



Vermont Building Energy Labeling Working Group:

Development of a Voluntary Commercial/Multifamily/Mixed-Use Building Energy Label

Report to the Vermont Legislature

As Called for in Act 89 of 2013:

Sec. 12. DISCLOSURE TOOL WORKING GROUP; REPORTS

December 15, 2014

Prepared by



Acknowledgements

This report is the result of a year of work from a group of individuals representing organizations named in Act 89 of 2013 who collectively dedicated over 200 hours researching, reading, discussing and responding to the issue of energy labeling multifamily, commercial and mixed-use buildings¹. We would like to acknowledge the following individuals for their time and dedication to this effort:

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It has been a pleasure working with such an engaged group of professionals who are passionate about improving the energy efficiency of Vermont's building stock. We have all learned a lot in the process and hope that our work will result in some meaningful energy savings in commercial, multifamily and mixed-use buildings.

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¹ In order to shorten the text throughout this report, "mixed-use" is not always mentioned, but is nonetheless implied in addition to commercial and multifamily buildings.

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Executive Summary

Act 89 of 2013 called for the creation of a Working Group to study “energy rating” and “disclosure” and 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 was also charged with developing or selecting “one or more tools that can be used to generate the energy rating”.

Working Group Discussions & Activities

The Working Group--made up of Vermont’s Public Service Department, Energy Efficiency Utilities (EEUs)², Weatherization Assistance Program representatives, energy efficiency experts and others—met monthly throughout 2014 and made progress towards these objectives for commercial, multifamily and mixed-use buildings. The Working Group discussed and addressed the following issues:

- Coordination with interested stakeholders
- Surveying stakeholders, building owners and tenants
- Review of rating tool options
- Metrics
- Asset vs. operational ratings
- Rating individual units vs. whole buildings
- Use-cases
- Policies
- Data aggregation, legal and privacy issues
- Data flow, storage and reporting options
- Program implementation and coordination options
- Label design options
- Grant opportunities
- Coordination with entities in Vermont and in neighboring states
- Information technology (IT) aspects and
- Writing, reviewing and finalizing this report.

Some Definitions

Energy Rating: A simplified means of conveying a building’s energy performance, either operational- or asset-based (modeled), such as the Home Energy Rating System (HERS).

Energy Label: An energy label is the visual presentation of the energy rating or score and any other supporting and comparative information. The label would typically be provided as a paper certificate and made available on-line.

Benchmarking: The process of tracking a building’s energy (and water) usage, using a standard metric to evaluate its relative efficiency over time as well as to compare the building’s efficiency to its peers locally and nationwide.

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

² EEUs include Efficiency Vermont, Vermont Gas Systems and Burlington Electric Department.

This report represents a “work in progress”, presents the consensus decisions made and suggests additional steps and decisions that will need to be made before rolling out a statewide consistent labeling program. The Working Group presents the following recommendations as a result of this work.

Consensus Decisions

The Working Group came to consensus on near-term implementation approaches and identified a list of additional issues for labeling commercial, multifamily and mixed-use buildings. For the near-term, the Working Group agreed to recommend benchmarking in phases in order to provide the energy information called for in Act 89. The Working Group also identified a number of issues that a subsequent Advisory Committee would need to address. The Working Group also suggested that the Public Service Board convene a proceeding to investigate customer energy data access, aggregation, transfer and storage issues.

Near-Term Implementation

For any building energy labeling activities commencing or continuing in the near-term, the Working Group recommends that Vermont adopt the following approaches:

1. **Benchmarking** – The “consistent format and presentation for an energy rating” for multifamily and commercial buildings, as called for in Act 89, should be derived from the following:
 - a. Actual operational energy consumption data (as opposed to “asset-based” or modeled building data);
 - b. Site-based energy usage as determined by the meter or fuel gauge at the building (as opposed to source-based energy as measured from the well or power plant);
 - c. EPA’s ENERGY STAR Portfolio Manager (“ESPM”) should be the primary tool used to benchmark buildings and generate an energy rating and label;
 - d. Energy Use Intensity (“EUI”, measured in kBtu/square foot/year) should be the primary metric for buildings;
 - e. Use the ESPM “Statement of Energy Performance Report”³ as the interim label to report the EUI and supporting building information to prospective buyers and tenants;
 - f. Aggregate energy use data will need to be provided through a mechanism that protects tenant privacy but allows for data access to facilitate benchmarking;
 - g. An opt-out provision should be provided for tenants who wish to not make available their energy use data; and
 - h. Engage and work with the private sector through EEU programs to deliver and implement benchmarking and labeling services to Vermont building owners and managers.
2. **Phased Implementation** - Proceed with the above benchmarking implementation in a phased approach as EEUs roll out benchmarking initiatives:
 - a. Phase 1: For buildings where only regulated fuels (i.e., electric and natural gas) are utilized and there is **a single utility account owner**, offer whole building benchmarking/labeling;

³ http://www.energystar.gov/buildings/tools-and-resources/sample_energy_star_statement_energy_performance

- b. Phase 2: For buildings where only regulated fuels (i.e., electric and natural gas) are utilized, include buildings where **there may be multiple utility account owners** for whole building benchmarking/labeling;
- c. Phase 3: For buildings where regulated (i.e., electric and natural gas) **and/or unregulated (delivered)** fuels are utilized, where there may be multiple utility account owners, offer whole building benchmarking/labeling; and
- d. Phase 4: For buildings where regulated (i.e., electric and natural gas) and/or unregulated (delivered) fuels are utilized, where there may be multiple utility account owners, offer whole building benchmarking/labeling **and unit level** labeling.

The Working Group will present progress to date on the above activities in December 2016, as called for in Act 89.

Unresolved Issues

Beyond the near-term consensus decisions the Working Group arrived at, there were a number of issues discussed but not completely resolved that remain on the table. The Working Group recommends that an Advisory Committee be formed to build on the progress of the Working Group and address at least the following program delivery, data storage, and administration policies and issues:

- Budgets for supporting these recommendations
- Schedule that addresses development, field testing and reporting back to the Legislature
- Label design
- Benchmarking and labeling service statewide management, providers and process
- Technical resource call center
- Quality Assurance (QA) provider
- Data Storage
- Public Access to labeled building results
- Tenant lease language
- Evaluation

The Advisory Committee will be formed in 2015 and continue discussing these issues for implementation in 2016 and beyond.

Public Service Board Proceeding

The Working Group recommends that the Public Service Board convene a proceeding to investigate the following issues:

1. **Data Aggregation and Storage** - -Consider establishing a system for delivery of aggregated energy data (including unregulated fuels, if the PSB considers it to be within its authority) to building owners and their authorized agents for use in buildings with tenants. Consider energy data release and data aggregation standards that strike a reasonable balance at protecting tenant privacy while allowing for property owner (or authorized agent) access to aggregated data, with reasonable opt-out allowances. Consider a data aggregation standard of “4/50”, as suggested by the Working Group. That is, allow for the release of tenant aggregated utility and fuel use data to any building owner (or their authorized agent) as long as there are at least four

tenants and none uses more than 50% of the total energy. Assess options for data storage, access and reporting.

2. **Standard Data Access Format**– Consider whether all Vermont electric and natural gas utilities should offer “Green Button” or similar type services to provide data in a standard format in order to facilitate data transfer to building owners and their agents.
3. **Automated Data Transfer** – Assess whether utilities should offer Portfolio Manager Web Services or other similar type services to customers as a means of more easily and accurately accessing utility data for benchmarking.

Next Steps

The Working Group recommends convening an Advisory Committee in 2015 in order to develop and implement an overall benchmarking and labeling plan following on from this report that would coordinate between the different utilities and others as the EEU's roll out any new Act 89-initiated pilots, develop and test the energy label, develop and coordinate software to generate the labels, design the storage database, report on activity, and access labels and benchmarking data publicly.

Efforts to promote and support benchmarking and labeling programs will require a concerted and ongoing focus in order to break into the market, gain awareness, earn recognition and increasingly drive opportunities to save energy. While the Advisory Committee and EEU's can report progress to the Legislature on December 15, 2016, as called for in Act 89, it is unlikely they will be in a position to implement a robust benchmarking initiative statewide or consider making benchmarking and labeling of multifamily, commercial and mixed-use buildings mandatory.

Organization of this Report

This report starts with a “Background and Context” section which provides some of the foundational national and earlier Vermont labeling information the Working Group used in deriving its findings. The “Findings” section then goes into more depth on particular topics (e.g., “Data and Privacy Issues”, “Program Delivery”) in the Vermont context and provides more specific Vermont context, leading to the “Recommendations”.

Background and Context

This report is the result of a year of meetings focused on Vermont commercial, multifamily and mixed-use building energy labeling and benchmarking, as called for in Act 89 of 2013, which stated, in part, the following:

** * * Voluntary Building Energy Disclosure * * **

Sec. 12. DISCLOSURE TOOL WORKING GROUP; REPORTS

(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.

Why Label Buildings?

Many countries and a few jurisdictions 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. Additionally, national building performance scores may enable additional financing opportunities or compliance with energy efficiency policies.

Benchmarking

Benchmarking is a valuable management tool for building owners. It tells owners how their property’s energy use compares to buildings of similar type, size and occupancy. It helps building owners identify cost-effective energy upgrades, realize the energy and cost savings benefits from those upgrades, document the savings achieved, and communicate these accomplishments to stakeholders. To date, more than a quarter-million buildings representing almost 30 billion square feet have been

benchmarked using the U.S. Environmental Protection Agency’s ENERGY STAR® Portfolio Manager tool alone. (SEEACTION 2013⁴)

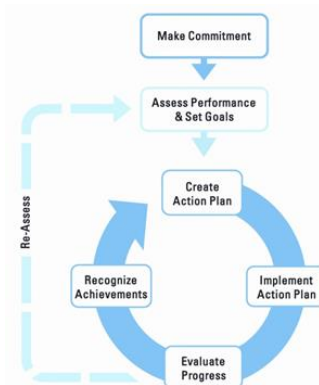
While building energy labeling could help make energy visible for building sales or leasing, benchmarking in and of itself could be the most useful and valuable outcome of this effort. It is apparent that benchmarking is not only a means of encouraging on-going building improvement, but it is a clear entrée to utility energy efficiency programs. Providing a label may be useful for some tenants or building purchasers, but by far, the larger benefit is the process of benchmarking to 1) engage owners actively in understanding their energy usage in the context of similar buildings, 2) compare to peers to motivate to make improvements for competitive reasons and 3) to identify opportunities for savings by unearthing the large users and then working with utility partners to enroll in Energy Efficiency Utility (“EEU”) programs.

As suggested in the IMT “Creating Value from Benchmarking” study (IMT 2014)⁵ benchmarking has the following benefits for building owners and energy efficiency programs:

- (1) Helping a building owner benchmark can motivate customers to enroll in energy efficiency programs;
- (2) Analyzing aggregated benchmarking data can help energy efficiency utilities make better decisions relative to energy efficiency potential;
- (3) Benchmarking can unlock the potential in innovative, whole-building efficiency programs; and
- (4) Benchmarking can be used as a low-cost method to supplement traditional evaluation, measurement and verification methods.

Figure 1 shows graphically the benchmarking process and feedback loop that encourages building improvement. It can be an effective tool to encourage building owners to make energy efficiency upgrades and then received immediate information through the benchmarking process.

Figure 1. The Role of Benchmarking in the ENERGY STAR Guidelines⁶



⁴ State and Local Energy Efficiency Action Network. (2013). *A Utility Regulator’s Guide to Data Access for Commercial Building Energy Performance Benchmarking*. Prepared by Andrew Schulte, ICF International.

⁵ <http://www.imt.org/resources/detail/creating-value-from-benchmarking-a-utility-perspective>

⁶ Source: www.energystar.gov/index.cfm?c=guidelines.guidelines_index

One of the performance metrics reported by the ENERGY STAR Portfolio Manager benchmarking tool is Energy Use Intensity (EUI) which is defined as kBtu/square foot/year. This metric is commonly used throughout the commercial building industry to describe and compare building energy use. EUI can be used by building buyers or tenants to encourage shopping for better buildings. Benchmarking is the starting point to begin the energy discussion with building owners, then to help them keep score over time to monitor and encourage progress. As Figure 2 portrays, enabling benchmarking leads to actionable information, which leads to participation in energy efficiency programs and energy savings. Any building type can be benchmarked.

Benchmarking and Energy Savings

A growing body of experience demonstrates a link between benchmarking, customer participation in utility programs, and energy performance improvements—suggesting strongly that owners and operators that benchmark their buildings are more likely to pursue and achieve energy savings than those who do not benchmark. (SEEACTION 2013)

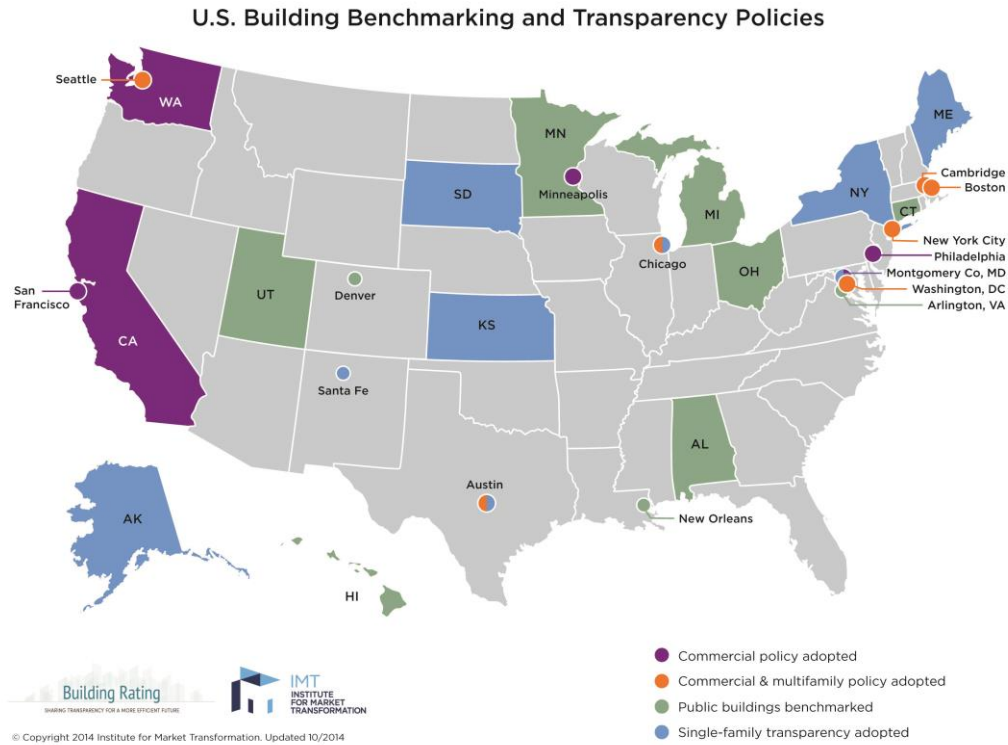
Figure 2. The Benchmarking Value Chain: From Data Access to Energy Savings



National Efforts

There is a good deal of national and local jurisdictional effort being placed on benchmarking. Most of this activity is driven by municipal or state policy, as shown in Figure 3.

Figure 3. U.S. Building Benchmarking and Transparency Policies⁷



ENERGY STAR Portfolio Manager

All of these benchmarking policy efforts utilize the Environmental Protection Agency’s (EPA) “ENERGY STAR Portfolio Manager”⁸. Portfolio Manager is a free, nationally available tool that receives on-going support from DOE/EPA. Benchmarking is a process by which a building’s actual energy and water use⁹ is measured and tracked over time. In addition to providing the benchmarking platform, Portfolio Manager also offers a 1 – 100 ENERGY STAR score, which is currently available for 21 different property types. An ENERGY STAR score enables you to compare your facility’s actual energy performance to similar facilities nationwide. A score of 50 represents typical performance, while a score of 75 indicates that your facility performs better than 75 percent of all similar facilities nationwide. An important distinction of the ENERGY STAR 1-100 score is that it is based on *source* energy which accounts for the energy consumed on-site as well as the energy used in generation and transmission. Because Portfolio Manager is a national tool, there is only one nationally-derived source-site ratio for each fuel in Portfolio Manager, including electricity.

While many building types are eligible to receive the ENERGY STAR score, there are additional requirements that must also be met. For example, multifamily buildings are eligible for a score only if they are comprised of 20 units or more. However, in addition to generating an ENERGY STAR Score, Portfolio Manager is capable of benchmarking any building type and reporting more than 150 performance metrics, including site-based Energy Use Intensity (EUI) in kBtu/square foot per year. A list

⁷ <http://www.buildingrating.org/graphic/us-benchmarking-policy-landscape>

⁸ http://www.energystar.gov/buildings/index.cfm?c=evaluate_performance.bus_portfoliomanager

⁹ Benchmarking produces an operational rating vs. an asset-based rating produced by modeling software.

of all building types that can be benchmarked along with the 21 building types that can receive an ENERGY STAR score are included in the Appendix.

Asset Ratings

DOE and others, including efforts in California and Massachusetts, are developing asset-based commercial building ratings using computer models for a few commercial building types. These approaches require a significant effort to collect building systems data. We discussed these for Vermont, but determined that the cost to implement would be a high barrier to voluntary adoption and would likely not survive the political process if proposed as part of a mandatory policy initiative. In addition to the high cost, asset based ratings only provide information about a building's projected operational performance under modeled conditions, not its actual performance. An asset-based model coupled with operationally-based benchmarking would provide the most complete energy picture, but as efforts in California and Massachusetts have proven, it is too costly to implement as a state-wide approach to labeling and is also not practical for statewide implementation given its limitation to just a few commercial building types at this time.

Data Management

DOE has also been developing tools to facilitate standard methods of naming, warehousing and transferring building performance data. Primary among these are the Building Energy Data Exchange Specification (BEDES) and the Standard Energy Efficiency Data (SEED) Platform. These efforts are largely driven by benchmarking/disclosure activities and are national efforts directed at enabling common storage platform and aggregating national data in a standard way.

Tools

As discussed above, the default national standard for benchmarking buildings is ENERGY STAR Portfolio Manager (ESPM). The tool is free and supported by DOE and EPA. However, there are other market-based benchmarking tools and service providers available. Two of the larger providers that are gaining national traction are WegoWise and Noesis. WegoWise, based in Massachusetts and has historically focused on multifamily buildings, whereas Noesis, based in Texas, is more commonly utilized for benchmarking commercial properties. Both service providers are reasonably priced, have no-cost introductory options, and have designed their proprietary tools to integrate with ESPM. While these and other options are available for anyone wanting to benchmark, the Working Group determined that the best default tool to recommend for voluntary benchmarking and labeling in Vermont should be ESPM.

Institute for Market Transformation (IMT)

The DC-based non-profit IMT has been a national leader in promoting and supporting benchmarking policies and implementation. They support two excellent web sites¹⁰ with many reports and studies on the topic of benchmarking and disclosure policies. Much of the material researched and referenced in this report is derived from IMT materials.

¹⁰ <http://www.energydataalliance.org/resources/> and <http://www.buildingrating.org/>

SEE Action Network

The State and Local Energy Efficiency (SEE) Action Network is a DOE-sponsored group that supports state and local jurisdictions with energy guidance. They have published a series of excellent documents¹¹ on building energy benchmarking from which we pulled much of the material in this report.

Vermont Energy Labeling Initiatives

There have been at least four statewide organized attempts to move building scoring, labeling and disclosure forward over the recent past. These 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 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 2011¹² with the focus primarily on residential buildings. While the proposed legislation was considered during the 2012 legislative session, it ultimately was not adopted.

Comprehensive Energy Plan

Over the course of 2011, the Public Service Department (PSD) issued 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 efforts¹⁴ and included recommendations to investigate building energy disclosure and rating and how energy efficiency improvements could be valued in appraisals and lending decisions.

Thermal Efficiency Task Force

Following the CEP recommendations¹⁵, 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

¹¹ <https://www4.eere.energy.gov/seeaction/topic-category/commercial-and-public-building-energy-efficiency>

¹² http://publicservice.vermont.gov/topics/energy_efficiency/buildingenergy_labeling

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.

early 2013.¹⁶ The report was very comprehensive and made some specific recommendations regarding scoring and labeling, including the following:

“Make efficiency visible. Begin delivering a voluntary energy performance score or label to existing buildings in Vermont, then reevaluate after 3 years to determine whether labeling and disclosure should be phased in as a requirement at time of sale. Help increase the availability of building fuel use data so building owners and tenants can identify energy savings opportunities. These data will also enable buildings owners to benchmark their energy performance against other similar buildings and / or the building’s own historical energy consumption.”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 a working group to study “energy rating”¹⁹ and disclosure. The language in the bill on “Voluntary Building Energy Disclosure” is included in the Appendix. In summary, it asks the 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 was due by December 15, 2013 on the working group findings on a *residential* disclosure tool and by December 15, 2014 (this report) on commercial disclosure tools.

In addition, in two 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.

Residential Implementation Update

Efficiency Vermont and members of the Act 89 Residential Working Group are in the process of implementing the recommendations outlined in the 2013 legislative report. Foremost among these recommendations is developing a process by which data collected in an energy audit modeling tool can be transferred to the DOE Home Energy Score Tool and resultant building performance metrics integrated into a statewide home energy label that is delivered to the customer. The home energy label is currently only applicable to single-family homes and townhouses.

¹⁶ http://publicservice.vermont.gov/topics/energy_efficiency/tetf

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. Within the US residential sector the term “rating” is generally understood to imply a RESNET HERS rating.

The States of Vermont and New Hampshire were awarded a DOE grant in October 2014 to support residential and commercial labeling, coordination with Realtors, appraisers and other, and data systems to support listing scores on the Multiple Listing Service (MLS).

Vermont Commercial/Multifamily/Mixed-Use Initiatives

All of the Vermont Energy Efficiency Utilities (Burlington Electric Department, Vermont Gas Systems and Efficiency Vermont) currently support customer benchmarking projects. While there has not been a significant effort to date promoting this service more broadly, some of the larger EEU customers are actively benchmarking their buildings with EEU support. Also, focused market work to initiate and support benchmarking of hospitals, schools and municipal buildings has been underway. There is currently no standard report or label that is offered alongside the benchmarking service.

Benchmarking Policy Initiative

The Vermont Green Building Network has been advocating for adoption of a mandatory benchmarking policy in Burlington.

Working Group

Act 89 passed in mid-2013 calling for the formation of a formal Working Group to recommend a home energy disclosure tool by December 2013 and then a commercial approach by December 2014. For this latter effort, the Commercial/Multifamily Working Group has held regular monthly meetings and included individuals from the following organizations:

- Burlington Electric Department
- Efficiency Vermont
- Energy Futures Group
- Office of Economic Opportunity/Weatherization Assistance Program
- Public Service Department
- Vermont Gas Systems
- Vermont Housing Conservation Board

The core Working Group members were legislatively mandated to include the EEUs plus the Home Weatherization Assistance Program. One of the earlier tasks conducted by the Working Group was to reach out to the commercial and multifamily building community to solicit their input through a survey and part of that process was to offer to an opportunity to participate in the Working Group. Some additional interest and Working Group participation came out of that survey. A consultant²⁰ was contracted by the PSD to schedule, organize and facilitate the meetings and to write this report.

The Working Group held monthly meetings²¹. These meetings provided an opportunity for the stakeholders to discuss and resolve some of the issues covered in this report. Some of these issues discussed included the following topics related to commercial, multifamily and mixed-use building benchmarking and labeling:

- Coordination with interested stakeholders
- Surveying stakeholders, building owners and tenants

²⁰ Energy Futures Group was hired to support the Working Group process.

²¹ A summary of the monthly meetings and the agenda for each is included in the Appendix.

- Rating tool options
- Metrics
- Asset vs. operational ratings
- Rating individual units vs. whole buildings
- Use-cases
- Policies
- Data aggregation and privacy issues
- Data flow, storage and reporting options
- Program implementation and coordination options
- Label design options
- Grant opportunities
- Coordination with entities in Vermont and in neighboring states
- IT aspects and
- Writing, reviewing and finalizing this report

In addition to meeting monthly to discuss the topics directed by Act 89, members of the Working Group also reached out to the Vermont affordable housing community to participate in meetings and discuss their efforts to benchmark some of their rental properties and coordinate efforts.

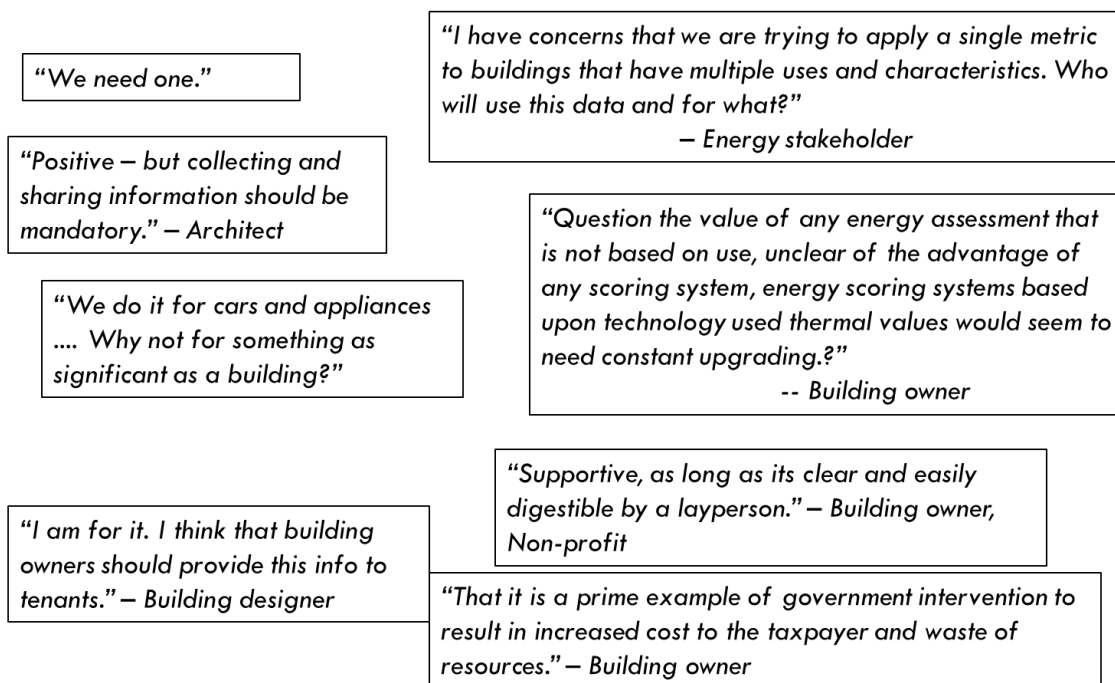
There was also regular communication with--and presentations at Working Group meetings by--some of the national groups working on benchmarking including the Northeast Energy Efficiency Partnerships (NEEP), U.S. Environmental Protection Agency (EPA), Massachusetts Department of Energy Resources (DOER), the Institute for Market Transformation (IMT) and WegoWise.

Stakeholder Survey

The Working Group also conducted a survey of commercial and multifamily building stakeholders in May 2014. Forty-five people responded representing for- and non-profit building owners of commercial and multifamily buildings, tenants, trade association members, government agencies, architects and property managers.

Most respondents replied positively when asked about their perceived value of labeling buildings for energy performance. However, some reserved judgment until more of the details were worked out while others had concerns about who pays and some of the technical intricacies. Comments ranged the gamut and included the following:

Figure 4. Representative Quotes from Stakeholder Survey



Overall, support for the concept of energy labeling is generally strong across commercial, multifamily and mixed-use building types – although a little less so for commercial buildings.

The greatest value building owners see is understanding how the building performs compared to similar buildings – and how they might improve the performance of their building. However, building owners are lukewarm to the concept of the energy score and label helping to rent/lease/sell a building. Building owners split on whether the energy score and label would be helpful in demonstrating compliance with energy codes.

Respondents were given 13 different building metrics and asked which would be most helpful to include on an energy label. The metrics most respondents were interested in seeing included energy-related building features, energy cost by end use and fuel type and \$/square foot. However, what is also interesting is the number of “unsure” responses.

Respondents identified multiple stakeholders who they believed would be appropriate to rate commercial/multifamily/mixed use buildings.

A PowerPoint presentation of the survey details is included in the Appendix.

Findings & Recommendations

In this section of the report, the Working Group presents its findings and recommendations. This section also describes some of the most relevant approaches that the Working Group thought would make the most sense in terms of implementing programs aimed at benchmarking and labeling commercial, multifamily and mixed-use buildings in Vermont.

Benchmarking and Labeling

While Act 89 called for an “energy rating” that could be used by a building purchaser or occupant, the Working Group looked into what a rating could be based on and concluded that a rating or label showing operational data (and from that, possibly a score) based on benchmarking would be the best approach to respond to the legislation for this market sector.

The benchmarking approach was also supported by the Vermont survey discussed above. Survey respondents reported that understanding how the building performs compared to similar buildings – and how they might improve the performance of their building--would provide the greatest value. This comparison to other buildings and tracking the performance of buildings over time is exactly what benchmarking provides, in addition to generating an Energy Use Intensity (EUI) metric that could be used for “rating” or “labeling” a building.

Providing an energy label to potential tenants or building buyers can be helpful to compare energy performance between buildings as they shop for apartments, rental space or to purchase an entire building. Additionally, a building performance label can act as a certificate of achievement that building owners can utilize to highlight the improvements made to and/or efficient operations of their building. In buildings where the owner pays the energy bills, the Working Group realized the significant benefits of benchmarking buildings and the potential savings to building owners by going through the process of benchmarking.

The Working Group concluded that the energy performance data presented on multifamily and commercial building labels is best represented by the results of benchmarking, which relies on operational utility data. Benchmarking is an on-going active process that helps building managers understand building energy use intensity, whereas a label is a presentation and historic record of a building’s performance at a given moment in time. Because the two complement each other, and ideally are offered together, using benchmarking as a process to inform building owners and the resulting label for tenants and building sales is the approach that the Working Group thought made the most sense to recommend. This combined benchmarking/labeling approach is referenced through the balance of this report.

Recommendation – Benchmarking & Labeling

Given all of benefits of benchmarking, the Working Group recommends 1) benchmarking as the approach to generate a rating or label and 2) encouraging the process of benchmarking for ongoing management of building energy use to building owners/managers.

Use Cases

As with residential building energy labeling, there are multiple possible “use cases” in which commercial/multifamily/mixed-use building energy labels could be utilized. In order to provide useful information to building owners, buyers, sellers, tenants, real estate professionals and others, the perspectives and data needs for each of the following scenarios or use-cases need to be fully incorporated into decisions regarding the final design of a statewide label:

Table 1. Commercial/Multifamily/Mixed-Use Building Energy Labeling Use Cases

Use Case	Audience	Possible Use
1. Time of Sale	Seller, Inspector, Realtor, Appraiser, Lender	General information or possible sales negotiation
2. Time of Purchase – Information	Buyer, Lender, Appraiser	Possible sales negotiation
3. Time of Purchase – Upgrade	Buyer, Lender, Appraiser	Scope out energy improvements
4. Existing Building	Building owner	Information pre-sale or for motivational comparison to other similar buildings
5. Existing Building - Post-Upgrade	Building Owner or Program	Verification of completed work
6. Post-Weatherization Assistance Program (WAP)	Building Owner or Program	Verification of completed work
7. Pre-Rental	Tenant	Comparison shopping
8. Rental Promotion of Efficient Property	Property Owner	Showcase highly performing property
9. Foreclosure – Information	Lender or Buyer	Scope out energy improvements
10. Foreclosure – Upgrade	Lender or Buyer	Scope out work
11. Energy Code Compliance	Builder, Building Owner or Code Official	Could possible document code compliance in either new construction or retrofit energy work
12. Manage Property Portfolio	Building Owner or Manager	Track energy performance over time, after improvements, and for comparison to other similar projects

These multiple use-cases speak to the need for the label to be adaptable to multiple situations. Since a number of these use-cases address ongoing energy tracking and improvement over time, benchmarking can be a beneficial approach beyond just periodically labeling buildings.

Labeling Metric

Labeling metrics include consideration of whether an approach should be “operational” vs. “asset”, “site-” vs. “source-” based and what actual units should be used to list on a label and used to compare buildings.

Operational vs. Asset Rating Approach

Given the wide variability in commercial, multifamily and mixed-use building types, sizes and uses, along with the need to recommend a labeling approach that is not too costly to implement, the Working Group felt that an “operational rating” approach makes the most sense for this sector. An operational approach would be directly based on the actual total energy consumption for a property. The cost for delivering this rating would be the cost of gathering the past energy consumption history and some fairly high level building characteristic data and entering it in ENERGY STAR Portfolio Manager tool.

The operational approach contrasts with the significantly more expensive “asset rating” approach in which a building’s energy characteristics are determined and entered into modeling software. This modeling approach is useful in examining particular energy opportunities within a building and determining “what-ifs”. In addition, the entire building can be compared against a “code compliant building” or other “reference building” in determining whether a building has met a standard or has improved a certain amount. An asset-based modeling approach can be helpful as a follow-on to an initial operational rating or for use in new construction. However, it is expensive to implement, so the Working Group recommends starting any Vermont initiative with an operational approach.

Certain programs may choose to offer an operational rating as a broad screening approach to rank building energy intensity, and then offer follow-on services with asset-based modeling to focus in and address particular issues through energy efficiency programs. This approach may serve as an entrée to those programs.

The U.S. DOE and Massachusetts DOER are both field testing asset rating tools and approaches. We should keep an eye on the tools under development and consider them later after the testing results are in.

Site vs. Source

The Working Group decided to base the rating on “site-based” energy. This means that energy consumption is measured at the building 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 rating relatively simple and avoid controversies regarding which source-based factors to use, site-based operational energy should be used to determine the primary metric displayed on the label.

Energy Use Intensity (EUI)

Given the desire to use one simple metric to describe a multitude of various building types, sizes and configurations, the Working Group thought that the simplest metric would be kBtu/square foot of building space/year, or “Energy Use Intensity (EUI)”. Given the desire to use an operational approach, through which a building’s total annual weather-normalized energy consumption is captured, the EUI would simply divide that use by the square footage of the building’s conditioned space. EUI is a

commonly used and understood metric in non-residential buildings. EUI can change annually as energy use changes, but it doesn't suffer the same fate as some other asset-based tools²² or types of scores in which a shift in baselines or reference buildings cause the entire scale to shift. EUI can be an effective metric for tracking and comparing both existing and new construction buildings (but only after constructed and using energy which can then be tracked) and should be considered in programs for both.

Recommendation – Metrics

The Working Group recommends a site-based operational Energy Use Intensity (or “EUI”, measured in kBtu/square foot/year) metric as the most widely understood, transparent and stable metric for all non-residential and non-industrial buildings in Vermont. This should be used for existing buildings as well as a means of tracking performance of new buildings after they are built and start using energy.

Applicable Tools

ENERGY STAR Portfolio Manager (ESPM) is a free, nationally supported tool. There is precedent in a dozen cities and jurisdictions where it is the tool being used to implement benchmarking policies. The EPA is providing a good deal of support and constant maintenance of the tool along with Portfolio Manager Web Services to assist with the utility data transfer.

While there are other benchmarking tools such as WegoWise and Noesis that may be useful for particular markets such as multifamily, these tools can coordinate with ESPM and be layered on top for additional services beyond the basic EUI metric provided by ESPM.

As ESPM is developed for benchmarking use in Vermont, consideration should be given to how it can link and be utilized with existing energy audit programs and tools in Vermont to ensure coordination. Storage of EUI and other ESPM data should also be considered by a future Advisory Committee.

Recommendation – Tools

Given the fact that it is free, actively supported by the U.S. EPA and is used exclusively in all of the jurisdictions in the U.S. with benchmarking policies, the Working Group recommends ENERGY STAR Portfolio Manager (ESPM) as the rating tool to use in Vermont.

²² RESNET's HERS ratings periodically change their methodology and this can cause upheaval in the market.

Whole-Building Labeling vs. Unit-Level Labeling

Act 89 called for “...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.” (Emphasis added).

The Working Group addressed this question of rating and labeling units within buildings at a dedicated meeting focused on this topic.

Experience with Unit Labeling for Tenants

There is very little regional or national experience with labeling tenant spaces within buildings. The Institute for Market Transformation (IMT) serves as a central clearinghouse nationally for building energy labeling initiatives. They report that only Austin, Texas has addressed this issue specifically (for multifamily properties), while WegoWise staff have some experience thinking about the issue.

Austin provides the “average rating” (EUI) for an average composite apartment unit for posting in individually-metered multifamily buildings, but not in master-metered buildings or in other commercial buildings, which are simply benchmarked. Since the City of Austin is also the municipal utility, they have access to all of the electric and natural gas utility information and are able to provide benchmarks for comparison in any building. If tenants or building owners want more information based on the label, the City can follow up with a “checklist audit” that looks at ducts, roof insulation and windows.

WegoWise has been asked about providing individual tenant information and is willing to think through how unit information could be parsed out of whole-building information, but they characterize such an effort as “laborious, expensive and not very accurate”.

Questions

Considering how a label for an individual unit could be generated from whole-building data raises multiple questions, including at least the following:

1. What about mixed-use buildings (i.e., commercial at street level, residential upstairs) with a central system but different tenant uses?
2. If the building is centrally heated and included in the rent, why would we want tenant unit labeling?
3. In buildings with individual meters, how would we get approval to release their past usage if the previous tenants have moved out already if there were too few apartments to aggregate data?
4. Would one approach be to just compare buildings, but then only offer individual unit ratings if there is individual data available? Wouldn't that be confusing for tenants shopping around between units in different buildings?
5. Since we suggest using an operational approach, how much difference will be seen if we average out tenant usage?

Proposed Unit vs. Building Labeling Approach

Given the technical, privacy and logistical barriers, the Working Group recommends the following approach:

1. Start with an approach that has the greatest likelihood of labeling as many building types as possible at a building-level before layering in complicating factors like trying to break out individual units.
2. Provide whole-building labels and EUIs that can be used for comparison across buildings by tenants.
3. Offer a checklist of features and guidance on a second page of the label that addresses additional information such the following:
 - a. Show tenants how they can compare buildings by examining the information contained on the building label (by focusing on the EUI) and how this will likely also translate down to the unit energy usage, on a per square foot basis;
 - b. Explain the energy implications of interior vs. exterior units, square footage, and the impact of common spaces;
 - c. Provide general information such as “your mileage may vary” based on how thermostats are set, windows are used, domestic hot water use varies and what additional equipment and appliances are put in the unit; and
 - d. Suggest seeking out some additional information such as whether or not a CBES Energy Code Certificate is on file, and does the property manager have a Building Operation Certification.
4. Develop a plan and guidance that ensures that information included in the label is made available to tenants, including the following:
 - a. Make it clear to tenants how to find the building label information whenever a label has been provided for a building;
 - b. Educate tenants about asking for the building label information whenever shopping for a new unit;
 - c. Work with tenant advocacy groups to train their trainers/counselors to educate their tenant clients to ask for the energy label information; and
 - d. Educate Realtors who represent commercial tenants to look for the label and the information it provides for their clients when shopping for commercial space.

Next Steps

In order support this building-level approach but continue to explore opportunities to provide better tenant-level unit information in the future, the Working Group recommends pursuing the following:

1. Work with WegoWise to explore the opportunities for providing tenant-level information for multifamily buildings;
2. Pursue the data access approaches (see section below) to secure utility bill information at both the building and tenant levels;
3. Look at how Portfolio Manager may be able to split out different end uses within a building and presents it to see whether this could be an approach for Vermont units; and

4. Coordinate with the Benningfield Group²³, TRC Engineering Services²⁴ or others, or work in-state with our existing resources to develop unit-level rating tools and explore whether their approaches could work for Vermont.

Recommendation – Whole-Building vs. Unit-Level Labeling

Due to all of the technical issues with available tools, accuracy, variability in tenant use and data access issues, the Working Group determined it would be best to start with whole-building level labeling first, but keep an eye on opportunities for tools and other unit-level approaches, and test those extensively before implementing in the future.

Phased Implementation

Given the challenges with figuring out how to access the data and navigating privacy issues for the utilities and fuel dealers, the Working Group suggest proceeding in phases. By staging implementation, details can be worked out specific to each set of buildings and ownership issues. The Working Group suggests rolling out the whole-building labeling and benchmarking effort in four phases that start with buildings with a single utility account owner, then adding in buildings with multiple utility account owners, next adding in delivered (unregulated) fuels, and finally focusing on providing labeling at the unit level in buildings with tenants. Implementation timing will be based on planning in 2015.

Recommendation – Phased Implementation

Proceed in a phased approach:

1. Phase 1: Start with buildings where only regulated fuels (i.e., electric and natural gas) are utilized and there is **a single utility account owner**, offer whole building benchmarking/labeling;
2. Phase 2: Next, work in buildings where only regulated fuels are utilized, include buildings where **there may be multiple utility account owners** for whole building benchmarking/labeling;
3. Phase 3: Follow with buildings where regulated **and/or unregulated (delivered)** fuels are utilized, where there may be multiple utility account owners, offer whole building benchmarking/labeling; and
4. Phase 4: Finally, for buildings where regulated and/or unregulated (delivered) fuels are utilized, where there may be multiple utility account owners, offer whole building benchmarking/labeling **and unit level** labeling.

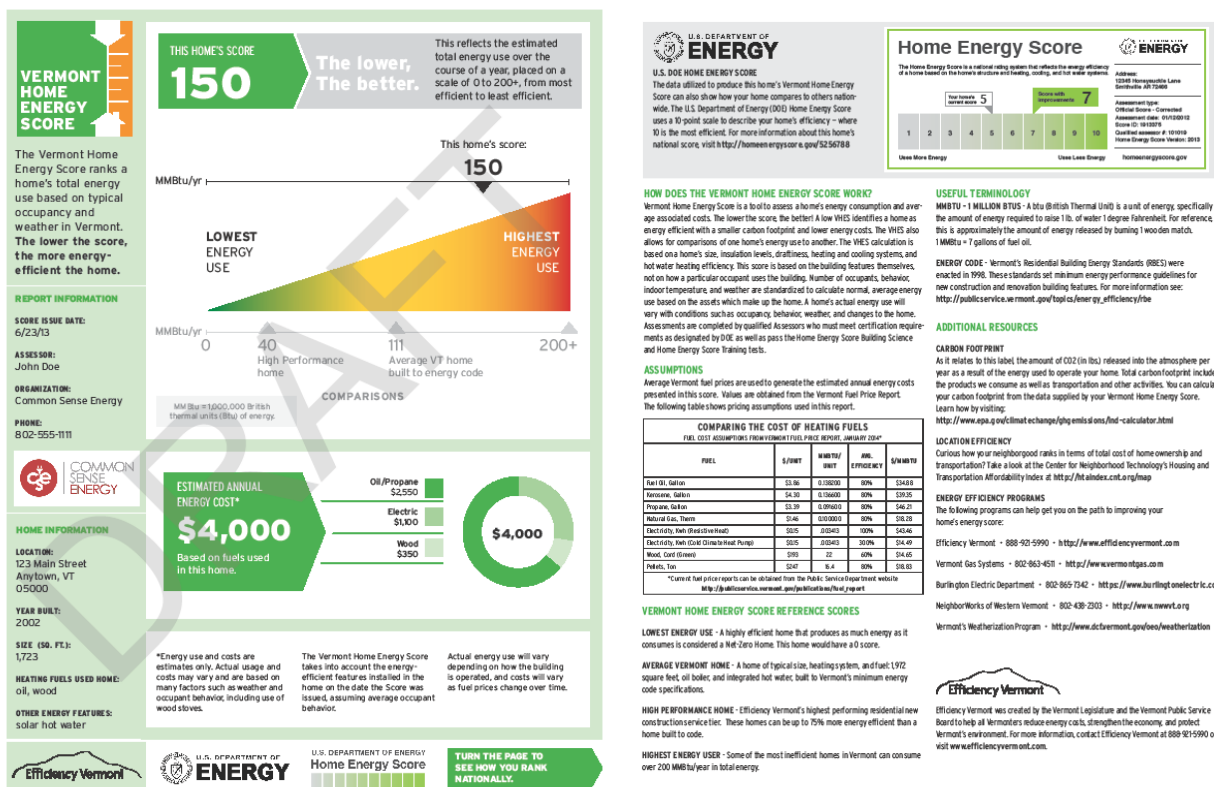
²³ www.benningfieldgroup.com/

²⁴ <http://www.trcsolutions.com/Pages/default.aspx>

The Label

Act 89 asked for a "consistent format and presentation" for the rating and label. While a specific label has not yet been designed, the Working Group does recommend following the good work and extensive consumer testing and design conducted by the Residential Working Group. Some of the key elements from the residential report should also be utilized on the commercial/multifamily/mixed-use building energy label, including displaying the primary metric (EUI) on a colored wedge with reference points, features of the building and energy costs per year. For buildings that can receive the ESPM ENERGY STAR Score, that should also be presented. The Residential Energy Labeling Report²⁵ submitted to the Legislature in December 2013 spent a lot of time with label design. A draft of the current residential energy label is presented below in Figure 5 and a full size version can be found in the Appendix.

Figure 5. The Residential Energy Label: Vermont Home Energy Score, Front and Back



However, until a comparable commercial/multifamily/mixed-use building energy label is developed, the ESPM "Statement of Energy Performance" report should be used. While not every benchmarked building will be able to receive an ENERGY STAR score, this report can still present the "Site EUI", which

²⁵ http://publicservice.vermont.gov/sites/psd/files/Topics/Energy_Efficiency/BEDWG/Vermont_Energy_Label_Report_to_Legislature_12-13-13_FINAL.pdf

is the primary metric the Working Group suggests be conveyed and reported on every building. A sample of this report can be seen in Figure 6, with site EUI highlighted.

Figure 6. ENERGY STAR Portfolio Manager - Statement of Energy Performance Report Sample

ENERGY STAR® Statement of Energy Performance

N/A **Vermont Elementary School**

ENERGY STAR® Score¹

Primary Property Function: K-12 School
Gross Floor Area (ft²): 75,000
Built: 1923

For Year Ending: December 31, 2013
Date Generated: December 15, 2014

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address	Property Owner	Primary Contact
Vermont Grade School 123 Main Street Our Town, Vermont 05122	Vermont Properties 123 Central Avenue Any Town, VT 05222	Labeling Provider 123 First St My Town, VT 05333
Property ID: 55555555	(802) 555-5555	

Energy Consumption and Energy Use Intensity (EUI)

Site EUI	Annual Energy by Fuel	National Median Comparison
57.8 kBtu/ft²	Propane (kBtu) 235,717 (7%)	National Median Site EUI (kBtu/ft²) 77.6
	Electric - Grid (kBtu) 1,346,317 (38%)	National Median Source EUI (kBtu/ft²) 141.4
	Fuel Oil (No. 2) (kBtu) 1,949,594 (55%)	% Diff from National Median Source EUI -26%
Source EUI		Annual Emissions
105.3 kBtu/ft²		Greenhouse Gas Emissions (Metric Tons CO2e/year) 290

Signature & Stamp of Verifying Professional

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: _____ Date: _____

Licensed Professional

Labeling Provider
My Town, VT 05333
802-123-4567

Professional Engineer Stamp
(if applicable)

Recommendation – The Label

Until a label similar to the residential label but for commercial, multifamily and mixed-used buildings is designed and developed, the Working Group recommends using the ENERGY STAR Portfolio Manager Statement of Energy Performance Report as the consistent statewide label. The Working Group recommends that the follow-on Advisory Committee design a label, test it with building owners, sellers and renters. This label then needs to be incorporated into software so that the different users are able to field-test it.

Role of the Private Sector

The Working Group felt strongly that in order to be successful, a labeling and benchmarking program needs strong involvement from building owners, tenants and the private sector. Therefore, program implementation plans should be designed such that private architects, engineers and building and energy professionals can be trained and certified to deliver the benchmarking and labeling services to building owners.

Engaging building owners and tenants as much as possible from the onset of the benchmarking and labeling design is important to ensure buy-in and to learn what they need and what can work for them. Ultimately, building owners are going to be the primary audience for these services, and tenants will be the secondary audience. As the program implementers, the EEU's should plan an extensive campaign to build awareness and drive demand for the labeling and benchmarking services to owners and tenants.

Recommendation – The Private Sector

Work with building owners and tenants to solicit input into program design and then engage them to drive demand for benchmarking and labeling. Work with building and energy professionals to develop training and certification to deliver the benchmarking and labeling services.

Data and Privacy Issues

Historical energy use data is necessary for completing ENERGY STAR Portfolio Manager, generating an EUI for labeling and benchmarking a building. Energy consumption data--and not billing data--is used to benchmark buildings. Buildings with a single utility account owner and no tenants directly paying utility bills are relatively straightforward to benchmark since data is readily accessible with owner permission to the utility and fuel dealer. However, there exist some significant challenges in obtaining data and protecting tenant privacy in multifamily and commercial buildings with multiple tenants. It is not always easy to obtain this past energy data, especially if the person or entity requesting that data is not the utility or fuel dealer customer in the first place. In Vermont, it is a generally accepted legal precept that there is a protected privacy interest in customer energy information. Energy providers, EEU's, the Public Service Department along with the Public Service Board all acknowledge that this information is confidential. Utilities and fuel dealers generally only release customer data with their customer's written permission. For buildings with a single owner interested in labeling or benchmarking, obtaining this energy data is generally not an issue. However, when multiple tenants pay for some or all their own bills in a building, it can be a challenge to obtain all of a building's energy use data, which is necessary for an accurate EUI. Tenants move on and are not easily accessible or may be unwilling to cooperate in providing permission for the data release for privacy or competitive reasons for some businesses.

The U.S. DOE's State and Local Energy Efficiency Action ("SEEACTION") Network report, "A Utility Regulator's Guide to Data Access for Commercial Building Energy Performance Benchmarking"²⁶ and IMT's report, "Utilities' Guide to Data Access for Building Benchmarking"²⁷ were found to be excellent resources in the research and development of this report. They expounded on the barriers to obtaining commercial building energy data and highlighted the three key data-related barriers to commercial building benchmarking as:

- Difficulty accessing complete energy usage for multi-tenant buildings;
- Wide variations in how customers gain access to their energy data; and
- Differences in the format of the data provided by utilities.

In Vermont, these barriers are further compounded by the additional dimension of delivered fuels²⁸. Fuel dealers operate a multitude of data tracking systems and are frequently swapped by building owners, making obtaining fuel data for labeling and benchmarking especially challenging.

In order to overcome these barriers, SEEACTION suggested that there are three primary options for providing commercial customers with energy usage data for benchmarking, which include the following:

- Utility (and fuel dealer) delivery of aggregated whole-building data;
- Green Button standard data access format; and
- Portfolio Manager Web services for automated data transfer.

No single solution will address all customer barriers to data access so Vermont utilities and fuel dealers need to consider developing a combination of these complimentary approaches or all three in order to facilitate benchmarking and labeling of buildings. However, the reality in Vermont is that it will likely take some time to put all of these in place, so a longer-term, phased-in approach may be necessary that starts with owned buildings without tenants, then implements a system with electric and natural gas utilities with tenants as a second phase, followed by working with delivered fuel providers, as recommended above.

Utility and Fuel Dealer Delivery of Aggregated Data

Experience elsewhere indicates that tenant data release is limited when restricted to having to obtain a "wet signature", which would adversely hamper benchmarking and labeling efforts. Some alternative options exist, including writing permissions directly in leases, but this approach can take years to implement across an entire market. One successful option that is being used in other jurisdictions is the aggregation of tenant data so as not to reveal any one tenant's information. In some buildings where there are only a few tenants or one large user, there may be privacy concerns. But, for the most part, these are the exceptions rather than the rule, and there are provisions for protecting tenant data in these circumstances that the Working Group reviewed and recommends adopting.

²⁶ State and Local Energy Efficiency Action ("SEEACTION") Network. (2013). *A Utility Regulator's Guide to Data Access for Commercial Building Energy Performance Benchmarking*. Prepared by Andrew Schulte, ICF International.

²⁷ http://www.energydataalliance.org/wp-content/uploads/2011/07/IMT_Report_-_Utilities_Guide_-_March_2013.pdf

²⁸ Typically fuel oil, propane and kerosene.

Utility delivery of aggregated energy use—and not billing--data is the most basic option for providing enhanced data access, especially in scenarios where there are multiple, directly metered tenants, and where it is difficult for building owners to obtain explicit data release authorization forms from each individual tenant. Using this approach, a building owner (or authorized representative, such as a building manager or other service provider) makes a request to the utility (or fuel dealer) for the building's aggregated historical usage data. The utility then verifies the identity of the requestor as the owner of the building or an approved third party. Finally, the utility provides whole-building energy usage information back to the requestor, usually in spreadsheet format, and in an aggregated manner that obscures the usage of any single tenant. To complete the

New York City Aggregated Data Example

One example of a utility that is currently taking this approach is Con Edison, which provides this service with the goal of supporting building owners and managers subject to New York City's benchmarking and disclosure law (Local Law 84). Upon request, Con Edison will provide two years of aggregated gas and electricity data for a fee of \$102.50 per building. Individual tenant authorization is not required for release of aggregated data to building owners; however, a letter of authorization must be filed by any third party (e.g., a consultant) that is obtaining data on behalf of the building owner. This provision is important because more than half of the data requests that Con Edison received during the first year that this service was offered were submitted by consultants. (SEEACTION 2013)

Chicago Area Aggregated Data Example

A more advanced example of this approach can be seen in the case of ComEd in northern Illinois. Prior to the development of its Web-based Energy Use Data System (EUDS) in 2008, ComEd provided aggregated whole-building usage data to building owners/managers upon request (without the need for individual tenant authorization). This service was provided on a case-by-case basis, initiated by direct requests from customers to their account managers, and was not generally advertised as a customer offering. ComEd found that data retrieval for a multi-tenant building could be labor intensive, with turnaround times of up to two weeks. For this reason, ComEd charged commercial customers \$600 per building for this manual service. By rolling out the EUDS system in 2008 as a free, Web-based offering to commercial customers, ComEd responded to the growing customer demand for more streamlined and automated access to whole-building aggregated data. With this service in place, the number of buildings requesting data for benchmarking rose from fewer than 100 to more than 3,000. ComEd subsequently made the decision to integrate Portfolio Manager Web services into EUDS in order to expand the customer service value of the tool, and to transition it from a data provision resource to a full-service benchmarking service. In doing so, ComEd was able to leverage the data access function that it had already deployed in order to introduce additional and value-added functionality for customers. (SEEACTION 2013)

benchmarking process, the building owner or manager (or a service provider acting on behalf of the owner) is responsible for inputting this information into a benchmarking tool.

As both of the case studies²⁹ in the side-bars from New York and Chicago show, the sponsoring utilities determined that they could provide whole-building aggregated data to building owners without compromising tenant privacy.

This approach serves one primary function, which is to overcome the challenge of multi-tenant billing that building owners may encounter in obtaining the data necessary to benchmark their buildings. Although it greatly facilitates the ability to obtain historical consumption data for multi-tenant buildings, it does not address the need for continued data access for ongoing tracking of progress for benchmarking, but it will work adequately for one-time building labeling. Furthermore, delivery of aggregated data, by itself, does not completely remove the burden of data entry for benchmarking purposes.

While it may take some time and effort to implement, establishing a system for delivery of aggregated energy use data would enable benchmarking and labeling to proceed in Vermont for buildings with tenants. Working with the electric and natural gas utilities would be one thing, but then figuring out systems that can integrate with fuel dealers will inevitably take more time and effort. A phased approach that starts with owned buildings without tenants would appear to be the logical first phase, then developing and implementing a system with electric and natural gas utilities with tenants as a second phase, followed by working with delivered fuel providers.

Recommendation – Aggregated Data

The Working Group suggests that the Vermont Public Service Board convene a proceeding on commercial, multifamily and mixed-use building benchmarking and labeling to investigate consideration of establishing a system for delivery of aggregated energy data to building owners and their agents for use in buildings with tenants.

Green Button and Other Data Formats

Green Button has been an “industry-led effort ... [to] provide electricity [and natural gas] customers with easy access to their energy usage data in a consumer-friendly and computer-friendly format.”³⁰

Participating utilities host the Green Button function within their secure Web portals. When customers log into their accounts, they can download electricity and natural gas consumption data for associated meters with the simple click of a button. Depending on the metering infrastructure a utility has in place, customers can use Green Button’s Download My Data function to obtain monthly summary data, daily load profile data, and even hourly or 15-minute interval data (if the utility provides this level of data granularity).

The second phase of Green Button implementation, which is currently underway nationally, introduces the Connect My Data function. This feature offers a platform through which customers can authorize the release of energy data directly to third-party service providers, providing an ongoing flow of data without the need for repeated approval processes. This would allow an authorized third party to collect

²⁹ SEEACTION 2013

³⁰ “Green Button: About.” (Undated). Accessed May 1, 2013: <http://greenbuttondata.org/greenabout.html>.

baseline usage data, and then track usage over time, potentially providing advanced analysis and other services to customers. Utility customers that take advantage of this function would be able to specify the duration of the data release authorization, and would be able to provide different levels of authorization to different providers. In all applications of Green Button, the customer always has control over whether or not they choose to share the data with a third party.

It is conceivable that platforms providing data in the Green Button format could also enable utilities to provide whole-building aggregated data to building owners (either without tenant authorization, if allowable, or by integrating electronic tenant authorization into the platform). However, as is the case with other data access options, any Green Button-mediated solution to whole-building data aggregation would need to be supported by the appropriate policy measures or guidance to protect the privacy of individual tenants.

Some but not all Vermont utilities have implemented Green Button, but all are interested and willing to investigate the costs and benefits of providing consumers with a mechanism to facilitate these benchmarking and labeling efforts. In addition, the Vermont Public Service Board is investigating data transfer protocols for energy use information in Docket 8316. While that proceeding narrowly focuses on only one aspect of data transfer from the electric distribution utilities to EEs, that the Board has jurisdiction over a broad spectrum of related issues must be acknowledged. The Working Group suggests that the Board convene a proceeding to investigate data transfer for energy labeling.

Recommendation – Data Transfer Format

The Working Group suggests that all Vermont electric and gas utilities investigate offering “Green Button” or other common data format services as a means of facilitating data transfer to building owners and their agents.

Automated Data Transfer

Portfolio Manager Web Services, previously known as “automated benchmarking”, allows utilities or other energy service providers to establish a connection between their databases and EPA’s Portfolio Manager tool. Core functionality includes the ability to:

- Create Portfolio Manager accounts on behalf of customers
- Create and update buildings, spaces, and meters and utility data in these customers’ accounts
- Extract meter and building details and
- Run reports on key calculated metrics provided by Portfolio Manager

The Web Services also include the capability for service providers to connect to a building that is already being benchmarked manually in Portfolio Manager, allowing users to authorize selected third parties to assume responsibility for some or all of the data entry required for benchmarking. The primary benefit of Portfolio Manager Web Services is that it substantially reduces the effort required by building owners and managers to benchmark their properties, removing the need to re-key data and enabling them to interpret the benchmarking results and use the information as the foundation of strategic energy management decisions.

Portfolio Manager Web Services can be distinguished from the other data access mechanisms discussed above because Web Services provides a direct link from a utility's usage data system to Portfolio Manager. Typically, the customer will still need to access the Portfolio Manager interface in order to update space use information, but Web Services can be used to transfer all Portfolio Manager related data. But by sending energy use information directly into Portfolio Manager, utilities exchanging data via Web services can greatly reduce the data entry burden on customers.

The Working Group is very interested in Portfolio Manager Web services as a platform to facilitate ease of accurate data transfer for Vermont building owners in support of benchmarking and labeling. While Efficiency Vermont has implemented Web Services, other EEU's are interested in it for future customer use.

Recommendation – Portfolio Manager Web Services

As part of any proceeding the Public Service Board has on benchmarking and labeling, the Working Group suggests consideration of utilities offering Portfolio Manager Web Services to customers as a means of more easily and accurately accessing utility data in support of benchmarking.

Legal Issues

There are additional legal issues that arise in the context of obtaining and disclosing customer data for the purpose of benchmarking and labeling energy use in buildings. One question that remains unanswered is at what level data may be aggregated while still ensuring the privacy protections of individuals. While the Vermont Public Service Board is considering data privacy issues associated with the increased information collected by so called *Smart Meters*, in Docket 7307, a broader investigation into these issues is needed to address data aggregation protocols and the appropriate mechanisms to obtain building energy usage data while still affording privacy protection for tenants.

Data Access Issues

The SEEAAction benchmarking report (SEEAAction 2013) dedicates an entire chapter to the issues of data access. While too detailed for this report, it is important to understand the various and multiple issues in developing and implementing a benchmarking and labeling initiative and should be considered by utilities, EEU's and program implementers as programs are being developed. Some of these data issues include the following:

- Integration with existing systems
- Mapping meters to specific units in buildings
- In-house versus outsourced development
- Ensuring complete energy usage data
- Helping customers successfully complete the benchmarking process and
- Accuracy of the size of conditioned space in buildings and building units

Enabling Benchmarking in Multi-Tenant Buildings While Protecting Customer Privacy

Given some of the recent regulatory dockets and issues around privacy and releasing multi-tenant data, the Working Group has determined that it will be necessary for the Public Service Board to address the issue of making available aggregated tenant data.

California addressed this issue by passing legislation. California's AB 1103 (and the superseding AB 531, from 2009) established that:

... upon the written authorization or secure electronic authorization of a nonresidential building owner or operator, an electric or natural gas utility shall upload all of the energy consumption data for the account specified for a building to the United States Environmental Protection Agency's ENERGY STAR Portfolio Manager in a manner that preserves the confidentiality of the customer.³¹

The final implementing regulations for AB 1103/531 (February 2013) further clarified that:

[i]f a building has a utility or energy provider account for which the owner is not the customer of record, the utility or energy provider shall aggregate or use other means to reasonably protect the confidentiality of the customer.³²

While implementing regulations for AB 1103/531 were being worked out, California Senate Bill (SB) 1476 (2010) established more specific responsibilities for the electric and natural gas utilities with regard to data release to third parties. In particular, the bill stated that "nothing...shall preclude an electrical corporation or gas corporation from using customer aggregated electrical or gas consumption data for analysis, reporting, or program management if all information has been removed regarding the individual identity of a customer."³³ Furthermore,

[n]othing in this section shall preclude an electrical corporation or gas corporation from disclosing a customer's electrical or gas consumption data to a third party for system, grid, or operational needs, or the implementation of demand response, energy management, or energy efficiency programs, provided that, for contracts entered into after January 1, 2011, the utility has required by contract that the third party implement and maintain reasonable security procedures and practices appropriate to the nature of the information³⁴

And finally,

³¹ California Assembly. (1999). Section 1(b) of *California Assembly Bill 531*. AB 531. Accessed May 1, 2013: www.leginfo.ca.gov/pub/09-10/bill/asm/ab_0501-0550/ab_531_bill_20091011_chaptered.pdf.

³² California Energy Commission. (2013). *Adopted Regulations: Nonresidential Building Energy Use Disclosure Program*. CEC-400-2010-004-CMF. Accessed May 1, 2013: www.energy.ca.gov/2010publications/CEC-400-2010-004/CEC-400-2010-004-CMF.pdf. Citation from p. 4.

³³ State of California. (2010). "Bill Number: SB 1476 Chaptered." *California Public Utilities Code*. Division 4.1, Chapter 5, §8380(e)(1). Accessed May 1, 2013: www.leginfo.ca.gov/pub/09-10/bill/sen/sb_1451-1500/sb_1476_bill_20100929_chaptered.html.

³⁴ Ibid at §8380(e)(2).

[n]othing in this section shall preclude an electrical corporation or gas corporation from disclosing electrical or gas consumption data as required or permitted under state or federal law or by an order of the commission.³⁵

In seeking to implement the provisions of SB 1476, the California Public Utilities Commission (CPUC) adopted a rule to protect the privacy and security of customer data, which was intended to be consistent with the Federal Trade Commission's Fair Information Practice Principles.³⁶ With regard to the ability of utilities to provide aggregated energy usage data, the CPUC ruled that:

[c]overed entities shall permit the use of aggregated usage data that is removed of all personally identifiable information to be used for analysis, reporting or program management provided that the release of that data does not disclose or reveal specific customer information because of the size of the group, rate classification, or nature of the information.³⁷

Like California, the Vermont Public Service Board has approved the practice of removing personally identifiable information as an adequate means of affording energy use privacy protection to utility customers and this could be an important component of the policy framework for building energy labeling.

Additionally, California determined that their threshold for data aggregation (called California's "15/15 Rule") required "any aggregated information provided by the Utilities [without the permission of individual customers] must be made up of at least 15 customers and a single customer's load must be less than 15 percent of an assigned category."³⁸

However, quite a few other jurisdictions have thought that this threshold is too high and instead have implemented thresholds with minimums of two to five tenants requiring individual permission for data release, as the following Table 2³⁹ shows. This table lists the minimum number of account holders along with a usage threshold for any one tenant before needing to receive specific permission for data release. In Colorado, where this data was recently presented to the Colorado Public Utilities Commission, the advocates⁴⁰ argued for a "3/50" rule in which aggregated data could be provided to the property owner provided there were at least three tenants and not one of them used more than 50% of the total energy for the building. They also noted that both the U.S. Census Bureau and U.S. Department of Agriculture aggregate data from three individuals before releasing data and use a 50% or 60% individual usage threshold, equivalent to a "3/50" or "3/60" aggregation standard.

³⁵ Ibid at §8380(e)(3).

³⁶ "Fair Information Practice Principles." (Undated). Federal Trade Commission. Accessed May 1, 2013: www.ftc.gov/reports/privacy3/fairinfo.shtm.

³⁷ California Public Utilities Commission. (2011). *Decision Adopting Rules To Protect The Privacy And Security Of The Electricity Usage Data Of The Customers Of Pacific Gas And Electric Company, Southern California Edison Company, And San Diego Gas & Electric Company*. Decision 11- 07-056. Accessed May 1, 2013: http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/140369.PDF. Citation from p. 87.

³⁸ Pacific Gas & Electric. (2012). *Electric Schedule E-CCAINFO: Information Release to Community Choice Providers*. Accessed May 1, 2013: www.pge.com/tariffs/tm2/pdf/ELEC_SCHEDS_E-CCAINFO.pdf (see Special Condition 2).

³⁹ PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO, DOCKET NO.14R-0394EG. 2014.

⁴⁰ Natural Resources Defense Council (NRDC), Southwest Energy Efficiency Project (SWEEP) and Institute for Market Transformation (IMT)

Table 2. NRDC, SWEEP and IMT Comments on Account Aggregation Thresholds in Colorado PUC Comments on 8/20/2014 Decision in Docket No. 14R-0394EG

Utility Company and State	Account Aggregation Threshold
Avista (Washington)	2/--
Consolidated Edison (New York)	2/--
Seattle City Light (Washington)	2/--
Clark Public Utilities (Washington)	2/--
Commonwealth Edison (Illinois)	4/--
National Grid Massachusetts	3/50
NSTAR (Massachusetts)	3/50
Austin Energy (Texas)	4/80
Puget Sound Energy (Washington)	5/--
Pepco (District of Columbia)	5/--

The Vermont Public Service Department suggested to the Working Group an aggregation standard of at least four tenants to allow data aggregation. The Working Group discussed the options and agreed with the Public Service Department’s recommendation of allowing for utility or fuel dealer release of aggregate data with four or more tenants, and requiring individual tenant permission for buildings of three or fewer tenants. In addition, the Working Group concluded that it is reasonable to allow aggregation if none of the tenants used more than 50% of the total building’s energy also seems reasonable. Therefore, the Working Group suggests a data aggregation standard of “4/50”.

Data Management Proposal

With these data issues in mind, the Working Group proposes the following data management policies and processes for Vermont:

1. Building energy data should be aggregated by fuel use and provided to the building owner or his/her agent for any building that will be benchmarked or labeled;
 - a. For buildings with tenants (residential or commercial) of four (4) or more units, all meter data should be aggregated and provided;
 - b. In buildings with fewer than four (4) tenants (residential or commercial), permission is required before releasing their energy data to the building owner;
 - c. In any building in which energy use of any one unit is more than 50% of building total, then permission from that tenant is also required;
 - d. Tenant permission in units with fewer than four units or with more than 50% of the total building energy use can authorize release of their energy records through any of the following:
 - i. Wet signature;
 - ii. Electronic authorization; or

- iii. Tenant lease (with a clause stating tenant will provide monthly energy consumption to the building owner).
 - e. Tenants may choose to ‘opt out’ of energy use aggregation, in which case the utility or fuel dealer notifies the building owner who will then need to make adjustment in the Portfolio Manager energy use entries.
- 2. EEU’s may serve as aggregators of multiple regulated and unregulated fuels;
 - a. If a customer wants to benchmark or label their building, there could be a routine fuel use request submitted by an owner to fuel dealers. An EEU could aggregate for the building and be responsible for ensuring tenant and fuel dealer confidentiality.
 - b. Fuel dealers may submit usage to an EEU for building-wide aggregation, in conjunction with electric and/or natural gas aggregation.
 - c. If a property receives fuel from multiple unregulated fuel dealers, then the building owner will need to work with the EEU and fuel dealers to collect all the information.

While it is likely that regulatory or legislative guidance will be necessary to clarify the data release and confidentiality recommendations above, the Advisory Committee that is recommended to follow the current Working Group will need to provide additional guidance on appropriate building uses or sizes and procedures for allocating energy use across mixed use properties. Additionally, guidance will also be needed to determine the allowable time frequency for reporting building aggregation (i.e., annually, monthly, etc.).

Recommendation – Data Aggregation Standard

The Working Group suggests that the Vermont Public Service Board convene a proceeding on commercial, multifamily and mixed-use building benchmarking and labeling that includes investigation of data release and a data aggregation standard that strikes a reasonable balance at protecting tenant privacy while allowing for property owner (or agent) access to aggregated data. A data aggregation standard of “4/50” should be considered, along with the other Working Group recommendations.

Program Delivery

There is currently some limited EEU activity supporting benchmarking in the Vermont market. Efficiency Vermont, Vermont Gas and the Burlington Electric Department currently provide some benchmarking services for schools, hospitals, municipal buildings and some commercial properties. However, these activities are quite limited and by no means available across all of these sectors. Additionally, none currently provides any energy label or consistent reporting for these building types.

At the same time, a number of the affordable housing providers are currently benchmarking their own buildings. Other affordable housing providers are also interested in these activities and have been meeting and discussing plans for sharing software, improving data access and expanding implementation of more benchmarking across their housing portfolios. They have also been reaching out and looking for assistance and support from the EEUs for these activities.

Budget Issues

The EEUs are interested in supporting labeling and benchmarking, but are working through a number of issues before committing to take on a new broader benchmarking and labeling initiative. The primary issue is budgetary; where would funds for benchmarking and labeling be taken from in the existing commercial/business sector programs? Funding new or expanded initiatives within a fixed budget poses some challenges, particularly in light of EEU 2015-2017 Resource Acquisition requirements. As well, cost-recovery for benchmarking and labeling IT systems and on-going program support will be necessary to clarify with the Public Service Department and/or Board before embarking on an expensive expanded initiative. Budget sources and priorities for supporting labeling and benchmarking need to be discussed since there is no budget allocation currently and no plans for any significant program in future years. Once these budget issues are worked out, there will also need to be agreements between the EEUs in terms of cost-sharing to support IT development and cross-cutting implementation, data storage, reporting and other administrative duties.

Given that the 2015 budgets are finalized, the earliest that a concerted effort could be funded would be 2016, if budgets and cost-sharing are resolved in 2015. Act 89 calls for a report back to the Legislature on progress by December 2016. Since the earliest likely start date of any statewide benchmarking and labeling initiative would not be until 2016, it is likely that there will not be much activity to report. However, as benchmarking and labeling are still nascent activities, any efforts made by Vermont to initiate a voluntary statewide program that builds on the experience and recommendations of other national efforts and attempts to tackle the more challenging barriers to benchmarking, would be advantageous. Vermont has an opportunity to play a key leadership role nationally and collaborate with other early adopters to design an implementation model for making building energy performance visible, managed through benchmarking and utilized in the buying, selling and leasing of buildings.

Recommendation - Budgets

The Working Group suggests that the Public Service Board and Public Service Department consider including building energy labeling as an EEU activity to develop and implement the elements in this report. Any on-going Advisory Committee should address budget sources, allowable costs, cost-sharing between EEUs and the timing of any revised budgets.

Scheduling - Start with Voluntary

The Working Group is supportive of following the guidance in Act 89 which calls for starting with a voluntary approach before moving to a mandatory one. However, based on the program design details, arrangements, systems, training, coordination and IT efforts involved with launching a statewide labeling/benchmarking initiative, it is likely that it will be more than a year or more before launching after all of these details and arrangements are determined. Testing all of the systems out for some time on a voluntary basis is critical before such a system could be confidently rolled out as a mandatory effort. Given this timeframe, it is unlikely that any coordinated statewide program would be launched before 2016. However, benchmarking is available now. To the extent that the EEU's and other market-based service providers are providing benchmarking services, the Working Group can report out on these efforts and any quantitative and/or qualitative results of these efforts by December 2016 as called for in Act 89, but it is unlikely there will be a fully functioning statewide program at that time.

Recommendation - Schedule

The Working Group suggests developing a realistic schedule that includes a few years to field test a voluntary program before considering making it mandatory. Such a change of schedule will need to be clearly conveyed to the Legislature. The Working Group recommends that the Legislature reconsider the December 2016 date for mandatory consideration given the time it will take to implement a statewide program.

Program Implementation Structure

Of high importance will be the program delivery structure and relationships between the EEUs and others in implementing a statewide benchmarking and labeling initiative. Some of the elements the Working Group considered in providing a statewide Vermont benchmarking and labeling service are discussed in more detail in the sections that follow. Budget implications will need to be considered for all of these efforts.

Advisory Committee

In order to follow on the recommendations from this report, coordinate efforts, develop the necessary resources and program pieces, resolve issues that arise and ensure statewide consistency, an Advisory Committee needs to be established. The make-up of this new Advisory Committee should be similar to the current Working Group. While the goal would be for the Advisory Committee to achieve consensus on any issues discussed, to ensure oversight and provide general direction, if needed, the Public Service Department could serve in the role of chair and help to facilitate agreements.

Customer Interface with Energy Efficiency Utilities

EEUs recognize the benefits of benchmarking, and will support benchmarking / labeling for customer groups according to fuel use and geographic regions defined through EEU Order of Appointment documentation. Where services overlap, EEUs will collaborate to ensure customers have a positive experience at all levels of EEU program implementation.

Benchmarking Service Statewide Management

For certain tasks, it makes much more sense for a single statewide entity to manage those program support tasks that are not customer-facing than to have multiple entities all providing the same service. Such “back office” management tasks include development of qualifications for service providers, then training, testing, overseeing and maintaining a database of these providers.

There is also an entire IT process that supports a labeling/benchmarking program, including development and support of the data aggregation, Green Button and Portfolio Manager Web Services, etc. Additional IT support services for a statewide data platform, statewide reporting (if required), uploading to real estate sales systems and other related activities will also be required.

Given Efficiency Vermont’s mission, expertise with benchmarking, IT capabilities and experience with residential labeling, the Working Group considered that they are well positioned to serve in this “back office” administrative role, but final roles for all EEU’s still need to be considered by the Advisory Committee and determined.

Benchmarking Service Providers and Process

The Working Group envisions that individuals that provide benchmarking and labeling services will be trained and credentialed building professionals, overseen by the EEU’s and following EPA’s standards and protocols, but supported and coordinated locally by each EEU. Qualified service providers could include architects, engineers, builders or anyone else appropriately trained and credentialed. Independent firms, in-house engineering or facility services, or EEU-based services in support of market work could all be the source of delivering this approach to building owners (or their representatives). Any individual providing these services would need to meet the requirements of EPA for operation and support of ESPM. The envisioned process would be the following:

- Building/Utility account owner hires a trained and certified ESPM Vermont Building Professional with the requisite experience and credentials to compile building energy and other building data required for ESPM.
- Depending on how the building is metered and whether it has tenants:
 - For a single owner in a master-metered building, the Building Professional obtains the owner’s permission to collect all of the historical energy data; or
 - In a building with individual meters, the Building Professional would need to secure aggregated tenant data from the utility and fuel dealer if four or more tenants. If there were three or fewer tenants, s/he would need to obtain written permission to obtain all of the energy consumption data.
- The Building Professional inputs the customer’s energy and other building data into ESPM and reports the score to the Efficiency Vermont administered storing and tracking database that houses the outputs of ESPM.
- The EEU responsible for originating the building/utility account relationship and overseeing the work of the building professional conducting the building energy check-up, issues the certificate/label/score for the building and then forwards the building score, address, building type, square footage and EUI to the Efficiency Vermont database.
- The Building Professional provides feedback to owner on code/health/safety issues found in the field for correction to the building owner.

- The Building Professional informs the owner of conservation opportunities and directs the owner to the requisite EEU program(s) that can best help the owner improve their buildings energy efficiency and acquire the appropriate cash rebates.
- Owner’s utility data remains with the energy efficiency utility, distribution utility, owner and the Building Professional.

Some of the advantages of this process including the following:

- Since the Building Professional has a contract and direct relationship with the owner they are in a good position to suggest a fuel neutral approach to help drive down the owner’s cost of operation.
- The Building Professional may provide feedback on code/health/safety issues found in the field to will help facilitate detection of problems and a path for remediation outside of the direct benchmarking support activities.
- EEUs have the opportunity to educate the Building Professionals to what conservation opportunities can be supported by incentives and yield the best return on investment.

However, some of the disadvantages of this process include the following:

- It is not a free service; the owner will have to hire a professional to rate their building. Although if the owner has “skin in the game” and is committed to understanding how energy is used in their building, they are more likely to go forward with the investment necessary to improve the energy efficiency of their building.
- It is not automatic. The owner will need to engage and be directed to go out and hire a Building Professional to perform the service. The EEUs could possibly offer a set cash rebate amount towards the rating/label/benchmarking process provided, that the building owner completes the implementation of cost effective efficiency measures within 12 months from the date of the energy “check-up”.

Technical Resource/Call Center

In order to provide assistance to Building Professionals, BED will be responsible for handling calls for assistance and providing technical resources to building professionals concerning buildings located in the City of Burlington. Efficiency Vermont could staff a call center to handle calls from Building professionals that concern buildings located outside of Burlington. . However, details will need to be worked out by the subsequent Advisory Committee.

Quality Assurance Provider

In order to ensure that the market-based Building Professionals are providing accurate and timely data, the EEUs will develop and administer a quality assurance program that provides spot checks and oversees their work to verify that data accuracy. Part of the certification should also be to provide continuing education trainings and a periodic re-examination. Each EEU will sponsor the Building Professionals that work for them and will coordinate with Efficiency Vermont on this issue of QA.

Labeling Service

In order to deliver a uniform Vermont label, the EEUs will need to support the IT platform that enables the Building Professionals and other EEUs to take the ESPM benchmarking data and generate the

common Vermont label. The Advisory Committee will need to address how often a building's label should be reviewed.

Besides generating the label, there is still a good deal of work necessary to design and program into the existing IT systems the ability to generate the uniform Vermont label that the Working Group develops.

Data Storage

Key to building energy transparency is a data platform to store the benchmarking/label inputs, resulting metrics and a time-stamped label. Specifically, this data should include the property address, the total building energy use by fuel type, building description/type and size, and the EUI. It does not include any specific energy cost data beyond what is needed to generate the EUI which is the total energy use by building reported by fuel type and compiled Btu data. In addition to data storage, work will need to be done to promote the data in the database in order to make it available to building and unit buyers and renters.

The Working Group presumes that data would be stored in the ESPM system and/or another database. This database could be administered by a single entity with custom permissions set for providers, or each provider could maintain a separate instance of the database. Details will need to be worked out by the Advisory Committee.

If labels are going to be used in the transaction process they will need to be in an easily-accessible location, with permissions clearly defined and managed. This data platform needs to be identified and supported as part of the on-going development process.

Public Access to Labeled Building Results

Even more important than internal program and utility access to building energy data is how the public is going to access building energy labels and benchmarked results. There is no equivalent to the residential "Multiple Listing Service" database for commercial buildings. However, in order to be effective in providing energy transparency, building results need to be accessible and visible as tenants shop around for apartments or commercial space and buyers need to be able to compare EUIs between buildings. The Working Group did not resolve this public access issue, but this issue needs to be addressed in order for energy labeling of buildings to become effective at driving energy investments and market recognition of energy efficient buildings.

Tenant Lease Language

While the Working Group encourages property owners to include model lease language in future leases that allows for data sharing, a complete and legal review still needs to be carried out and a plan for sharing the model language would need to be developed. In addition, more consideration should be given to whether customers who are tenants should be given an option to elect to keep their energy use confidential, keeping in mind that the exercise of this privacy right may prevent dissemination of information critical to the building energy labeling process. This effort could be undertaken by a future Advisory Committee. (See Appendix for examples from Burlington Housing Authority and WegoWise.)

Evaluation

Third party evaluations can assess whether all is running smoothly and accurately, and, if not, suggest corrections that should be made. Evaluations also ensure that resources are being well spent, that

participants are on track, and that accurate savings are accruing. An evaluation could also review benchmarking/labeling impacts and assess the potential for savings claims.

Recommendation – Program Implementation

The Working Group suggests that a follow-on Advisory Committee be formed to carry on the work of the Working Group and address the following program implementation issues:

- Budgets for supporting these recommendations
- Schedule that addresses development, field testing and reporting back to the Legislature
- Custom label design
- Benchmarking and labeling service statewide management, providers and process
- Technical resource call center
- Quality Assurance (QA) provider
- Data Storage
- Public Access to labeled building results
- Tenant lease language
- Evaluation

Summary Recommendations

The Working Group met at least monthly over the course of 2014 and made good progress towards a labeling initiative for Vermont. A multitude of issues still need resolution in order to develop and deliver a completed plan for energy labeling of Vermont commercial, multifamily and mixed-use buildings. This report represents a “work in progress”, reports on the consensus decisions made to date and suggests additional steps and decisions that will need to be made before rolling out a statewide consistent labeling program. This section presents the consensus decisions that the Working Group agreed on, suggests formation of an Advisory Committee to work on resolving the open questions, identifies some issues that the Public Service Board could address and suggests statewide benchmarking policy for the Legislature’s consideration.

Consensus Decisions

The Working Group came to consensus on near-term implementation approaches and identified a list of additional issues for labeling commercial, multifamily and mixed-use buildings. For the near-term, the Working Group agreed to recommend benchmarking in phases in order to provide the energy information called for in Act 89. The Working Group also identified a number of issues that a subsequent Advisory Committee would need to address. The Working Group also suggested that the Public Service Board convene a proceeding to investigate customer energy data access, aggregation, transfer and storage issues.

Near-Term Implementation

For any building energy labeling activities commencing or continuing in the near-term, the Working Group recommends that Vermont adopt the following approaches:

1. **Benchmarking** – The “consistent format and presentation for an energy rating” for multifamily and commercial buildings, as called for in Act 89, should be derived from the following:
 - a. Actual operational energy consumption data (as opposed to “asset-based” or modeled building data);
 - b. Site-based energy usage as determined by the meter or fuel gauge at the building (as opposed to source-based energy as measured from the well or power plant);
 - c. EPA’s ENERGY STAR Portfolio Manager (“ESPM”) should be the primary tool used to benchmark buildings and generate an energy rating and label;
 - d. Energy Use Intensity (“EUI”, measured in kBtu/square foot/year) should be the primary metric for buildings;
 - e. Use the ESPM “Statement of Energy Performance Report”⁴¹ as the interim label to report the EUI and supporting building information to prospective buyers and tenants;
 - f. Aggregate energy use data will need to be provided through a mechanism that protects tenant privacy but allows for data access to facilitate benchmarking;
 - g. An opt-out provision should be provided for tenants who wish to not make available their energy use data; and

⁴¹ http://www.energystar.gov/buildings/tools-and-resources/sample_energy_star_statement_energy_performance

- h. Engage and work with the private sector through EEU programs to deliver and implement benchmarking and labeling services to Vermont building owners and managers.
2. **Phased Implementation** – Proceed with the above benchmarking implementation in a phased approach as EEUs roll out benchmarking initiatives:
 - a. Phase 1: For buildings where only regulated fuels (i.e., electric and natural gas) are utilized and there is **a single utility account owner**, offer whole building benchmarking/labeling;
 - b. Phase 2: For buildings where only regulated fuels (i.e., electric and natural gas) are utilized, include buildings where **there may be multiple utility account owners** for whole building benchmarking/labeling;
 - c. Phase 3: For buildings where regulated (i.e., electric and natural gas) **and/or unregulated (delivered)** fuels are utilized, where there may be multiple utility account owners, offer whole building benchmarking/labeling; and
 - d. Phase 4: For buildings where regulated (i.e., electric and natural gas) and/or unregulated (delivered) fuels are utilized, where there may be multiple utility account owners, offer whole building benchmarking/labeling **and unit level** labeling.

The Working Group will present progress to date on the above activities in December 2016, as called for in Act 89.

Unresolved Issues

Beyond the near-term consensus decisions the Working Group arrived at, there were a number of issues discussed but not completely resolved that remain on the table. The Working Group recommends that an Advisory Committee be formed to build on the progress of the Working Group and address at least the following program delivery, data storage, and administration policies and issues:

- Budgets for supporting these recommendations
- Schedule that addresses development, field testing and reporting back to the Legislature
- Label design
- Benchmarking and labeling service statewide management, providers and process
- Technical resource call center
- Quality Assurance (QA) provider
- Data Storage
- Public Access to labeled building results
- Tenant lease language
- Evaluation

The Advisory Committee will be formed in 2015 and continue discussing these issues for implementation in 2016 and beyond.

Public Service Board Proceeding

The Working Group recommends that the Public Service Board convene a proceeding to investigate the following issues:

1. **Data Aggregation and Storage** - Consider establishing a system for delivery of aggregated energy data (including unregulated fuels, if the PSB considers it to be within its authority) to building owners and their authorized agents for use in buildings with tenants. Consider energy data release and data aggregation standards that strike a reasonable balance at protecting tenant privacy while allowing for property owner (or authorized agent) access to aggregated data, with reasonable opt-out allowances. Consider a data aggregation standard of “4/50”, as suggested by the Working Group. That is, allow for the release of tenant aggregated utility and fuel use data to any building owner (or their authorized agent) as long as there are at least four tenants and none uses more than 50% of the total energy. Assess options for data storage, access and reporting.
2. **Standard Data Access Format**– Consider whether all Vermont electric and natural gas utilities should offer “Green Button” or similar type services to provide data in a standard format in order to facilitate data transfer to building owners and their agents.
3. **Automated Data Transfer** – Assess whether utilities should offer Portfolio Manager Web Services or other similar type services to customers as a means of more easily and accurately accessing utility data for benchmarking.

Next Steps

The Working Group recommends convening an Advisory Committee in 2015 in order to develop and implement an overall benchmarking and labeling plan following on from this report that would coordinate between the different utilities and others as the EEU's roll out any new Act 89-initiated pilots, develop and test the energy label, develop and coordinate software to generate the labels, design the storage database, report on activity, and access labels and benchmarking data publicly.

Efforts to promote and support benchmarking and labeling programs will require a concerted and on-going focus in order to break into the market, gain awareness, earn recognition and increasingly drive opportunities to save energy. While the Advisory Committee and EEU's can report progress to the Legislature on December 15, 2016, as called for in Act 89, it is unlikely they will be in a position to implement a robust benchmarking initiative statewide or consider making benchmarking and labeling of multifamily, commercial and mixed-use buildings mandatory.

Appendix

A. Vermont Act 89 – 2013 Energy Bill

* * * Voluntary Building Energy Disclosure * * *

Sec. 12. DISCLOSURE TOOL WORKING GROUP; REPORTS

(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.

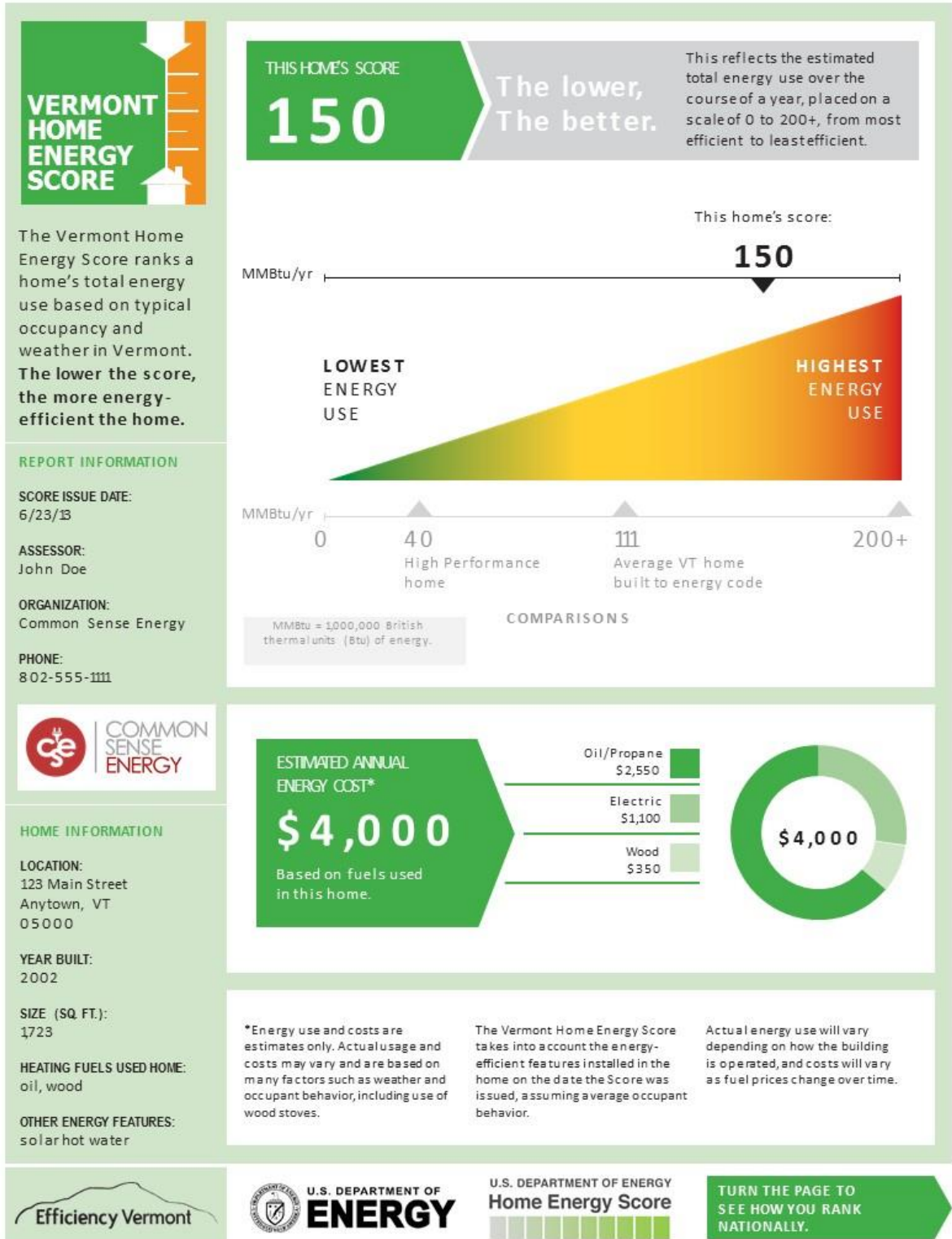
B. Commercial/Multifamily Building Energy Labeling Working Group Meetings & Schedule for 2014

1. January 23, 2014
 - a. Internal EVT, PSD planning meeting to begin to scope out the project and stakeholders
2. February 18
 - a. Confirm Working Group structure and make-up
 - b. Review current legislation, tools and policies in Vermont and beyond
 - c. Review/update 2014 scope of work
 - d. Plan for tools review meeting
3. March 4
 - a. VHFA meeting focused on WegoWise
 - b. Attendees: VHFA, Cathedral Square Corp., Burlington Housing Authority, Rural Edge, VHCB, Champlain Housing Trust, EVT, Housing Vermont, EFG
 - c. Reviewed experience with WegoWise and potential for wider use by all affordable housing providers in Vermont
 - d. Updated the group on this statewide building labeling effort
4. March 19
 - a. Develop an understanding of current labeling/scoring initiatives and tools; webinar presentations from others outside of Vermont
 - b. Presentations (remotely presented) by:
 - i. IMT
 - ii. NEEP
 - iii. EPA Portfolio Manager
 - iv. WegoWise
 - v. Mass. DOER/NEEP Building Asset Rating
5. April 4
 - a. Review tools presentations from 3/19; what did we learn and where do we want to go?
 - i. Review tool and metrics options
 - ii. Review data flow and tool options
 - b. Confirm steering committee and subcommittee membership (for MF and Commercial Buildings)
 - c. Decision-making process; how do we include stakeholders and who makes final decisions?
 - d. Scope out tasks, schedule and decisions from here to Dec. 15.
6. May 6
 - a. VHFA-sponsored meeting of affordable housing groups
 - b. Focus on WegoWise possible adoption and next-steps
7. May 8
 - a. Review schedule and milestones and decisions along the way to Dec. 15
 - b. Stakeholders
 - i. Proposed structure and membership
 - ii. Surveys and blog development
 - c. Label design

- i. Coordination with residential?
 - ii. Elements to consider for inclusion
 - iii. ENERGY STAR vs. local EUI presentation of results
 - d. Tools
 - i. Building vs. tenant unit calculations and presentation issues
 - ii. Subcommittee needed?
 - e. Data
 - i. Collection, storage, reporting, privacy
 - ii. Discuss options and issues needing decisions and resolutions
- 8. May 31
 - a. Distributed Stakeholder Survey #1 to seek input on:
 - i. General direction
 - ii. Preliminary decisions
 - iii. Building applicability
 - iv. Stakeholder involvement
 - b. 40 recipients
 - i. Affordable housing groups
 - ii. Building owners
 - iii. Governmental agencies
 - iv. Tenant groups
 - c. June 11 deadline
- 9. June 17
 - a. Review and decide on unit vs. building labeling approach
 - b. Review stakeholder survey results, decide on next steps
 - i. Stakeholder meeting?
 - ii. Establish stakeholder blog?
 - iii. Website presence?
 - c. Implementation Issues – initial discussion
 - d. Data Issues - discussion
 - i. Accessing utility energy data
 - ii. Disclosing labeling data (public vs. private issues)
 - iii. Storing labeling results
 - iv. Coordination with Residential efforts
 - e. Tool update
 - i. WegoWise
 - f. DOE FOA 1073 Proposal for VT/NH Funding - update
 - g. Schedule & Next Steps
- 10. July 22
 - a. Building vs. Unit Labeling
 - b. Use-Cases (for which a label would be applicable/used in comm./MF buildings)
 - c. Data disclosure policies
- 11. August 28
 - a. Data and privacy proposal discussion
 - b. Program Implementation discussion
 - i. What does a statewide program look like serving comm./MF buildings?
 - ii. How would the utilities coordinate?
 - iii. Who issues labels?

- iv. Central or individual utility issuance?
 - v. Data warehousing?
 - vi. Who issues and supports building owners, etc.?
 - c. Need for a customer survey for tenants?
 - d. Need for a stakeholder survey #2?
 - i. Label design issues
 - ii. Implementation options
 - iii. Tenant input
 - iv. Seek confirmation on direction and decisions
- 12. September 25
 - a. Review outline of report to the Legislature
 - b. EEU roles in supporting a labeling “program” in Vermont
 - i. Discuss VGS/BED thoughts
 - ii. Review table of “labeling service options”
 - iii. Consider elements of IMT paper: “Creating Value from Benchmarking: A Utility Perspective”
 - c. Data updates based on discussions in the interim and/or PSB hearings
 - i. Tenant lease language review and discuss
- 13. October 17
 - a. Discussions with possible implementation partners
 - b. Decisions and decisions on program components and roles
 - c. Review draft of report to the Legislature
- 14. November 12
 - a. Update on DOE FOA 1073 labeling grant award with NH
 - b. Review report
 - i. Review/discuss revised program delivery elements
 - ii. Review/discuss recommendations
 - c. Discuss label design elements and steps to develop
 - d. Label data storage and SEED
- 15. December 4
 - a. Review, update report sections
 - b. Finalize report for the Legislature for 12/15/14

C. Vermont Residential Home Energy Score Label Front & Back (Draft)





U.S. DOE HOME ENERGY SCORE

The data utilized to produce this home's Vermont Home Energy Score can also show how your home compares to others nationwide. The U.S. Department of Energy (DOE) Home Energy Score uses a 10-point scale to describe your home's efficiency—where 10 is the most efficient. For more information about this home's

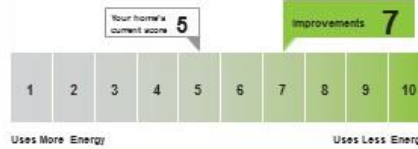
Home Energy Score

The Home Energy Score is a national rating system that reflects the energy efficiency of a home based on the home's structure and heating, cooling, and hot water systems.



Address:
12346 Honeysuckle Lane
Smithville AR 72468

Assessment type:
Official Score - Corrected
Assessment date: 01/12/2012
Score ID: 1818376
Qualified assessor #: 101018
Home Energy Score Version: 2013



HOW DOES THE VERMONT HOME ENERGY SCORE WORK?

Vermont Home Energy Score is a tool to assess a home's energy consumption and average associated costs. The lower the score, the better! A low VHES identifies a home as energy efficient with a smaller carbon footprint and lower energy costs. The VHES also allows for comparisons of one home's energy use to another. The VHES calculation is based on a home's size, insulation levels, draftiness, heating and cooling systems, and hot water heating efficiency. This score is based on the building features themselves, not on how a particular occupant uses the building. Number of occupants, behavior, indoor temperature, and weather are standardized to calculate normal, average energy use based on the assets which make up the home. A home's actual energy use will vary with conditions such as occupancy, behavior, weather, and charges to the home. Assessments are completed by qualified Assessors who must meet certification requirements as designated by DOE as well as pass the Home Energy Score Building Science and Home Energy Score Training tests.

ASSUMPTIONS

Average Vermont fuel prices are used to generate the estimated annual energy costs presented in this score. Values are obtained from the Vermont Fuel Price Report. The following table shows pricing assumptions used in this report.

COMPARING THE COST OF HEATING FUELS				
FUEL COST ASSUMPTIONS FROM VERMONT FUEL PRICE REPORT, JANUARY 2014*				
FUEL	\$/UNIT	MMBTU / UNIT	AVG. EFFICIENCY	\$/MMBTU
Fuel Oil, Gallon	\$3.86	0.138200	80%	\$54.88
Kerosene, Gallon	\$4.30	0.136600	80%	\$59.55
Propane, Gallon	\$3.39	0.091600	80%	\$46.21
Natural Gas, Therm	\$1.46	0.100000	80%	\$18.28
Electricity, Kwh (Resistive Heat)	\$0.15	.003413	100%	\$43.46
Electricity, Kwh (Cold Climate Heat Pump)	\$0.15	.003413	300%	\$14.49
Wood, Cord (Green)	\$193	22	60%	\$14.65
Pellets, Ton	\$247	16.4	80%	\$18.83

*Current fuel price reports can be obtained from the Public Service Department website http://publicservice.vermont.gov/publications/fuel_report

VERMONT HOME ENERGY SCORE REFERENCE SCORES

LOWEST ENERGY USE - A highly efficient home that produces as much energy as it consumes is considered a Net-Zero Home. This home would have a 0 score.

AVERAGE VERMONT HOME - A home of typical size, heating system, and fuel: 1972 square feet, oil boiler, and integrated hot water, built to Vermont's minimum energy code specifications.

HIGH PERFORMANCE HOME - Efficiency Vermont's highest performing residential new construction service tier. These homes can be up to 75% more energy efficient than a home built to code.

HIGHEST ENERGY USER - Some of the most inefficient homes in Vermont can consume over 200 MMBtu/year in total energy.

USEFUL TERMINOLOGY

MMBTU - 1 MILLION BTUS - A btu (British Thermal Unit) is a unit of energy, specifically the amount of energy required to raise 1lb. of water 1degree Fahrenheit. For reference, this is approximately the amount of energy released by burning 1wooden match. 1MMBtu = 7 gallons of fuel oil.

ENERGY CODE - Vermont's Residential Building Energy Standards (RBES) were enacted in 1998. These standards set minimum energy performance guidelines for new construction and renovation building features. For more information see http://publicservice.vermont.gov/topics/energy_efficiency/rbe

ADDITIONAL RESOURCES

CARBON FOOTPRINT

As it relates to this label, the amount of CO₂ (in lbs.) released into the atmosphere per year as a result of the energy used to operate your home. Total carbon footprint includes the products we consume as well as transportation and other activities. You can calculate your carbon footprint from the data supplied by your Vermont Home Energy Score. Learn how by visiting: <http://www.epa.gov/climatechange/ghemissions/ind-calculator.html>

LOCATION EFFICIENCY

Curious how your neighborhood ranks in terms of total cost of home ownership and transportation? Take a look at the Center for Neighborhood Technology's Housing and Transportation Affordability Index at <http://htaindex.cnt.org/map>

ENERGY EFFICIENCY PROGRAMS

The following programs can help get you on the path to improving your home's energy score:

EfficiencyVermont • 888-921-5990 • <http://www.efficiencyvermont.com>

Vermont Gas Systems • 802-863-4511 • <http://www.vermontgas.com>

Burlington Electric Department • 802-865-7342 • <https://www.burlingtonelectric.com>

NeighborWorks of Western Vermont • 802-438-2303 • <http://www.nwvt.org>

Vermont's Weatherization Program • <http://www.udcf.vermont.gov/oeo/weatherization>



Efficiency Vermont was created by the Vermont Legislature and the Vermont Public Service Board to help all Vermonters reduce energy costs, strengthen the economy, and protect Vermont's environment. For more information, contact Efficiency Vermont at 888-921-5990 or visit www.efficiencyvermont.com.

D. ENERGY STAR Portfolio Manager Building Types

While any building can be benchmarked and provided an EUI using ENERGY STAR Portfolio Manager (ESPM), the following 21 property types are eligible, using ESPM, to receive an ENERGY STAR 1-100 score:

- (1) Bank branch
- (2) Barracks
- (3) Courthouse
- (4) Data center
- (5) Distribution center
- (6) Financial office
- (7) Hospital (general medical & surgical)
- (8) Hotel
- (9) K-12 school
- (10) Medical office
- (11) Multifamily housing
- (12) Non-refrigerated warehouse
- (13) Office
- (14) Refrigerated warehouse
- (15) Residence hall/ dormitory
- (16) Retail store
- (17) Senior care community
- (18) Supermarket/grocery store
- (19) Wastewater treatment plant
- (20) Wholesale club/supercenter
- (21) Worship facility

Any building type can be benchmarked using ESPM, including the following:

Property Category/Type	
Banking/financial services	Manufacturing/industrial
Bank Branch	Manufacturing/Industrial Plant
Financial Office	Mixed use
Education	Mixed Use Property
Adult Education	Office
College/University	Medical Office
K-12 School	Office
Pre-school/Daycare	Veterinary Office
Vocational School	Other
Other	Parking
Entertainment/public assembly	Parking
Aquarium	Public services
Bar/Nightclub	Courthouse
Bowling Alley	Drinking Water Treatment & Distribution
Casino	Fire Station
Convention Center	Library
Fitness Center/Health Club/Gym	Mailing Center/Post Office
Ice/Curling Rink	Police Station
Indoor Arena	Prison/Incarceration
Movie Theater	Social/Meeting Hall
Museum	Transportation Terminal/Station
Performing Arts	Wastewater Treatment Plant
Race Track	Other
Roller Rink	Religious worship
Social/Meeting Hall	Worship Facility
Stadium (Closed)	Retail
Stadium (Open)	Automobile Dealership
Swimming Pool	Convenience Store with Gas Station
Zoo	Convenience Store without Gas Station
Other - Entertainment/Public Assembly	Enclosed Mall
Other – Recreation	Lifestyle Center
Other – Stadium	Retail Store
Food sales and service	Strip Mall
Bar/Nightclub	Supermarket/Grocery Store
Convenience Store with Gas Station	Wholesale Club/Supercenter
Convenience Store without Gas Station	Other – Mall
Fast Food Restaurant	Technology/science
Food Sales	Data Center
Food Service	Laboratory
Restaurant	Other
Supermarket/Grocery Store	Services
Wholesale Club/Supercenter	Data Center
Other - Restaurant/Bar	Personal Services (Health/Beauty, Dry Cleaning, etc)
Healthcare	Repair Services (Vehicle, Shoe, Locksmith, etc)
Hospital (General Medical & Surgical)*	Other
Medical Office	Utility
Outpatient Rehabilitation/Physical Therapy	Drinking Water Treatment & Distribution
Senior Care Community	Energy/Power Station
Urgent Care/Clinic/Other Outpatient	Wastewater Treatment Plant
Other/Specialty Hospital	Other
Lodging/residential	Warehouse/storage
Barracks	Self-Storage Facility
Hotel	Distribution Center
Multifamily Housing	Non-Refrigerated Warehouse
Prison/Incarceration	Refrigerated Warehouse
Residence Hall/Dormitory	
Senior Care Community	
Single Family Home	
Other	

COMMERCIAL & MULTIFAMILY BUILDING LABEL SURVEY RESULTS

JENNI CATHCART, VEIC CONSUMER INSIGHTS MANAGER



June 2014

METHODOLOGY



- Online survey distributed by Richard Faesy on 5/31
- “Snowball recruiting” approach
- 45 respondents

1 = Bldg owner -- comm	0
2 = Bldg owner -- municipal/gov't	0
3 = Bldg owner -- non-profit	9
4 = Energy org stakeholder	5
5 = Housing org -- for-profit	1
6 = Housing org -- municipal/gov't	0
7 = Housing org -- non-profit	7
8 = Tenant in a commercial bldg	0
9 = Tenant in a multifamily bldg	1
10 = Trade association member/advocate	8
11 = Other gov't agency	3
12 = Other	11
13 = Architect	0
14 = Property manager	0

Respondents' Area(s) of Interest

Commercial Buildings only	2
Multifamily Only	11
Mixed Use Only	1
Commercial and Multifamily	2
Multifamily and Mixed Use	1
Commercial, Multifamily, Mixed Use	9

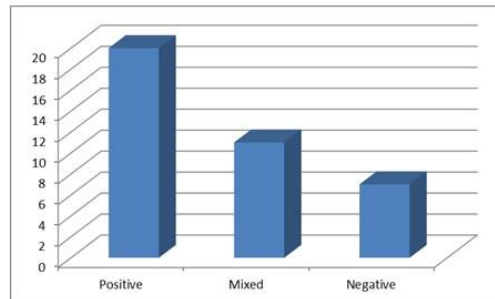
OVERALL REACTION

Benefits

- Accountability to building owners
- Useful – if it's easy to understand

Concerns

- How is usage factored into the label?
- Who pays for monitoring?
- Obstacles in defining a standardized/reliable score



QUALIFIED RATERS

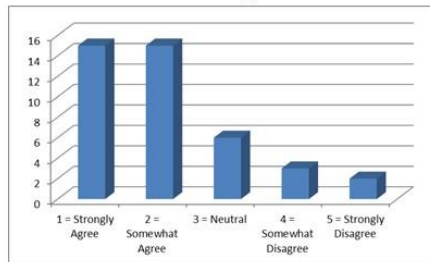
Respondents identified multiple stakeholders who they believed would be appropriate to rate commercial/multifamily/mixed use buildings.

Engineer	15
Architect	9
BPI certified contractor	9
Home Energy Score rater	17
Home Inspector	2
Individuals trained and certified in building rating	26
All of the above	7
Other	4

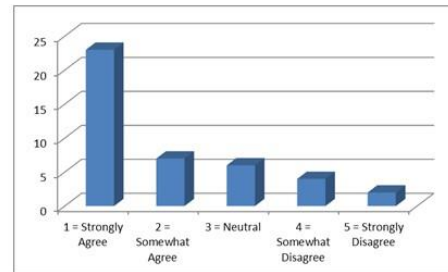
Q21: Who do you think would be qualified to complete the building energy score and label for commercial, mixed-use and multifamily buildings? (Check all that apply.)

LEVEL OF SUPPORT

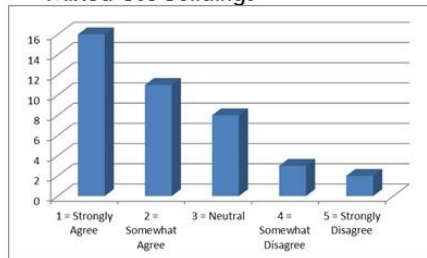
Commercial Buildings



Multifamily Buildings



Mixed Use Buildings



Overall, support for this concept is generally strong across all 3 building types – although a little less so for commercial buildings.

BUILDING OWNERS

A building energy score and label would likely help me understand how my building performs in comparison to similar buildings.

1 = Strongly Agree	3
2 = Somewhat Agree	2
3 = Neutral	1
4 = Somewhat Disagree	0
5 = Strongly Disagree	3
6 = Not Applicable	0
7 = Unsure	0
TOTAL	9

A low building energy score would likely provide me with motivation to make building improvements.

1 = Strongly Agree	1
2 = Somewhat Agree	4
3 = Neutral	0
4 = Somewhat Disagree	1
5 = Strongly Disagree	3
6 = Not Applicable	0
7 = Unsure	0
TOTAL	9

The greatest value building owners see in this concept surrounding understanding how the building performs compared to similar buildings – and how they might improve the performance of their building

It is unlikely that I would use the building energy score and label in any way.

1 = Strongly Agree	2
2 = Somewhat Agree	0
3 = Neutral	3
4 = Somewhat Disagree	0
5 = Strongly Disagree	4
6 = Not Applicable	0
7 = Unsure	0
TOTAL	9

BUILDING OWNERS (cont'd)

A building energy score and label would likely be helpful when renting/leasing/selling a building (or units within a building).	
1 = Strongly Agree	1
2 = Somewhat Agree	1
3 = Neutral	1
4 = Somewhat Disagree	4
5 = Strongly Disagree	1
6 = Not Applicable	1
7 = Unsure	0
TOTAL	9

A building energy score and label would likely help me demonstrate compliance with energy codes.	
1 = Strongly Agree	2
2 = Somewhat Agree	3
3 = Neutral	0
4 = Somewhat Disagree	2
5 = Strongly Disagree	2
6 = Not Applicable	0
7 = Unsure	0
TOTAL	9

- Building owners are lukewarm – at best -- to the concept of the energy score and label helping to rent/lease/sell a building
- Building owners split on whether the energy score and label would be helpful in demonstrating compliance with energy codes.

WHAT TO RATE?

The commercial, mixed-use and multifamily building energy score and / label should rate the performance of...	
1 = Entire Building	19
2 = Each distinct office/apartment/retail space	2
3 = Both	16
4 = Other ("Neither")	3
TOTAL	40

METRICS

Energy-related building features, energy cost by end use and fuel type and \$/square foot are rated highest...what's also interesting is the number of "unsure" responses.

METRIC	YES	NO	UNSURE	SUM
1-100 rating scale	17	8	14	39
Carbon footprint	14	13	12	39
Energy-related building features (e.g. 90% efficient furnace)	30	5	4	39
Energy cost by end use (e.g. space heating, water, etc.)	27	5	7	39
Energy cost by fuel type (e.g. oil, electric, natural gas)	27	4	8	39
Energy code compliance documentation	20	7	12	39
Energy program certifications (e.g. Vermont Gas Systems program)	16	10	13	39
Energy Use Intensity (EUI)	21	4	14	39
Location efficiency (e.g. proximity to public transportation)	10	17	12	39
Mmbtu/year	23	6	10	39
Recommended energy improvements/upgrades	16	12	11	39
\$/year	23	10	6	39
\$/square foot/year	28	7	4	39

Q: Which of the following metrics would be helpful to include?

QUALIFIED RATERS

Respondents identified multiple stakeholders who they believed would be appropriate to rate commercial/multifamily/mixed use buildings.

Engineer	15
Architect	9
BPI certified contractor	9
Home Energy Score rater	17
Home Inspector	2
Individuals trained and certified in building rating	26
All of the above	7
Other	4

Q21: Who do you think would be qualified to complete the building energy score and label for commercial, mixed-use and multifamily buildings? (Check all that apply.)

F. Lease Language & Information

Burlington Housing Authority

65 main street / burlington vt 05401 -8408 / tel 802.864.0538 / fax 802.658.1286
BURLINGTON HOUSING AUTHORITY

AUTHORIZATION FOR THE RELEASE OF INFORMATION

I/we consent to allow Burlington Housing Authority to request and obtain information from third party sources relevant and necessary for the processing of my application for federally assisted housing, for the periodic determination of my rental obligations, and for the periodic determination of my continued eligibility for housing.

Sources that may be contacted and that are authorized to release requested information include, but are not limited to: income and benefit sources, asset sources, sources for eligible deductions from income (pharmacy/prescription, doctor, dental expenses, medical insurance, etc), landlords, credit bureaus, character references, personal references, utility companies, social service providers, courts, police departments and corrections departments.

Copies of this authorization shall have the same force and effect as the original.

This authorization shall remain effective for the duration of my receipt of rental assistance from the Burlington Housing Authority.

Head of Household Signature Date

Spouse Signature Date

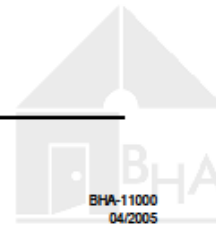
Other family member,
age 18 or older Signature Date

Other family member,
age 18 or older Signature Date

Other family member,
age 18 or older Signature Date

File Name: _____

Authorization for the Release of Information





WegoWise, Inc. is working with your property manager to understand the energy use in the building. This partnership could help reduce the utility bills for your space!

Why is tenant participation necessary?

To qualify for an Energy Star label, all the energy and water use within a building has to be captured, including tenant paid utilities.

To gain a complete picture of the building.

- Manage utility costs.
- o By tracking in WegoWise, it's easy to spot spikes in usage or cost, which may indicate problems with a building or a billing error.
- Identify top retrofit candidates.

o WegoWise makes it easy to identify the least efficient buildings in your portfolio. You then know which buildings to start with for energy audits and upgrades, allowing you to create a prioritized list to plan around.

- Set goals.
- o Compare your buildings to our database of other multi-family properties to see if you're better or worse than others. Use the usage information from our database to set goals and targets for your buildings.
- Track actual retrofit savings.
- o After installing retrofits, track them in WegoWise to quantify the actual savings. This allows you to know which measures typically save you the most and should be tried in other buildings and which ones aren't worth it.

Why WegoWise?

- Automatic importing of monthly utility data ensures a one time setup process
- Quarterly building performance reviews are available for participating tenants
- Building performance data can be shared anonymously with all stakeholders
- Building benchmarks will help target resources for retrofits

How to Get Started:

Your property manager will contact you for your tenant space characteristics & utility account information. Any confidential information needed to register your accounts online will be kept secure.

201 South St., Ste. 616, Boston, MA 02111 sales@wegowise.com Tel: 617-367-WEGO www.wegowise.com



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201 South St., Ste. 616, Boston, MA 02111 sales@wegowise.com Tel: 617-367-WEGO www.wegowise.com

wegoWise: Quick Tips

Why is it Important to Track Tenant Utility Use?

Benchmarking whole-building energy use is increasingly important as energy costs rise and municipal benchmarking laws come into effect. Tenant-occupied spaces typically account for a majority of the total building area, and tracking the utility consumption of these spaces allows you to identify opportunities for cost-effective retrofits, comply with local benchmarking laws, and make your property more appealing.

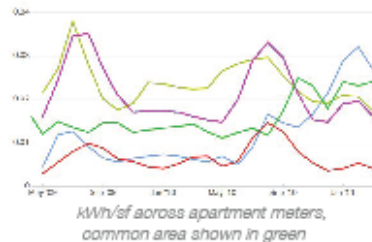
How Do I Get Tenants to Release Utility Information?

The two most important factors affecting the success of tenant release programs are tenant education, and good communication between the building owner and tenants. Many tenants balk at the idea of releasing personal information, so be sure to emphasize that their information will be kept private, and that any retrofits will help make the building more comfortable and reduce their utility bills.

Use the tips below as a guideline for implementing your tenant release program and ensure that the process is smooth, efficient, and effective.

5 Steps to Track Tenant Utility Data

- 1. Create a sheet for recording usage or draft a tenant-release form.**
For manual data collection distribute a form for tenants to record usage, cost, and billing period start/end dates. For automatic tracking, a release form lets your tenants give consent for you to access their data online. WegoWise users can take advantage of our premade and customizable templates.
- 2. Post educational materials notifying tenants about the tracking project, and how their information will be used.**
Post materials in common areas and distribute in mailboxes. Sign up for a WegoWise account to gain access to our library of outreach materials and educational flyers.
- 3. Collect data, and distribute data-release forms**
In person is best, but a mailing can work, too.
- 4. Follow up with tenants in 7-10 days**
Make sure that tenants have had a chance to read and understand the materials, and answer any questions they have. Consider holding a building meeting to address concerns and answer questions.
- 5. Use data for disclosure compliance or to identify trends.**
WegoWise automates bill collection, provides insightful visualizations, and enables you to track the savings from retrofit projects.



Begin Tracking Your Energy Use Today: wegoWise.com/signup

Tracking Tenant Utility Use

Tips for Writing a Tenant Release Form

Now that you've decided to track the utility consumption of your tenant-occupied spaces, the first thing you'll need is your tenants' permission to access their utility data. There are two main strategies for acquiring utility billing history from your tenants: requesting access to their online utility account, and requesting that tenants fill out a spreadsheet with their utility usage history.

What to ask for?

Manual Data Collection

Put together a printable spreadsheet that you can hand out to tenants to record their own energy use history. Be sure to include columns for at least the following data: Billing Period Start Date, Billing Period End Date, Energy Use, and Cost. For best results, try to collect information as far back as possible, at least the past year is recommended.

Automatic Data Collection

Using a variety of software applications (including, yes, WegoWise) you can usually gather data automatically from your utility company's website. Check with your local utility provider to find out what information (Name, Account Number, etc.) you will need to register tenant accounts online. In case your tenants have already registered online, include a place for them to write in their login information.

What to write?

Make sure the document is clear and easy to read. Avoid legalese and jargon. The tenant release form needs to inform tenants what information you are gathering, for what purpose, and with whom it will be shared. The form should be written to both inform the tenant and protect the property owner from legal complications. At a minimum, be sure to include:

1. An explanation of what is information is being requested
2. A description of what that the information will be used for such as to highlight retrofit candidates
3. A description of who will see energy use histories and personal information
4. Explicit authorization from the tenant or tenant's representative to access data
6. The tenant's explicit release of the property owner/associates from legal liability or resulting expenses.

The image shows a sample tenant release form for WegoWise. The form is titled "Tenant Release Form" and includes sections for "Property Info", "WegoWise Account Info", and "Authorization". It contains detailed text explaining the purpose of data collection and the tenant's agreement to share their utility data. A large "SAMPLE" watermark is overlaid on the form.

Begin Tracking Your Energy Use Today: wegowise.com/signup

[1]

G. Resources

Institute for Market Transformation

1. *BuildingRating.org*: <http://www.buildingrating.org/>
2. *Data Access and Transparency Alliance*: <http://www.energydataalliance.org/>
3. “Utilities’ Guide to Data Access for Building Benchmarking for the Energy Efficient Buildings Hub”, Institute for Market Transformation. March 2013. (IMT 2013)
4. “Creating Value from Benchmarking: A Utility Perspective” , August 2014 : <http://www.imt.org/resources/detail/creating-value-from-benchmarking-a-utility-perspective> . (IMT 2014)
5. Institute for Market Transformation Policy Map http://www.imt.org/uploads/resources/files/IMT_USbenchmarking_map_10.10.14.pdf (accessed 10/13/14)

National Association of Regulatory Utility Commissioners

Draft Resolution on Accessing Whole-Building Energy Data and Automated Benchmarking: <http://www.buildingrating.org/document/draft-resolution-accessing-whole-building-energy-data-and-automated> , 2/14/2011.

State and Local Energy Efficiency Action Network (SEEAction)

1. *A Utility Regulator’s Guide to Data Access for Commercial Building Energy Performance Benchmarking*. Prepared by Andrew Schulte, ICF International. May 2013
2. *A Regulator’s Privacy Guide to Third-Party Data Access for Energy Efficiency*. Prepared by M. Dworkin, K. Johnson, D. Kreis, C. Rosser, J. Voegelé, Vermont Law School; S. Weissman, UC Berkeley; M. Billingsley, C. Goldman, Lawrence Berkeley National Laboratory. 2012
3. *Benchmarking and Disclosure: State and Local Policy Design Guide and Sample Policy Language*. Prepared by A. Burr, Institute for Market Transformation. 2012.

U.S. EPA ENERGY STAR Portfolio Manager

<http://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager>