



Municipal Guide for Vermont Energy Codes and Above-Code Programs

September 2013

ABOUT THIS GUIDE:

This guide offers local officials an easy-to-use resource that will:

- Provide background information on building Energy Code requirements;
- Explain the Code process from application through documented compliance;
- Describe the benefits of meeting and exceeding Vermont's Energy Codes, including lower energy costs;
- Outline the support available from Efficiency Vermont for builders and homeowners—both to simply meet the minimum requirements of the Codes and to receive technical and financial assistance to exceed the Codes; and
- Make it easier to carry out the tasks associated with towns' responsibilities for meeting the Codes, as described in Act 89 and passed by the Vermont Legislature in 2013.

The guide also provides suggestions for how zoning administrators, town energy committees, planning commissions, design review boards, and similar local bodies can call attention to the benefits of energy-efficient construction by raising awareness of how to comply with the Energy Code and how to participate in above-code programs.

PART ONE: INTRODUCTION AND OVERVIEW

Context

Vermont has Energy Code requirements that apply to all residential new construction and certain renovation projects that take place in homes containing no more than three stories. These requirements are known as the Residential Building Energy Standard (RBES). In addition, the Commercial Building Energy Standards (CBES) set requirements for all new commercial construction (new buildings, additions, alterations, renovations, and repairs) that take place in multifamily housing with 4 stories or more, and all commercial structures. For both residential and commercial projects, this guide addresses Code requirements primarily as they apply to new construction.

Efficiency Vermont provides information and technical support at no cost to town officials, builders, architects, engineers, and homeowners, including details about the requirements contained in RBES and CBES and about strategies for ensuring compliance. Information is available toll-free through Efficiency Vermont's Energy Code Assistance Center at 855-887-0673 and by going to either:

- www.encyvermont.com/vesh (click on Energy Code Assistance under the General Info tab for residential Code information [RBES]); or
- www.encyvermont.com/CNC and click on the Energy Code tab for commercial Code information.

BACKGROUND:

Since the late 1990s, the Vermont Legislature has increasingly emphasized the importance of reducing the State's reliance on energy sources that have adverse impacts on both the economy and the environment. Part of this emphasis has taken the form of the RBES and CBES energy efficiency codes. However, in most of Vermont's cities and towns, there is no effective compliance mechanism. To date, most compliance has been documented through voluntary certifications and through energy ratings conducted by Efficiency Vermont, at the builder's request. To promote energy efficiency, Act 250 also typically requires RBES/CBES certification or better.

This Guide provides the background information town officials need to know about how Code requirements apply and about how to refer permit applicants to Efficiency Vermont for detailed technical assistance.

WHY BUILD TO CODE AND ABOVE?

- Building to RBES and CBES is the law.
- Buildings that are constructed to meet RBES and CBES deliver lower energy bills for their owners and occupants than buildings that don't meet these codes. RBES and CBES save money for the occupants from the first day of use and minimize the potential impacts of future energy cost increases. Further, buildings that are built to above-code specifications can be significantly more efficient than Code, and cost even less to operate.
- Code-compliant buildings have less impact on the environment than non-compliant buildings because they require less energy to operate, and thus generate less pollution.
- Dollars spent on constructing more efficient buildings keep money circulating in the local economy and create a ripple effect, since those businesses and their employers in turn spend money locally.
- It simply makes good economic sense to build in energy efficiency at the time of construction. This protects building owners against future energy cost increases and saves them from potentially invasive and costly efficiency upgrades in the future. It is far easier and less expensive to build in energy efficiency at the time of construction than it is to make buildings more efficient in the future.

Buildings that are significantly more efficient than Code will provide greater benefits than those that simply meet Code. In most cases, any additional upfront costs for building more efficient buildings are more than offset by the reduced energy costs the building occupants will pay. In other words, energy efficiency is an excellent investment. Efficiency Vermont offers technical assistance and financial incentives to help homes and commercial buildings achieve above-code performance.

THE EASIEST WAY TO ENSURE CODE COMPLIANCE

The best way to know that a home or commercial building will meet Code is to take advantage of Efficiency Vermont's technical assistance and financial incentives. Efficiency Vermont helps owners and builders install efficiency measures that enable the building to exceed Code, thus assuring compliance and providing additional benefits from more energy-efficient spaces.

Efficiency Vermont is operated by a private nonprofit organization, the Vermont Energy Investment Corporation, under an energy efficiency utility appointment issued by the Vermont Public Service Board. Efficiency Vermont provides technical assistance, rebates, and other financial incentives to help Vermont households and businesses reduce their energy costs with energy-efficient equipment, lighting, and approaches to construction and major renovation. Efficiency Vermont's technical and code experts provide services to builders, homeowners, and others free of charge, saving them a lot of time in understanding Code requirements. Efficiency Vermont also makes financial incentives available when builders agree to build to certain efficiency levels that go above Code requirements. Efficiency Vermont's technical team helps builders and homeowners understand both the Code requirements and the suitable opportunities for going above Code for the home or building they are constructing.

PART 2: CODE REQUIREMENTS AND OPPORTUNITIES

Residential Building Energy Standards

The RBES, known also as the Residential Energy Code, was first passed by the Vermont Legislature in 1997 as the minimum standard of energy efficiency applied to new residential construction in Vermont. In 2009, the Vermont Legislature passed the Vermont Energy Act of 2009 directing RBES to be revised according to the 2009 International Energy Conservation Code (IECC). IECC 2009, and in turn the RBES requirements, reflect an increase in energy efficiency that pushes the Energy Code requirements beyond long-held conventional insulation and construction practice. This updated Energy Code went into effect October 2011.

All new homes built in Vermont must meet RBES. Enrollees participating in Efficiency Vermont's Residential New Construction services receive support in achieving and exceeding Energy Code requirements. As a benefit of participating in the program, enrollees receive a completed copy of the Energy Code certificate (to be signed by the builder) upon successful completion of program requirements.

RBES applies to:

- New single-family homes (including modular and log homes)
- New multifamily homes (buildings 3 stories or less)
- Additions, alterations, renovations, and repairs (only applies to the portion of the home being worked on)

RBES has two requirements:

- A certification requirement for reporting compliance

- A technical requirement (that is, minimum standards for energy-efficient building components and construction practices)

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 RBES, 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 are involved, unless required by a municipality. The Energy Code includes an exemption for owner-builders for meeting Energy Code; however, owner-builders must complete and submit a disclosure statement specifying that the Energy Code has not been met.

The process can be summarized as follows:

1. Builder or homeowner determines whether a project needs to comply with the Energy Code
2. Builder or homeowner follows the guidelines for building to the Energy Code, including minimum ventilation and combustion safety requirements
3. Builder fills out and posts the required compliance certificate in the home, and files copies with the municipality and the Public Service Department

In order to comply with the Residential Energy Code, a home, as built, must meet all of the basic requirements and the performance requirements, via one of the compliance methods described in the RBES Handbook (Please refer to enclosed CD for a copy of the RBES Handbook or reference the link below):

Fast-Track Method

This prescriptive-based approach is the compliance method that allows the builder or owner to incorporate a prescribed set of features with minimal calculations.

REScheck Software Method

This performance-based approach utilizes software (REScheck) that allows for more flexibility in how the builder/owner achieves code compliance. REScheck software must be installed on a builder's or owner's computer. (<http://www.energycodes.gov/rescheck>)

Home Energy Rating Method

This comprehensive, performance-based approach gives the highest degree of flexibility for code compliance by accounting for a broader range of measures, including air tightness, efficient domestic hot water heating, and solar orientation. A Home Energy Rating (HERS) is provided as a service through Efficiency Vermont's Residential New Construction Program.

For assistance in understanding and complying with RBES call 855-887-0673. Detailed information on the RBES compliance requirements and process can be obtained by downloading the Residential Building Energy Code Handbook at:

http://www.encyvermont.com/docs/for_partners/rnc/VT-Energy-Code-Handbook-V3dot1.pdf

Commercial Building Energy Standards

The Commercial Building Energy Standards (CBES), also known as the Commercial Energy Code, defines the minimum efficiency requirements for all commercial buildings in Vermont. The 2011 Vermont Commercial Building Energy Standards, which became effective January 3, 2012, applies to all new commercial construction: new buildings, additions, alterations, renovations, and repairs. It is based on the 2009 International Energy Conservation Code® (IECC) and is a State of Vermont Code Book. Another energy standard published by the American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE), ASHRAE 90.1-2007, is also permitted by the 2011 CBES, with specific requirements listed.

Hard copies of the 2011 CBES are available from the Energy Code Assistance Center and a free-for-viewing electronic copy is available on the International Code Council (ICC) website at http://www.ecodes.biz/ecodes_support/Free_Resources/2011Vermont/11Vermont_main.html. Note that there is not a separate “code handbook” for CBES as there is for RBES. The 2011 CBES Code Book is the principal reference document for the Commercial Energy Code.

21 V.S.A. §268 requires certification that both the design AND the construction of a commercial building are in compliance with the CBES. The design must be certified by the primary designer; if a licensed professional engineer or a licensed architect is not involved in designing the project, the builder issues the certification. The construction of a commercial building is to be certified as compliant with CBES by the party having primary responsibility for coordinating the construction of the building. This is typically the General Contractor or construction manager. In the absence of such a party, the owner must certify compliance. The completed CBES certificate must be completed and posted in the building, and a copy of the certificate with two accompanying affidavits must also be filed with the Public Service Department.

For assistance in understanding and complying with CBES, the builder or owner may call 855-887-0673 to request a copy of the Commercial Energy Code, or go to www.publicservice.vermont.gov/topics/energy_efficiency/cbes.

Act 89 Requirements

RBES and CBES are the law in Vermont. They are not optional for the buildings that they apply to. Act 89 strengthens the provisions of RBES and CBES by providing guidance to town officials for local support and enforcement. Specifically, Act 89 adds a new requirement for town officials to provide information about the Energy Codes at the time a permit application is submitted. The Act also stipulates provisions for obtaining the Energy Code certificate prior to the issuance of Certificates of Occupancy. Act 89 also provides a mechanism that enables the Public Service Department to create a well-defined Stretch Code; if and when the Department develops that Stretch Code, local municipalities will have the option to adopt it for buildings in their jurisdictions.

Act 89 places requirements on municipalities related to Energy Codes. This guide does not provide legal advice on these requirements. However, the law does stipulate that town officials must provide information on the RBES and CBES requirements:

When an application for a municipal land use permit seeks approval of a structure, the administrative officer shall provide the applicant with a copy of the applicable building energy standards.

Act 89

Main provisions in Act 89 relating to the Energy Code are:

- Town officials must provide RBES and CBES information when a building or zoning permit is applied for.
- Any building that requires a Certificate of Occupancy must be certified for CBES or RBES compliance before the CO is issued.
- Municipalities have the option of adopting the Stretch Code to increase the energy efficiency of local construction if and when the Public Service Department Commissioner adopts such a code.

To assist town officials in meeting this requirement, the Energy Code Assistance Center provides copies of the CBES and the RBES Handbook. As an alternative, municipalities can provide permittees with on line copies CBES and RBES Handbook (as referenced earlier in this document). Efficiency Vermont will also provide towns with brochures containing information on how to request energy efficiency and thermal efficiency services for buildings, thus minimizing any additional work required of town officials in providing information about above-code programs.

It is important to note that Energy Code compliance certificates are required of all commercial buildings, any residential buildings that are considered to be “public” buildings, and any residential buildings in towns that require a Certificate of Occupancy.

Act 89 states:

(2) Condition precedent. Provision of a (RBES) certificate as required...shall be a condition precedent to:

A) issuance by the Commissioner of Public Safety or a municipal official acting under 20 V.S.A. § 2736 of any final occupancy permit required by the rules of the Commissioner of Public Safety for use or occupancy of residential construction commencing on or after July 1, 2013 that is also a public building as defined in 20 V.S.A. § 2730(a); and

(B) issuance by a municipality of a certificate of occupancy for residential construction commencing on or after July 1, 2013, if the municipality requires such a certificate under 24 V.S.A. chapter 117.

Although Efficiency Vermont does not have any role in code enforcement or in assuring that RBES and CBES certificates are filed prior to issuing Certificates of Occupancy, it can assist towns in understanding the Energy Code certification process. Efficiency Vermont also provides support and assistance to builders, designers, and homeowners to make them aware of the specific requirements and how to assure that projects will meet the applicable code requirements.

Act 89 includes provisions that enables municipalities to adopt a **“Stretch Code”** that provides a construction efficiency standard that is higher than the baseline Energy Code. Act 89 defines a Stretch code as “...a building energy code for residential buildings that achieves greater energy savings than the RBES....” The Act goes on to say that the “...Commissioner may adopt a stretch code by rule.” The Stretch Code is envisioned to be developed by the end of 2014 through a public process.

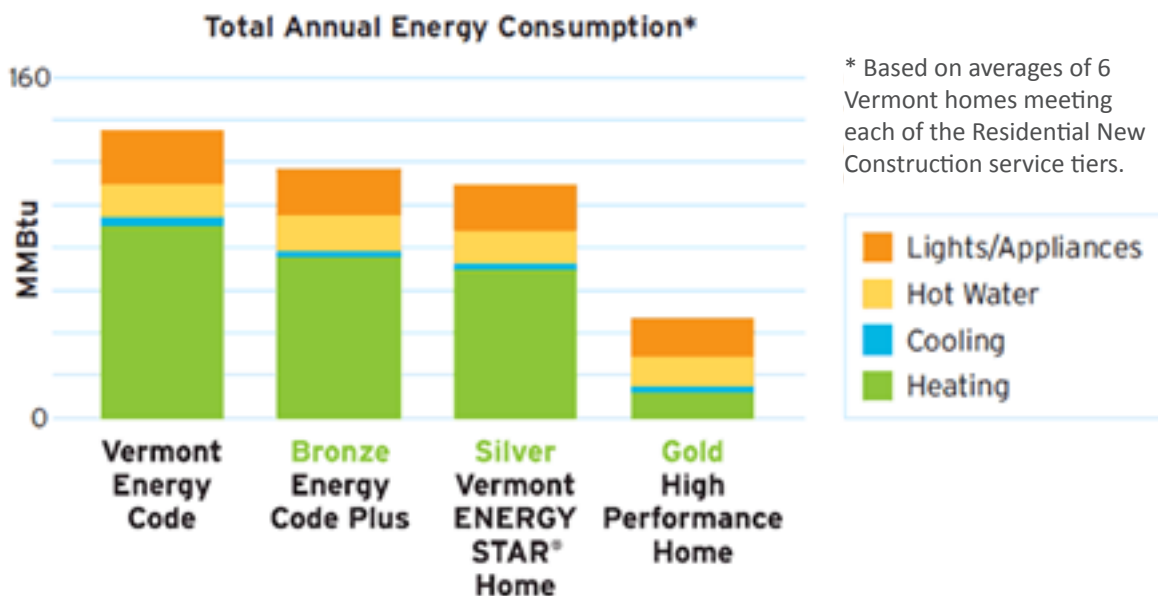
How Can Efficiency Vermont Help?

Residential New Construction

Efficiency Vermont offers homebuilders technical assistance on meeting and exceeding RBES requirements. Efficiency Vermont at 888-921-5990, ext. 7762 will put builders and homeowners in touch with experts who can discuss their projects with them, explain the various Efficiency Vermont options available to them, and provide the technical support for meeting the requirements.

Efficiency Vermont offers the following performance tiers for residential new construction in Vermont:

- **Bronze:** Vermont Energy Code Plus. A step above Vermont's RBES standard.
- **Silver:** Vermont ENERGY STAR Homes. A comprehensive approach to energy efficiency and green building.
- **Gold:** High-Performance Homes. Superior efficiency with extremely low energy demand in a net-zero-ready home.



This bar chart shows annual modeled energy usage for Efficiency Vermont's new construction tiers based on a typical Vermont home.

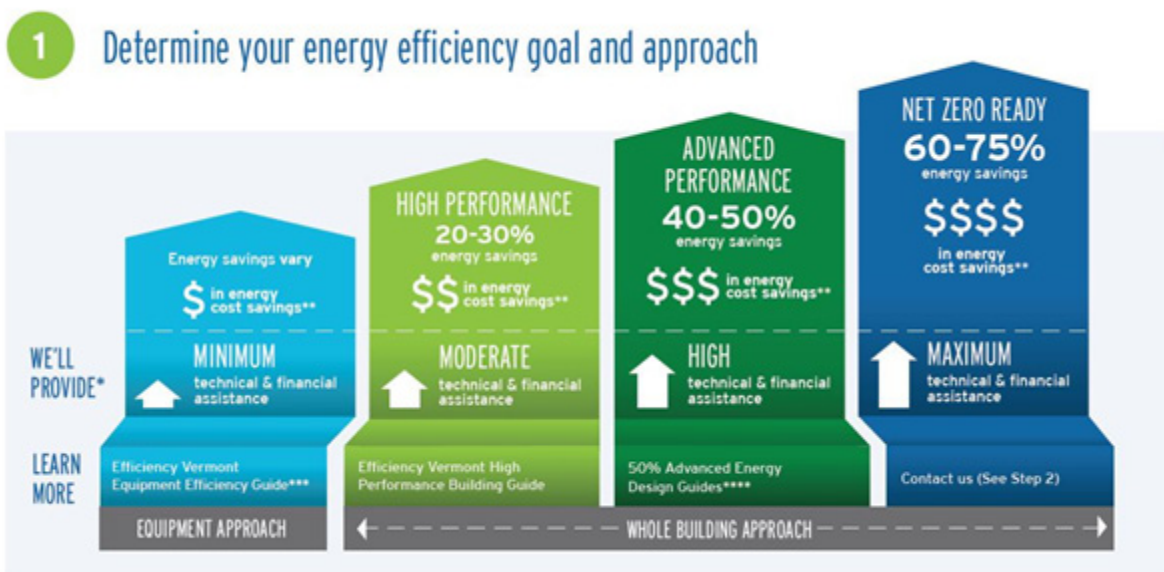
Commercial and Multifamily New Construction

Efficiency Vermont can work with commercial project teams to incorporate energy efficiency throughout the design, construction, and operation phases of their projects. The Project Intake Coordinator at PICS@veic.org or 888-921-5990, ext. 7662 is the first step for building owners or builders to take. Projects that follow a Whole-Building Approach through one of the three performance levels shown below and whose builders invite Efficiency Vermont to a kick-off or early design meeting are eligible for the highest level of technical and financial assistance.

For multifamily projects, Efficiency Vermont offers a comprehensive technical assistance and two levels of financial incentives to help the owner and builder create the best building most cost-effectively.

The program involves:

- ENERGY STAR certification
- Vermont Residential Building Energy Code certification
- Technical review of construction, engineering, and bid documents
- Construction support, including interim and post-construction inspections for air sealing and insulation
- Performance-based blower door testing at conclusion of the project
- Rebates of \$500 to \$1,000 per unit for meeting the **Design Checklist for Multifamily Housing** (qualifying energy-efficient appliances, lighting, HVAC, water heating and equipment)



Efficiency Vermont's **Design Checklist for Multifamily Housing** for comprehensive design and supporting protocols provides guidelines for making buildings energy efficient. These documents are a good starting point for most new construction and major renovation multifamily projects. An owner or builder initiating a project is encouraged to review the Checklist and contact Efficiency Vermont. An Energy Consultant will be assigned to the project to provide customized technical assistance and financial incentives to meet the needs of the specific project.

PART 3: OPTIONS FOR MUNICIPALITIES TO INCREASE ENERGY EFFICIENCY OF LOCAL CONSTRUCTION

Introduction

Town Energy Committees and local Planning Commissions are implementing a wide variety of activities, from helping reduce energy consumption in municipal buildings and street lighting to working with residents to improve the efficiency of their homes. This Guide presents several suggestions and recommendations for municipalities to promote increased compliance with the Energy Code and participation in Efficiency Vermont's above-code programs. The recommended actions below are presented in order of increasing level of effort by the municipality.

Options for Municipalities

The following options will help increase energy efficiency in local construction:

Educate new homeowners and owners of homes that are undergoing rehabilitation.

Municipalities can provide valuable information to their communities on Code requirements and on above-code programs. Efficiency Vermont can make information available to municipalities to distribute to new homeowners and builders. Town offices can request an Efficiency Vermont poster that raises community awareness about the Energy Code (see Sample Poster for Town Offices).

Provide relevant language on the town website.

One easy way to help raise awareness about both RBES and CBES is to provide information on town websites about the Code. Sample language that can be considered:

The Vermont building Energy Codes—the Vermont Residential Building Energy Standards (VT-RBES) and Vermont

Commercial Building Energy Standards (VT-CBES)—are minimum standards of energy efficiency that apply to all new residential construction, renovations, alterations, and repairs in Vermont. The Energy Code Assistance Center provides toll-free assistance at 855-887-0673. Information is also available at the Public Service Department website:

- VT-RBES: http://publicservice.vermont.gov/topics/energy_efficiency/rbes
- VT-CBES: http://publicservice.vermont.gov/topics/energy_efficiency/cbes

Efficiency Vermont offers technical assistance and incentives for projects that seek to meet a level of energy efficiency above the Energy Code. Contact them at 888-921-5990 or visit www.encyvermont.com to learn more.



Sample of Poster for Town Offices

Advocate and promote RBES, CBES, and above-code construction.

Finding local residents who have experience in constructing energy-efficient homes and asking them to provide testimonials can encourage others to incorporate energy efficiency into their projects. Simply finding a few people who would be willing to talk with neighbors and having their names available through the town offices is one such strategy. Additionally, Efficiency Vermont maintains a list of contractors who have built above-code homes: www.encyvermont.com/rnc.

Provide technical assistance.

Although Efficiency Vermont provides technical assistance at no charge in many situations, local individuals who are knowledgeable on Code requirements and above-code programs can provide valuable on-the-ground assistance. Zoning administrators, Planning Commission members, and



Town Energy Committee members can assist new homeowners on how to comply with Code and above-code construction. Local volunteer experts could even provide site visits to help coach builders who are new to efficient construction practices.

Incorporate RBES, CBES and above-Code into building permit process or fees.

Towns that require building permits can consider adding language on the permits that contains a sign-off line indicating acknowledgment of the requirement and agreement to comply with RBES or CBES, as applicable. Understandably, towns might not be able to consider additional

compliance options beyond that required by Act 89, but even the simple inclusion of this language can have an effect by reinforcing the expectation of compliance. Dorset, for example, provides the following language in its zoning permit application:

"I swear under the pains and penalties of perjury that the statements contained in this application are true to the best of my knowledge and belief. I also agree that development will be in accordance with current Town of Dorset Zoning Bylaws, The VT Residential Building Energy Standards, and other applicable ordinances unless otherwise approved."

Date: _____ Signature of Applicant: _____

Towns can also consider modest financial benefits linked to higher levels of efficiency. For instance, towns could enact a tiered permit fee structure, where building to higher efficiency levels results in a lower permit fee.

Adopt Stretch Codes, per Act 89.

When the State adopts a Stretch Code, that code will become an option for municipalities to adopt. The effect will be more stringent energy efficiency standards for construction within the local community. The State will provide information on what local communities need to do to adopt the Stretch Codes.

Call attention to RBES and CBES requirements that address renovation projects.

Although the Energy Codes include renovation and rehabilitation projects, in reality these projects have not received the attention that new construction has. Raising the bar on Energy Code compliance in renovation projects is nonetheless an important component of achieving greater energy efficiency in buildings. There is much more renovation and rehabilitation construction than new construction. Towns can consider new and creative ways to call attention to the requirements for renovations. This will likely increase energy efficiency of communities, and can involve building permit requirements, inspections, and Stretch Codes. Towns could also work with building owners to hold building tours and open houses to show the energy upgrades that are being done as part of renovation and rehabilitation projects.

Incorporate into town planning and zoning.

When contemplating updates to town plans and zoning ordinances, local officials can consider incorporating language into the Town Plan and zoning ordinances requiring new homes and commercial buildings to be built to Code (or even higher levels of efficiency). This ties both to the idea of including Code compliance language in building permits, and also to the adoption of local Stretch Codes.

Incorporate into building codes.

Towns with building codes could incorporate the Energy code into the building code and into building inspections by verifying the existence of an Energy Code certificate. Building code inspectors already perform compliance inspections for other codes, and, RBES/CBES compliance inspections could also be incorporated in the process. Efficiency Vermont can provide basic training and guidance on Code requirement and above-Code programs.

Appendix A

Resources for Town Officials on RBES and Above-Code Residential Programs

Hard copies of the materials listed below can be obtained by contacting the Energy Code Assistance Center at 855-887-0673

- Poster for town offices
- Energy Code Certificate forms (RBES and CBES)
- Vermont Residential Energy Code Handbook
- Brochure about the Energy Code Assistance Center
- Brochure about Efficiency Vermont's Residential New Construction Services for Above-Code programs
- Cover letters for permittees to accompany Code Handbook and information about Above-Code programs

Footnotes & References

¹ An Act Relating to Reducing Energy Costs and Greenhouse Gas Emissions, June 17, 2013. See in particular Sec. 6, 21 VSA §266, Residential Building Energy Standards; Stretch Code, at <http://www.leg.state.vt.us/DOCS/2014/ACTS/ACT089.PDF>.

² http://publicservice.vermont.gov/topics/energy_efficiency/rbes

³ http://publicservice.vermont.gov/topics/energy_efficiency/cbes

⁴ Act 250 is Vermont's Land Use and Development Act. For a useful summary, see http://www.sec.state.vt.us/municipal/Do_It_Yourself_Act_250.pdf.

⁵ Act 89, p.31

⁶ Act 89 specifies that the Residential Building Energy Code Handbook can be provided in lieu of the full Code. The Handbook is available at: http://www.encyclopedia.vermont.com/EVT/docs/for_partners/VT%20Energy%20Code%20Handbook_Draft_8%2022%2011.pdf

⁷ Vermont law already required documentation of CBES compliance for commercial buildings before a Certificate of Occupancy could be issued. Act 89 extends that requirement to residential buildings.

⁸ Public buildings primarily are those used for public purposes: workplaces, buildings that are owned by public entities such as schools and firehouses, and any residential property that is rented for either a short term or a long term. Complete information is available at: <http://www.leg.state.vt.us/statutes/fullsection.cfm?Title=20&Chapter=173&Section=02730>.

⁹ Act 89, pp. 25-26.

¹⁰ Act 89, p. 23.

¹¹ Commissioner refers to the Commissioner of the Public Service Department, per 21 V.S.A § 266.

¹² See previous footnote.