

THE Revised NEW HAMPSHIRE ENERGY CODES

Effective August 17, 2007, the International Energy Conservation Code 2006 is the state-wide energy code with which anyone building, renovating or adding to a home or commercial structure must comply in all towns and cities. The new code is a simplification of the prior code and the compliance tools are also less complex. There is now only one form. There are no separate forms for renovations or additions. There are no calculations required. There are no packages. The new form resembles the previous *Express NH* form. Please download the new form entitled *New Hampshire Residential Energy Code Application* (Form EC-1) from www.puc.nh.gov.

Please fill out both pages of the form completely, entering the planned window U-values and insulation R-values. Your planned R or U values must meet or exceed those required. Enter N/A if that section is not present or not being altered in your project. If you are building with steel studs or trusses, contact the PUC for the more stringent insulation requirements.

RESCHECK SOFTWARE If your planned structure will not meet the minimum requirements laid out in the EC-1 form page 2, you may use the REScheck software package in the IECC 2006 edition when the location is set for Concord, NH to try to show compliance. REScheck is a much more complex method of demonstrating compliance, requiring extensive calculations. Be aware that your building may no longer comply with the code using REScheck under the new code.

You may download REScheck from the PUC Energy Codes page. Go to www.puc.nh.gov, click on *Energy Codes* and follow the links. Printouts from the old NHcheck software will not be accepted. If you currently use NHcheck, go to the "Code" on the toolbar and select IECC 2006. You will note minor visible changes but there are significant changes behind the scenes:

- You must enter the **Conditioned Floor Area** on the **Project** page
- Area weighted window U value above .40 is no longer acceptable in this climate zone. That is, if the average U value of your window square footage exceeds .40, no trade-offs will compensate.
- Glazing percentages are no longer calculated so removing windows will not allow a structure to pass.
- You must enter an **SHGC** number. Enter either the value off the windows you plan to use or 1.0. The SHGC number is not considered in this climate zone.
- Click the **Check Compliance** button periodically to...check compliance.
- A heating system trade-off is available only if the orientations of the walls are entered.
- IECC 2000 NHcheck or REScheck print-outs will not be accepted.
- Mail the EC-1 page 1 and the REScheck *Compliance Certificate* along with simple plans to the PUC.

REScheck Area-calc module. This tool will help you calculate the areas of ceilings, windows, doors, walls and floors. You can access Area-calc from REScheck by clicking on Tools.

ARCHITECT AND ENGINEER CERTIFICATION In addition to the requirements for a certification letter, published on the PUC websites, professional certification shall include a statement of the method used to determine compliance with the energy code.

NEW CONSTRUCTION

- **Ceiling R-Value.** If you want to list different R-values for different ceilings you may still do so using the REScheck software approach. Note that you may substitute R-38 ceiling insulation for R-49 if you maintain the full value of the insulation over the outside plates.
- **Insulation of Domestic Hot Water pipes.** Any domestic hot water pipes in unconditioned space must be insulated to a minimum of R-4.

THERMALLY ISOLATED SUNROOMS These are additions having greater than 40% glazing to wall and ceiling area.

- The floor area may not exceed 500 square feet.
- Thermal isolation must be maintained from the rest of the house. (The sunroom addition must be separated from the house by insulated walls, doors and/or windows.)
- If the area is to be heated, a separate heating system or zone with a thermostat must control the heat in the sunroom. (These features allow the occupant to isolate the room from the rest of the house and chose to heat or not heat that room.)
- A sunroom may not be used as either a kitchen or a sleeping room.

ADDITIONS, ALTERATIONS, RENOVATIONS OR REPAIRS TO A BUILDING

“...(s)hall conform to the provisions of this code as they relate to new construction without requiring the unaltered portions of the existing building or building system to comply with all of the requirements of this code.”

If you renovate or repair a portion of the building, *that portion* must be brought up to code standards. Use form EC-1 to document the planned renovations. Mark inapplicable boxes N/A and briefly note the conditions of the addition or renovation project such as “Adding on top of existing structure” or simply “Replacing windows”.

You need not seek code certification under the following conditions:

- New storm windows installed over existing windows or doors.
- Glass only replacement in an existing sash or frame.
- Existing ceiling, wall or floor cavities exposed during construction provided these cavities are already filled with insulation.
- Construction where the existing roof, wall or floor cavity is not exposed.

ONLINE COMPLIANCE

You may submit your application on-line. If you are using the New Hampshire Residential Energy Code Application (EC-1 Form) you may fill it out and e-mail it to energycodes@puc.nh.gov. **Your typed name will be considered your signature.**

If you are using REScheck you will need the following:

- **REScheck Software** completed for the project and saved as an '.rck' file. To download this software go to www.puc.nh.gov and click on energy codes.
- **Area Calc Module** '.acx' file. To use this module, access it through REScheck software tools and save it as a separate '.acx file'.
- **An electronic copy of your plan.** This may be a scanned plan saved with a standard format such as .jpg, .tif, or .gif.
- E-mail your '.rck' '.acx' and your scanned plans to energycodes@puc.nh.gov

The former Online submittal process has been eliminated.

Mail any remaining materials to the NH Public Utilities Commission, 21 South Fruit Street Ste 10, Concord NH 03301-2429.

Please send code related questions and requests for technical support for the REScheck software to energycodes@puc.nh.gov or by calling 603-271-6306.

New Hampshire
Residential Energy Code Application
 for Certification of Compliance for New Construction, Additions and/or Renovations
 (EC-1 Form)
 Minimum Provisions Effective Date: April 1, 2010

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: 20px; margin: 5px auto;"></div> ft ²		
Town/City:	County:				
Zone 5 <input type="radio"/> Cheshire, Hillsborough, Rockingham or Strafford except the town of Durham Zone 6 <input type="radio"/> All other counties and the town of Durham			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		
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					
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		

02/11

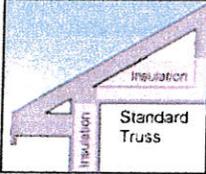
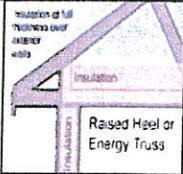
I hereby certify that all the information contained in this application is true and correct, and construction shall comply in all respects with the terms and specifications of the approval given by the Public Utilities Commission and with the New Hampshire Code for Energy Conservation in New Building Construction.

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

Official Use Only	
Date Complete Application Received:	Approved by: _____ Date: _____
Approval Number:	Stamp:
	Project # _____ Permit # _____

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.

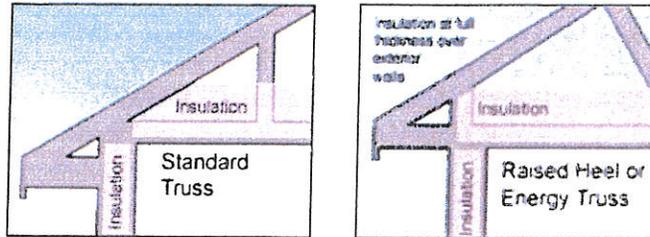
You are encouraged to build with higher R-values and lower U-values than you report here. The "Required R or U Values" are the worst permitted in NH.

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 U Factor <i>(lower U is better)</i>	U .35 (maximum) U-.31 (if log walls) U .50 (Thermally Isolated Sunrooms only)	Write in U-Value	Window Type: ○ Low-e ○ Low-e Argon 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-38 (Zone 5) R-49 (Zone 6) if using the above construction technique R-30 (Zone 5) R-38 (Zone 6) if maintaining the full R value over the plates	Write in R-Value → If using only R-30 in Zone 5 or R-38 in Zone 6 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. If using only R-30 (Zone 5) or R-38 (Zone 6), you must certify that you'll maintain R-38 over the plates by checking the box below. <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 Cavity Insulation only <i>or</i> R-13 plus R-5 Cavity <i>plus</i> Continuous Insulation 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-.31 or lower and heating AFUE of 90% (gas) or 84% (oil) and meet all other energy code requirements. Check if <input type="checkbox"/> Sunroom <input type="checkbox"/> Log Walls
Door U-Value	U .35 (maximum)	Write in U-Value	
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-13 Cavity Insulation <i>or</i> R-10 Continuous Insulation (Zone 5) R-19 Cavity Insulation <i>or</i> R-15 Continuous Insulation (Zone 6)	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 2' (Zone 5) 4' (Zone 6) (see drawing pg 3) <i>add R-5</i> if the Slab is heated	Write in R-Value	
Air Sealing	Planned Air Sealing Test Method → By checking this box, I certify that I understand that I have two approaches to demonstrating compliance with air sealing requirements.	<input type="checkbox"/> Blower Door <input type="checkbox"/> Visual Inspect	The visual inspection certification must be consistent with the requirements of Table 402.4.2 (page 4) and the method of compliance planned and approved by the local jurisdiction

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-30 in Zone 5 or R-38 in Zone 6 will be deemed to satisfy the requirement for R-38 or R-49 respectively wherever the full height of uncompressed R-30 or 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.

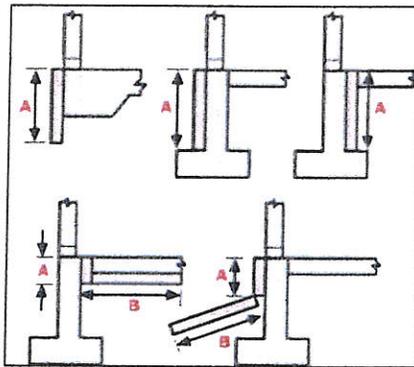


ⁱⁱ R-13 + R-5 means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, R-5 sheathing is not required where the structural sheathing is placed. If structural sheathing covers more than 25 percent of exterior, the structural sheathing must be supplemented with insulated sheathing of at least R-2.

ⁱⁱⁱ Slab edge insulation must start at the top of the slab edge and extend a total of two (Zone 5) or four feet (Zone 6). 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 402.4.2

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

✓ Check here

Certification No.:

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.

✓ Check here

Certification No.:

Air Leakage Code section 402.4	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.
The building thermal envelope must be durably sealed to limit infiltration	
Air Sealing and Insulation Code Section 402.4.2	Building envelope air tightness and insulation installation shall be demonstrated to comply with requirements by Blower Door testing to less than 7 air changes/hr at 50 Pa or a visual inspection per page 4 of this document. The local Building Official may require an independent 3 rd party to conduct the visual inspection. See page 4.
	While the Blower Door Test and/or Visual Option are methods of demonstrating compliance many of the general requirements as defined by this checklist (pages 5 & 6) must still be met.
Testing Option Code Section 402.4.2.1	Blower Door Test conducted by: _____
or	Result (at 50 Pa): _____ CFM Interior Volume _____ CF _____ ACH
	or
Visual Option Code Section 402.4.2.1	Structure passes Visual Inspection: _____ signed _____ date
Fireplaces Code Section 402.4.3	New wood-burning fireplaces shall have gasketed doors and outdoor combustion air.
Recessed Lighting Code Section 402.4.5	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.
Electrical Power and Lighting Systems Code section 404	A minimum of 50% of the lamps in permanently installed lighting fixtures shall be high efficacy lamps.
High-Efficacy Lamps Code section 202	Compact fluorescent lamps, T-8 or smaller diameter linear fluorescent lamps, or lamps with a minimum efficacy of: 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.
Materials and Insulation Information Code section 102.1	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.
Pull-Down Attic Stairs, Attic Hatch, and Knee Wall Doors Code section 402.2.3	Should be insulated to a level equal to the surrounding surfaces and tightly sealed and weather-stripped at the opening.

Full size Attic or Basement Entry Doors	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.
Duct Insulation Code section 403.2	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.
Duct Construction Code sections 403.2.2 &.3	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.
Duct Testing Code sections 403.2.2 &.3	Duct tightness shall be verified by testing unless the air handler and all ducts are located within the conditioned space. Test conducted by: _____ Duct test result at 25 Pa: _____ Post construction or _____ Rough-in test
Temperature Controls Code section 403.1 & .1.1	At least one thermostat must be provided for each separate heating and cooling system. Hot air systems must be equipped with a programmable thermostat. 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
Mechanical System Piping Insulation Code section 403.3	Mechanical system piping capable of conveying fluids at temperatures above 105°F or below 55°F must be insulated to R-3.
Circulating Hot Water Systems Code section 403.4 & NH amendments	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.
Mechanical Ventilation Code section 403.5	Outdoor air intakes and exhausts must have automatic or gravity dampers that close when the ventilation system is not operating.
Equipment Sizing Code section 403.6	Heating and cooling equipment must be sized in accordance with Section M1401.3 of the <i>International Residential Code</i> .
Certificate Code section 401.3	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.

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.