

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).

After December 1, 2015, Act 250 projects must comply with Vermont’s newly-developed Stretch Code, which requires:

1. A higher level of thermal energy efficiency than the Base Code minimum, or a lower maximum Home Energy Rating Score (see Table 5-3 or Table 7-2)
2. Maximum air leakage rate based on a blower door test (see Section A.1)
3. Electric vehicle charging for multifamily developments of 10 or more dwelling units (see Section A.2)

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.¹ 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.)

The Residential Energy Code is both simple and flexible in the ways a home can meet the technical requirement. There are three methods that can be used to comply. You select the one that works best for your design.

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 statute 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

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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.

Energy Code 
Assistance Center

: This chapter explains:
: ★ How self-certification
: works.
: ★ How to complete the
: two types of
: certification.
: ★ Where and when to file
: copies.

Chapter 8

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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

2015 Vermont Residential Building Energy Standards (RBES) Certificate

This certificate is for projects started on or after March 1, 2015.
*Before completing this form, refer to the instructions in Section 8.2a of the Residential Energy Code Handbook (4th edition).
 For additions, alterations, renovations or repairs, only fill out applicable portions of certificate.*

Property Address (Street, City, ZIP Code) _____

Electric Utility serving this address _____

Units _____ # Stories _____

Foundation Type: Basement Slab On Grade Crawl Space

Act 250 Permit # NA

Construction START Date _____ Construction FINISH Date _____

Conditioned Sq. Ft. _____ # Bedrooms _____

Project Description

Single Family Renovation / Alteration

Multi-family Addition

Log Home Stretch Code

Existing Home Project Description: _____

Thermal Envelope

R- _____ Basement / Crawl Space Walls	_____ Basement Insulation Depth (ft)	U- _____ Basement Windows <input type="checkbox"/> NFRC <input type="checkbox"/> Default
R- _____ Unheated Slab	R- _____ Floors over Unheated Spaces	R- _____ Sloped Ceilings _____ Area (Sq. Ft.)
R- _____ Heated Slab	R- _____ Above-Grade Walls	R- _____ Flat Ceilings _____ Area (Sq. Ft.)
R- _____ Perimeter Slab Edge	U- _____ Doors <input type="checkbox"/> NFRC <input type="checkbox"/> Default	U- _____ Skylights <input type="checkbox"/> NFRC <input type="checkbox"/> Default
U- _____ Windows <input type="checkbox"/> NFRC <input type="checkbox"/> Default	R- _____ Attic Access Hatch / Door	

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) _____ <input type="checkbox"/> NA	
Calculated Heat Loss (Btuh) _____	Calculated Heat Gain (Btuh) _____	<input type="checkbox"/> Programmable Thermostat
AFUE or HSPF Efficiency _____	SEER or COP Efficiency _____	<input type="checkbox"/> Heat Pump Supplementary Heat Control No Heat Pump Supplied

Ducts

Ducts located within conditioned space

R- _____ Supply Ducts _____ Location	_____ Duct Tightness (CFM @ 25 Pa.)	
R- _____ Return Ducts _____ Location	Test Performed at <input type="checkbox"/> Rough-in <input type="checkbox"/> 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

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

Compliance Method Used

Prescriptive Package # _____ REScheck Software Maximum UA _____ Your UA _____

Home Energy Rating Rating Score _____ Rated by _____

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.**

Read the instructions in their entirety before completing the Vermont RBES Certificate.

Existing Homes

For additions, alterations, renovations and repairs to existing homes, include a brief description of the project under the Existing Home Project Description section of the form and fill out the portions of the form pertaining to your project. For Owner/Builder projects, the Owner/Builder form should be completed (see Figure 8-2).

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.

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.

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.

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).

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*

Figure 8-2: The Vermont Owner/Builder Disclosure Statement.

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.

Property Address (Street, City, ZIP Code) _____

Electric Utility serving this address _____

Units _____ # Stories _____

Foundation Type: Basement Slab On Grade Crawl Space

Act 250 Permit # NA

Construction START Date _____ Construction FINISH Date _____

Conditioned Sq. Ft. _____ # Bedrooms _____

Project Description

Single Family Renovation / Alteration

Multi-family Addition

Log Home Stretch Code

Existing Home Project Description: _____

Thermal Envelope

R- _____ Basement / Crawl Space Walls	_____ Basement Insulation Depth (ft)	U- _____ Basement Windows <input type="checkbox"/> NFRC <input type="checkbox"/> Default
R- _____ Unheated Slab	R- _____ Floors over Unheated Spaces	R- _____ Sloped Ceilings _____ Area (Sq. Ft.)
R- _____ Heated Slab	R- _____ Above-Grade Walls	R- _____ Flat Ceilings _____ Area (Sq. Ft.)
R- _____ Perimeter Slab Edge	U- _____ Doors <input type="checkbox"/> NFRC <input type="checkbox"/> Default	U- _____ Skylights <input type="checkbox"/> NFRC <input type="checkbox"/> Default
U- _____ Windows <input type="checkbox"/> NFRC <input type="checkbox"/> Default	R- _____ Attic Access Hatch / Door	

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) _____ Programmable Thermostat

AFUE or HSPF Efficiency _____ SEER or COP Efficiency _____ Heat Pump Supplementary Heat Control

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

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

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.

For copies of this form, photocopy this page or contact the Energy Code Assistance Center (855-887-0673).

Chapter 8: Certification

52