

Voluntary Building Energy Disclosure in Vermont

Request for Public Comment on Proposed Home Energy Score & Label

August 12, 2013

Introduction

In 2013, the Vermont Legislature passed Act 89, thermal energy efficiency legislation. A section of the Act addressing “Voluntary Building Energy Disclosure” requires the Vermont Public Service Department to convene a working group to “develop a consistent format and presentation for an energy rating that an owner of a building may use to disclose the energy performance of the building or a unit within the building to another person, including a potential purchaser or occupant.” The working group is also charged with developing or selecting “one or more tools that can be used to generate the energy rating.” A report making recommendations on residential disclosure is due to the Vermont Legislature by December 15, 2013.

The Vermont Home Energy Score Working Group was formed to meet this Act 89 requirement. The Working Group includes representatives from:

- Building Performance Professionals Association
- Efficiency Vermont
- Energy Futures Group
- NeighborWorks of Western Vermont
- Office of Economic Opportunity/Weatherization Assistance Program
- Vermont Gas Systems
- Vermont Green Homes Alliance
- Vermont Public Service Department

The Working Group is currently seeking public comments and feedback on a proposed home energy score and label for Vermont, to inform the report to the Legislature. This document provides more information on residential disclosure in Vermont and the proposed energy scoring metric and label options.

Please provide your comments and suggestions by emailing them to kelly.launder@state.vt.us in a format that works best for you. For example, you may use the comment feature in the PDF document, or provide comments in the body of an email or in a separate Word document.

Comments are due by Wednesday, September 4, 2013. We appreciate your feedback and look forward to reviewing your comments and suggestions.

Overview of Vermont’s Scoring & Labeling Background & History

Many countries and a few locations in the U.S. regularly score and label their existing buildings for energy efficiency to ensure transparency to buyers, renters, occupants and others. This is one important step towards making energy efficiency visible and enabling markets to begin to truly value buildings’ energy performance. Scoring and labeling quantifies investments made in a building’s energy efficiency and would serve as the key piece of information in a time-of-listing/sale disclosure initiative.

Vermont has a long history of energy rating our residential building stock. We have been rating homes and multifamily buildings for energy efficiency since 1987 using the national Home Energy Rating System (HERS) methodology.¹ While these ratings have been applied to both existing and new homes over that period, HERS has been used primarily as a residential new construction program verification tool.²

Over the last five years or so, Vermont has become more interested in providing a lower-cost, more widely applicable, simplified approach to energy labeling our existing buildings.

Vermont's discussions about scoring and labeling buildings have included all building types. However, given the complexities of the issue, a decision was made to start with single-family detached homes to work out the details, then expand to multifamily and ultimately to non-residential buildings, which provide additional complexities and challenges.

There have been at least three recent statewide organized attempts to move building scoring, labeling and disclosure forward. These have included the "Building Energy Disclosure Working Group" in 2011, the "Thermal Efficiency Task Force" in 2012, and most recently, Act 89 in 2013.

Building Energy Disclosure Working Group

Act 47, passed in the 2010–11 Vermont legislative session, created a "Building Energy Disclosure Working Group" (BEDWG) to study "whether and how to require disclosure of the energy efficiency of commercial and residential buildings in order to make data on building energy performance visible in the marketplace for real property and inform the choices of those who may purchase or rent such property."

The BEDWG, which represented a broad cross-section of the Vermont housing industry, generated a good deal of background other supporting materials and delivered a comprehensive report to the Legislature in December 2011.³ The report included draft legislation for mandatory disclosure of building energy performance; this legislation was considered but did not pass during the 2012 legislative session.

Some Definitions

Energy Rating: A home energy rating is an analysis of a home's energy efficiency; as per the Home Energy Rating System (HERS) Index. The HERS Index is a nationally recognized scoring system for measuring a home's energy performance.

Energy Score: An energy score is a standardized metric that enables comparison of the energy performance of buildings. It is a more generic term than "rating" and can apply to any number of different metrics used to measure home performance including Btu/yr, Btu/sq. ft./yr, HERS rating, 1-10 score, etc.

Energy Label: An energy label is the visual presentation of the energy score and any other supporting and comparative information. The label would typically be provided as a paper certificate and also displayed somewhere in the home for future reference.

Disclosure: Making the score and/or label available to a buyer, renter or someone else.

¹ See <http://www.resnet.us/hers-index>.

² Currently HERS is primarily used in Vermont to verify compliance with Efficiency Vermont's Vermont ENERGY STAR Homes Program and the Residential Building Energy Standards (RBES) Energy Code.

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

Comprehensive Energy Plan

Over the course of 2011, the Vermont Public Service Department (PSD) finished compiling the Comprehensive Energy Plan (CEP).⁴ This plan lays out a vision for Vermont's energy future and recommends that Vermont "set a path to obtain 90% of our total energy from renewable sources by 2050." The CEP referenced the Building Energy Disclosure Working Group's efforts in a section of the Plan⁵ and included recommendations to investigate building energy disclosure and rating, and to investigate how energy efficiency improvements could be valued in appraisals and lending decisions.

Thermal Efficiency Task Force

Following the CEP recommendations⁶, the PSD created and facilitated a 60+ person "Thermal Efficiency Task Force" (TETF) to "ensure an integrated and comprehensive statewide whole-building approach to thermal energy efficiency that will put Vermont on the path toward meeting the state building efficiency goals set forth in statute". The taskforce finished its work and delivered its report to the Legislature in early 2013.⁷ The report was very comprehensive and made some specific recommendations regarding scoring and labeling, including the following:

*"Make efficiency visible. Begin delivering a voluntary energy performance score or label to existing buildings in Vermont, then reevaluate after 3 years to determine whether labeling and disclosure should be phased in as a requirement at time of sale. Help increase the availability of building fuel use data so building owners and tenants can identify energy savings opportunities. These data will also enable buildings owners to benchmark their energy performance against other similar buildings and / or the building's own historical energy consumption."*⁸

Creation of a working group to develop an "energy rating" to use in building disclosure was one of the TETF recommendations included in H. 520, which was enacted as Act 89.⁹

Act 89 - Voluntary Building Energy Disclosure Working Group & Report

The 2013 Legislature passed thermal efficiency legislation, Act 89, with language that calls for the creation of another working group to study "energy rating"¹⁰ and disclosure. The language in the bill on "Voluntary Building Energy Disclosure" is included in Appendix 1. In summary, it asks the new working group to "develop a consistent format and presentation for an energy rating that an owner of a building may use to disclose the energy performance of the building or a unit within the building to another person, including a potential purchaser or occupant." The Working Group is also charged with developing or selecting "one or more tools that can be used to generate the energy rating." A report to the Legislature is due by December 15, 2013 on the working group findings on a residential disclosure tool and a year later on commercial disclosure tools. In addition, in three years (December 15, 2016), the PSD is asked to report back on the tools selected or adopted, the efforts made to disseminate the tools for public use, the frequency of the tools' use by sector (residential and commercial), and the contexts in which the tools were used, such as property sale or lease. They are also asked to analyze

⁴ http://publicservice.vermont.gov/publications/energy_plan/2011_plan

⁵ CEP, section 7.2.1.4 Building Energy Disclosure, page 174.

⁶ CEP, section 7.2.1.1 A Whole-Building Approach, page 168.

⁷ http://publicservice.vermont.gov/topics/energy_efficiency/tetf

⁸ http://publicservice.vermont.gov/topics/energy_efficiency/tetf, Report page ES-6

⁹ <http://www.leg.state.vt.us/docs/2014/Acts/ACT089.pdf>

¹⁰ Note that the use of "rating" with a small "r" should be read as a generic term to include scoring and labeling, not to be confused with an "Energy Rating" (with a capital "R") that would refer to a "HERS Rating" as mentioned above.

and recommend whether building energy disclosure requirements should be made mandatory for one or more sectors, and whether any such requirement should be met by all subject properties or whether it should be triggered by an event such as time of sale or lease.

Vermont Home Energy Score Working Group

In anticipation of the TETF and legislative activity related to building energy rating, scoring, labeling and disclosure, Efficiency Vermont began an informal working group in late 2012 to begin working towards development of a Vermont home energy score. As work on these issues progressed, and it became clear that Act 89 would include language requiring a working group to make recommendations for voluntary building energy disclosure, the group expanded to become the Vermont Home Energy Score Working Group. The Working Group has initially focused on the following topics:

1. Deciding on a score metric and label presentation; and
2. Selecting a scoring tool to consistently generate the score and label.

While most of the Vermont discussions to date have revolved around providing a score as part of energy performance disclosure by home sellers to potential buyers, the Working Group realized that there are also multiple other “use cases” in which a score or label would provide beneficial information to buyers, sellers, homeowners, renters, property owners, lenders, home inspectors, Realtors, appraisers, building code officials and energy or housing programs. For single-family homes, these use cases include:

- Time of sale or purchase of a home
- During an energy audit, to encourage energy upgrades
- After upgrades, to document improved energy performance

The Working Group includes representatives from all the major programs that are currently performing single-family energy audits and upgrades in Vermont: the Vermont Gas Retrofit Program, the Weatherization Assistance Program, the Efficiency Vermont Home Performance with ENERGY STAR program, and the NeighborWorks Heat Squad. The Working Group has initially focused on developing an energy score that could be delivered on a voluntary basis during energy audits and after upgrades, through the energy auditors and contractors working with these four programs. However, the Working Group is also striving to develop an energy scoring approach that can be used in a time-of-sale context, and that could potentially be delivered by other qualified assessors, such as home inspectors.

Proposed Energy Score and Label

The Working Group is currently seeking public comments on the proposed options for a Vermont energy scoring metric and label, described in this section. Evaluation of energy scoring tools is also underway, but is not the focus on this public comment process.

Proposed Scoring Metric

The Working Group evaluated a number of options for the scoring metric, including the US Department of Energy’s Home Energy Score (DOE HES) (1-10), HERS (0-100+), dollars per year, Btus (or millions of Btus, MMBtus) per year, kilowatt-hour (KWh) equivalent per year, Btus per square foot per year, and others.

The Working Group gave special consideration to the use of HERS ratings for existing homes in Vermont, but ultimately decided against using it as the Vermont energy metric. While HERS works well for newly constructed homes, it costs an estimated \$800-1000 to rate a home, and the Working Group believes

that it is a more detailed and expensive approach than what is needed to deliver energy scores to the majority of existing buildings, which is Vermont's long-term goal. Furthermore, most of Vermont's energy auditors and contractors are not certified as HERS raters, so Vermont currently lacks the infrastructure to deliver HERS ratings to the existing homes market.

The Working Group recommends that an asset-based estimate of total annual building energy use (including heating, hot water, and electricity) in MMBtu/year should be the metric used for the Vermont home energy score.¹¹ An MMBtu/year metric can be delivered via a streamlined in-home assessment by a qualified assessor at significantly lower cost than a HERS rating, and is an easy add-on for Vermont's existing base of energy auditors and contractors.

The asset-based approach would base the MMBtu/year estimate of building energy use on the features of the home – the home's insulation levels, observed air leakage, heating and cooling equipment, and hot water equipment – as documented by a qualified assessor. This contrasts with an operational approach, where the MMBtu/year would be based on the occupant's actual usage (fuel records from the prior year or several years). The Working Group recommends an asset-based approach primarily because actual energy usage can be heavily influenced by occupant behavior, such as thermostat settings and the use of wood stoves. In a time-of-sale context, it makes more sense to present an estimate that is based on typical occupancy and weather, rather than one that is specific to the previous occupants. It also reduces the burden of obtaining actual fuel records, which can be challenging in Vermont given that many homes rely on multiple unregulated fuel providers. Lastly, with an asset-based approach, even newly constructed homes can receive an MMBtu/year estimate of building energy use, allowing for direct comparison of new and existing homes.

MMBtus/year is the basis for the Oregon Energy Performance Score (EPS) and has also been used in energy scoring efforts in Massachusetts. It has the following advantages as an energy score:

- Corresponds to the home's projected total energy usage
- Varies based on the size of the home and energy used
- Accounts for equipment efficiency
- Does not change over time unless the home is improved, unlike metrics like dollars/year, which changes based on fuel costs, or normalized scores (1-10, A-F) that change as the building stock the home is being compared to changes
- Doesn't vary based on the fuel type (like dollars per year)
- Less potential for confusion with actual fuel bills and other information presented in many energy audits
- Can more easily complement HERS (a normalized score) by providing "estimated annual energy usage", and goes in the same direction as HERS (0 is best on both scales)
- Can be used to generate other meaningful reference data, should programs or auditors choose to present them, such as dollars per year or Btu per square foot per year.

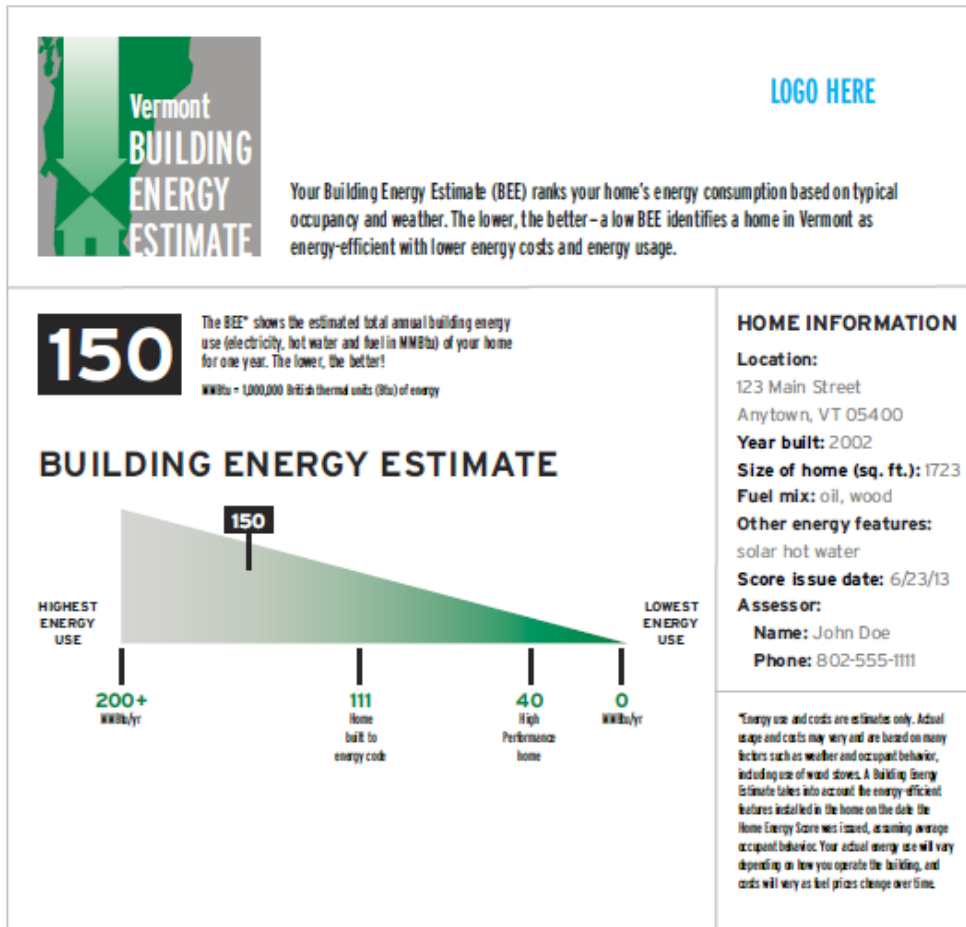
While MMBtus/year in isolation is not meaningful to most consumers, it can be presented on an energy label that provides context, for example by comparing the rated home with comparison homes, such as a home of similar size that is built to code and to high-performance standards.

¹¹ MMBtu = 1 million British Thermal Units (BTUs) of energy.

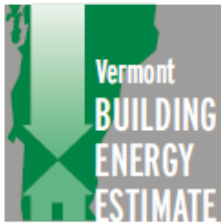
Proposed Label Options

The Working Group has developed three options for an energy label to present the MMBtu/year score to Vermont homeowners and home buyers. The goal of the energy labels is to present the energy scoring metric in context, to enable Vermonters to understand how the rated home’s energy performance compares to other homes. All three options include a “Building Energy Estimate” as the primary metric. The second option also includes “Energy Use Intensity” and the third option adds “Energy Costs by Fuel”.

Option #1



Option #2



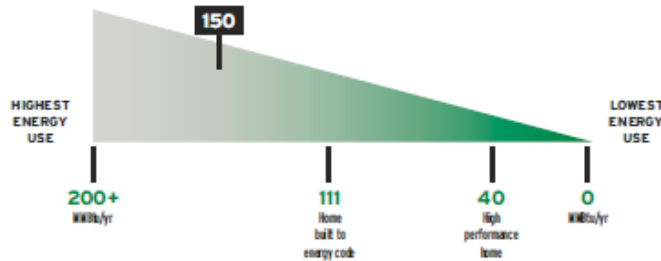
Your Building Energy Estimate (BEE) ranks your home's energy consumption based on typical occupancy and weather. The lower, the better – a low BEE identifies a home in Vermont as energy-efficient with lower energy costs and energy usage.

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BUILDING ENERGY ESTIMATE

The BEE* shows the estimated total annual building energy use (electricity, hot water and heating in MMBtu) of your home for one year. The lower, the better!
MMBtu = 1,000,000 British thermal units (Btu) of energy



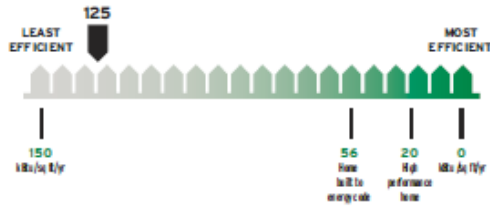
HOME INFORMATION

Location:
123 Main Street
Anytown, VT 05400
Year built: 2002
Size of home (sq. ft.): 1723
Fuel mix: oil, wood
Other energy features:
solar hot water
Score issue date: 6/23/13
Assessor:
Name: John Doe
Phone: 802-555-1111

125

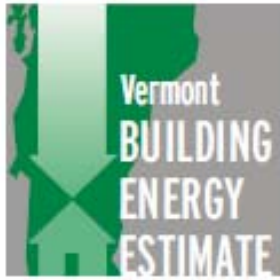
ENERGY USE INTENSITY

The Energy Use Intensity* shows the estimated annual energy use per square foot in kBtu/s for your home, so you can see how your home's efficiency compares to similarly sized homes. The lower the number, the more efficient your home.
kBtu = 1,000 British thermal units (Btu) of energy



*Energy use and costs are estimates only. Actual usage and costs may vary and are based on many factors such as weather and occupant behavior, including use of wood stoves. A Building Energy Estimate takes into account the energy-efficient features installed in the home on the date the Home Energy Score was issued, assuming average occupant behavior. Your actual energy use will vary depending on how you operate the building, and costs will vary as fuel prices change over time.

Option #3



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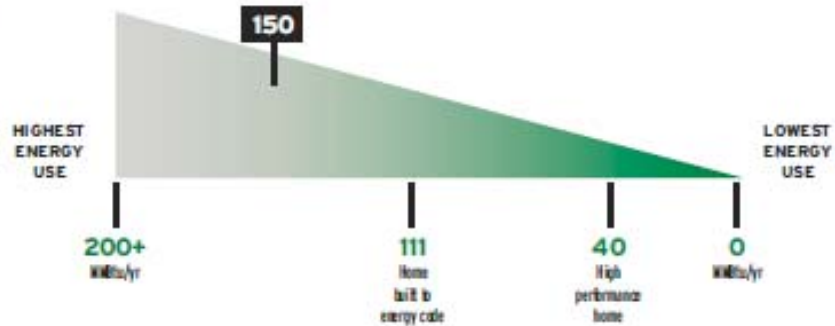
Your Building Energy Estimate (BEE) ranks your home's energy consumption based on typical occupancy and weather. The lower, the better—a low BEE identifies a home in Vermont as energy-efficient with lower energy costs and energy usage.

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MBtu = 1,000,000 British thermal units (Btu) of energy

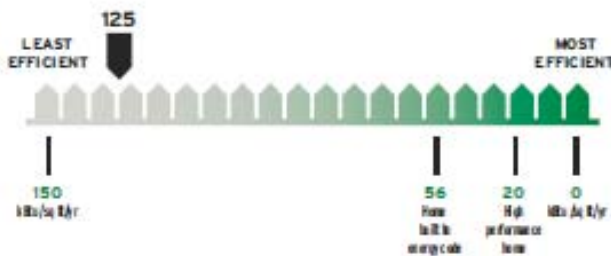


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HOME INFORMATION

Location:
123 Main Street
Anytown, VT 05400

Year built: 2002

Size of home (sq. ft.): 1723

Fuel mix: oil, wood

Other energy features:
solar hot water

Score issue date: 6/23/13

Assessor:
Name: John Doe
Phone: 802-555-1111

\$4,000

ENERGY COST BY FUEL

This shows the estimated annual energy cost* to operate the home, in total and by fuel, assuming typical occupancy and weather. Energy costs are based on 2013 values and may change over time.

Oil/Propane (gallon)	\$2,546
Electric (kWh)	\$1,115
Wood (cord)	\$332

*Energy use and costs are estimates only. Actual usage and costs may vary and are based on many factors such as weather and occupant behavior, including use of wood stoves. A Building Energy Estimate takes into account the energy-efficient features installed in the home on the date the Home Energy Score was issued, assuming average occupant behavior. Your actual energy use will vary depending on how you operate the building, and costs will vary as fuel prices change over time.

Request for Comment

The Working Group is currently seeking public comments on the proposed Vermont energy metric and label options. We welcome your feedback on all aspects of the proposal, including the following questions:

1. What is your intuitive reaction to the energy label designs? Are they easy to understand? Confusing? What do you like or dislike?
2. Do you prefer a simpler label showing only the Building Energy Estimate (BEE) in MMBtus/year (version #1)? Or do you prefer versions #2 and 3, which include the Energy Use Intensity (kBtus/square foot/year) and/or the annual energy cost, in total and by fuel?
3. What should the energy score(s) be called? Building Energy Estimate and Energy Use Intensity are possible names, but the Working Group is seeking input on what names would be most readily understood by consumers and in the context of a real estate transaction.
4. The Working Group is seeking to develop an energy metric and label that can complement HERS ratings, which many new homes in Vermont have received. There is currently a field for HERS in the Vermont Multiple Listing Service (MLS), which is used by home buyers, sellers, and the real estate industry. What are your comments on how the Vermont energy metric and label can best be used in combination with HERS ratings?
5. How should the energy score treat renewable energy systems, such as solar photovoltaics (PV) and solar hot water? Should the MMBtu/year usage be calculated net of on-site renewable energy production?
6. Who should be able to deliver the energy label? Should there be minimum training requirements or qualifications for assessors?
7. Would Vermont be at a disadvantage by not including any reference to the DOE Home Energy Score (1-10)? The 1-10 score lacks some of benefits of MMBtus/year as a meaningful metric that corresponds to actual usage and does not change over time. Moreover, it goes in the opposite direction to HERS (a high score is better/more efficient in the DOE HES, whereas in HERS, 0 is best/most efficient. Do the advantages of a national score outweigh these potential drawbacks?
8. This effort is focused on single-family homes. What are the considerations as Vermont seeks to develop an approach to building scores and labels that could eventually apply to multifamily and commercial buildings (which will be considered by a Working Group in 2014)?

Next Steps

In addition to receiving public comments on the proposed energy scoring metric and label options, the Working Group will be seeking input from a variety of stakeholder groups, including building performance contractors, Realtors, and other real estate industry stakeholders. The Working Group will revise the proposed energy scoring metric and label based on comments and feedbacks, then conduct customer testing in September and October to ensure that the energy score and label are easily understood by Vermont homeowners and home buyers. Final recommendations for the energy score, label, and scoring tool will be included in the report to the Vermont Legislature, due December 15, 2013.

Please provide your comments and suggestions by emailing them to kelly.launder@state.vt.us by **Wednesday, September 4, 2013**. We appreciate your feedback and look forward to reviewing your comments and suggestions.

Appendix 1 - Vermont Act 89

The section on “Voluntary Building Energy Disclosure” includes the following language:

(a) The Department of Public Service shall convene a working group to develop a consistent format and presentation for an energy rating that an owner of a building may use to disclose the energy performance of the building or a unit within the building to another person, including a potential purchaser or occupant, or that a prospective purchaser or occupant of a building or unit within a building may use to compare the energy performance of multiple buildings or units. The Working Group shall develop or select one or more tools that can be used to generate the energy rating.

(b) The Working Group under this section shall include representatives of each entity appointed under 30 V.S.A § 209(d)(2), the Home Weatherization Assistance Program under 33 V.S.A. § 2502, and such other entities as the Commissioner of Public Service may determine are appropriate.

(c) The Working Group under this section shall consider the recommendations in the report to the General Assembly of the Building Energy Disclosure Working Group (Dec. 2011).

(d) The Department of Public Service (the Department) shall report to the General Assembly in writing:

(1) on or before December 15, 2013, on the findings of the Working Group with regard to the development of a residential building energy disclosure tool; and

(2) on or before December 15, 2014, on the findings of the Working Group with regard to the development of a commercial building energy disclosure tool.

(e) On or before December 15, 2016, the Department shall further report to the General Assembly in writing on the development and use of disclosure tools under this section. This report shall:

(1) identify the tools selected or adopted by the Working Group under this subsection;

(2) describe the efforts made to disseminate the tools for public use;

(3) describe, to the extent feasible, the frequency of the tools' use, including their relative use by sector, such as residential or commercial, and the contexts in which the tools were used, such as property sale or lease;

(4) analyze and recommend whether building energy disclosure requirements should be made mandatory for one or more sectors and whether any such requirement should be met by all subject properties by a date certain or whether it should be triggered by an event such as time of sale or lease; and

(5) include the Department's proposed legislation to implement its recommendation under subdivision (4) of this subsection.

Appendix 2 - Resources

1. “Valuing Building Energy Efficiency through Disclosure and Upgrade Policies”, Northeast Energy Efficiency Partnerships (NEEP), original 2009 report and 2013 supplement:
<http://www.neep.org/public-policy/energy-efficient-buildings/building-energy-rating/index>
2. DOE’s Home Energy Score Tool: http://www1.eere.energy.gov/buildings/residential/hes_index.html
3. “Residential Energy Use Disclosure: A Review of Existing Policies”, ACEEE, April 2013:
<http://aceee.org/topics/building-rating-and-disclosure>
4. “Residential Energy Disclosure Policy Options – Strategies, Tools and Recommendations” for NRDC by EFG, July 2012: <http://www.energyfuturesgroup.com/publications-and-presentations/>
5. Austin (Texas) Energy Conservation Audit and Disclosure Ordinance:
<http://www.austinenergy.com/about%20us/environmental%20initiatives/ordinance/index.htm>
6. Oregon Energy Trust Scoring and Labeling: <http://energytrust.org/residential/new-home-solutions/eps.aspx>