Introduction

The Vermont Residential Energy Code

The Vermont Residential Energy Code — officially called the "Residential Building Energy Standards" (RBES) and generally referred to as simply the Residential Energy Code — initially was passed by the Vermont legislature in May 1997. It is a minimum standard of energy efficiency that has applied to virtually all new residential construction in Vermont since July 1, 1998 with updates in 2006, 2011 and 2015. The 2015 Vermont Residential Energy Code is based on Vermont amendments to the 2015 International Energy Conservation Code (2015 IECC).

What Buildings Must Comply?

★ Detached one- and two-family dwellings.
★ Multi-family and all other residential dwellings three stories or fewer in height.
★ Additions, alterations, renovations and repairs to existing buildings.
★ Factory-built modular homes not on a permanent chassis.
★ Residential buildings commencing construction on or after March 1, 2015 must comply with this code. Buildings for which construction commenced before March 1, 2015, if not complying with this code must comply with the previous version of RBES.
★ Act 250 projects commencing construction on or after December 1, 2015 must comply with the Stretch Code. Projects for which construction commenced before March 1, 2015, if not complying with this code must comply with the previous version of RBES. If after March 1, 2015, but before December 1, 2015 the new base code would apply.
★ In towns that require a certificate of occupancy (COO), a RBES certificate is required before the COO can be issued.

This is a summary; see Chapter 1 for details.

What Buildings Are Exempt?

★ Commercial and high-rise residential buildings (over 3 stories), however these must meet the Commercial Building Energy Standards. Residential portions of a mixed use building that is three stories or less must meet the Residential Energy Code. Residential portions of mixed-use buildings include the living spaces in the building and the nonliving spaces in the building that serve only the residential users such as common hallways, laundry facilities, residential management offices, community rooms, storage rooms, and foyers.
★ Mobile homes on a permanent chassis with (except for site-built components such as conditioned basements or crawl spaces).
★ Buildings or additions with very low energy use (those designed for a peak energy use of less than 3.4 Btu/h [1 Watt] per square foot of floor area).
★ Unconditioned buildings.
★ Hunting camps or summer camps.

This is a summary; see Chapter 1 for details.
The Basic Steps for Meeting the Code

The Vermont Residential Energy Code encompasses two requirements: a technical requirement (i.e., minimum standards for energy-efficient building components and construction practices); and a certification requirement for reporting compliance. It is one of the few codes in the country in which the builder self-certifies compliance.

The law recognizes that it is the builder’s responsibility to understand the Residential Energy Code, to build to the minimum technical efficiency standards, and then to certify (on a one-page form) that the building complies with the law. No plan reviews or final inspections by Code officials are involved. The whole process can be summarized as follows:

1. Determine whether you need to comply (Chapter 1);
2. Follow the Basic Requirements (Chapter 2);
3. Follow the minimum ventilation and combustion safety requirements (Chapter 3);
4. Follow the Existing Homes requirements for additions, alterations and repairs (Chapter 4);
5. Select and complete the Compliance Method that works best for you (Chapters 5-7); and
6. Fill out, file and post the required compliance certificate (Chapter 8).

Compliance Methods

The technical requirement of the Residential Energy Code consists of four components:

- **Basic Requirements**: a list of fixed requirements applicable regardless of compliance path selected (see inside front cover).
- **Ventilation & Combustion Safety Requirements**: (see Chapter 3).
- **Existing Homes**: requirements pertaining to additions, alterations and repairs.
- **Prescribed Requirements**: requirements that vary based on the compliance method selected (Chapter 5).

In order to comply with the Residential Energy Code, a home, as built, must meet all of the Basic Requirements, Ventilation & Combustion Safety Requirements, and the Prescribed Requirements using one of the compliance methods. Additions, alterations and repairs must meet the Existing Homes requirements pertaining to the portion(s) of the home affected.

Three different methods of complying with the Residential Energy Code have been designed. These all describe the thermal and efficiency values that are necessary to meet the minimum standards of the Code. These vary in simplicity of use, as well as in the level of efficiency above the minimum standard that must be achieved. In general, the simplest methods specify the highest levels of efficiency, while the more complex methods are closest to the minimum efficiency standard of the Code. The three compliance methods are:

- **Prescriptive Method**  The simplest approach. Allows you to incorporate a prescribed set of features. Minimal calculations. (See Chapter 5.)
- **REScheck Software Method**  Use your computer with REScheck software to easily analyze almost any design and determine whether any modifications are needed to meet the Code. (See Chapter 6.)
- **Home Energy Rating Method**  This approach gives full credit for air tightness, efficient heating, cooling and domestic water heater, and solar orientation. A certified Energy Rater is required to complete this approach. (See Chapter 7.)

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1 While the Residential Energy Code does not require inspections by code officials, it does not eliminate inspections related to Act 250 projects, spot checks for enforcement of other applicable codes, or inspections required by state or local codes.
Residential Energy Code Updates

The statue that governs the Vermont Residential Energy Code provides for regular review and updates to the provisions in the Code. The review of the Residential Energy Code is administered by the Vermont Public Service Department. Please address all comments and inquiries to:

Vermont Public Service Department
Planning & Energy Resources Division
112 State Street
Montpelier, Vermont 05620-2601
802-828-2811

Technical Assistance

Technical assistance with the Residential Energy Code is available at no charge. Please contact:

Energy Code Assistance Center
128 Lakeside Ave., Suite 401
Burlington, VT 05401
855-887-0673 ~ toll free
802-658-1643 ~ fax

The Energy Code Assistance Center (ECAC) services include:
★ Toll-free assistance hotline: 855-887-0673.
★ Workshops for builders on how to comply with the Vermont Residential Energy Code.
★ Handbooks, forms, software and other Code-related materials.
★ Professional advice on how to easily meet the Code.
★ Information about state-of-the-art construction techniques and building details.
★ Referral to energy-efficiency programs.
★ Sources for energy-efficient products.
★ Customized workshops and presentations on energy-efficient building practices.

E-CALL Hotline
855-887-0673

The E-CALL Hotline is staffed from 8 a.m. to 5 p.m. Monday through Friday. A voice mail is available at all other times. Call for free assistance with any Code-related questions or concerns you may have.
Chapter 8

Certification

The Vermont Residential Energy Code is one of the few codes in the country where the builder self-certifies that the home complies with the law. Builders are responsible for understanding the Residential Energy Code, for building to the minimum (or better) standards, and for completing and filing a document.

Section 8.1

Types of Certification

Certification is accomplished by verifying the thermal and efficiency features of the home in the as-built condition. These features are recorded on one of two documents, depending on the situation:

1. If the home meets the technical requirement of the Residential Energy Code, a Vermont Residential Building Energy Standards Certificate (Figure 8-1) must be completed, filed and posted in the home.

2. If the home qualifies for the Owner/Builder Special Provision (see Section 1.4), a Vermont Owner/Builder Disclosure Statement (Figure 8-2) must be completed, filed and disclosed to prospective buyers. Homes covered under this provision do not have to meet the technical requirement of the Code, but documentation must be provided to the buyer prior to a purchase and sales agreement when the home is sold.

Section 8.2

The ‘Vermont Residential Building Energy Standards Certificate’

A Vermont Residential Building Energy Standards Certificate must be filed for each home covered by the Residential Energy Code. The certificate documents compliance with the Code and represents your statement that the information it contains is accurate. The certificates must be printed and posted on or near the electric-service panel or heating equipment. After the certificate is filled out, you need to produce the necessary copies for filings and for your records. It is permissible to photocopy an original certificate and post the copy on or near the electrical panel or heating equipment in the home.
Fig. 8-1: Example of the Vermont Residential Building Energy Standards Certificate

<table>
<thead>
<tr>
<th>Property Address (Street, City, ZIP Code)</th>
<th>Act 250 Permit #</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric Utility serving this address</td>
<td>Construction START Date</td>
<td>Construction FINISH Date</td>
</tr>
<tr>
<td># Units</td>
<td># Stories</td>
<td># Conditioned Sq. Ft.</td>
</tr>
<tr>
<td>Foundation Type:</td>
<td>Basement</td>
<td>Slab On Grade</td>
</tr>
<tr>
<td>Thermal Envelope</td>
<td>R-____ Basement / Crawl Space Walls</td>
<td>_____ Basement Insulation Depth (ft)</td>
</tr>
<tr>
<td>R-____ Unheated Slab</td>
<td>R-____ Floors over Unheated Spaces</td>
<td>R-____ Sloped Ceilings</td>
</tr>
<tr>
<td>R-____ Heated Slab</td>
<td>R-____ Above-Grade Walls</td>
<td>R-____ Return Ducts</td>
</tr>
<tr>
<td>R-____ Perimeter Slab Edge</td>
<td>U-____ Doors</td>
<td>Default</td>
</tr>
<tr>
<td>U-____ Windows</td>
<td>Default</td>
<td>R-____ Attic Access Hatch / Door</td>
</tr>
<tr>
<td>Air Sealing</td>
<td>Verified by: Testing</td>
<td>ACH50</td>
</tr>
<tr>
<td>Ventilation System</td>
<td>Exhaust</td>
<td>Balanced</td>
</tr>
<tr>
<td>Mechanical System</td>
<td>Calculation Method: ACCA Manual</td>
<td>8th Edition</td>
</tr>
<tr>
<td>Primary Heating System Size (Btuh)</td>
<td>Primary Central Cooling System Size (Btuh)</td>
<td>NA</td>
</tr>
<tr>
<td>Calculated Heat Loss (Btuh)</td>
<td>Calculated Heat Gain (Btuh)</td>
<td>SEER or COP Efficiency</td>
</tr>
<tr>
<td>AFUE or HSPF Efficiency</td>
<td>Heat Pump Supplied</td>
<td></td>
</tr>
<tr>
<td>Ducts</td>
<td>Ducts located within conditioned space</td>
<td></td>
</tr>
<tr>
<td>R-____ Supply Ducts</td>
<td>Location</td>
<td>Duct Tightness (CFM @ 25 Pa.)</td>
</tr>
<tr>
<td>R-____ Return Ducts</td>
<td>Test Performed at</td>
<td>Rough-in</td>
</tr>
<tr>
<td>Combustion Safety</td>
<td>Spillage testing conducted on combustion equipment not directly-vented</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solid fuel burning appliances and fireplaces have gasketed doors with compression closure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exterior</td>
<td>air supply requirements met for solid fuel-burning appliances and fireplaces</td>
</tr>
<tr>
<td>Other</td>
<td>Mechanical System Piping, R-3</td>
<td>Automatic time switches for pool heaters</td>
</tr>
<tr>
<td></td>
<td>Circulating service hot water piping, R-3</td>
<td>Pool cover for all heated pools</td>
</tr>
<tr>
<td></td>
<td>Automatic or Gravity dampers</td>
<td>75% of lamps in permanently installed fixtures are high efficacy</td>
</tr>
<tr>
<td></td>
<td>Automatic controls for snow-melt systems</td>
<td>Electric vehicle charging parking spaces (for multifamily buildings under stretch code)</td>
</tr>
<tr>
<td></td>
<td>Accessible on-off switches for pool heaters</td>
<td></td>
</tr>
<tr>
<td>Compliance Method Used</td>
<td>Prescriptive</td>
<td>Package #</td>
</tr>
<tr>
<td></td>
<td>Home Energy Rating</td>
<td>Rating Score</td>
</tr>
</tbody>
</table>

I certify to __________________________ (Owner) that the above information is correct and that the premises listed HAVE been constructed in accordance with the Vermont Residential Building Standards (RBES) created under 30 V.S.A. § 51.

Signature ___________________________ Print Name ___________________________

Company ___________________________ Phone ___________________________ Date __________

30 V.S.A. § 51 requires this certificate label to be permanently affixed to the inside electrical service panel or heating or cooling equipment or nearby in a visible location. Copies also must be provided to 1) the Dept. of Public Service, Planning & Energy Resources Division, 112 State St., Montpelier, VT 05602, and 2) the town clerk of the town where the property is located. NOTE: Noncompliance with RBES may result in action for damages under 30 V.S.A. § 51. This label does not specify all 2015 RBES requirements. QUESTIONS? CALL THE VT PUBLIC SERVICE DEPARTMENT: 802-828-2811.
Section 8.2a

*Instructions for Completing the ‘Vermont Residential Building Energy Standards Certificate’*

Read these instructions in their entirety before completing the Vermont RBES Certificate for your home. Items are listed in **bold** in the order they appear on the certificate.

1. If the dwelling received an Act 250 Permit, list the Act 250 Permit #. If not, check N/A.
2. List the Property Address, including the City and Zip code.
3. List the Electric Utility providing electric service to the dwelling. If the dwelling has no electricity, state none. If electricity is provided by a stand-alone system, indicate the system type, such as photovoltaic, wind turbine, propane generator, etc.
4. List the Construction Start and Construction Finish dates by Month/Year. Construction Start is when site work began, when the ground was first dug to prepare for a below grade foundation or slab on grade, etc. Construction Finish is when the dwelling is sufficiently ready for occupancy.
5. **Project Description**: Check off all that apply. **Multi-family homes**: Write in the number of Units. For all Projects, write in the number of Stories above grade, and the Conditioned sq. ft. area, excluding unconditioned spaces, such as an unconditioned garage or unheated basement. Write in the Number of Bedrooms. For Existing Homes Project Description include a brief description of the work done.
6. **Foundation Type**: Check off all that apply.
7. **Thermal Envelope**: Where applicable, list the nominal R-value of the insulation. If any component has more than one R-value (e.g., R-38 ceiling and R-49 ceiling), calculate an average R-value and that figure on the form. (See Section 2.5, “How to Calculate Average R-values and U-values.”) For basement walls, list the vertical height of the basement insulation in **Insulation Depth** in feet (ft.).
8. **Doors and Windows**: Where applicable, list the U-Value. If the U-value is not an NFRC (National Fenestration Rating Council) Rating, list the Default Rating (refer to Appendix B, Table B-1). Check rating type — either NFRC or Default Rating. Note: If there is not enough space in this section to list each thermal envelope component, list additional information under Other Energy Features.
9. **Air Sealing**: Check whether air sealing was verified by visual inspection or blower door testing. If tested, list the envelope air leakage rate.
10. **Ventilation System**: Check whether the ventilation system is “Exhaust” or “Balanced.” List the Ventilation Air Flow rate in cubic feet per minute and check off if the flow rate is either Rated or Tested.
11. **Mechanical Systems**: Check the system sizing Calculation Method. Note the System Size, Design Heat Loss/Gain and Efficiency of the Primary Heating and Cooling System.
12. **Programmable Thermostat**: Check whether a programmable thermostat is installed.
13. **Heat Pump Supplementary Heat Control**: Check whether a control was installed on heat pump supplementary heat.
14. **Duct**: Check if ducts are located within conditioned space. If located in unconditioned space, list insulation R-values for supply and return ducts and their location. List the tested duct leakage rate.
15. **Combustion Safety**: Check if spillage testing was conducted on combustion equipment that is not directly-vented or power vented. Check if fireplaces have gasketed doors with compression closure. Check if exterior air supply requirements have been met for solid fuel-burning appliances and fireplaces.

To order additional certificates, contact one of these resources:

★ Energy Code Assistance Center
  1-855-887-0673.
★ Vermont Public Service Department
  1-802-828-2811.
16. **Other**: Check all that apply.

17. Under **Code Compliance Path**, check the compliance path by which you determined technical compliance with the Code.

   - ★ If compliance is determined using the REScheck Software Method, list the **REScheck maximum required UA** value and **Your home UA** value calculated by REScheck.

   - ★ If compliance is determined using a home energy rating, list the **Final home energy rating** and the **Company** (Rated by) that determined the final rating score.

18. Under the certification section, list the name of the **owner** of the dwelling.

19. **Signature**: This is the signature of either the builder who directed construction or of another party authorized to certify Code compliance. **Company**: List the business name of the party certifying compliance. **Print** the **Name** of the person whose **Signature** is presented. List the **Phone** number of the **Company** certifying compliance (including area code) and the **Date** (month and year) the certificate is signed and completed.

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**Section 8.2b**

**Filing the ‘Vermont Residential Building Energy Standards Certificate’**

Once the certificate is completed, you need to file the required copies and attach the original to the house:

1. Make at least three copies of the completed certificate, retaining one for your records.

2. Attach the original certificate to the house by permanently affixing it on or near the electrical service panel or heating equipment, without covering or obstructing the visibility of the circuit directory label, service disconnect label or other required labels.

3. Within 30 days of completing construction, send one copy each to:

   - ★ The town clerk for the town or city in which the home is located. (Note: Check local procedures before filing the certificate; local fees and forms may be required.)

   - ★ The Vermont Public Service Department (Planning & Energy Resources Division, 112 State Street, Drawer 20, Montpelier VT 05620-2601).
Section 8.3

The ‘Vermont Owner/Builder Disclosure Statement’

As outlined in Section 1.4, “Owner/builder” projects are exempt from the technical requirements of the Code, but the owner/builder must meet certification requirements by completing and filing a disclosure statement. To qualify for this provision, all of the following criteria must be met:

1. The property must not be subject to Act 250.
2. The owner must be the person in charge of construction (i.e., the “general contractor”), directing the details of construction and the selection and installation of materials.
3. The owner must live in the building.
4. The owner must evaluate whether the home meets the Residential Energy Code.
5. Depending on whether the home meets the technical requirement of the Code, the owner must complete one of two documents: either the Vermont Residential Building Energy Standards Certificate if the home meets the technical requirement, or the Vermont Owner/Builder Disclosure Statement if it does not.
6. Before entering into a binding purchase and sale agreement, the owner must disclose in writing (using the Owner-Builder Disclosure Form or similar) to a prospective buyer the nature and extent of any non-compliance with the Residential Energy Code. This disclosure must itemize measures not meeting the minimum requirements.

Section 8.3a

Instructions for Completing the ‘Vermont Owner/Builder Disclosure Statement’

Read the instructions in their entirety before completing the form. (See sample on the next page.) This form is very similar to the Vermont Residential Building Energy Standards Certificate in Section 8.2; follow the instructions in Section 8.2a to fill out either one. There are only three differences between the two forms:

1. The Vermont Owner/Builder Disclosure Statement cannot be used for Act 250 projects. (Act 250 projects must meet the technical requirement of the Residential Energy Code.)
2. The signature area on this form does not include a space for you to list a company name.
3. This form states that the home does not meet the Code’s technical requirement.

Section 8.3b

Filing the Vermont Owner/Builder Disclosure Statement

If you are using the form to notify a potential buyer, you must do so before entering into a binding purchase and sales agreement. Once the home is sold, you need to file the required copies with the town and state. The process for filing this statement is identical to that for the Vermont
### VERMONT OWNER/BUILDER DISCLOSURE STATEMENT

This home does not meet the technical requirements of the Vermont Residential Building Energy Standards (RBES) and is not required to do so. 

*For additions, alterations, renovations or repairs, only fill out applicable portions of certificate.*

<table>
<thead>
<tr>
<th>Property Address (Street, City, ZIP Code)</th>
<th>Act 250 Permit # NA</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric Utility serving this address</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction START Date</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction FINISH Date</td>
<td></td>
<td></td>
</tr>
<tr>
<td># Units</td>
<td># Stories</td>
<td># Conditioned Sq. Ft.</td>
</tr>
<tr>
<td></td>
<td></td>
<td># Bedrooms</td>
</tr>
</tbody>
</table>

**Foundation Type:**  
- [ ] Basement  
- [ ] Slab On Grade  
- [ ] Crawl Space

**Thermal Envelope**
- R-_______ Basement / Crawl Space Walls
- R-_______ Heated Slab
- R-_______ Perimeter Slab Edge
- U-_____ Windows [ ] NFRC [ ] Default
- R-_____ Attic Access Hatch / Door
- U-_____ Skylights [ ] NFRC [ ] Default

**Air Sealing**
- Verified by: [ ] Testing _____ ACH50 _____ CFM50 [ ] Visual Inspection

**Ventilation System**
- [ ] Exhaust  
- [ ] Balanced  
- Air Flow: _____ CFM  
- [ ] Rated  
- [ ] Measured

**Mechanical System**
- Calculation Method: [ ] ACCA Manual J 8th Edition  
- Other ____________________________________
- Primary Heating System Size (Btuh) ________  
- Primary Central Cooling System Size (Btuh) ________  
- [ ] NA
- Calculated Heat Loss (Btuh) ________  
- Calculated Heat Gain (Btuh) ________
- SEER or COP Efficiency ____________  
- [ ] Programmable Thermostat

**Ducts**
- [ ] Ducts located within conditioned space
- R-_______ Supply Ducts _________ Location _________ Duct Tightness (CFM @ 25 Pa.)
- R-_______ Return Ducts _________ Location _________ Test Performed at [ ] Rough-in  
- [ ] Post-construction

**Combustion Safety**
- [ ] Spillage testing conducted on combustion equipment not directly-vented
- [ ] Solid fuel burning appliances and fireplaces have gasketed doors with compression closure
- [ ] Exterior air supply requirements met for solid fuel-burning appliances and fireplaces

**Other**
- [ ] Mechanical System Piping, R-3
- [ ] Circulating service hot water piping, R-3
- [ ] Automatic or Gravity dampers
- [ ] Automatic controls for snow-melt systems
- [ ] Accessible on-off switches for pool heaters
- [ ] Automatic time switches for pool heaters
- [ ] Pool cover for all heated pools
- 75% of lamps in permanently installed fixtures are high efficacy
- Electric vehicle charging parking spaces (for multifamily buildings under stretch code)

**Compliance Method Used**
- Prescriptive [ ] Package #_______  
- [ ] REScheck Software
- Maximum UA ________ Your UA ________
- [ ] Home Energy Rating
- Rating Score ________  
- Rated by ________________

I certify that the above information is correct and that the premises listed HAVE NOT been constructed in accordance with the Vermont Residential Building Standards (RBES) created under 30 V.S.A. § 51.

Signature ___________________________  
Print Name __________________________

Phone ___________________________  
Date ___________________________

For Owner/Builder projects, 30 V.S.A. § 51 requires sellers to provide this statement to prospective buyers, prior to entering into a binding purchase and sale agreement, which itemizes how the home does not comply with Vermont RBES. Seller must send copies within 30 days following the sale of the property, to 1) the Public Service Department, Planning & Energy Resources Division, 112 State St., Montpelier, VT 05620, and 2) the town clerk of the town where the property is located.

**QUESTIONS? CALL THE VT PUBLIC SERVICE DEPARTMENT: 802-828-2811.**