilings or chases, knee walls, behind tubs and showers, separating unheated garages from the thermal envelope, common walls between dwelling units, attic access, rim joist junction and all other openings in the building envelope that are sources of air leakage must be caulked, gasketed, weather-stripped or otherwise sealed.</p> |
| <p>Air Sealing and Insulation Code Section R402.4.1</p> | <p>Building envelope air tightness and insulation installation shall be demonstrated to comply with requirements by Blower Door testing to less than 3air changes/hr at 50 Pa. The local Building Official may require an independent 3rd party to conduct the blower door test. <u>See page 4.</u></p> |
| <p style="text-align: center;">Testing Option Code Section R402.4.2.1</p> | <p>Usually, careful compliance with the Air Barrier checklist (p4) will allow the structure to pass the Blower Door Test. When required by the code official, testing shall be conducted by an approved third party.</p> <p>Blower Door Test conducted by: _____</p> <p>Result (at 50 Pa): _____ CFM Interior Volume _____ CF _____ ACH</p> |
| <p style="text-align: center;">Fireplaces Code Section R402.4.2</p> | <p>New wood-burning fireplaces shall have tight-fitting flue dampers and outdoor combustion air.</p> |
| <p style="text-align: center;">Recessed Lighting Code Section R402.4.4</p> | <p>Recessed lights must be type IC rated and labeled as meeting ASTM E 283 and sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.</p> |
| <p style="text-align: center;">Electrical Power and Lighting Systems Code section R404</p> | <p>A minimum of 75% of the lamps in permanently installed lighting fixtures shall be high efficacy lamps.</p> |
| <p style="text-align: center;">High-Efficacy Lamps Code section R202</p> | <p>Compact fluorescent lamps, T-8 or smaller diameter linear fluorescent lamps, or lamps with a minimum efficacy of:</p> <ol style="list-style-type: none"> 1. 60 lumens per watt for lamps over 40 watts, 2. 50 lumens per watt for lamps over 15 watts to 40 watts, and 3. 40 lumens per watt for lamps 15 watts or less. |
| <p style="text-align: center;">Materials and Insulation Information Code section R303.1</p> | <p>Materials and equipment must be identified so that code compliance can be determined. Manufacturer manuals for all installed heating, cooling and service water heating equipment must be provided. Insulation R-values, glazing and door U-values and heating and cooling equipment efficiency must be clearly marked on the building plans, drawings or specifications.</p> |
| <p style="text-align: center;">Pull-Down Attic Stairs, Attic Hatch, and Knee Wall Doors Code section R402.2.4</p> | <p>Should be insulated to a level equal to the surrounding surfaces and tightly sealed and weather-stripped at the opening.</p> |
| <p style="text-align: center;">Full size Attic or Basement Entry Doors Code section R402.2.4</p> | <p>All doors leading from a conditioned space into an unconditioned attic or enclosed attic or basement stairwell should be insulated and weather-stripped exterior rated door units. One door is exempt.</p> |
| <p style="text-align: center;">Duct Insulation Code section R403.2</p> | <p>Supply ducts in attics must be insulated to at least R-8. All other ducts must be insulated to at least R-6. Exception: Ducts or portions thereof located completely inside the building thermal envelope.</p> |

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| <p>Duct Construction Code sections R403.2.2 &.3</p> | <p>Ducts, air handlers, filter boxes, and building cavities used as ducts must be sealed. Joints and seams must comply with Section M1601.4.1 of the <i>International Residential Code</i>. Building framing cavities must not be used as supply ducts.</p> |
| <p>Duct Testing Code sections R403.2.2 &.3</p> | <p>Duct tightness shall be verified by testing unless the air handler and all ducts are located within the conditioned space. Test conducted by: _____</p> <p>Duct test result at 25 Pa: _____ Post construction or _____ Rough-in test</p> |
| <p>Temperature Controls Code section R403.1 & .1.1</p> | <p>At least one thermostat must be provided for each separate heating and cooling system. Hot air systems must be equipped with a programmable thermostat.</p> <p>Heat pumps having supplementary electric-resistance heat must have controls that, except during defrost, prevent supplemental heat operation when the heat pump compressor can meet the heating load</p> |
| <p>Mechanical System Piping Insulation Code section R403.3</p> | <p>Mechanical system piping capable of conveying fluids at temperatures above 105°F or below 55°F must be insulated to R-3.</p> |
| <p>Hot Water Systems Code section R403.4 & NH amendments</p> | <p>Circulating service water systems must include an automatic or readily accessible manual switch that can turn off the hot water circulating pump when the system is not in use. Circulating domestic hot water system piping shall be insulated to R-4. All hot water piping with runs greater than 5' @ >3/4" pipe diameter; 10' @ 3/4"; 20' @ 1/2"; 30' @ 3/8" must be insulated to at least R-3.</p> |
| <p>Mechanical Ventilation Code section R403.5</p> | <p>The building shall be provided with ventilation meeting the requirements of the IRC or IBC. Outdoor air intakes and exhausts must have automatic or gravity dampers that close when the ventilation system is not operating.</p> |
| <p>Equipment Sizing Code section R403.6</p> | <p>Heating and cooling equipment must be sized in accordance with ACCA Manual S and <i>Jde</i>.</p> |
| <p>Certificate Code section R401.3</p> | <p>A permanent certificate, completed by the builder or registered design professional, must be posted on or in the electrical distribution panel. It must list the R-values of insulation installed in or on the ceiling, walls, foundation, and ducts outside the conditioned spaces; U-factors and SHGC for fenestration. The certificate must also list the type and efficiency of heating, cooling and service water heating equipment.</p> |

NEW HAMPSHIRE ENERGY CODE Summary of Basic Requirements Page 2

These 2 pages must be provided to the building inspector at final inspection or retained.