Vermont Energy Labeling Working Group:

Development of a Voluntary Residential Building Energy Label

Report to the Vermont Legislature

As Called for in Act 89 of 2013:

Sec. 12. DISCLOSURE TOOL WORKING GROUP; REPORTS

December 13, 2013

Prepared by

ENERGY FUTURES GROUP

Acknowledgements

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This report was prepared primarily by Richard Faesy with significant contributions from Emily Levin and Leslie Badger supported by a good deal of review and editing by all members of the Working Group.

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The Working Group would like to acknowledge the leadership provided by chair, Emily Levin, who was able to plan and move this process forward efficiently and with grace on a tight timeframe despite multiple stakeholder interests, competing time commitments, overlapping projects and the impending birth of Leif Nathaniel Levin Harman on October 22, 2013.

Figure . Leif Nathaniel Levin Harman

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Executive Summary

Act 89 of 2013[1] called for the creation of a "Disclosure Tool 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" and to develop or select "one or more tools that can be used to generate the energy rating." This report presents the results of more than a year's worth of work to develop a voluntary residential building energy rating and label.

Background

In anticipation of the Legislature making this request, Efficiency Vermont formed a "Building Energy Label Working Group" in the fall of 2012. Membership grew over the course of 2013 to ultimately include the following Vermont organizations with an interest in residential building energy efficiency:

- Building Performance Professionals Association (BPPA)
- Efficiency Vermont (EVT)
- Energy Futures Group (EFG)
- NeighborWorks of Western Vermont (NWWVT)
- Office of Economic Opportunity/Weatherization Assistance Program (OEO/WAP)
- Public Service Department (PSD)
- Sustainable Energy Resources Group (SERG)
- Vermont Green Home Alliance (VGHA)
- Vermont Gas Systems (VGS)

The Working Group met regularly throughout the year and performed a comprehensive assessment and analysis of relevant issues related to labeling buildings for their energy performance. Multiple stakeholders--including Realtors, the regional Multiple Listing Service (MLS) organization[2], home performance contractors, the U.S. Department of Energy, a few states and others--were engaged in reviews of proposed scoring metrics and label designs. Draft building energy labels went out for public comment in August 2013, followed by two rounds of Vermont consumer testing. Literally hundreds of individuals provided review, feedback and recommendations throughout the development process.

The software used to generate a score was also a major focus throughout the development process. Comprehensive testing of multiple energy analysis tools on actual Vermont homes and a request for proposal (RFP) process to select Efficiency Vermont's statewide energy auditing software package were used to narrow down tool options. At the same time, negotiations with the U.S. Department of Energy on the use of their energy scoring software opened up options that could enable Vermont to use their free and nationally recognized software engine as a plug-in to Efficiency Vermont's statewide audit software (along with building analysis software used by the Weatherization Assistance Programs, Vermont Gas and NeighborWorks of Western Vermont) as a way to uniformly and consistently generate energy labels on homes throughout Vermont for all residential customers.

A Multi-Pronged Approach

As a result of all of these discussions and interactions, the Working Group came to the conclusion that just providing a single building energy label was not sufficient if the goal of this effort is to make energy

[1] See Appendix for full Act 89 text.

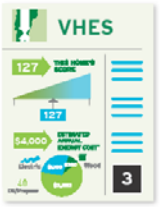
[2] Northern New England Real Estate Network, or NNEREN of Concord, New Hampshire

truly visible in housing transactions. In order to provide transparent and valuable energy information to homeowners, buyers, renters and sellers of homes, the Working Group determined that a multi-pronged approach would be necessary, including the following four approaches:

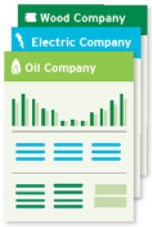
1. Develop and make available a voluntary energy score and label that can be displayed within the MLS;
2. Describe the energy features of the home accurately in the MLS system;
3. Gather and provide previous utility bills as part of home rental, sales and purchases; and
4. Recognize energy efficiency program achievement with certifications that conform to national guidelines so that they may be included in the MLS, used with existing appraisal tools, and are meaningful to mortgage underwriters.

Addressing all of these approaches can provide a comprehensive means of conveying the complete energy picture of a home.

A label that simply and accurately conveys the energy performance of a home in an easy-to-understand format that can be provided as part of a sale or rental transaction was the real focus of these efforts. The Working Group discussed and analyzed multiple scoring metrics and different information that should--and should not--be included on a label. Among other issues, they weighed whether the score should be asset- or operational-based, presented as site- or source-energy, in Btus or kilowatt-hours, and whether or not it should consider location efficiency[3] or renewable energy. They also examined numerous scoring metric options including 1-10, 0-100+, and A-F. They asked whether a better score should be higher on the scale, or lower, and whether the scale should read from left to right or the opposite. They looked at what supplemental data should accompany the score, including energy costs, energy intensity, carbon impacts, and improvement recommendations.



The second and third approaches will require working collaboratively with the Vermont Realtors and regional MLS organization to review and update their systems to ensure that the appropriate information is gathered and conveyed accurately. Both groups have indicated they are more than willing to cooperate.



Currently, there is no formal certificate or other means of recognition for homeowners who complete a comprehensive home energy retrofit project that would allow them to highlight effective investment (or a certain savings level) when it comes time to sell their home. If energy efficiency is going to be recognized in the marketplace and start being valued, those who invest in energy-savings improvements need to be able to make visible that investment and the results. The program implementers have committed to developing some sort of certification for participating homes in 2014.

[3] Towards the end of the process, some State agencies suggested adding transportation metrics, but the Working Group had already completed most of its work and decided to focus only on buildings at this time.

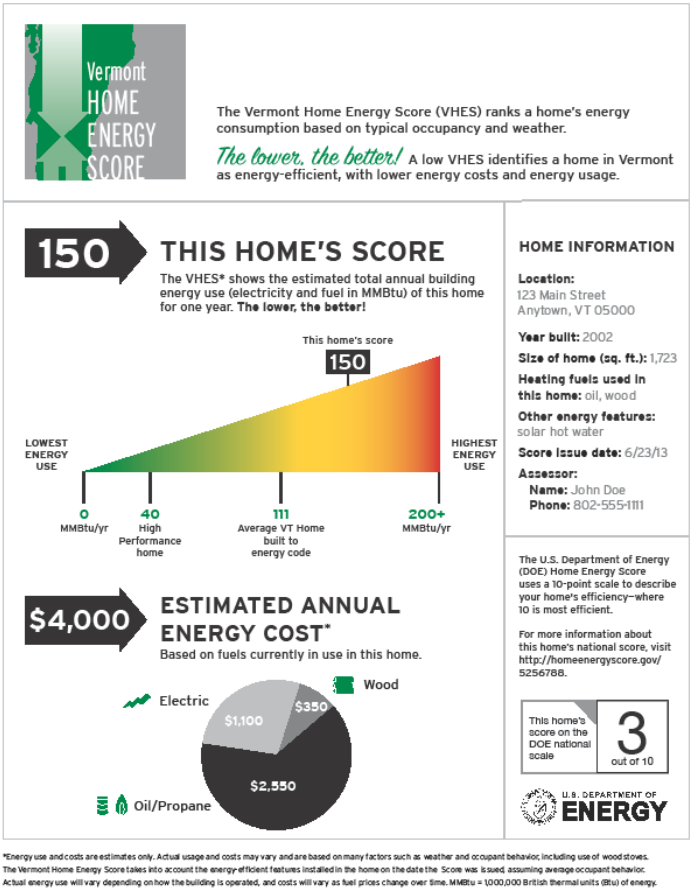
The Building Energy Label

In the end, the Working Group decided to present four primary pieces of information as part of the Vermont Home Energy Score label, which include:

1. An asset[4]- and site-energy[5]-based MMBtu[6]/year total projected energy consumption[7] score;
2. Projected energy costs in total and by fuel type[8];
3. The U.S. Department of Energy's Home Energy Score; and
4. A general description of the home.

After examining a number of options, the Working Group determined that the most transparent and clearest metric to use as the basis for scoring homes in Vermont would be millions of British Thermal Units, or MMBtu per year. This metric captures all of the energy uses in a home presented using a common denominator for all energy types. Presenting MMBtu/year as "asset-based" allows for consistent comparisons regardless of who had previously lived in the house and how they had operated it. The label will provide meaningful comparisons (e.g., compared to the energy code and a new high performance home) to provide some consumer context. Since this metric is not familiar to most consumers, some education will be required to inform homeowners, buyers, renters and sellers about the metric. However, the graphics developed to present the score have been designed so that the metric, regardless of what it stands for (MMBtu/year), is intuitive and easy to understand at a glance whether it is "good" or "bad". Consumer testing showed that most people are indeed able to understand the label, and the score itself, without any additional explanation.

Figure . The Proposed Draft Vermont Home Energy Score Label



[4] "Asset-based" includes the energy features found in the home, average occupancy based on number of bedrooms, typical temperature-setting behavior and average weather conditions.

[5] Based on energy at the home, instead of source-based which would measure energy from the generation station or well-head.

[6] MMBtu signifies millions of British Thermal Units, a standardized measurement of energy usage across type (electricity, oil, etc.). For scale, a typical Vermont household uses about 127 MMBtus per year.

[7] Total projected energy use includes heating, cooling, hot water, lights, appliances and any on-site renewables.

[8] Based on the same asset characteristics and typical operating conditions, using a published state average price, such as from the Vermont Fuel Report.

All consumers are familiar with the metric of dollars per year. The label will present the annual cost of each fuel used in the home and the total amount expected to be paid. Again, for useful comparison purposes, the projected energy costs will be asset-based and derived from the same calculations that drive the primary MMBtu/year metric.

The Working Group has engaged in an extended dialogue with the U.S. Department of Energy (DOE) regarding their Home Energy Score Tool™ over the past year and observed good progress in its accuracy, features and usability. Including a national score on a local label has the potential to cause some confusion, but the Working Group concluded that the benefits of linking to the national program in order to position Vermont for any future federal tax credits, mortgage programs or other benefits would be worth it. Consumer testing validated the Working Group's belief that including the DOE logo and score lends credibility to the label. This relationship will also provide access to a free scoring software tool, on-going national lab support, and a training and testing process for Vermont assessors.

Implementation

Planning for--and then implementing--the elements outlined in this report will require an on-going and concerted effort. Some of these tasks include finalizing the label design and supporting materials; integrating software tools; coordinating MLS system and Realtor enhancements; establishing a central data repository; development of a quality assurance system for assessors; training, testing and certifying assessors; developing reporting functions; and trade ally and consumer education and marketing. Efficiency Vermont has offered to administer and coordinate these efforts as part its ongoing market transformation activities.

Next Steps

It is the Working Group's determination that no additional legislation is needed; the implementation steps laid out here can be completed without legislative action. As a result of these efforts, the Working Group recommends the following:

1. *Support voluntary approaches*. The Working Group recommends a voluntary approach in order to test how energy labeling and better energy information can add value for homeowners, buyers, sellers and renters.
2. *Encourage partnerships*. The Working Group itself along with the process of developing this report resulted in much good work. This coordination and relationship-building between the Vermont energy community, Realtors, the MLS, the Building Performance contractors, housing and environmental groups should be encouraged to continue in order to arrive at the best possible consensus-based outcomes impacting Vermont's energy landscape.
3. *Support the proposed residential labeling approach*. The multi-pronged voluntary labeling approach should include MLS, appraiser, lender and Realtor coordination and system enhancements, development of a program completion certificate, and development and implementation of the proposed home energy label.
4. *Adopt the proposed governance structure*. The PSD should be named as the authority over a governing board of stakeholders to guide the on-going development and implementation of energy label for Vermont buildings.
5. *Support the administration and statewide coordination.* Efficiency Vermont has stepped up to help lead and support this effort in 2013 and the Working Group believes it is the logical entity to continue playing this role. Secure available resources to aid in this effort for the future.
6. *Develop a multifamily and commercial and industrial labeling tool in 2014.* Coordinate with the existing Working Group but re-formulate its membership to invite stakeholders with an interest

and expertise in multifamily and commercial and industrial buildings to begin addressing these additional market sectors. Develop the required report to the Legislature by December 15, 2014.

7. *Create a locational efficiency working group.* The Locational Efficiency Working Group should consider how locational efficiency could be measured and incorporated into the residential and commercial building ratings and/or labels. The DPS in coordination with the Agency of Commerce & Community Development (ACCD), Agency of Natural Resources (ANR), Vermont Energy Investment Corp. (VEIC), and Vermont Agency of Transportation (VTrans), along with other interested stakeholders will complete a report with recommendations on how locational efficiency information could be incorporated by January, 2015.
8. *Plan and evaluate for the December 2016 report on mandatory approaches.* As called for in Act 89, the PSD and others should implement these labeling approaches and then "…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" in preparation for the report to the Legislature on December 15, 2016.

Background & Context

Why Label Buildings?

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 building energy performance. Scoring and labeling quantifies investments made in a building's energy efficiency and could 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.[9] 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.[10]

Over the last five years or so, Vermont has become 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 four recent statewide organized attempts to move building scoring, labeling and disclosure forward. These initiatives are discussed in more detail below.

Vermont Energy Labeling Initiatives

The four recent statewide initiatives to advance building scoring, labeling and disclosure have included the "Building Energy Disclosure Working Group" in 2011, the "Comprehensive Energy Plan" in 2011, the "Thermal Efficiency Task Force" in 2012 and most recently, Act 89 which came out of the 2013 Legislative session.

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 was directed to consider the following:

(1) Whether there should be requirements to disclose building energy performance in a standardized manner that allows comparison and assessment of energy use among buildings.

[9] See http://www.resnet.us/hers-index.

[10] 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.

(2) Requirements for disclosure of building energy performance that have been adopted in other jurisdictions and model codes or statutes that have been published relating to such disclosure.
(3) If requirements to disclose building energy performance were to be adopted:
- To whom should the disclosure be provided?
- When should the disclosure be required?
- Which properties, if any, should be exempt?
- Should there be a phase-in of requirements?
- What type of building energy ratings should be employed?
- Should the state subsidize the costs of energy audits, and what sources of funding would be used to support such a subsidy?

The BEDWG represented a broad cross-section of the Vermont housing industry, worked very productively together to gain consensus, generated a good deal of background other supporting materials, and delivered a comprehensive report to the Legislature in December 2011[11].

The BEDWG considered a two-stage process for disclosing energy performance at time-of-sale. The first stage would involve the seller completing a free online tool to disclose energy usage prior to listing the home for sale. The second stage would be an in-home assessment to be completed for the buyer by a qualified energy assessor prior to closing; this professional assessment was estimated to cost in the range of $250. The BEDWG arrived at a near-consensus[12] recommendation that stage one--disclosing energy use via a free online tool--should become a requirement at time-of-sale, and proposed legislation to this effect. The BEDWG did not recommend that stage two become mandatory. While the proposed legislation was considered during the 2012 legislative session, it lacked support from one key member of the group, was opposed by Realtors and lenders, and ultimately was not adopted.

Comprehensive Energy Plan

Over the course of 2011, the PSD finished compiling the Comprehensive Energy Plan (CEP).[13] 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[14] 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 recommendations[15], 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.[16] The report was very comprehensive and made some specific recommendations regarding scoring and labeling, including the following:

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[11] http://publicservice.vermont.gov/topics/energy_efficiency/bedwg
[12] All but one member of the Working Group supported this recommendation.
[13] http://publicservice.vermont.gov/publications/energy_plan/2011_plan
14 CEP, section 7.2.1.4 Building Energy Disclosure, page 174.
[15] CEP, section 7.2.1.1 A Whole-Building Approach, page 168.
[16] http://publicservice.vermont.gov/topics/energy_efficiency/tetf

> *"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."[17]

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.[18]

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"[19] 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 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.

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

[18] http://www.leg.state.vt.us/docs/2014/Acts/ACT089.pdf

[19] 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.

National Context

Department of Energy Home Energy Score Tool™

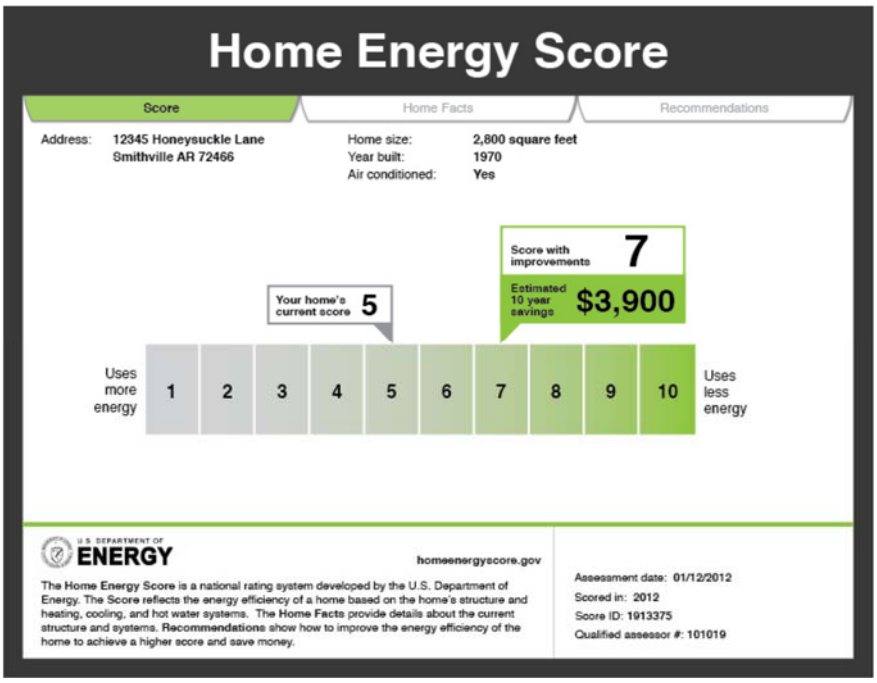
At the same time Vermont has been thinking about building labeling, so has the U.S. Department of Energy (DOE). Lawrence Berkeley National Lab (Berkeley Lab), in collaboration with DOE, developed the Home Energy Score (HEScore) and rolled it out as a pilot program 2010. Since the initial rollout, DOE and Berkeley Lab have made many improvements to the scoring tool HEScore and are actively promoting partnerships throughout the U.S. As of the writing of this report, DOE has partnered with nearly 30 states, local governments, utilities and non-profit organizations to deliver Home Energy Scores. Throughout their development period, DOE has been in active discussions with Working Group members, and information has flowed freely between Vermont and the DOE to the benefit of both. This has transpired into a negotiation that is likely leading to the Working Group engaging with the DOE and Berkeley Lab to adopt HEScore as the calculation engine to generate Vermont's energy score and label.

In the process of creating the scoring tool, Berkeley Lab and DOE have developed a number of additional tools and approaches from which Vermont will benefit. HEScore is accessed through an Application Programming Interface (API). The HEScore API allows for data collected by other software tools to generate Home Energy Scores. Rather than each assessor having to enter data into a common tool, the HEScore API accepts data collected from other tools, performs the scoring calculations, and then passes back the resulting score and supplemental information (e.g. energy use metrics, costs, savings, etc.) to the originating software. The supplemental information may be used by the originating software to provide customized reports. This will be extremely valuable in a state like Vermont where there are at least four different energy auditing software tools currently in use[20]. A single label-generation tool, like HEScore, could be used to consistently generate scores and labels regardless of which energy audit tool is used as a front end. DOE has also developed assessor training and testing that could be applicable to Vermont.

The Working Group considered using the HEScore 1-10 simplified score as Vermont's primary metric. However, based on Working Group discussions and feedback from consumer testing and public comments, it became clear that this metric was not granular enough for Vermont's needs. In the end, the value of a national score and the credibility of the DOE were deemed important enough to include the 1-10 score on a Vermont label, but only in a secondary position to a more granular MMBtu/year primary score. Current discussions with DOE may result in the primary MMBtu/year score and the $/year metrics on the first page of the label, and the DOE score on a second page. Details have yet to be completely worked out as of this date of this report.

[20] Efficiency Vermont will use Optimizer audit software; Vermont Gas uses an Excel spreadsheet, Q-Loss; Weatherization Assistance Program uses Hancock; and NeighborWorks of Western Vermont uses CakeSystems.

Figure . U.S. Department of Energy's Home Energy Score Report



National Activities Related to Data Standards

At the same time the Working Group has been developing Vermont's building energy label, a number of other national activities have been taking place that will help make building energy more transparent and help with valuation in the real estate marketplace. These other activities and support documents include the Building Performance Institute's (BPI) data and certification standards, the Green MLS Implementation Guide and the Appraisal Institute's Residential Green and Energy Efficient Addendum.

BPI Data Transfer & Certificate Standards

The Building Performance Institute (BPI) is best known for setting the national standards for Home Performance contractors, but has recently also developed national standards for data transfer and for certificates of completion for home performance jobs. These standards could be adopted by efficiency programs such as those operated by Efficiency Vermont, VGS, and Vermont Weatherization Assistance Programs (WAPs) to ensure that each home energy audit and improvement project results in a consistent set of data about energy features and performance that can be readily shared with the MLS system – on a voluntary basis – if the home is listed for sale.

The Home Performance XML ("HPXML") data transfer standard [21]provides requirements for an extensible mark-up language (XML) standard data transfer protocol that can be used to transfer home performance-related data between any party involved in a home performance program, including contractors, program administrators, utilities, federal agencies, MLS, the Appraisal Institute's Residential Green and Energy Efficient Addendum, etc. The Standard for Home Performance-Related Data Collection is designed to facilitate the exchange of information and data among all actors in the home performance industry by providing a standard vocabulary for describing terms related to buildings,

[21] BPI-2100-S-2013: Standard for Home Performance-Related Data Transfer and BPI-2200-S-2013: Standard for Home Performance-Related Data Collection. See http://www.bpi.org/news_expansion.aspx?selectedID=1476

energy consumption, and energy conservation measures. Each of the data elements can be transferred via HPXML.

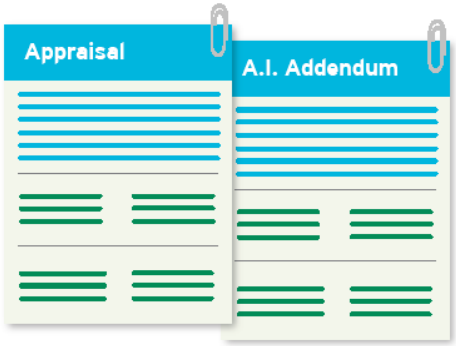
BPI's Residential Energy Efficiency Upgrade Certificate Standard[22] 2101, was created for the real estate sales process, to promote accurate valuation of energy efficiency by standardizing the way energy efficiency improvements are represented. BPI-2101 identifies a standard set of data elements for certificates that document the completion of a whole-house energy upgrade (HEU) or individual energy conservation measures (ECMs) in existing homes. A certificate that complies with the requirements of this standard can be issued to homeowners by programs or entities implementing third-party quality assurance programs for inclusion in Multiple Listing Service (MLS) databases during the home re-sale process.

Green MLS Implementation

The Green MLS Implementation Guide v 1.0[23] was released in mid-2013 for public comment and is expected to be finalized in late 2013. The Guide was created by the National Association of Realtors Green REsource Council in cooperation with the Real Estate Standards Organization and the Real Estate Transaction Standard Data Dictionary to provide a blueprint to implement Green MLS fields which are compliance with the Real Estate Transactions Standards (RETS). Essentially, the Guide provide a library of terms related to green and energy efficient building in an attempt to standardize language in Multiple Listing Service (MLS) systems throughout the country. In this way, a home's features and certifications can be consistently described by any MLS system that adopts this standards set of terms.

Appraisal Institute Green and Energy Efficient Addendum

The Appraisal Institute's Residential Green and Energy Efficient Addendum[24] allows appraisers to characterize and quantify green and energy efficient features in a home in order to consider them in the appraisal process. This is the first form of its kind developed for appraisers by appraisers and is an important step towards capturing the value of energy efficiency in the appraisal process. This addendum could also be pre-filled by an energy auditor as part of a home energy audit or improvement project.



[22] BPI-2101-S-2013: Standard Requirements for a Certificate of Completion for Residential Energy Efficiency Upgrades. http://www.bpi.org/tools_downloads.aspx?selectedTypeID=1&selectedID=143
[23] http://www.cntenergy.org/media/GreenMLS_ImplementationGuide_PublicComment.pdf
[24] http://www.appraisalinstitute.org/education/downloads/ai-reports/AI-82004-res-green-energy-eff-addendum.pdf

Working Group

In October 2012, Efficiency Vermont convened a small internal committee[25] to begin the process of developing a home energy score and label to deliver through its Home Performance with ENERGY STAR program, which encourages home energy audits and improvements through a network of certified contractors. Those efforts have since grown into all of the areas covered in this report.

Membership

As work on labeling issues progressed, the committee realized that Vermont Gas, the Weatherization Assistance Program (WAP), and NeighborWorks of Western Vermont were also interested in delivering a home energy score and label through their energy audit and retrofit programs, and it made sense to coordinate the efforts and develop a consistent approach to single-family homes in Vermont. Subsequently, Act 89 passed in mid-2013 calling for the formation of a formal Working Group to recommend a home energy disclosure tool. The regular meetings expanded and ultimately included representation from many of the interested residential parties in Vermont. Working Group members included individuals from the following organizations:

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

Activities

The Working Group met approximately monthly for more than a year from the fall of 2012 through November 2013. Given the Legislature's directive in Act 89, it is likely at least some of the members and most of the organizations represented in the current Working Group will continue to meet to develop multifamily and non-residential building solutions to labeling these other classes of buildings in order to provide a subsequent report on December 15, 2014.

In addition to meeting regularly, members of the Working Group worked between meetings in order to move issues forward and make decisions at each of the meetings. Members reviewed and analyzed rating tools, communicated regularly to other states also working on building energy labeling (primarily Massachusetts and Oregon) and met with groups that have an interest in--and may be impacted by--the results of this work. Working Group members reported progress to the Building Performance Professionals Association[26], Vermont Fuel Dealers Association, Building for Social Responsibility[27], housing industry members that participate in the Vermont Green Home Alliance[28] and others.

[25] Led by Emily Levin, but included Leslie Badger, Jake Marin, Richard Faesy, and periodically pulled in other Efficiency Vermont staff to support certain research

[26] http://www.bppa-vt.org/

[27] http://www.bsr-vt.org/

[28] http://www.vermontgreenhomealliance.org/

Working Group members also met with the Vermont Association of Realtors, who helped to set up a focus group of Realtors to review and discuss the labeling plans. Constructive feedback provided by the Realtors was most helpful in guiding the Working Group's direction and helping formulate the multi-pronged information approach embedded in this report's recommendations.

Working Group members also took a trip to Concord, New Hampshire to meet with the regional headquarters of the MLS system for Vermont, New Hampshire, parts of Maine and Massachusetts. The Northern New England Real Estate Network (NNEREN)[29] were also very generous with their time, suggestions, feedback and expertise. These discussions were invaluable in understanding the opportunities that the MLS system can provide in serving as a repository of building information and conveying all of the energy information on properties through a single database. NNEREN staff continue to remain engaged in Vermont discussions and have made an open offer to assist the Working Group in the implementation of the energy label in the future.

Work Focus

The Working Group's initial focus was to develop a system to voluntarily score and label single-family existing homes that complete energy audits and upgrades through efficiency programs such as the VGS Retrofit Program, Weatherization Assistance Program, and Efficiency Vermont's Home Performance with ENERGY STAR program. These programs already involve comprehensive in-home energy assessments completed by professional energy auditors, so adding a home energy score and label is a natural extension. To this end, the Working Group focused on two areas: software tool and scoring metrics. On tools, the Working group ran a number of different modeling software tools[30] to gain a better handle on usability and accuracy. For scoring metrics, the Working Group spent a good deal of time examining the pros and cons of different approaches to presenting a score on a label. More detail on these deliberations follows and is addressed below.

In the course of addressing these two initial areas, a number of contextual issues arose. The Working Group also engaged with representatives from the real estate industry to develop recommendations for including, on a voluntary basis, information on home energy features and performance in process of buying, selling, and appraising existing homes in Vermont. The balance of this report addresses most of those issues in more depth and presents a case for why the Working Group ended up with its suite of recommendations and next steps.

[29] http://www.nneren.com/

[30] REM/Rate, Energy Performance Score (EPS; subsequently renamed "CakeSystems"), DOE's Home Energy Score Tool and EnergySavvy

Use Cases

While many of the previous Vermont efforts have revolved around disclosing energy information at time of sale, the Working Group realized that there are also multiple other "use cases" in which a label along with additional information could provide beneficial information to buyers, sellers, homeowners, renters, property owners, lenders, home inspectors, Realtors, appraisers, building code officials and energy or housing programs. Some of these use cases and the potential clients who would have an interest in energy information are listed in the following table:

Table . Energy Label Use Cases

Use Case	Client Interested in Energy Information
1. Time of Sale	Seller, Home Inspector, Realtor, Appraiser, Lender
2. Time of Purchase – Information	Buyer, Lender, Appraiser
3. Time of Purchase – Upgrade	Buyer, Lender, Appraiser
4. Existing Home - Pre-Upgrade	Homeowner
5. Existing Home - Post-Upgrade	Homeowner or Program
6. Post-Weatherization Assistance Program (WAP)	Homeowner or Program
7. Pre-Rental	Renter
8. Rental Promotion of Efficient Property	Property Owner
9. Foreclosure – Information	Lender or Buyer
10. Foreclosure – Upgrade	Lender or Buyer
11. Energy Code Compliance	Builder, Homebuyer or Code Official

Based on the multitude of use cases, it became clear to the Working Group that a label and the tool that generates it need to be adaptable. For instance, if a program is going to leave behind a label after upgrade work is complete, it makes no sense to generate energy improvement recommendations. However, if a homeowner is interested in assessing upgrade options, the tool needs the ability to provide a label that presents scores for different packages of improvements. Different use cases will dictate different needs, and the scoring tool and label should correspond with those needs.

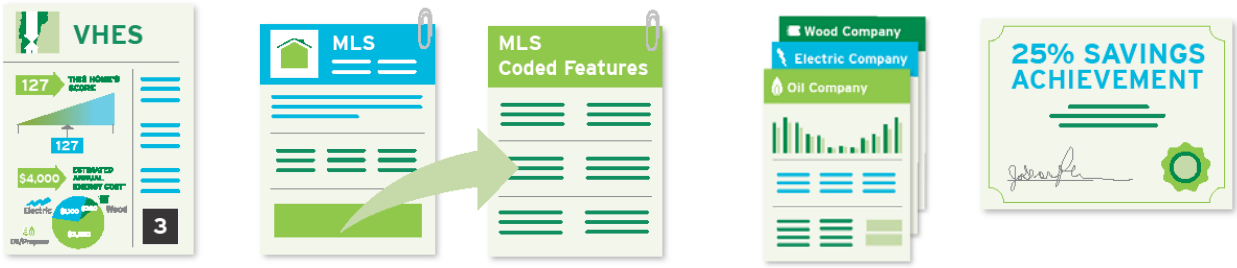
A Multi-Pronged Approach

Recognizing the variety of use-cases (discussed above) caused the Working Group to appreciate that an energy label alone may not be the best or only solution to providing transparency in housing transactions. Discussions with the Realtors and others opened up the realization that there may already be some opportunities and vehicles for conveying energy information that could be enhanced and supported by label, and that a label alone may not always be the only or best way to provide information.

The Working Group recognized that only providing a single building energy label was not enough if the goal of this effort is to make energy truly visible in housing transactions. In order to provide transparent and accurate energy information to buyers, renters and sellers of homes, the Working Group determined that a multi-pronged approach would be necessary, including the following four approaches:

1. Develop and make available a voluntary energy score and label;
2. Describe the energy features of the home accurately in the MLS system;
3. Gather and provide previous utility bills as part of home sales and purchases; and
4. Recognize energy efficiency program achievement with certifications.

The Working Group determined that the energy label, MLS energy features description and an achievement certification would primarily apply to improved homes that participated in a Vermont program. Additionally, providing utility bills could apply to all homes, improved or in need of improvement. This multi-pronged approach will go a long way towards providing needed information in home transactions.



Information from each of these sources can be mixed and matched based on the use-case in combinations designed to yield the most effective results. How these approaches might be combined and utilized in some typical use-cases is discussed in more detail below. Detail on each of four approaches follows in subsequent report sections.

Energy Audit

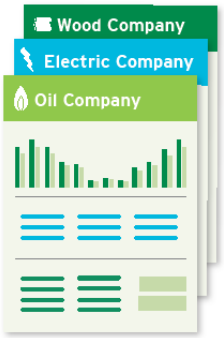
As part of a Vermont existing homes retrofit program[31], an energy audit is provided as a first step in an attempt to encourage the homeowner to make upgrades. A home energy score and label could be used to show where the home rates currently and what the score could be with improvements. The audit would present the recommendations supported by the costs and savings, while a label could complement the energy audit and reinforce the recommendations by demonstrating how the score would change by implementing the recommended measures.

Post-Improvement

After retrofits are installed in a home, a great way to demonstrate to the homeowner the impact of the work that was done would be to leave behind an energy label. At the same time, programs could also start providing a certificate of completion, plaque or some other means of demonstrating achievement. A list of the features that were improved could also be provided. When it comes time to sell that home, the homeowner would have multiple materials to demonstrate the improvements made to their home in hopes of capturing a higher sales price based on the documentation of the work done. The label and certificate could be presented to interested buyers and both attached to the MLS listing. And the improved building features could be picked up by the selling Realtor and noted in the "coded features" of the MLS system in order to accurately describe the energy features of the home.

Time of Sale

Sellers of homes that have had energy improvements could voluntarily feature those investments in their home by promoting the energy score and label, a list of the energy features and improvements (that should also be included in the MLS listing) and any recognition certifications achieved. Assembling the past year's energy bills in anticipation of buyer questions can provide additional substantiation of a home's performance.

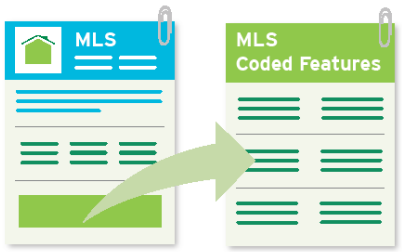


For all home sellers, regardless of whether or not improvements have been made to a home, and leveraging what appears to be current common practice, gathering and making available the previous year's total energy bills could go a long way towards making energy use and costs more transparent. This in turn will encourage upgrades to inefficient houses. The Realtors currently have two forms a they make available to home sellers: the "Sellers Property Information Report" ("SPIR") and "Property Utilities and Services" form. Providing guidance to ensure accuracy and consistency in compiling and presenting this data as part of the MLS system will help energy costs move more into the forefront of buyer's minds. Another approach that some jurisdictions are pursuing is to automate the transfer of utility data[32] to make compiling this information easier. The electric utilities and Vermont Gas are in the best position to streamline and simplify the transfer of utility data. Collecting information on oil, propane, kerosene and wood usage is more challenging.

[31] These could include Efficiency Vermont's Home Performance with ENERGY STAR, Vermont Gas Systems' Retrofit Program, the Low-Income Weatherization Assistance Program and NeighborWorks of Western Vermont's Heat Squad.

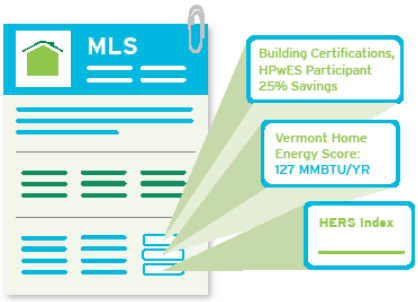
[32] "Green Button" is a national approach to enable more seamless data transfer of someone's historical energy bill information

Describing Home Energy Features in the MLS



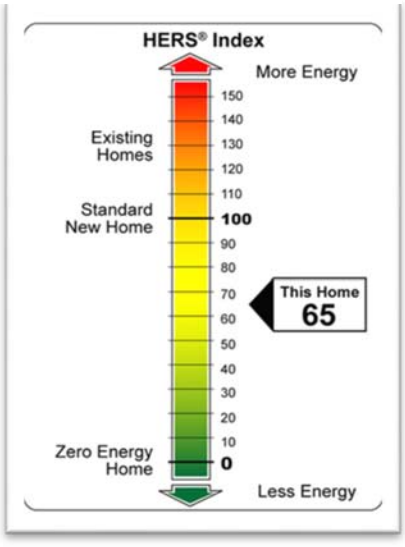
The MLS system currently has data fields that describe most all aspects of a house, including some of the energy features. These include fields such as "heat fuel", "heating/cooling" type, "water heater" type, and "construction" with options to choose features such as "insulated concrete forms" or "green features". However, there are opportunities in the features section of the MLS to better describe a home's energy characteristics. For instance, there is no indication whether a home is fully insulated or not, the levels of insulation present, or the home's air tightness. The MLS has open fields that allow listing agents to add information about a home's positive characteristics in their own words, which would be an opportunity to describe upgraded energy features. However, if a home was lacking in some area, like having low- or un-insulated walls, ceiling or basement, that information would probably never be conveyed to a buyer.

In addition to describing specific features of homes, the MLS also provides an opportunity to list any certifications a home may have achieved. Members of the Vermont Green Homes Alliance have worked hard over the past few years in collaboration with NNEREN to add a new coded feature called "Building Certifications". This effort came mostly from the interest of builders with a new construction focus. As a result, the certifications in the coded features list include pretty much exclusively new construction programs, such as "ENERGY STAR Cert. Home", "LEED for Homes", "Passive House" and "VT Builds Greener". However, the feature "HERS Rated" could apply to a new or existing home, and NNEREN has expressed a willingness to work with the Working Group to add any certifications relevant to existing homes (e.g., "Home Performance with ENERGY STAR" or "Weatherization Assistance Program"). One of the recommended initiatives described in more detail below is for the Working Group to create some certifications for existing homes in 2014. The concept would be that these existing homes certifications could be listed in this section of the MLS along with the new construction certifications.



The Vermont Green Homes Alliance is also currently working with NNEREN to display a graphic image of a HERS rating (see *Figure . HERS Index*) in the MLS for homes that have been rated. NNEREN is open to considering an existing homes equivalent score and possible graphic, as well. However, they would prefer some coordination among others in their service territory and have asked the Working Group to reach out to the energy community in New Hampshire to discuss opportunities for a consistent building energy label and display across all of NNEREN's territory.

Figure . HERS Index



Providing Utility Bill Data

Working Group members were informed in a focus group meeting of Realtors[33] sponsored by the Vermont Association of Realtors to address energy labeling that Vermonters already regularly ask for the prior occupants' energy bills when shopping for homes. Realtors anticipate these requests and currently gather sellers' heating and electric bills to make them available. In fact, there are two Realtor forms specifically for this purpose that most Realtors use with their customers. The "Property Utility and Services" ("PUS") form and the "Seller's Property Information Report" (SPIR)[34] have blanks to capture and convey this data. Both of these forms are regularly[35] attached to the MLS listing to enable buyers to view this information. (Full copies of these forms can be found in the Appendix).

The Working Group sees the existence and seemingly widespread use of these forms as a real benefit in conveying energy information to home buyers. However, there appear to be some opportunities to both improve the forms and to work with the Realtors to provide guidance on their consistent completion.

Regarding form improvement, there is some inconsistency in the units between the two forms in that the PUS lists all energy sources in dollars while the SPIR lists electricity use in dollars and fuel use in gallons. As well, completing the SPIR for a home with natural gas may be challenging because the annual fuel use field asks for gallons when natural gas is sold by "Therms" or "CCFs". Since many Vermont homes supplement their fuel use by burning wood, it would also be useful for buyers to know how much wood is burned in addition to other fuels. There is no field for multiple fuel sources on the SPIR. However, despite these opportunities for form improvement, the fact that these forms exist and provide an opportunity to convey energy use and cost data to home buyers is an important benefit to Vermonters.

The Working Group also sees an opportunity to assist the Realtors in the training of their members in the completion of these forms with a goal of completion and consistency in order to capture all energy use and cost in home transactions.

[33] Focus group of Vermont Realtors organized by the Vermont Association of Realtors on 8/28/13 in Montpelier
[34] See appendix for images of both forms
[35] E-mail correspondence from Isaac Chavez from Vermont Association of Realtors 11/11/13

Home Energy Score and Label

The Working Group spent a good deal of time and effort addressing the energy scoring metrics, software tool options, integration with the existing residential energy efficiency programs, and the presentation of the scores on a label. The Working Group then put a draft label out for public comment, followed by two rounds of consumer testing. This section addresses these issues.

Scoring Metrics

Since the first deliberations of the Building Energy Disclosure Working Group in 2011, the issue of what should be the primary scoring metric to present on a label has remained front and center. The Working Group built on those earlier discussions and research, reached out to others wrestling with the same issue in Massachusetts, Oregon and other states, along with the U.S. DOE, put some options out for public comment and consumer testing and was able to come to an agreement and recommendation.

The fundamental conundrum with selecting a metric to convey energy performance in order to provide transparent energy information is that there is simply no "right" answer. However, the Working Group was able to arrive at a "best of all worlds" combination of metrics that, together, should convey a sound picture of a home's energy efficiency. This section presents the options examined, the pros and cons of each, and makes a case for why the Working Group chose MMBtu/year based on an asset-based total building energy use as the recommended primary metric. The Working Group then also concluded that a Vermont label should include two supplemental metrics: DOE's Home Energy Score and total energy cost per year.

MMBtu/Year

The Working Group examined a number of energy score metric options, including the Department of Energy's Home Energy Score of 1-10, HERS' 0-100+, dollars per year, Btus (or millions of Btus, MMBtus) per year, kilowatt-hours equivalent per year, Btus (or millions of Btus, MMBtus) per square foot per year and others. Some of the pros and cons of these options are summarized in *Figure . Pros and Cons of Various Energy Score Metrics* below.

Asset vs. Operational Scores

A key concept to understand in considering scoring metrics is the difference between "asset-based" and "operational-based" scores. An **asset-based** score is one that is based on the features of the home (e.g., insulation, air tightness, mechanical system efficiencies, etc.) assuming average occupancy (based on number of bedrooms), thermostat settings and weather conditions. An **operational-based** score uses the actual energy consumed as the basis of comparison, regardless of the home's features. Therefore, an asset-based score remains fixed over time regardless of who lives in the home, how high they set the thermostat, how many showers they take, and how warm or cold a winter may be. An operational score will change as the energy consumption of the home changes. The former is most useful as a way to standardize a score and provide for meaningful comparisons between homes, regardless of who lives there, their habits and the variations in weather.

Figure . Pros and Cons of Various Energy Score Metrics

1-10	1-100	$$/yr	MMBtu (kWhe[36])/yr	MMBtu (kWhe)/sf[37]/yr
Comment				
None	None	1. May be asset- or operational-based	1. May be asset- or operational-based	1. Energy Use Intensity (EUI) 2. Used primarily with commercial buildings
Tools that provide this score type				
1. EPA Home Energy Yardstick 2. DOE Home Energy Score	1. REM/Rate (HERS) 2. Energy Savvy	1. REM/Rate (HERS) 2. EPS/Cake 3. Utility Bills *any tool that provides consumption by fuel type	1. REM/Rate (HERS) 2. EPS/Cake 3. Utility Bills *any tool that provides consumption data	*any tool that provides consumption data
Pros				
1. Easy to understand	1. Easy to understand 2. Provides more granularity than 1-10	1. Provides a meaningful description of how much energy the home uses, regardless of size or other reference 2. Easily understood by homeowner	1. Provides a meaningful description of how much energy the home uses, regardless of size or other reference	1. Existing common metric (*primarily for commercial buildings) 2. Tries to normalize for size
Cons				
1. Multiple tools with this score type, may cause market confusion (DOE, EPA) 2. Not very granular (wide range of consumption for given score) 3. Overlapping scores (i.e. same consumption, different score)	1. Multiple tools with this score type, may cause market confusion - some tools present low score as "good" (HERS), while others present low score as "bad" (Energy Savvy) 2. Not very granular 3. Overlapping scores (i.e. same consumption, different score)	1. If operational, "score" may vary widely depending on occupancy and behavior 2. May lead to issues/concerns around fuel type 3. May lead to homeowner frustration/confusion if large discrepancy with actual bills	1. May not be a metric easily understood/referenced by homeowner	1. Probably not meaningful to homeowner 2. May be interpreted differently depending on how SF is calculated 3. Small house penalty *Homes constructed to same standard will have a lower EUI if larger 4 Inclusion of basement or not will have large impact on result

There are a number of metric options available, including the Home Energy Rating System (HERS)[38], which has been in place in Vermont since 1987 and has been used to rate thousands of homes. HERS is a good system to use for new homes and to document compliance with energy codes and new

[36] "Kilowatt-hour equivalent"
[37] Square feet of conditioned home floor area
[38] See http://www.resnet.us/

construction programs[39]. However, at $500 to $1000 per home to produce a HERS rating for each home[40], 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. With a goal of moving energy information into the real estate market, delivery costs for an energy label would need to be seen as "reasonable", which the Working Group defined as somewhere in the +/- $250 range. This moved HERS off the table.

The Working Group spent multiple meetings reviewing the pros and cons of each of the scoring metrics and came to the conclusion that MMBtus[41]/year on an asset-basis (see side-bar above) should be the metric used in Vermont. This decision was supported by public comments and consumer testing, as well. An asset-based estimate of total annual building energy use (including heating, cooling hot water, lights, appliances, plug-loads and any on-site renewables) in MMBtu/year 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.

In addition, the Working Group decided to base the MMBtu/year score on "site-based" energy. This means that energy consumption is measured at the house from the meter or fuel tank on site. This is opposed to "source-based" energy which would apply factors to the site-based energy readings to take into account generation and transmission losses or the energy used in extracting the fuel and delivering it to the site. The Working Group determined that in order to keep the explanation of the energy score relatively simple, avoid controversies regarding which source-based factors to use, and in order to give full credit to on-site renewables, that energy consumption should be based on energy measured on-site.

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

- Corresponds to the home's projected total energy usage

[39] ENERGY STAR Homes, LEED for Homes, Vermont Builds Greener and the National Green Building Standard all use HERS ratings to document program compliance.

[40] Plan review, computer modeling, multiple on-site inspections, performance testing and report and certificate documentation comprise HERS costs.

[41] MMBtu = 1 million British Thermal Units (Btus) of energy.

- 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)
- Sufficiently granular to meaningfully differentiate between homes (in contrast to a 1-10 scale)
- 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.
- Can serve as the basis for an existing homes certification.

MMBtu/year is a foundational value that will not change over time and can be used to generate other meaningful reference metrics, should programs or auditors choose to present those metrics, such as dollars per year or MMBtu/sq. ft./year. While the Working Group understands that the average consumer will not know what MMBtu/year means, a considerable amount of effort was spent creating graphics that visually enhance the meaning and context of the numeric score. Public comments and consumer testing have shown that there will likely be some market confusion for any home energy score that is presented. However, the majority of consumers liked, and were able to understand, the score/graphic combination developed by the Working Group. Presenting MMBtu/year on a label in such a way as to compare the rated home with the same home at a different reference point (such as that home built to the energy code) also provides some immediate context. By also comparing the different scores of the rated home to that same home with any energy improvement recommendations, this comparison would begin to allow consumer understanding of this new energy currency.

DOE's Home Energy Score

Throughout this process, the Working Group also kept in close contact with the U.S. DOE about the possibility of using their Home Energy Score (HEScore) calculation engine as Vermont's score generator and weighed the pros and cons of linking to their national 1-10 score. The Working Group also sought input, through public comments and customer testing, about whether the DOE 1-10 score should be included in the label as a primary or secondary metric. The Working Group was able to forge new ground nationally in negotiations with the DOE and arrived at an agreement that would allow use of DOE's free software calculation engine without having to use their 1-10 score as Vermont's sole scoring metric. The Working Group and DOE struck a deal in which Vermont could proceed with presenting the preferred MMBtu/year metric as the primary score on the label, but then also present DOE's 1-10 score as a supplemental metric in a less prominent position on the label. While there was some concern about potential market confusion with two scores on the Vermont label, the Working Group concluded that any access to national lending, tax credits, incentives or other programs and access to a free, nationally-vetted scoring tool and Application Programming Interface (API) provided through this connection with the DOE score outweighed the downsides of potential local market confusion. In addition, consumer testing showed that the majority of respondents believed the DOE logo and score lend credibility to the label. Consumers were also able to understand both scores, regardless of their differences. Through an effective label design that highlighted MMBtu/year while linking to the DOE score, the Working Group believes they can achieve the best of both worlds and provide potential longer-term benefits to the state.

$/Year

The third metric that the Working Group thought would be important to include on a label was an asset-based total energy cost per year. From the beginning, the Working Group acknowledged that this metric would be the one most immediately understood by most people. However, there were a few issues that continued to arise that caused MMBtu/year to become the primary metric recommended.

Given the fact that energy prices change over time, relying on energy cost per year would mean that the score would change as soon as energy prices changed. The durability of the score and label were an important principle carried into the Working Group from the original Building Energy Disclosure Working Group in 2011. As well, there was concern that since the dollars per year on the label would never match the actual dollars a homeowner spent on energy (or listed in an accompanying energy audit), the value of the label might somehow be diminished.

However, the Working Group did realize that presenting an asset-based total energy cost per year as a complimentary metric along with the primary MMBtu/year and the DOE score could provide a robust label that provides a strong suite of information to the housing market. Comments received during the consumer testing supported including annual energy cost as part of the label. Many respondents reported that energy cost information would be helpful in better understanding the label by including a metric they were familiar with and could readily understand. The Working Group recommends including total energy cost per year on the energy label, with annual cost by each fuel used in a house and the total presented.

Other Considerations

The Working Group considered a number of other options in addition to the above before deciding which to include on the label. Some of these other considerations included location efficiency (to minimize automobile use) and carbon footprint. The Working Group decided to focus exclusively on the asset (the building) and the energy use at the site within that structure only. This includes all energy consumed and produced through renewables on site, but does not consider transportation issues or greenhouse gas production issues. Since there is no clear consensus on how to quantify location and carbon impacts, the Working Group decided to keep the label simple and straightforward for now and include just MMBtu/year, annual building energy cost, the DOE 1-10 score and some general house information. More information on location efficiency options can be found in some of the public comments submitted to the Working Group and posted at http://publicservice.vermont.gov/topics/energy_efficiency#bedwg.

Coordination with HERS

Vermont has been a national leader in offering Energy Ratings for homes since 1987. Since that time, Efficiency Vermont--and before that, Vermont Energy Investment Corporation and Energy Rated Homes of Vermont--have rated thousands[42] of homes and multifamily buildings. Vermont has also been an active participant in the Residential Energy Services Network, or RESNET[43], the national standards-setting and administrator of the Home Energy Rating System (HERS), helped with its original formation and served on the board for years.

While a handful of HERS Energy Ratings have been issued for existing homes in Vermont, the majority are used to qualify residential new construction projects for ENERGY STAR Homes, LEED for Homes, National Green Building Standard and other above-code certifications, and for Vermont RBES[44] energy code compliance. Approximately 300 to 400 Energy Ratings are issued on new homes each year. As a result, there are now thousands of Vermont homes with a HERS Rating.

By introducing a new energy label with scores that could be in the same numerical range as a HERS Rating, there is potential to confuse the market. Typically, the HERS Index in Vermont is between 50 and 80 for new homes; see *Figure . HERS Index.* New homes using the Vermont Home Energy Score would likely score around this range, as well. However, most existing homes are expected to score in a range between 100 and 200 MMBtu/year.

The Working Group had numerous discussions with members of the Vermont Green Homes Alliance about this issue and agreed that there is room for both a HERS Index Rating and the Vermont Home Energy Score. There will need to be consumer and builder education about the relationship and the differences between the two.

The MLS system currently has a field for a HERS Rating. The MLS system operators, NNEREN, conceptually agreed to consider adding another data field for the Vermont Home Energy Score in the MLS, pending further discussions. Additional coordination and market education will be required in order to distinguish HERS Ratings from Vermont Home Energy Scores.

HERS Energy Rating Index vs. Vermont Home Energy Score – What's the Difference?

A **HERS Energy Rating**, or **HERS Index** is a national system for rating—usually new—homes. A certified Energy Rater enters hundreds of data points from a house (or from plans) into software that calculates the normalized Rating (that is, relative to a home constructed to code). The U.S. Department of Energy has determined that a typical resale home scores 130 on the HERS Index while a nationwide "standard new home" is awarded a rating of 100 (a HERS score ≤75 can be used to document compliance with Vermont's energy code, RBES V3.1). A home with a HERS Index Score of 70 is 30% more energy efficient than a standard new home. A home with a HERS Index Score of 130 is 30% less energy efficient than a standard new home.

The **Vermont Home Energy Score** is purely the total of all energy used for heating, cooling hot water, lights and appliances in a house, converted to millions of Btus (MMBtu), and presented as a score of MMBtu/year.

[42] Over 4,300 Vermont ratings have been issued to date, according to Chris Gordon in an 11/18/13 e-mail.
[43] http://www.resnet.us/
[44] Residential Building Energy Standards, or RBES

Presentation of the Score and Label

The Working Group spent a good deal of time and effort trying to decide on the best primary scoring metric to select, which other metrics should be included, and how to present them most clearly and understandably on the label. Part of this process included putting options out for public comment, on Efficiency Vermont's Facebook page soliciting feedback, on the Efficiency Vermont blog and then through two rounds of consumer testing via online panels of more than 200 Vermonters in each round. This section addresses these public-facing efforts to hone in on the right metrics and presentation of the score.

Public Comments

In mid-August 2013, the Vermont PSD and Efficiency Vermont put out requests for public comment on the proposed building energy labels developed over the previous year by the Vermont Energy Labeling Working Group. These requests were posted on Efficiency Vermont's Facebook page, on their blog and e-mailed directly to interested parties. Comments were due September 4, 2013. The Working Group received many responses and great suggestions for modifications and improvements. Subsequent versions of the label have benefitted tremendously from the public comments received. A summary of the comments follows below. As well, the Appendix includes the following: 1) the solicitation document sent out for comments, 2) a compilation of the comments received in spreadsheet form, and 3) the actual comments that were sent to the PSD.

Responses to the request for public comments included the following:

- Efficiency Vermont Facebook Page
  - 8 comments
  - 44 likes
- Efficiency Vermont Blog
  - 29 comments
- E-mailed comments to the PSD
  - 32 comments
- Total: 69 comment responses

Responses ranged from a few sentences to pages of thoughtful reactions and suggestions. Comments were received from the following groups and individuals:

Biebel Builders / Prudent Living
Brattleboro Buyer Brokerage Real Estate
Build Basic Green
Common Sense Energy
Conservation Services Group
Department of Housing and Community Development
Earth Advantage
Energy Coordinator for the Town of St. Johnsbury
Energy Futures Group
Energy Savvy
Evaluator
Green Homes America
Green Works Solar Store
Home Energy Advocates
Mass. Department of Energy Resources
Northeast Energy Efficiency Partnerships
Passive House Alliance
Renewable Energy Vermont
Student
Sustainable Energy Resource Group
Thetford Energy Committee
U.S. Department of Energy
VEIC/Efficiency Vermont
Vermont Fuel Dealers Association
Vermont Gas Systems
Vermont Housing & Conservation Board
Vermont Housing & Conservation Board
Vermont Natural Resources Council
VPIRG members
VT Fuel Efficiency Partnership
VTrans

Comment themes included the following:

- Keep it simple;
- We don't need more labels; we already have too many;
- Provide metrics that are meaningful to consumers;
- Combinations of a few simple metrics can be more effective than a single metric or too many metrics on a label;
- Use intuitive graphics to convey the information (including color and comparisons to other homes); and
- Consumers understand dollars.

Some of the comments also included the following suggestions:

- Consider including locational efficiency component[45] in the score;
- We need to address assessor training and certification standards;
- Provide some sort of recognition for good scores or participation in programs (plaque or medallion); and
- Include apartments for renters.

Conclusions the Working Group drew from the comments and subsequent discussions included the following:

- The top score metrics were identified as MMBtu/year and DOE's HEScore 1-10, eliminating Btu/square feet/year as a metric[46];

[45] Locational efficiency refers to the energy implications of transportation energy in locating a house.
[46] Btu/sq. ft./year was dropped primarily because it introduced a normalizing factor that seemed to favor large homes and distracted from the core message of total energy consumption.

- There is significant support for the idea of a home energy label but “the devil’s in the details”;
- There wasn’t agreement on the layout of the score graphic (e.g., left-to-right vs. right-to-left, higher vs. lower scores are better or worse…) so we need to dig a little deeper on these elements through consumer testing; ;
- There is no “right way” of labeling buildings;
- Nor is there any clear consensus to emerge on any the label elements; and
- Some commenters suggested considering locational efficiency, but there was no consensus recommendation on how this could be incorporated into the existing label, and it seemed clear that more work needed to be done on this issue before inclusion in a building label.

Consumer Testing

Two rounds of consumer testing allowed the Working Group to test Energy Label options and hone in on the best means of designing the Vermont Home Energy Label. Each round put energy scores and label options in front of more than 200 people in an on-line format.

Consumer Testing – Round 1 (October 2013)

The first round of tested three leading contenders for the primary energy score:

a) MMBtu/yr colored bar
b) MMBtu/yr green and gray wedge
c) DOE Home Energy Score 1-10

The focus was on selecting the preferred score and determining how best to present visually. The three scores presented follow:

Figure . Consumer Testing – Colored Bar (A)

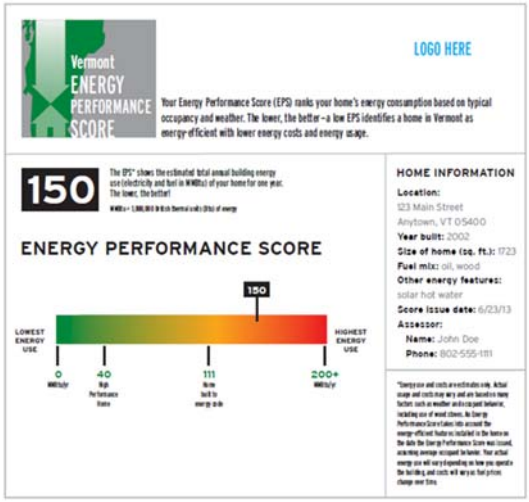


Figure . Consumer Testing - Green & Gray Wedge (B)

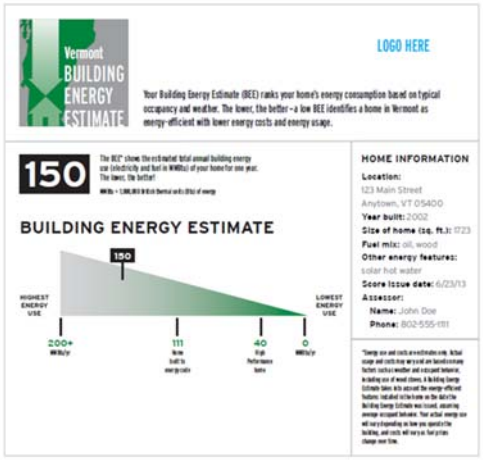
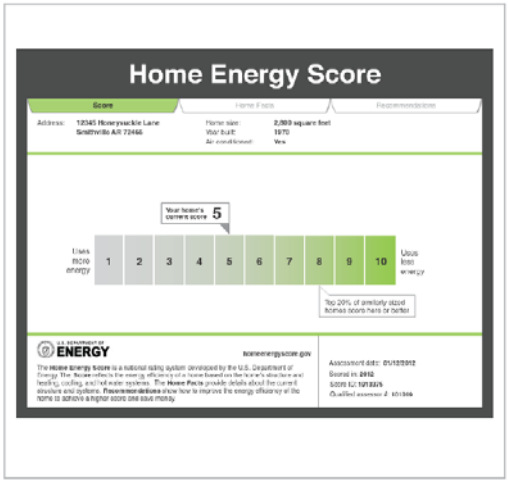
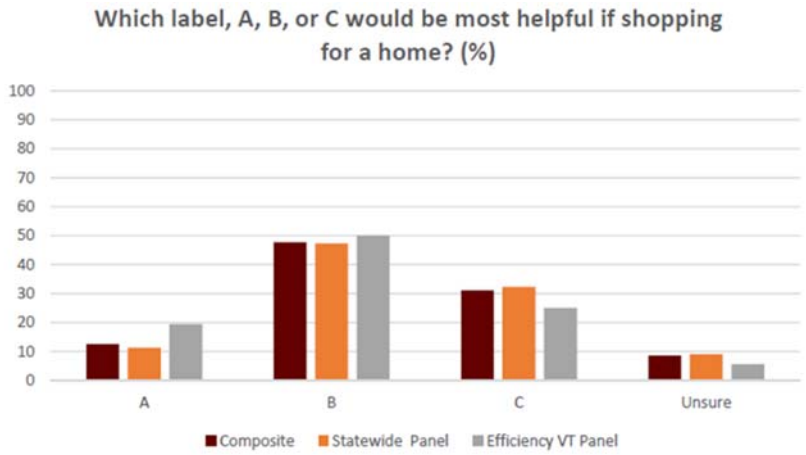


Figure . Consumer Testing – DOE Home Energy Score (C)



The results from the panel are presented in graphically in *Figure . Consumer Testing – Response to Energy Scores* below. The preference was for the wedge.

Figure . Consumer Testing – Response to Energy Scores



Additionally, customers preferred 0 on the left, full color and a more detailed scale. They also wanted to see a clearer call-out "your score is X" and were interested in seeing estimated costs and fuel mix as supplemental information.

The results from the first round of testing were considered, the scores and labels re-designed and then put out in second round of consumer testing in early November 2013.

Consumer Testing – Round 2 (November 2013)

Highlights from the second round of consumer testing follow:

- "Vermont Home Energy Score" was the name favored for the two labels tested. Having both "Home" and "Vermont" in the name was important to the majority of respondents.
- The majority of respondents preferred the wedge graphic to the bar graphics.
- The majority of respondents understood how to read both the wedge and bar graphics on the labels.
- Regarding the "Estimated Annual Energy Cost" section of the labels, a majority preferred the pie-chart to the bar graphic.
- Due to a leading question asked of consumers, a majority of respondents thought it was confusing to have both the DOE score and the Vermont Home Energy Score on the same label – as they use opposite scales of energy efficiency. However, respondents had a conflicting response when asked to design the elements of a label, as discussed next.
- When respondents were asked to design their own label from all of the graphic elements provided, including the Home Score (Bar or Wedge), Estimated Annual Energy Costs (Stacked Bar or Pie Chart), and the DOE score, the majority of responses indicated a preference for the Home Score Wedge, the Estimated Annual Energy Cost Pie Chart, and a preference for the DOE score to be included as well.
- Both Labels scored in the 70-80% range on ease of comprehension, clarity of the Home Energy Score graphic and Estimated Annual Energy Cost graphic, motivation to learn more about one's

own home energy consumption, moving forward with energy upgrades, the purchase of a home, or choosing between homes to purchase.

- A majority of respondents thought that the DOE score lends credibility to the label.

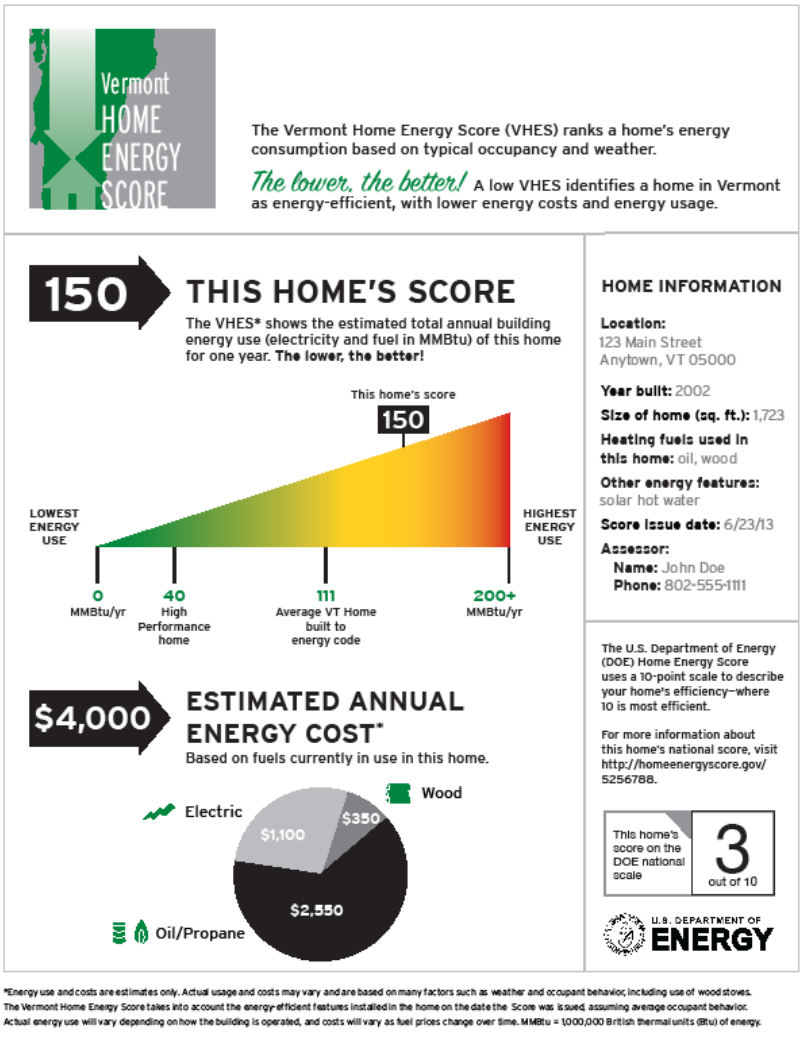
The complete results from both rounds of consumer testing can be found at http://publicservice.vermont.gov/topics/energy_efficiency#bedwg.

Recommended Components of the Energy Label

As a result of the two rounds of consumer testing, the Working Group drafted a design of the label and finalized the name. Consumers preferred "Vermont Home Energy Score" as the name. The final label should include the following elements:

1. The Score Graphic: After considering various presentations of the MMBtu/year score, such as a gauge on a dashboard, set up with 0 on the right and then on the left, with and without colors and as a bar vs. a wedge, the consumer focus groups served as the largest influence in helping the Working Group come to a decision. The final decision incorporated a colored wedge, with 0 on the left and an "energy code home" and "high performance home" as the primary reference points along the scale, as presented in Figure . Recommended Draft Vermont Home Energy Label.
2. A pie chart presenting the estimated energy costs of each fuel and the total costs;
3. A secondary U.S. DOE Home Energy Score of 1-10[47]; and
4. General information about the house and its address.

Figure . Recommended Draft Vermont Home Energy Label



[47] As we "go to press", the Working Group and the DOE are negotiating an arrangement that places the DOE Home Energy Score on the second page of the label in order to minimize any confusion about scores that go in opposite directions (i.e., 0 is best with MMBtu/year while 1 is worst for DOE's score) and to provide more context around the DOE Score by possibly including the DOE 1-10 scale and more information.

Realtor Discussions

The Working Group had productive meeting with the Vermont Association of Realtors (VAR) and the regional MLS system administrator, NNEREN, in late August 2013.

Vermont Association of Realtors

The VAR organized a two hour focus group of Realtors from around the Central Vermont region for a mid-day meeting in Montpelier. Working Group members presented the proposed Energy Label elements under development at that time and received some very helpful feedback that was incorporated in the subsequent Label design and plans. Some of the take-aways from the focus group included the following:

- Don't make building energy labeling mandatory, keep it voluntary;
- Most buyers ask about energy costs, so the Realtors anticipate this request by asking the seller to gather past energy records and complete the Property Utilities and Services Form and the Seller's Property Information Report (see Appendix for copies of both forms);
- Understanding the MMBtu/year score can be challenging, so make sure to provide clear graphics and a simple explanation to increase chances of home buyers and sellers understanding of the Score and the Energy Label.
- There continues to be concern about an Energy Label diminishing the value of energy inefficient homes by making energy performance data transparent. This end of the market seems to be of greater concern than the value that the Vermont Home Energy Label could have in improving the value of upgraded or recently-new homes with good energy scores.
- Focus on a multi-pronged approach in conveying energy information to the market including past energy bills and information in the MLS system in addition to the Energy Label.

Northern New England Real Estate Network

Working Group members also traveled to Concord, New Hampshire to meet with the regional MLS system administrator, the Northern New England Real Estate Network (NNEREN) in late August 2013. NNEREN staff were also quite gracious with their time and were very interested in working with Vermont to enhance the energy features of the MLS system. Already, they have been working with the Vermont Green Building Network and have incorporated a data field in the Vermont MLS to capture green building certifications for new construction along with a HERS Index Energy Rating. They were very interested in collaborating with the Working Group in the future to enhance the MLS system to capture more energy information. Some of the take-aways from the NNEREN meeting included the following:

- NNEREN would be willing to consider including and existing homes Energy Score in the MLS, but only after it has been piloted and "finalized" so that changes in the system only have to be made once;
- Coordinate efforts with New Hampshire and strive for a consensus approach so that NNEREN can have the same fields for both Vermont and New Hampshire;
- Review the "coded features" that describe all of the house elements that get listed in the MLS fields and provide recommendations for improvement, which NNEREN would welcome.

Labeling Tool Options

The Working Group examined a number of labeling tool options. The selection of a scoring tool depends in part on the metrics to be presented on the label. Some metrics can only be produced by one tool. For example, the DOE 1-10 score can only be produced by the DOE Home Energy Scoring Tool, and the HERS Index can only be produced by RESNET-approved tools like the REM/Rate software. On the other hand, an asset-based MMBtu/year metric can be produced by all of the leading energy scoring tools, as well as most energy audit software.

The Working Group's analysis of energy scoring tool options happened to coincide with Efficiency Vermont's process of selecting a new energy auditing software tool and management system for its Home Performance with ENERGY STAR program, and so was able to benefit from a good deal of in-depth tool review and analysis by Efficiency Vermont staff. Integrating a tool capable of generating an energy label was considered as part of that new tool selection process.

Meanwhile, it is likely there will be at least four, and maybe five home assessment and audit tools in place in Vermont that would all need to be able to generate a consistent energy score and label. The Weatherization Assistance Program (WAP) is implementing the "Hancock Energy Audit Tool" (iHEAT). Vermont Gas Systems (VGS) will continue to use their Excel spreadsheet "Q-Loss" tool. NeighborWorks of Western Vermont (NWWVT) has selected and has embarked on implementing "CakeSystems" software. For new construction programs, Efficiency Vermont and VGS use REM/Rate. And Efficiency Vermont has selected OptiMiser™ as its new audit software. The Working Group considered allowing all of these tools to be able to directly produce an energy score, but decided that approach would not allow for an adequate level of consistency in the energy scores being produced across the state. The Working Group determined that a single energy score generation tool was needed to assure accuracy and constancy across assessors and programs.

While some of the available scoring tools make energy improvement recommendations, the Working Group decided against incorporating that feature. The audit tools and Vermont auditors currently make customized energy improvement recommendations, and the Working Group decided it would be best to keep it that way, rather than interjecting a new automated recommendations approach into the mix.

The preferred arrangement is that the selected scoring tool would be set up with an API[48] through which each of the four or five existing Vermont audit tools feeds the house information into a "score generator". This "score generator" would both calculate a score and provide supplemental information to enable the printing of a label. As a stand-alone software module that could just be plugged into any of the existing audit tools in order to upload the required inputs (e.g., house size, insulation levels, number of bedrooms, equipment efficiency, etc.), each program would be able to calculate a uniform score that would be consistent across all of the audit tools, combined with a consistent label print engine. There are a few options for how the score generator could be connected to audit tools, including being attached as a "back end module" or housed somewhere on the Internet to enable the audit tool to remotely connect. The U.S. DOE HEScore API is a prime candidate for this option since it incorporates all of these features, is free and will continue to be supported by DOE, can connect to existing Vermont audit tools, and generate all three of the recommended Vermont metrics (asset-based MMBtu/year, energy cost/year and the DOE 1-10 score). As one of its final actions before producing this

[48] An application programming interface (API) is a protocol intended to be used as an interface by software components to communicate with each other. (Wikipedia)

report, the Working Group decided to work with DOE to implement their HEScore as Vermont's score generator.

While the label will initially be linked with an energy audit tool (either directly or via an Internet connection), eventually the scoring tool will also need to be able to stand alone. The HEScore can stand alone to be utilized by newly trained and certified labeling assessors, such as home inspectors, in addition to existing experienced energy auditors who are affiliated with home retrofit programs and it can be connected to existing energy audit programs via an API.

The current (simplified) vision for producing a home energy score label is as follows:

1. Building data from (any) Vermont energy auditing tool is exported to an electronic file;
2. The electronic file is imported into the Efficiency Vermont audit tool (OptiMiser);
3. OptiMiser converts building data into the HEScore API required format;
4. OptiMiser makes the connection to HEScore via API;
5. HEScore computes the energy score and sends data back to OptiMiser; and
6. OptiMiser generates a label PDF from HEScore data that is sent back to assessor.

The Working Group also needs to explore including this new score in the Multiple Listing Services (MLS) in order to publicize scores. However, this will take some coordination to minimize confusion given the presence of the HERS rating there now. How a new score and label coordinates with the existing REM/Rate rating system for new construction will require further discussion with NNEREN and others. The Working Group will continue to work with the Vermont Green Homes Alliance on this MLS integration issue.

Score Generation Tool Testing

The Working Group spent a number of early meetings examining tool accuracy and assessing ease of use. Three of the leading energy score generation tools were tested; all require data entry by a trained energy assessor in the home. Tools were assessed for both their quantitative output as well as qualitative attributes such as ease of use, complexity of data entry and time to complete. The tools assessed included DOE's Home Energy Score Tool, Energy Performance Score (EPS/"CakeSystems")[49], and REM/Rate™ (in Simplified Input mode). A total of 26 Vermont homes were tested over three rounds. Subsequently, a revised version of the DOE HEScore was also tested. Qualitative and quantitative assessments of these tools are discussed in summary below and in more detail in the Appendix.

Qualitative Assessment

EPS, HEScore and REM/Rate were fairly comparable in terms of data entry time, complexity and ease of use. The three tools each have about 50-60 inputs, taking in the range of 20-30 minutes to complete (not including data collection time). REM/Rate, in Simplified Input mode, has the ability for many more inputs depending on the level of detail the assessor wishes to enter. All tools are capable of entering measured blower door results or estimating air leakage. When a blower door test has not been conducted, EPS and REM/Rate ask for an estimated CFM50 value (that the assessor would need to generate). In contrast, HEScore simply asks whether or not the home has been professionally air sealed and generates an estimated leakage value as part of the tools algorithms. Component data entry detail ranges across the tools. In general, HEScore and REM/Rate allow for more detailed information when it is known (e.g. window U-values and HVAC efficiencies etc.), or default entries when it is not known. EPS

[49] During the course of our testing, EPS was renamed "CakeSystems". In order to remain consistent with the results, this section of this paper references "EPS" while other sections refer to the same tool as "CakeSystems".

on the other hand, generally only allows simplified/descriptive inputs that default to specific values behind the scenes. All tools require some level of training to use. Of the three, EPS was probably the most user-friendly, but also the most limiting as it does not allow for more detailed data entry when it is desired. REM/Rate required the most detailed level of data entry. HEScore provided a good balance of default values when actual data is not known or available, while allowing for specific inputs when it is known.

Quantitative Results

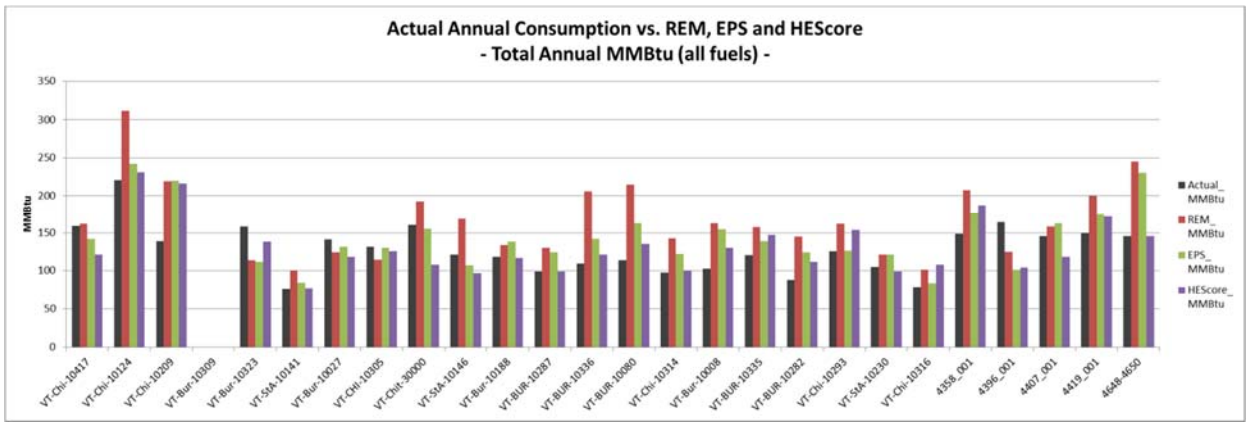
All tools were assessed both for their native output score as well as the estimate of total annual consumption. The Working Group compared fuel consumption estimate results across tools as well as to actual consumption. Due to the relatively small sample size it is difficult to make any definitive judgment about how closely the tools modeled energy consumption compared to actual. Given the highly variable nature of occupancy patterns, modeled to actual consumption variance was expected. It was noted however, when certain tools consistently over- or under-estimated consumption.

The following bullets and Figure . Quantitative Analysis of 26 Vermont Homes – Actual vs. Modeled Consumption (MMBtu Total of All Fuels)below provide a summary of results from the modeled energy consumption assessment.

- HEScore produced the highest percent of homes (56%) that modeled total MMBtu/year within 15% of actual fuel consumption, followed by EPS (40%) and REM (20%)
- HEScore produced the lowest percent of homes (36%) that modeled total MMBtu/year with a 25% or greater varience from actual fuel consumption, followed by EPS (40%) and REM (68%)
- HEScore modeled the lowest *average* variance from actual fossil fuel (gas and oil) consumption (7%), followed by EPS (18%) and REM (39%)
- HEScore modeled the highest *average* varience from actual electricity consumption (25%), followed by EPS (13%) and REM (4%)
- All tools produced similar high and low outliers (min/max values)
- Of the five non-regulatd fuels tested, HEScore and EPS had the lowest *average* varience from actual fuel oil consumption
- REM and EPS can be ‘dialed in’ to more accuately define lights and appliances
- REM and EPS can also be ‘dialed out’ and default entries used for all homes
- HEScore has no lights and appliance data entry (purely based on tool agorithms not user input)
- All tools have similar ‘simplified’ composite average inputs for buildings components with REM having the most flexibility for more detailed data entry
- All tools took a smiliar amount of time to complete when using the native user interface

The following figure provides a visual summary of testing results from the three tools assessed.

Figure . Quantitative Analysis of 26 Vermont Homes – Actual vs. Modeled Consumption (MMBtu Total of All Fuels)



Documenting Energy Costs and Features at Time of Sale

The MLS system is a key means of listing and conveying energy information about any home. Since most homes in Vermont sell with a Realtor using the statewide MLS system[50] or another internet-based listing system[51] used by "for sale by owner" ("FSBO") sellers, these systems provide a great resource and opportunity for displaying and delivering energy information to buyers. The MLS is actually currently used to capture both some of the energy features of a home and in some instances, its historical energy costs. However, there are opportunities for improving how this information is characterized and then conveyed to buyers that could be pursued to aid in making energy more transparent in the home transaction process.

The administrators of Vermont's MLS system, NNEREN[52], have expressed interest and a willingness to work collaboratively in improving the energy-related sections of the MLS. The Working Group sees this as an opportunity and one of the key outcomes of this effort to improve transparency and information about the energy efficiency of our building stock.

While the Working Group did not specifically reach out to the FSBO internet system providers, there also appears to be opportunity to work with them to improve their energy description sections and attachments. Since they are a much smaller part of the real estate market, these efforts would be secondary, but, nonetheless, are seen as important in a comprehensive approach to conveying energy information to home buyers.

[50] Isaac Chavez of the Vermont Realtors Association: more than 78% of real estate licensees are Realtors and use the MLS, via e-mail 11/11/13.

[51] Such as http://www.picketfencepreview.com/, http://www.forsalebyowner.com/real-estate/Vermont or http://www.owners.com/

[52] See collaboration activities described above in "Working Group - Activities" section.

Voluntary Recognition Certificate

Currently, there is no formal certificate or other means of recognition for homeowners who complete a comprehensive home energy retrofit project that would allow them to demonstrate program achievement (or a certain savings level) when it comes time to sell their home. If energy efficiency if going to be recognized in the marketplace and start being valued, those who invest in energy-savings improvements need to be able to make visible that investment and the results. Working Group members have committed to developing some sort of certification for participating homes in 2014.

This recognition certificate could potentially link to the Vermont Home Energy Score by including the MMBtu/year score on the certificate, or requiring that the home meet a target energy score. As well, this new existing homes program achievement certificate could easily be added to the existing field in the MLS system for "Building Certifications" along with all of the existing green new construction certifications for additional recognition and visibility in the home transaction process.

Assessors

It will be important for those inspecting homes and issuing the Vermont Home Energy Label to meet certain qualifications. At a minimum, a sound understanding of building science and energy principles should be required. The Working Group considered the BEDWG recommendation that energy use be disclosed via a free, online tool. However, after testing a variety of scoring tools, the Group determined that an MMBtu/year energy score could not be generated with sufficient accuracy, reliability, and credibility by a homeowner completing a simple online tool. The voluntary energy labeling approach recommended here is consistent with the "stage two" in-home assessment considered by the BEDWG.

Vermont has a strong foundation of more than 80 Building Performance Institute (BPI) certified contractors and more than 30 certified HERS Raters. There is also the potential for independent assessors, such as home inspectors were they to become trained. One of the additional benefits of moving forward with the DOE Home Energy Score is the fact that the DOE has already developed a training, testing and quality assurance system that builds on BPI and HERS pre-qualifications, and also has an avenue in for home inspectors after training. Working with the HEScore could be the most expedient means of addressing the assessor issue. However, the Working Group did not examine DOE's system in depth and would need to do so before deciding to proceed.

Implementation & Coordination

This section presents the Working Group recommendation for implementing and coordinating the delivery of a voluntary, statewide home energy score and label in the following areas:

- Integration into existing programs;
- Governance;
- Program coordination;
- Data management, storage, and reporting;
- Certification and branding; and
- Cost-sharing.

Integration into Existing Programs

Vermont's existing home residential retrofit program sponsors[53] are all part of the Working Group. They all have an interest in providing a Vermont Home Energy Label as part of their services. Typically, the label could be provided along with an energy audit to explain to the homeowner where a home currently scores and where it would score after installing the recommended energy improvements. Additionally, after the energy work is complete, the program would leave the homeowner with the label to document the score and to use if and when the homeowner decides to sell their home.

After developing the scoring tool, the initial focus would be to start seeding the market with scores, both as part of recommendations and post-improvement. In this way, programs will be able to pilot the process and results in order to make adjustment before wider use. After a period of providing the label to certain program customers, they could then expand its use across more use-cases. As well, the existing program providers will need to gain some experience in order to report back to the Legislature in 2016 and address their question about making energy scoring mandatory.

Some programs are also considering going back to past projects and running their upgraded homes through the scoring tool to automatically generate Vermont Home Energy Labels, which could then be issued retroactively to customers. This could result in an immediate proliferation of many Energy Labels in the marketplace and serve as an effective way to generate a "buzz" and create additional interest in the Label.

In every case, putting the label in the hands of homeowners who have voluntarily invested in the energy upgrade of their homes will be beneficial because when it comes time to sell, the investment made in the home becomes apparent and can be used as a selling point. Regardless of where a house is located and which program someone participated in, having a common Vermont Home Energy Label will begin to make energy use more visible. Further, once sufficient testing of the label has been accomplished, label data could be appended to the NNEREN MLS regardless of whether the home is listed for sale, as is being done currently by Efficiency Vermont in order to create a database for appraisal use.

Cost

Similar to the recommendations that came out of the 2011 Building Energy Disclosure Working Group (BEDWG) regarding tool costs, an organization (such as Efficiency Vermont) would need to purchase, customize and support the scoring and labeling software. While Efficiency Vermont could cover the cost of preparing the software for access by the other residential retrofit programs in Vermont, each

[53] Residential Retrofit Program Sponsors include Efficiency Vermont, Vermont Gas Systems, the Weatherization Assistance Program and NeighborWorks of Western Vermont.

program would need to pay for developing the software on their end to access and communicate with a central scoring tool and database.

Qualified assessors could then access the software online at no charge and could choose to bundle an energy label as part of their audit report or could sell the service separately. Expectations by the Working Group are that the cost would be in the $250 range for an assessor to travel, inspect a house and generate a label. The cost would likely be lower if the energy label were generated as an add-on to a professional energy audit. This is in line with the expectations set forth by the BEDWG in 2011.

Governance

The Working Group determined that an advisory board should be established to govern the delivery of the Vermont home energy score and label. At minimum, this panel should include representatives from the following:

- Public Service Department
- Energy Efficiency Utilities:
  - Efficiency Vermont
  - Vermont Gas Systems
  - Burlington Electric Department
- Office of Economic Opportunity/Weatherization Assistance Program
- Other interested stakeholders

Possible seats for expansion to represent the multifamily, commercial and industrial representatives should be considered unless a separate group is going to be formed to address these sectors in preparation for the report to the Legislature due December 15, 2014.

The PSD should maintain ultimate decision-making authority on issues on which the board is not able to reach consensus.

This board should meet regularly to review implementation plans and progress, collect stakeholder input, approve changes, provide ongoing guidance to the program coordinator, and report progress and issues to the PSD. As part of its program coordinator role, described below, Efficiency Vermont will provide regular progress reports and identify issues requiring guidance from the advisory board. These progress reports could potentially be rolled into Efficiency Vermont's existing regulatory processes, which include filing annual plans and quarterly progress reports to the PSD.

Program Coordination

In order to ensure a consistent, statewide approach to energy scoring and labeling in Vermont, central coordination is needed to perform the following functions:

- Procuring, configuring, maintaining, and updating the scoring tool software;
- Serving as a repository for energy scores and associated data;
- Hosting a website where customers can learn about the energy label and perform additional analysis (e.g., generating a carbon score based on their energy score);
- Serving as a resource to answer Vermonters' questions about the energy label;
- Training and supporting unaffiliated energy assessors, such as home inspectors, who are qualified to deliver the home energy score and label, but are not affiliated with an existing agency;

- Delivering statewide trainings about the energy score and label to builders, contractors, Realtors, appraisers, assessors, and others;
- Performing QC/QA to ensure quality of energy scores being produced by assessors; and
- Reporting aggregate results.

Efficiency Vermont will serve as the central coordinator for the Vermont energy labeling program. Efficiency Vermont already serves as a resource to Vermonters on their energy questions through its telephone hotline and website. As operator of the Energy Code Assistance Center, Efficiency Vermont also provides statewide training and free technical assistance on how to meet the requirements of the Vermont Residential Building Energy Standards. Providing statewide training and technical assistance related to the Vermont energy score and label would be a natural extension of these activities. Efficiency Vermont will seek to engage with real estate industry representatives to deliver the training and technical assistance to Realtors, appraisers, and others, to assure that the concerns of the marketplace are effectively articulated and addressed.

Efficiency Vermont currently works with a broad base of contractors of all types, including energy auditors, home performance contractors, and heating contractors. Efficiency Vermont will support additional independent assessors, such as home inspectors, who could deliver the Vermont energy label. Efficiency Vermont will set qualifying criteria (with input from the Advisory Board), provide training and certification, provide access to the energy scoring tool, and perform QA/QC for the scores reported by these independent assessors. Additional assessor qualifications and QA/QC may be required, depending on the scoring tool that is selected.

Efficiency Vermont has procured energy audit software for use in its Home Performance with ENERGY STAR program. In order to ensure a consistent statewide approach, to reduce costs, and prevent redundancy, it made sense to leverage this process to obtain a scoring tool that can be used statewide. With the support of the Working Group, Efficiency Vermont therefore took the lead in procuring the software required to generate the energy score and label. In June 2013, Efficiency Vermont issued a request for proposals (RFP) for an energy scoring tool as a component of a broader RFP process that also includes contractor energy audit software and program management software. Members of the Working Group had robust input into the scoring tool selection process. Working Group input included: 1) reviewing the draft list of requirements for the score tool to include in the RFP; 2) participating in demos of the tool; and 3) providing input and recommendations to Efficiency Vermont on which tool should be selected.

Efficiency Vermont has selected and licensed the tool (OptiMiser), will configure it for Vermont conditions, and maintain and upgrade the tool on an ongoing basis. Efficiency Vermont will work with other agency partners, such as WAPs and VGS, to determine how best to transfer data into the scoring tool through APIs, or via an alternative approach. While the details of how this might work, and the associated costs, have yet to be determined, Efficiency Vermont will coordinate the effort and serve as the primary point of contact for the energy score software vendor.

As program coordinator and scoring tool software lead, Efficiency Vermont will also perform a basic level of desktop QC on any energy score generated in Vermont and assure compliance with any QA/QC requirements associated with the selected energy scoring tool. Efficiency Vermont will coordinate with other agencies to develop a field QA process for a percentage of homes scored, building on existing field QA procedures.

Data Management, Reporting, and Privacy Protections

The Working Group recommends that all energy scores delivered in Vermont be collected in a central repository to allow for QA/QC and aggregate trend analysis. This will also allow Efficiency Vermont to create a website to provide Vermonters for ongoing access to their own personal energy scoring data and additional, more in-depth analysis, such as calculating a carbon score. Efficiency Vermont will work with the software vendor to store the energy score data securely in a central location and report aggregate results and trends.

In order to enable the creation of a data repository, it will be necessary for VGS and WAPs to share their customer data with select Efficiency Vermont staff insofar as it is associated with generating the energy label. Efficiency Vermont understands the sensitivity of WAP and utility client information, and will work closely with OEO and WAPs to determine the best approach to preserve client confidentiality. Efficiency Vermont currently maintains a strict confidentiality policy for the use of customer utility data, such as electric usage, customer address, name, account number, and physical location. According to this confidentiality policy, customer-specific information may only be used for the purposes of implementing Efficiency Vermont energy efficiency services, by staff and subcontractors who have signed a Confidentiality Non-Disclosure Agreement. Customer-specific information can only be used for other purposes with express written request from the customer, including the date of the request, the scope of customer information that is authorized to be provided, and the name and contact information of the party to whom it is to be provided.

In Residential New Construction with the DPS's approval the following is stated on the enrollment form:

> "Home Energy Rating Information Release: The sponsors of Efficiency Vermont Residential New Construction service are authorized to release the following Home Energy Rating System (HERS) information for the purpose of assisting real estate appraisers and realtors in the development of accurate home appraisals: the physical address of the Rated property, the HERS Index Score, whether the home is labeled as ENERGY STAR, LEED for Homes, National Green Building Standard, or Passive House, and date completed in Efficiency Vermont Residential New Construction service. Requests to withhold such release will be honored, providing such notification is received prior to completion of HERS documents in Efficiency Vermont Residential New Construction service. Home Energy Rating information will also be available to subsequent owners of the property upon request."

This is done in order to convey how many other homes not listed for sale have HERS Ratings and third party verified building certifications. It may behoove the Working Group to at least consider an augmented list of all labeled existing homes for the same purpose.

While the above privacy issues should be considered, a balanced approach needs to be weighed to ensure adequate privacy while supporting market recognition of energy performance. Consistent with existing policies, no customer-level data will be publicly shared without express written permission of the customer, similarly to the Residential New Construction approach. Customers will have the option to withhold their home energy label data from the MLS and appraisal databases at time of sale. Otherwise, some information may be used by credentialed appraisers and Realtors, and viewed by prospective home purchases with approval of the customer as included as a standard part of participating in a retrofit program. Final privacy details will need to be determined.

Certification and Branding

The Vermont home energy label will have a statewide brand of the "Vermont Home Energy Score", which can be promoted through joint marketing and branding. Each agency delivering the label should have their logo represented. For example, if VGS is delivering an energy label to its customers, then the VGS logo should appear on the label. As the program coordinator, Efficiency Vermont's logo will also appear. Therefore, most labels will include at least two logos – the Efficiency Vermont logo and that of the individual agency (e.g., VGS, CVCAC, and NWWVT). The label could potentially also include a third logo for the individual assessor, if delivered by a home performance contractor or other private party.

Cost-Sharing

Efficiency Vermont will bear any up-front costs associated with purchasing or licensing the energy scoring tool and customizing it for use for Vermont. Agencies such as VGS and WAP will pay for any additional costs that are directly associated with their use of the tool in proportion to the number of energy scores being generated for their customers. Such additional costs might include setting up data exports from their audit software into the score tool and paying per-home fees for scoring additional homes. None of these costs need to be incurred up-front, so this will give agencies time to identify options to pay for this work. Moreover, costs could vary substantially depending on which tool is selected, and how it is configured.

EEUs and WAPs will also share in the costs associated with the program coordination functions, including training, QA/QC, data management, trend analysis, and reporting, in proportion with the number of scores being generated for their customers.

Implementation Proposed Timeline

The timeline for next steps includes working on the scoring tool configuration, data transfers and training of assessors throughout 2014, with a goal of beginning to deliver the Vermont Home Energy Label by the end of 2014.

Summary and Next Steps

This section presents a summary of Working Group recommendations and the next steps to implementing a Vermont Home Energy Score and Label. It is the Working Group's determination that no additional legislation is needed; the implementation steps laid out here can be completed without legislative action. As a result of these efforts, the Working Group recommends the following:

1. *Support voluntary approaches*. The Working Group recommends a voluntary approach in order to test how energy labeling and better energy information can add value for homeowners, buyers, sellers and renters.
2. *Encourage partnerships*. The Working Group itself along with the process of developing this report resulted in much good work. This coordination and relationship-building between the Vermont energy community, Realtors, the MLS, the Building Performance contractors, housing and environmental groups should be encouraged to continue in order to arrive at the best possible consensus-based outcomes impacting Vermont's energy landscape.
3. *Implement the proposed residential labeling approach*. The multi-pronged voluntary labeling approach should include MLS and Realtor coordination and system enhancements, development of a program completion certificate conforming to the BPI Residential Energy Efficiency Upgrade Certificate Standard 2101, and development and implementation of the proposed home energy label. Specifically:
    a. *MLS Coded Features*: Review and work with NNEREN to update the coded features in the MLS system to better address existing homes features, the Vermont Home Energy Score and the recognition certificate;
    b. *Coordinate efforts with New Hampshire;*
    c. *Update the Vermont Association of Realtors Forms:* Seller's Property Information Report (SPIR) and Property Utilities and Services form and work on a consistent and accurate way to report utility bills;
    d. *Scoring and Labeling Tool:* Work with OptiMiser and the DOE Home Energy Scoring Tool to set up the software and data transfers required to generate energy scores and labels through voluntary retrofit programs;
    e. *Educational Materials:* Develop marketing and educational materials in support of rolling out the Label; and
    f. *Assessors:* Develop the qualifications and certification requirements for independent assessors and then implement.
4. *Adopt the proposed governance structure*. The PSD has agreed to serve as the authority over a governing board of stakeholders to guide the on-going development and implementation of energy labeling Vermont buildings.
5. *Support the administration and statewide coordination.* Efficiency Vermont has stepped up to help lead and support this effort in 2013 and is willing to continue playing this role. Secure available resources to aid in this effort for the future through a Legislative allocation or from another program funding source.
6. *Develop a multifamily and commercial and industrial labeling tool in 2014.* Coordinate with the existing Working Group but re-formulate its membership to invite stakeholders with an interest and expertise in multifamily and commercial and industrial buildings to begin addressing these additional market sectors. Develop the required report to the Legislature by December 15, 2014.
7. *Create a locational efficiency working group.* The Locational Efficiency Working Group should consider how locational efficiency could be measured and incorporated into the residential and

commercial building ratings and/or labels. The DPS in coordination with ACCD, ANR, VEIC, and VTrans, along with other interested stakeholders will complete a report with recommendations on how locational efficiency information could be incorporated by January, 2015.

8. *Plan and evaluate for the December 2016 report on mandatory approaches.* As called for in Act 89, the PSD and others should implement these labeling approaches and then "…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" in preparation for the report to the Legislature on December 15, 2016.

Appendix

Vermont Act 89 – 2013 Energy Bill

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;

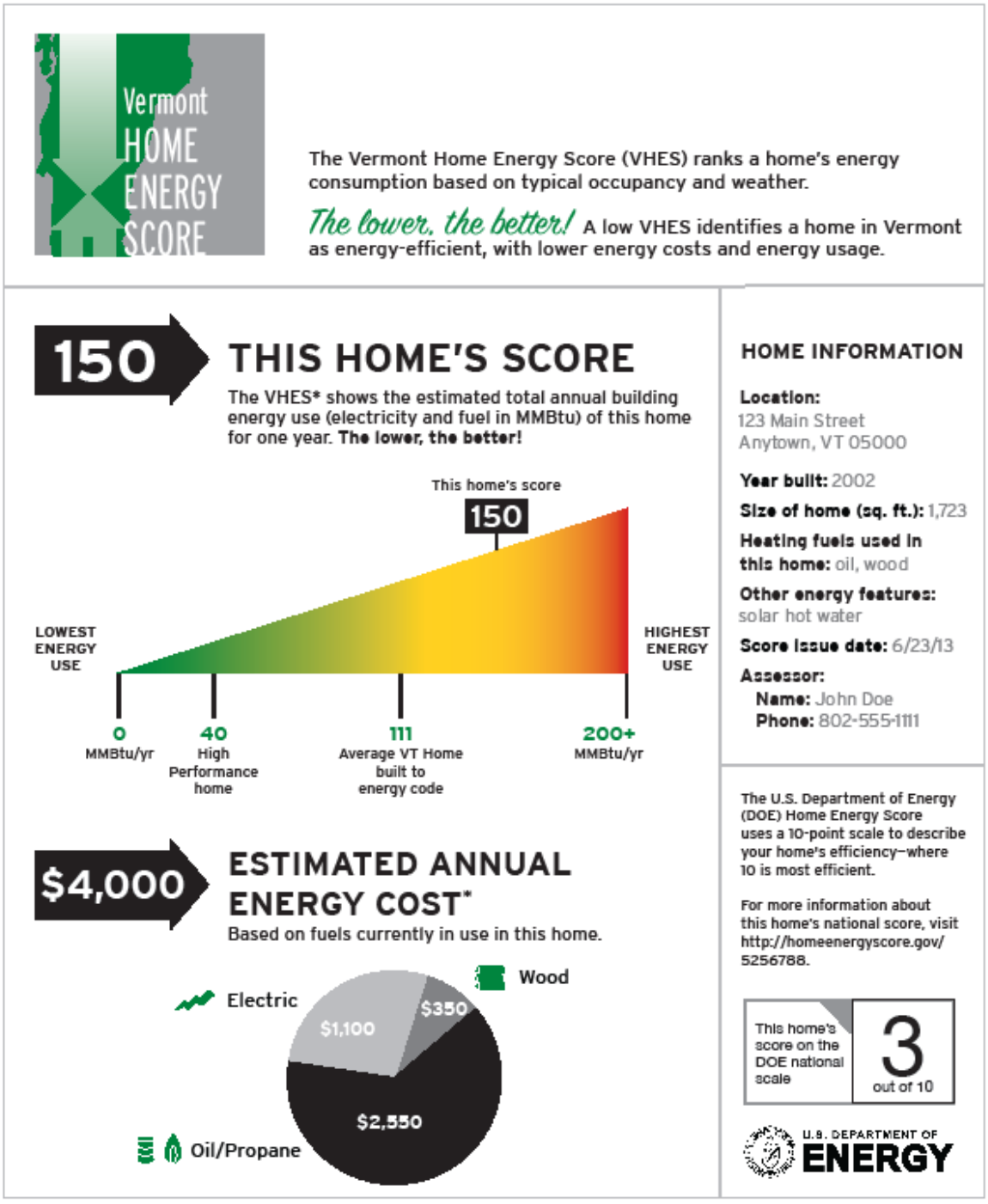
(2) describe the efforts made to disseminate the tools for public use;

(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;

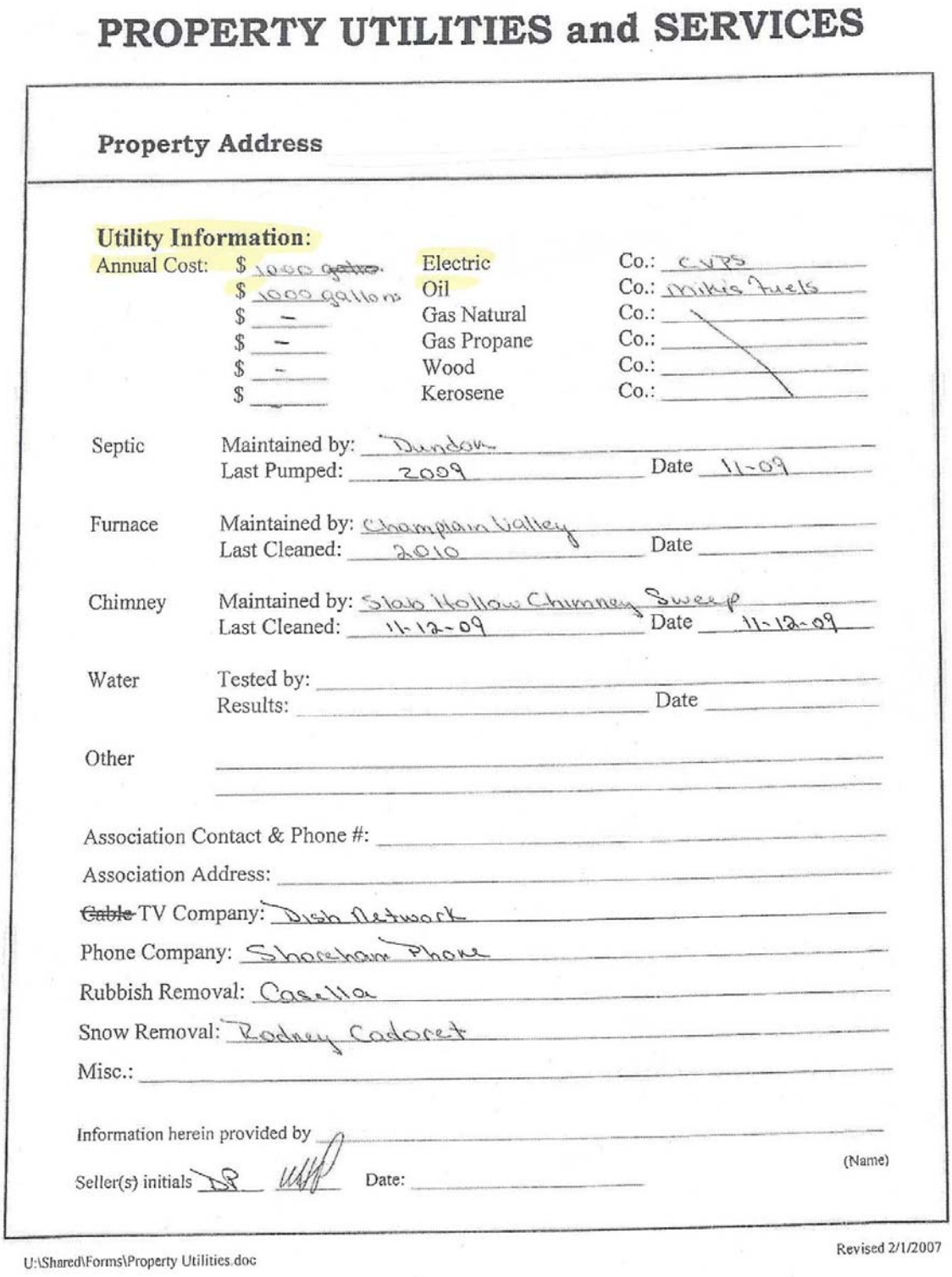
(4) analyze and recommend whether building energy disclosure requirements should be made mandatory for one or more sectors and whether any such requirement should be met by all subject properties by a date certain or whether it should be triggered by an event such as time of sale or lease; and

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

Vermont Home Energy Label



Property Utilities and Services Form - Sample



PROPERTY UTILITIES and SERVICES

Property Address _____

Utility Information:

Annual Cost:			
$ 1000 gallons	Electric	Co.:	CVPS
$ 1000 gallons	Oil	Co.:	Mikis Fuels
$ –	Gas Natural	Co.:	
$ –	Gas Propane	Co.:	
$ –	Wood	Co.:	
$ –	Kerosene	Co.:	

Septic — Maintained by: Dundon
Last Pumped: 2009 Date 11-09

Furnace — Maintained by: Champlain Valley
Last Cleaned: 2010 Date _____

Chimney — Maintained by: Slate Hollow Chimney Sweep
Last Cleaned: 11-12-09 Date 11-12-09

Water — Tested by: _____
Results: _____ Date _____

Other _____

Association Contact & Phone #: _____

Association Address: _____

~~Cable~~ TV Company: Dish Network

Phone Company: Shoreham Phone

Rubbish Removal: Casella

Snow Removal: Rodney Cadoret

Misc.: _____

Information herein provided by _____ (Name)

Seller(s) initials _____ Date: _____

U:\Shared\Forms\Property Utilities.doc Revised 2/1/2007

Seller's Property Information Report - Sample

SELLER'S PROPERTY INFORMATION REPORT

TO BE COMPLETED BY SELLER

Seller's Name(s): _____ _____ Date: _____

_____

Property Address: _____ _____ _____

Type of Property: ☒ Single Family Residence, ☐ Multi-Family Residence (duplex, triplex, etc,), ☐ Condominium/Townhouse, ☐ Land Only, ☐ Commercial

INTRODUCTION: This Report provides information from the Seller based on Seller's personal knowledge concerning the above Property. Unless otherwise disclosed, Seller does not have any expertise in construction, architecture, engineering, surveying or any other skills that would provide Seller with special knowledge concerning the condition of the Property. Other than having owned the Property, Seller has no greater knowledge about the Property than that which could be obtained by a careful inspection performed by or on behalf of a potential buyer. The real estate agents involved with the sale of this Property do not conduct or perform any inspection of the Property. Unless otherwise disclosed, Seller has not inspected or examined those portions of the Property that are generally inaccessible. **THIS REPORT DOES NOT CONSTITUTE A WARRANTY OF ANY KIND BY THE SELLER OR BY ANY REAL ESTATE AGENT CONCERNING THE CONDITION OF THE PROPERTY. THIS REPORT IS NOT A SUBSTITUTE FOR A PROPERTY INSPECTION. BUYER HAS THE OPPORTUNITY TO REQUEST THAT SELLER AGREE TO A PROPERTY INSPECTION AS PART OF ANY CONTRACT FOR THE SALE OF THE PROPERTY.**

INSTRUCTIONS TO SELLER: (1) Answer ALL questions. (2) Disclose conditions that you know about that affect the Property. (3) Attach additional pages to this Report if additional information is required. (4) Complete this form yourself. (5) If some items do not apply to this Property, write "N/A" (Not Applicable). IF YOU DO NOT KNOW THE FACTS, WRITE "DON'T KNOW." DO NOT GUESS THE ANSWER TO ANY QUESTION.

THE STATEMENTS IN THIS REPORT ARE MADE BY THE SELLER.
THEY ARE NOT STATEMENTS OR REPRESENTATIONS MADE BY ANY REAL ESTATE AGENT(S).

1. LAND (SOILS, DRAINAGE, BOUNDARIES AND EASEMENTS)

(a)	Has any fill or off-site material been placed on the Property?	☐ YES	☒ NO	☐ DON'T KNOW
(b)	Do you know of any sliding, settling, subsidence, earth movement, upheaval or earth stability problems that have occurred on the Property or in the immediate neighborhood?	☐ YES	☒ NO	☐ DON'T KNOW
(c)	Is the Property located in a federal flood hazard zone or wetlands, public waters or conservation zones designated by federal, state or local statute, regulation or ordinance?	☐ YES	☒ NO	☐ DON'T KNOW
(d)	Do you know of any past or present drainage, high water table, or flood problems affecting the Property or adjacent properties?	☐ YES	☒ NO	☐ DON'T KNOW
(e)	Is the Property served by a road maintained by the municipality?	☒ YES	☐ NO	☐ DON'T KNOW
(f)	Are there public or private landfills or dumps (compacted or otherwise) on the Property or on any abutting property? misc. items in woods + underbarn	☐ YES	☒ NO	☐ DON'T KNOW
(g)	Are there currently any underground storage tanks, including gasoline, propane and/or fuel oil on the Property?	☐ YES	☒ NO	☐ DON'T KNOW
(h)	Have there been any underground storage tanks, including gasoline, propane and/or fuel oil on the Property in the past?	☐ YES	☒ NO	☐ DON'T KNOW
	If yes, have they been removed?	☐ YES	☐ NO	☐ DON'T KNOW
	When? _____ By whom? n/a			
(i)	Do you know the location of the boundary lines of the Property?	☒ YES	☐ NO	☐ DON'T KNOW

Seller(s) Initials DP _____ _____

  This form developed by Vermont Association of REALTORS®, Inc.

Form generated by: TrueForms™ www.TrueForms.com 800-499-9612

(j) Are the boundary lines of the Property marked in any way? ☐ YES ☐ NO ☑ DON'T KNOW
If yes, how are they marked? very good understanding of boundary lines

(k) Has the Property been surveyed? ☐ YES ☑ NO ☐ DON'T KNOW
If yes, when? _____ By whom? _____

(l) Is a copy of the survey available? ☐ YES ☐ NO ☐ DON'T KNOW

(m) Are there any easements or rights of way (other than utility easements) affecting the Property? ☐ YES ☑ NO ☐ DON'T KNOW

(n) Are there any boundary line disputes, claims of adverse possession, encroachments, shared driveways, party walls or zoning set back violations affecting the Property? ☐ YES ☑ NO ☐ DON'T KNOW

If any of your answers in this section are "YES," explain in detail: _____

2. MECHANICAL, ELECTRICAL, APPLIANCES & OTHER SYSTEMS

HEATING/AIR CONDITIONING/HOT WATER

(1) Air Conditioning ☐ Central Air ☐ Window ☐ (#) AC Units Included in Sale _____

(2) Heating ☐ Electric ☑ Fuel Oil ☐ Natural Gas ☐ Propane ☐ Wood ☑ Base Board ☐ Hot Air
☐ Other radiant heat in kitchen

(3) Hot Water ☐ Electric ☑ Fuel Oil ☐ Natural Gas ☐ Propane ☐ Domestic ☐ Solar
☐ Other _____

Are you aware of any problems regarding these systems? ☐ YES ☑ NO, **if "yes," explain in detail:**

Annual Fuel Usage: 1000 Gallons Provider Morris Fuels Property used: ☑ Full Time ☐ Seasonally
Fuel consumption may vary by user, number of occupants and weather conditions

ELECTRICAL SYSTEM

Electrical service panel has: ☐ Fuses ☑ Circuit Breakers 100 **AMPS (If known)**

Are you aware of any problems or conditions that affect the electrical system? ☐ YES ☑ NO

If yes, explain in detail: _____

Total Annual Usage $ 1000 Electric Utility Provider CVPS Property used ☑ Full Time ☐ Seasonally
Electricity consumption may vary by user, number of occupants, number of appliances and weather conditions

ELECTRICAL SYSTEM

Is land line telephone service present at the Property? ☑ Yes ☐ No If yes, current provider: Shoreham Phone

Is cellular telephone service available at the Property? ☑ Yes ☐ No If yes, list available provider(s): Verizon

Is internet service present at the Property? ☐ Yes ☑ No If yes, current provider: _____
If yes, service is: ☐ Dial Up ☐ Broadband ☐ Cable ☐ Satellite ☐ DSL

Is television service present at the Property? ☑ Yes ☐ No If yes, current provider: Dish Network
If yes, source is: ☐ Antenna ☐ Cable ☑ Satellite ☐ DSL

Seller(s) Initials DP WMP _____ _____

OTHER EQUIPMENT AND APPLIANCES INCLUDED IN SALE

Mark the items included in the sale of the property:

☐ Electric Garage Door Opener - Number of Transmitters ___ ☐ Security Alarm System (☐ Owned ☐ Leased) ☐ Humidifier
☐ Dehumidifier ☐ Lawn Sprinklers ☐ Automatic Timer ☑ Smoke Detectors - How Many? 3 ☐ Swimming Pool
☐ Pool Heater ☐ Spa/Hot Tub ☐ Pool/Spa Equipment (list): ___
☑ Refrigerator ☑ Stove ☐ Microwave Oven ☑ Washer ☑ Dryer ☐ Dishwasher ☐ Trash Compactor ☐ Intercom
☐ Ceiling Fans ☐ Sump Pump ☑ Well Pump ☐ Central Vacuum ☐ Freezer ☐ Woodstove ☐ Cable/Satellite - (receiver/dish)
☐ Indoor/Outdoor Grill ☐ Garbage Disposal ☐ Hood/Fan ☐ Whirlpool Bath ☐ Attic Fans ☐ Other: ___

Are any of the items that will be included in the sale of the property in need of repair or replacement? ☐ **YES** ☑ **NO, if "yes," explain in detail:** ___

List equipment and appliances, including any AC units, excluded from sale of the Property ___

3. STRUCTURAL COMPONENTS

Check any of the following items that have significant defects or malfunctions or that need significant repair:

☐ Foundation ☐ Slab ☐ Chimney ☐ Fireplace ☐ Interior Walls ☐ Ceilings ☐ Floors
☐ Windows ☐ Doors ☐ Storms/Screens ☐ Exterior Walls ☐ Driveway ☐ Sidewalks ☐ Pool ☐ Roof
☐ Outside Retaining Walls ☐ Other Structures/Components: ___

If any of the above items are checked, please describe the defect or malfunction or items that need significant repair: ___

Has there been significant damage to the Property or any of the structures from fire, wind, floods, earth movements or landslides?
☐ **YES** ☑ **NO** ☐ **DON'T KNOW** If yes, explain in detail: ___

BASEMENT/CELLAR/CRAWL SPACE:

Has there ever been any water leakage, accumulation of water, dampness or visible mold within the basement, cellar or any crawl space? ☐ YES ☑ **NO, if "yes," explain in detail:** damp but no water
Have there been any repairs or other attempts to control any water or dampness within the basement, cellar or crawl space?
☐ **YES** ☑ **NO** ☐ **DON'T KNOW, if "yes", explain in detail:** ___
Are any of the above recurring problems? ☐ **YES** ☑ **NO, if "yes," what are the problems and how often have they recurred?** ___

Has paint containing lead been used on the Property? ☑ **YES** ☐ **NO** ☐ **DON'T KNOW**

ROOF: ☐ Shingle ☑ Slate ☐ Metal ☐ Tile ☐ Other (describe) ___ ☐ Don't know
Approximate age of roof? some as house (1830)
Has the roof ever leaked since you have owned the Property? ☑ **YES** ☐ **NO** ☐ **DON'T KNOW**
Has the roof been replaced or repaired since you have owned the Property? ☑ **YES** ☐ **NO** ☐ **DON'T KNOW**
If "yes," when? ___
Are there any current problems with the roof? ☐ **YES** ☑ **NO** ☐ **DON'T KNOW**
If "yes," explain: ___

If any of your answers in this section are "YES," explain in detail: normal repair + maintenance on roof

4. WATER SUPPLY

Special Notice: Water supplies, especially those that are not public or municipal supplies, are affected by many conditions about which Seller may have no knowledge or have any ability to control. These water supply systems can change, deteriorate or fail, often with no warning signs.

Seller makes no warranty or representation whatsoever that the water supply, including quality or quantity, will operate or continue to/unction/or any period o/time. Buyer's inspection of these systems by a qualified inspector is strongly recommended.

Seller(s) Initials DP WHP ___ ___

Type of System:
The Property is connected to and serviced by (*check all appropriate boxes*):
☐ Public or Municipal ☐ Community ☑ Private ☐ Shared
☐ On-site ☐ Off-site ☐ Drilled Well ☐ Dug Well ☐ Spring ☐ Lake/Pond ☐ None ☐ Don't know
Water System Features (if known): ☐ Cistern/Reservoir/Holding Tank ☑ Water Softener/Conditioner ☐ Reverse Osmosis
☐ Infrared Light ☐ None ☐ Don't know ☐ Other: Spring fed well

Water Pipes are: ☐ Copper ☐ Galvanized Metal ☐ Lead ☐ PVC (Plastic) ☑ Combination ☐ Don't know.

Condition of Water and Water System:
Has the water been tested for coliform bacteria?
☐ **YES** ☐ **NO** ☑ **DON'T KNOW** **If "yes," when?** _____
By whom? _____ Results: _____
Has any other water quality or water chemistry testing been done?
☐ **YES** ☑ **NO** ☐ **DON'T KNOW** **If "yes," when?** _____
By whom? _____ Results: _____
Are you aware of low water pressure in your water system? ☑ **YES** ☐ **NO**
Has your water supply ever run out or run low? ☐ **YES** ☑ **NO** **If "yes," describe** _____
only issue if multiple users at one time.
Describe in detail any other problems you have had with your water system, including water quality or quantity: _____
water softener
Does the water have any odor, bad taste, cloudiness or discoloration? ☐ **YES** ☑ **NO** **If "yes" to any, describe in detail:**

5. SEWER/SEPTIC WASTEWATER SYSTEM

Special Notice: Sewer septic and wastewater systems that are not public or municipal systems are not designed to perform indefinitely and are affected by many conditions about which Seller may have no knowledge or have any ability to control. In addition, the useful life of these systems is affected by the amount and type of use, soil conditions, maintenance, the inherent design of these systems and many other factors.
Seller makes no warranty or representation whatsoever that these systems will operate or continue to function for any period of time. Buyer's inspection of these systems by a qualified inspector is strongly recommended.

Type of System:
The Property is connected to and serviced by (check appropriate boxes):
☐ Public or Municipal Sewer System ☐ On-site septic/wastewater system ☐ Off-site septic/wastewater system ☑ Septic Tank
☐ New or Alternate Technology (explain technology) _____ ☐ Holding Tanks
☐ Cesspool ☐ Sewage Pump ☐ Dry Well ☐ Subsurface Leach Field ☑ Mound System ☐ Other ☐ Don't know

Condition of System:
If other than public or municipal sewer system, please answer the following:
Date septic system installed? 2001
If the septic/wastewater system is other than a public or municipal system, is the system entirely on your Property?
☑ **YES** ☐ **NO** ☐ **DON'T KNOW, If "no", where is it?** _____
Has the septic/wastewater system been repaired since you owned the Property? ☑ **YES** ☐ **NO** **If "yes," when?** 2001
What was done: replaced in 2001 w/ mound system
By whom? Clark's Septic
Type of septic tank ☑ Concrete ☐ Metal ☐ Fiberglass ☐ Other (describe) _____ ☐ Don't Know
Septic tank capacity (in gallons) 1000 ☐ Don't Know
Date Septic Tank Last Inspected? _____ ☑ Don't Know Reports of last inspection/pumping attached ☐ **YES** ☑ **NO**
Date Septic Tank Last Pumped? _____ ☑ Don't Know By whom? Dundon
To your knowledge, is any portion of the sewer/septic/wastewater system in need of repair or replacement? ☐ **YES** ☑ **NO**
If "yes," describe in detail: _____

Seller(s) Initials DR WM _____ _____

6. ADDITIONAL INFORMATION CONCERNING THE PROPERTY

(a) **Age of building: Main Bldg.** 1830 **Additions to Main Bldg.** _____ **Additional Bldgs (a)** _____ **(b)** _____

(b) **Is Seller currently occupying the Property?** ☑ **YES** ☐ **NO** If "no," how long has it been since Seller occupied? _____

(c) Has Seller built or caused to be built any of the buildings on the property, or made any additions, modifications, alterations or renovations to any building on the property? ☑ **YES** ☐ **NO** **If "yes," please explain:** new kitchen

(d) If "yes," did you obtain all necessary permits and approvals for such work? ☐ **YES** ☑ **NO** no permit needed

(e) Has Seller received written notice of any violations of local, state or federal laws, building codes and/or zoning ordinances affecting the property? ☐ **YES** ☑ **NO**

(f) Are there any property tax abatements, land use tax stabilization agreements or other special property tax arrangements applicable to the Property? ☐ **YES** ☑ **NO** ☐ **DON'T KNOW**

(g) Has Seller received notice that the Property will be reassessed by any taxing authority during the next 12 months? ☐ **YES** ☑ **NO**

(h) Does the property have Urea-Formaldehyde Foam Insulation? ☐ **YES** ☑ **NO** ☐ **DON'T KNOW**

(i) Does the property have Asbestos and/or Asbestos Materials in the siding-walls-plaster-flooring-insulation-heating system? ☐ **YES** ☐ **NO** ☑ **DON'T KNOW**

(j) Has the property been tested for Radon Gas? ☐ **YES** ☑ **NO** ☐ **DON'T KNOW**

(k) If "yes," when? _____ By whom? _____ Results: _____

(l) Does the property have evidence of mold? ☐ **YES** ☐ **NO** ☑ **DON'T KNOW**

(m) If "yes," what has been done about the mold? _____

(n) Are you aware of any off-site conditions in your neighborhood/community that could adversely affect the value or desirability of the Property, such as noise, proposed major new development, relocation or major construction of roads or highways, proposed zoning changes, etc.? ☐ **YES** ☑ **NO** ☐ **DON'T KNOW** **If "yes," please explain in detail:** _____

(o) Do you have any knowledge of termites, dry rot, or pests on or affecting the Property? ☐ **YES** ☑ **NO**

(p) Do you have any knowledge of any damage to the Property caused by termites, dry rot or pests? ☐ **YES** ☑ **NO**

(q) Is the property currently under warranty or other coverage by a licensed pest control company? ☐ **YES** ☑ **NO**

(r) Do you know of any termite/pest control reports or treatments for the Property in the last five years? ☐ **YES** ☑ **NO**

(s) **If any of your answers in this section are "yes," explain in detail:** _____

7. CONDOMINIUMS AND OTHER HOMEOWNERS ASSOCIATIONS

(a) Is the property part of a condominium or other common interest ownership regime or is it subject to covenants, conditions and restrictions (CC&R's)?
☐ **YES** ☑ **NO** ☐ **DON'T KNOW** **If "YES", Condo docs or CC&R's attached?** ☐ **YES** ☐ **NO**

(b) Is there any defect, damage, or problem with any common elements or common areas, which could affect their value or desirability? ☐ **YES** ☐ **NO** ☐ **DON'T KNOW**

(c) Is there any condition or claim which may result in an increase in assessment or fees?
☐ **YES** ☐ **NO** ☐ **DON'T KNOW** **If "YES", describe below.**

(d) Are any required stormwater permits current? ☐ **YES** ☐ **NO** ☐ **DON'T KNOW**

(e) Are there any homeowners' association or "common area" expenses or assessments affecting the Property?
☐ **YES** ☐ **NO** ☐ **DON'T KNOW**

(f) Are there any current actions, disputes or lawsuits pending between the homeowners/condominium owners' association and any other parties? ☐ **YES** ☑ **NO** ☐ **DON'T KNOW** **If "YES", describe below.**

(g) Do you know of any violations of local, state, or federal laws or regulations, condominium rules or CC&R's relating to this property? ☐ **YES** ☐ **NO** ☑ **DON'T KNOW**

If any of your answers in this section are "YES," explain in detail:

_____

_____

_____

_____

_____

Seller(s) Initials DP _____ _____ _____

IS THERE ANYTHING ELSE THAT SHOULD BE DISCLOSED ABOUT THE CONDITION OF THE PROPERTY?
(In answering this question, you should be guided by what you would want to know about the property if you were buying it.)

☐ YES ☐ NO ☐ DON'T KNOW OF ANYTHING ELSE

neighboring land to north is in land trust, does swell during summer

SELLER'S STATEMENT

Seller is providing the information in this report to reduce the likelihood of DISPUTES or LEGAL ACTION concerning the sale of the Property. The information provided herein does not constitute any warranty, express or implied, by Seller about the Property or any feature of the Property. Seller hereby authorizes any real estate agent to provide a copy of this report to any prospective buyer.

IN DELIVERING THIS REPORT TO A BUYER OR PROSPECTIVE BUYER, NO REPRESENTATION IS MADE BY ANY REAL ESTATE AGENT THAT THEY HAVE ANY INDEPENDENT OR PERSONAL KNOWLEDGE ABOUT THE CONDITION OF THE PROPERTY, THAT THEY HAVE MADE ANY INQUIRY OR INVESTIGATION ABOUT THE CONDITION OF THE PROPERTY OR ANY OF THE INFORMATION PROVIDED IN THIS REPORT BY THE SELLER OR THAT THEY HAVE VERIFIED THE INFORMATION PROVIDED IN THIS REPORT BY THE SELLER.

Seller acknowledges that the information provided in this report is correct to the best of Seller's knowledge as of the date signed by Seller.

Seller _____ Date 12-10-11

Seller _____ Date 12-10-11

BUYER/PROSPECTIVE BUYER ACKNOWLEDGES RECEIPT OF A COPY OF THIS REPORT ON THE DATE SET FORTH BELOW. BUYER/PROSPECTIVE BUYER UNDERSTANDS THAT THIS REPORT PROVIDES INFORMATION ABOUT THE PROPERTY MADE BY THE SELLER AS OF THE ABOVE DATE. IT IS NOT A WARRANTY OF ANY KIND BY SELLER OR ANY REAL ESTATE AGENT. THIS REPORT IS NOT A SUBSTITUTE FOR ANY PROPERTY INSPECTION.
BUYER/PROSPECTIVE BUYER MAY OBTAIN A PROPERTY INSPECTION; HOWEVER, ANY SUCH INSPECTION MUST BE BY WRITTEN AGREEMENT WITH SELLER. BUYER/PROSPECTIVE BUYER UNDERSTANDS THAT THERE MAYBE MATTERS RELATING TO THE PROPERTY WHICH ARE NOT ADDRESSED IN THIS REPORT.

Buyer/Prospective Buyer _____ Date _____

Buyer/Prospective Buyer _____ Date _____

On _____, this report, prepared by Seller, was provided to Buyer/Prospective Buyer by _____, acting as *(check one)*:

☐ **Seller's Real Estate Agency** ☐ **Broker's Agent acting on behalf of Seller** ☐ **Buyer/Prospective Buyer's Real Estate Agency**

Signed: _____

Signed: _____

DOE Home Energy Score Data Collection Sheet

Home Energy Scoring Tool

Data Collection Sheet

Assessment Date: _____ **Qualified Assessor**: _____

Comments: _____

_____

_____

_____

Location Information

Address: _____ City: _____ State: _____ Zip: _____

House Information

Year Built: _____ # of Bedrooms: _____ # of Stories Above Grade: _____

Conditioned Floor Area (sq ft): _____ Average Ceiling Height (ft): _____

Direction Faced by Front of House: N / NE / E / SE / S / SW / W / NW

Air Tightness

Air Leakage rate: _____ cfm50 **or** Has the house been air sealed?: Yes / No

Roof

Roof Construction: Standard Roof / with Radiant Barrier / with Expanded Polystyrene Sheathing (EPS)

Exterior Finish: Composition Shingles or Metal / Wood Shake / Clay Tile / Concrete Tile / Tar & Gravel

Insulation Level (on roof): R-0 / R-11 / R-13 / R-15 / R-19 / R-27

Roof Absorptance (number between 0.0 - 1.0): _____

Attic

Attic or Ceiling Type: Unconditioned Attic / Conditioned Attic / Cathedral Ceiling

Attic Floor Insulation: R0 / R-3 / R-6 / R-11 / R-19 / R-21 / R-25 / R-30 / R-38 / R-49 / R-60

Foundation

Type: Slab-on-Grade / Unconditioned Basement / Conditioned Basement / Unvented Crawlspace / Vented Crawlspace

Foundation Insulation: None / R-5 (slab only) / R-11 (bsmt/crawl wall) / R-19 (bsmt/crawl wall)

Insulation over Basement or Crawlspace: R0 / R-11 / R-13 / R-15 / R-19 / R-21 / R-25 / R-30 / R-38

Skylights: Yes or No (circle one):

Total Skylight Area (sq. ft.): _____ Number of Panes: _____

Frame Type: Aluminum / Aluminum with Thermal Break / Wood or Vinyl

Glazing Type: Clear / Tinted / Solar Control low-E / Insulating low-E, argon gas fill

Wall Characteristics: Front or All (circle one)

Construction: Wood Frame / Wood Frame with Expanded Polystyrene Sheathing (EPS) / Wood Frame with Optimum Value Engineering / Structural Brick / Concrete Block or Stone / Straw Bale

Exterior Finish: Wood, Asbestos, Fiber Cement, Composite Shingle or Masonite Siding / Stucco / Vinyl Siding / Aluminum Siding / Brick Veneer / Asbestos Siding / Fiber Cement Siding / Composite Shingle Siding / Masonite Siding

Wall Insulation: R-0 / R-3 / R-7 / R-11 / R-13 / R-15 / R-19 / R-21/ R-27 / R-33 / R-38

Window Area (sq. ft.):

Front: _____ Right Side: _____ Back: _____ Left Side: _____

Window Characteristics: Front or All (circle one)

Number of Panes: _____ Frame Type: Aluminum / Aluminum with Thermal Break / Wood or Vinyl

Glazing Type: Clear / Tinted / Solar Control low-E / Solar Control low-E, argon gas fill / Insulating low-E / Insulating low-E, argon gas fill

Alternative Values: U-Factor (between 0.01-5): _____ SHGC (between 0-1): _____

Wall Characteristics: Right Side (facing house)

Construction: Wood Frame / Wood Frame with Expanded Polystyrene Sheathing (EPS) / Wood Frame with Optimum Value Engineering / Structural Brick / Concrete Block or Stone / Straw Bale

Exterior Finish: Wood, Asbestos, Fiber Cement, Composite Shingle or Masonite Siding / Stucco / Vinyl Siding / Aluminum Siding / Brick Veneer / Asbestos Siding / Fiber Cement Siding / Composite Shingle Siding / Masonite Siding

Wall Insulation: R-0 / R-3 / R-7 / R-11 / R-13 / R-15 / R-19 / R-21/ R-27 / R-33 / R-38

Window Characteristics: Right Side (facing house)

Number of Panes: _____ Frame Type: Aluminum / Aluminum with Thermal Break / Wood or Vinyl

Glazing Type: Clear / Tinted / Solar Control low-E / Solar Control low-E, argon gas fill / Insulating low-E / Insulating low-E, argon gas fill

Alternative Values: U-Factor (between 0.01-5): _____ SHGC (between 0-1): _____

Wall Characteristics: Back

Construction: Wood, Asbestos, Fiber Cement, Composite Shingle or Masonite Siding / Wood Frame with Expanded Polystyrene Sheathing (EPS) / Wood Frame with Optimum Value Engineering / Structural Brick / Concrete Block or Stone / Straw Bale

Exterior Finish: Wood Siding / Stucco / Vinyl Siding / Aluminum Siding / Brick Veneer / Asbestos Siding / Fiber Cement Siding / Composite Shingle Siding / Masonite Siding

Wall Insulation: R-0 / R-3 / R-7 / R-11 / R-13 / R-15 / R-19 / R-21/ R-27 / R-33 / R-38

Window Characteristics: Back

Number of Panes: _____ Frame Type: Aluminum / Aluminum with Thermal Break / Wood or Vinyl

Glazing Type: Clear / Tinted / Solar Control low-E / Solar Control low-E, argon gas fill / Insulating low-E / Insulating low-E, argon gas fill

Alternative Values: U-Factor (between 0.01-5): _____ SHGC (between 0-1): _____

Wall Characteristics: Left Side (facing house)

Construction: Wood, Asbestos, Fiber Cement, Composite Shingle or Masonite Siding / Wood Frame with Expanded Polystyrene Sheathing (EPS) / Wood Frame with Optimum Value Engineering / Structural Brick / Concrete Block or Stone / Straw Bale

Exterior Finish: Wood Siding / Stucco / Vinyl Siding / Aluminum Siding / Brick Veneer / Asbestos Siding / Fiber Cement Siding / Composite Shingle Siding / Masonite Siding

Wall Insulation: R-0 / R-3 / R-7 / R-11 / R-13 / R-15 / R-19 / R-21/ R-27 / R-33 / R-38

Windows Characteristics: Left Side (facing house)

Number of Panes: _____ Frame Type: Aluminum / Aluminum with Thermal Break / Wood or Vinyl

Glazing Type: Clear / Tinted / Solar Control low-E / Solar Control low-E, argon gas fill / Insulating low-E / Insulating low-E, argon gas fill

Alternative Values: U-Factor (between 0.01-5): _____ SHGC (between 0-1): _____

Heating System

Heating System Type: None / Central Gas Furnace / Room (thru-the-wall) Gas Furnace / Propane Furnace / Oil Furnace / Electric Furnace / Electric Heat Pump / Electric Baseboard Heater / Gas Boiler / Oil Boiler

Heating System Efficiency:

Year Installed: _____ or Efficiency Value (AFUE or HSPF): _____

Cooling System:

Cooling System Type: None / Central Air Conditioner / Room Air Conditioner / Heat Pump

Cooling System Efficiency:

Year Installed: _____ or Efficiency Value (SEER or EER): _____

Ducts

Duct Location: Conditioned Space / Unconditioned Basement or Unvented Crawlspace / Vented Crawlspace / Unconditioned Attic / Unknown or Not Applicable

Insulation: Yes / No Air Sealed: Yes / No

Hot Water:

Fuel: Fuel Oil / Natural Gas / Electricity / Propane

Hot Water System Efficiency:

Year Installed: _____ or Energy Factor (between 0-1): _____

Does the boiler also provide domestic hot water?: No / Tankless Coil / Indirect Tank

WPTZ News Story on Vermont Energy Labeling – 11/6/13

New labeling aims to unmask home energy efficiency

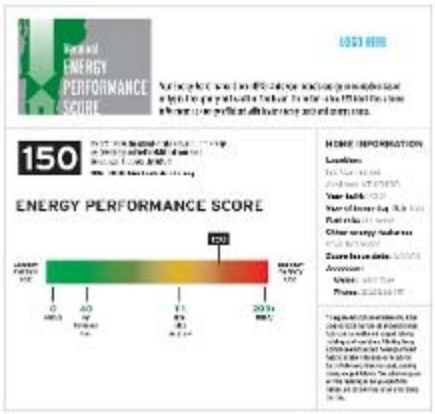
Vt. among first states to begin voluntary system, Realtors nervous

UPDATED 1:56 PM EST Nov 06, 2013

Read more: http://www.wptz.com/news/vermont-new-york/burlington/new-labeling-aims-to-unmask-home-energy-efficiency/-/8869880/22818094/-/l807j4z/-/index.html#ixzz2kJR5KpYC

MONTPELIER, Vt. —Martha Smyrski knew she had to do something about her 3-bedroom bungalow in Montpelier. It was drafty in winter, delivering a noticeable chill whenever she climbed the stairs.

"And last winter I ended up paying much more than I expected for oil," she explained, estimating her outlay at about $3,500 for the season. "That pushed me over the edge."



A final prototype of Vermont's new home energy performance label

So Smyrski hired an energy efficiency contractor to explore her options.

Energy consultant Malcolm Gray did some tests and recommended the addition of lots of insulation, and air sealing in the attic and basement.

About $5,000 worth of work, after incentives, will mean Smyrski will reduce her annual oil consumption by at least 20 percent. With today's fuel prices, that should save her about $900 this winter.

The efficiency improvements will also make her home more comfortable year-round, she learned, and she elected to go forward.

Her story is one state lawmakers are trying to encourage, to reduce carbon emissions and fossil fuel consumption, and to save Vermonters money over the long-term.

So far that objective has met with mixed results. Vermont's target goal - 80,000 home retrofitting projects completed by 2020 - is running woefully behind.

One problem, says Efficiency Vermont's Jim Merriam, is that unlike, say, new granite countertops, efficiency improvements "are invisible to homeowners and to buyers."

It's hard to see what's inside your walls. But that's effectively changing in Vermont in 2014.

Tucked into recent thermal efficiency legislation, state lawmakers approved new disclosure labeling for homes and buildings. It's a voluntary system, at least to start, and modeled after the ubiquitous Energy Star stickers on home appliances and MPG labels on new cars sold in the U.S.

Right now, most home-buyers are left to guess what a prospective house might cost for heating and cooling. The new labels would change that.

"If it's a house, an older house, you don't know if it's leaky or tight, and a sticker would help quite a bit," Gray says. He thinks standard efficiency retrofitting could add 5 percent to the market value of a typical home, and maybe more, because of lower relative utility costs.

Yet Vermont also has some of the oldest housing stock in the nation, and some real estate professionals are concerned about a system that could create a "Scarlet Letter" effect.

Issac Chavez, president of Vermont Realtors, says a voluntary system is all he can support. "Our challenge is to do it without stigmatizing the property," he said.

Chavez worries if buyers start to expect energy scores on prospective houses, thousands of homes that have not had efficiency work done will become that much more difficult to sell.

"Imagine the day if this were to become mandatory. It's not a leap in imagination to get to point where lenders decide they'll lend only on houses with a certain score." Chavez added.

Of course, that cuts both ways.

Merriam thinks the labels will simply reward those who have invested in their property but have been unable to realize the equity they deserve from the improvement.

"This is a way to bring efficiency out and make it really visible to both buyer and seller," he says.

Two other states -- Massachusetts and Oregon -- are also moving ahead with similar efficiency labeling programs in 2014, Efficiency Vermont said.

Read more: http://www.wptz.com/news/vermont-new-york/burlington/new-labeling-aims-to-unmask-home-energy-efficiency/-/8869880/22818094/-/l807j4z/-/index.html#ixzz2kJQsq68q

Public Comments

The solicitation for public comments (8/29/2013), a spreadsheet summary of the comments received, and selected public comments from organizations are all posted on the PSD website at: http://publicservice.vermont.gov/topics/energy_efficiency#bedwg.

Consumer Testing

Two rounds of consumer testing were conducted by the The Center for Research and Public Policy in October and November 2913 in order to test proposed scoring and label designs with real Vermonters. The detailed reports are posted on the PSD website at http://publicservice.vermont.gov/topics/energy_efficiency#bedwg.

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
7. Oregon labeling hearings: http://www.oregon.gov/energy/docs/Stakeholder%20Supplied%20Materials/Earth%20Advantage_SummaryResearch_ODOE2801_131018.pdf