Residential Energy Labeling for Underserved Markets

A Program Landscape Assessment

December 2019
Acknowledgments

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- Lisa Timmerman, City of Portland
Introduction

Across the country, cities and states understand that you can’t change what you don’t measure. In the case of energy use in the built environment, the energy-related features of homes are often overlooked. Homebuyers without backgrounds in energy efficiency face a number of barriers to understanding what they are buying. Most do not know what features to ask about or look for, like up-to-code insulation levels or a high-efficiency furnace, even though those features have the potential to significantly impact home comfort, affordability, and overall quality of life in a home. An additional challenge is that these features are in less accessible and more intimidating parts of the home, like the attic or basement.

One solution to bridging this information gap is through a residential energy label. Consumers are already used to seeing labels displaying nutritional information about their food, expected annual costs to operate their refrigerator, or the anticipated miles per gallon on a new car. Labels communicate complicated information in a digestible and standardized format. The ENERGY STAR® label is already an accepted way for consumers to gain information about individual appliances within their homes. Whole home energy labels are increasingly being used across the country to give consumers better information about how their residences use energy. Better information can lead to smarter decisions about energy investments. Delivering this information at key times as part of the real estate transaction can optimize the value of this information in informing key decisions. For example, the City of Portland, Oregon has chosen to require the disclosure of an energy label at the time a home is listed on the market, while the City of Denver is pilot testing an energy label by providing a free Home Energy Score™ to reach sellers, buyers, and those who have recently purchased a home.

Proponents of residential energy labeling initiatives understand consumers have a right to know key information about their homes, which is likely the consumers’ biggest asset. When the number of labels reaches critical mass, these programs can also help jurisdictions get a better, more granular, and more standardized view of the housing stock within particular regions. Additionally, when home energy information becomes standardized, appraisers can utilize this data to more accurately assign value to high performing homes.

To date, most labeling initiatives have largely been focused on single-family homes, without an emphasis on low-income or underserved markets. While these homes certainly benefit from access to energy labels, this paper strives to explore the barriers to creating and implementing residential energy labeling programs that target underserved housing markets. Additionally, this paper highlights creative solutions to overcome those barriers. This is done by compiling lessons learned from energy labeling experts in local governments and utilities and from speaking with program administrators from across the country. This paper does not discuss the exhaustive list of energy labeling programs and pilots across the country.

In short, the lessons learned can be summarized into four key areas, outlined below.

- Stakeholder engagement
- Upgrade recommendations and implementation
• Data collection and analysis
• Centering access to labels and upgrades for underserved markets

Challenges to home energy labeling programs sometimes relate to the fact that they require time and money to implement but do not directly generate energy savings that could be counted toward utility or city reduction goals. Instead, home energy labeling programs fix a market failure of asymmetric information, which can help homeowners make efficiency investments when it’s best for them. But for utility programs, directly tied energy savings are often a key performance metric for program success. Additionally, as with any program, especially voluntary ones, it can be challenging to convince all relevant stakeholders that their engagement in the program is valuable.

Residential Energy Labels: What do they look like?

Residential energy labels can take make many forms, but typically include one or all of the following:

• A list of a home’s physical assets, like insulation level or heating equipment efficiency.
• Whole home energy costs and/or usage information.
• A score or rating used to normalize and compare a home’s energy use.

Additionally, labels almost always include a list of recommended actions for improving the home’s energy features.

In its label, Eugene, Oregon uses the US Department of Energy’s Home Energy Score to help homeowners and occupants understand the current state of the home and its potential for improvement if energy upgrades are made (Figure 1). Note below that this label includes both the current score of three out of 10, estimated energy costs, and the estimated score if recommended energy improvements are made. It also includes basic information about the home, such as the year built, square footage, and number of bedrooms. The back page features recommended next steps to move forward on energy improvements.
Figure 1. Eugene Water & Electric Board Home Energy Score Label

<table>
<thead>
<tr>
<th>HOME PROFILE</th>
<th>LOCATION: 123 Main St, Eugene, OR, 97405</th>
</tr>
</thead>
<tbody>
<tr>
<td>YEAR BUILT:</td>
<td>1992</td>
</tr>
<tr>
<td>HEATED FLOOR AREA:</td>
<td>1250 sq. ft.</td>
</tr>
<tr>
<td>NUMBER OF BEDROOMS:</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ASSESSMENT</th>
<th>ASSESSMENT DATE: 2018-02-04</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPIRATION DATE:</td>
<td>2026-02-04</td>
</tr>
<tr>
<td>ASSESSOR:</td>
<td>Emily Ryba, University of Oregon</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HOME ENERGY SCORE</th>
<th>U.S. DEPARTMENT OF ENERGY</th>
<th>THIS HOME'S SCORE</th>
<th>OUT OF 10</th>
<th>THIS HOME'S ESTIMATED ENERGY COSTS</th>
<th>$1,718</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Home Energy Score</th>
<th>Your home's current score</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uses more energy</td>
<td>1  2  3  4  5  6  7  8  9  10</td>
<td>Uses less energy</td>
</tr>
</tbody>
</table>

Official Assessment ID#: 100001

The Home Energy Score is a national rating system developed by the U.S. Department of Energy. The Score reflects the energy efficiency of a home based on the home’s structure and heating, cooling, and hot water systems. The average score is a 5. Learn more at HomeEnergyScore.gov.

Made possible through a partnership between EWEB, University of Oregon, and the City of Eugene.

<table>
<thead>
<tr>
<th>HOW MUCH ENERGY IS THIS HOME LIKELY TO USE?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric: 8,696 kWh .......................... $956</td>
</tr>
<tr>
<td>Natural Gas: 40c therm/yr .................... $762</td>
</tr>
<tr>
<td>Other: 0 galt/yr ............................ $0</td>
</tr>
</tbody>
</table>

TOTAL ENERGY COSTS PER YEAR $1,718
Austin, Texas requires that homes have an Energy Conservation and Audit Disclosure (ECAD) when listed, a form based on a simplified prescriptive audit on components eligible for incentives through Austin Energy. As you can see in Figure 2, the cover letter includes a four-item list of features they recommend for their housing stock and indicates whether the home has those features. The second page communicates specific information about energy-related systems in the home but does not report total estimated energy costs.

<table>
<thead>
<tr>
<th>FEATURE</th>
<th>TODAY’S CONDITION</th>
<th>RECOMMENDED IMPROVEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attic Insulation</td>
<td>R-3</td>
<td>Add insulation to R-49 as space allows</td>
</tr>
<tr>
<td>Floor Insulation</td>
<td>R-2</td>
<td>Insulate floors to R-30 or as space allows</td>
</tr>
<tr>
<td>Wall Insulation</td>
<td>R-7</td>
<td></td>
</tr>
<tr>
<td>Envelope/Air Sealing</td>
<td>Not professionally air sealed</td>
<td>Have the home professionally air sealed</td>
</tr>
<tr>
<td>Windows</td>
<td>Double-pane wood</td>
<td></td>
</tr>
<tr>
<td>Skylights</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Heating system</td>
<td>Central furnace, Gas</td>
<td>Install an efficient heat pump</td>
</tr>
<tr>
<td>Cooling system</td>
<td>No cooling system</td>
<td></td>
</tr>
<tr>
<td>Duct Insulation</td>
<td>Not fully insulated</td>
<td>Insulate exposed ducts to R-11</td>
</tr>
<tr>
<td>Duct sealing</td>
<td>Ducts not fully sealed</td>
<td>Have ducts tested for leaks &amp; seal if necessary</td>
</tr>
<tr>
<td>Water heater</td>
<td>Electric storage</td>
<td>Install a heat pump water heater</td>
</tr>
<tr>
<td>Solar PV</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

The above energy improvements are recommended by EWEB to improve the score and lower the home’s carbon footprint. Some improvements may not be recommended by the U.S. Department of Energy due to cost-effectiveness or fuel conversion reasons. USDOE recommendations may be provided upon request.
Figure 2. How to Read and Interpret the ECAD Audit

ECAD AUDIT: READ AND INTERPRET

Understanding the Audit Cover Letter

A. **Shows** date of completed audit. The audit is valid for 10 calendar years from this date.

B. **Summarizes** recommended home improvements based on audit results. These improvements correspond to Home Performance with ENERGY STAR program offerings.

C. **Estimates** potential annual savings based on estimates for an average house; actual savings may differ.

D. **Provides** details on recommended energy efficiency improvements based on the home’s specific audit results.

**SAMPLE AUDIT**

**DID YOU KNOW?**

If you receive rebates of more than $500 or make at least three of the recommended improvements through Home Performance with ENERGY STAR, you meet ECAD requirements for a period of 10 years.
These are two illustrative examples of many home energy labels that exist throughout the country. Though they are based on two different methodologies, they both include similar home energy information and exist to communicate clear energy-related details about the home. To see more examples of labels from other programs, please see Appendix B.

Underserved Markets

For the purpose of this paper, underserved markets are those that currently have limited access to the benefits of residential energy efficiency upgrades. Fannie Mae and Freddie Mac consider manufactured housing, affordable housing vulnerable to becoming unaffordable, and housing in rural areas as underserved for their Duty to Serve Directive.  

1 Federal Housing Finance Agency, 2019
Rental units are often underserved in terms of access to energy upgrades due to the well-documented concept of the split-incentive problem\(^2\). In cases where the tenant pays the utility bills, owners often feel disincentivized to invest money in the structural upgrades that would result in a monetary incentive to their tenants, but not their direct bottom line\(^3\). Approximately 15 million single-family housing units in the country are occupied by renters, which makes up about 43% of all renters in the U.S.\(^4\) Multifamily rental buildings are also challenging to serve. When efficiency programs are funded through ratepayer fees, renters pay into these programs often without being able to reap the benefits from them directly.

Rural households spend a disproportionately higher percentage of their income on utilities than those in non-rural areas. The gap is even higher when looking specifically at low-income rural households and those who live in manufactured housing.\(^5\) Manufactured housing residents face about double the energy costs per-square-foot of site-built homes, which exacerbates the energy burden for manufactured housing residents.\(^6\)

Across all housing types, low- and moderate-income (LMI) households tend to face much higher energy burdens. They are more likely to spend a greater percentage of their income on housing costs and could benefit the most from access to standard information about the energy use (and costs) of their homes.\(^7\)

By enabling access to standard information about how homes use energy, home energy labeling programs can bring valuable information to these underserved groups that need it most. When this data is aggregated, program managers can better understand and address the nature of energy burdens as they manifest throughout a region. By overlaying label information with Census data and other data sources, local governments, utilities, and others can find which efficiency programs and incentives will most likely carry the benefits they seek.

**Interviews**

**Methodology**

To better assess the landscape of existing residential energy labeling programs, the team sought to speak with program experts directly through a series of interviews. The team conducted 10 interviews with program experts in local government, utilities, and program administrators from February 26, 2019, to March 22, 2019 (Appendix A). Participants were recruited from national working groups focusing on labeling efforts as well as referred to the research team by subject matter experts. The interview guide can be found in Appendix C. Individuals were interviewed from:

- The City and County of Denver (Department of Public Health and Environment).

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\(^2\) Carliner, 2013  
\(^3\) Bird & Hernández, 2012  
\(^4\) U.S. Census Bureau, 2018  
\(^5\) Drehobl, Ross, & Stickles, 2019  
\(^7\) Joint Center for Housing Studies of Harvard University, 2017
• The State of Connecticut (Energize Connecticut).
• The City of Eugene, Oregon (Eugene Water & Electric Board).
• The City of Austin, Texas (Austin Energy).
• The State of Vermont (Efficiency Vermont).
• The City of Berkeley.
• The City of Minneapolis, Minnesota (Center for Energy and Environment).
• The City of Portland, Oregon.

The goal was to better understand the current scopes of these labeling programs to reach underserved populations, to determine what barriers stand in the way of reaching these groups more fully, and to gauge interest for programs to expand offerings in this way. In addition to the above interviews, we spoke with a number of organizations who offer energy labels as part of their upgrade programs. However, we chose to focus this paper on programs that primarily emphasize the energy label itself.

**Interview Learnings**

The best practices and learnings gleaned from the interviews can be summarized into four key areas, outlined below.

- Stakeholder engagement
- Upgrade recommendations and implementation
- Data collection and analysis
- Centering access to labels and upgrades for underserved markets

**Stakeholder Engagement**

Ongoing stakeholder engagement emerged as a best practice across programs. Minneapolis reported doing a significant amount of public engagement and outreach to sectors that could be affected by their proposed labeling ordinance. They believe this significantly increased understanding of their ordinance and reduced opposition. They also found that even when stakeholders were not in favor of the ordinance, they appreciated being contacted and having their voices heard.

Austin also stressed the importance of talking to stakeholders early, and found it was important to the success of their ordinance to take feedback and concerns from stakeholders seriously. Based on feedback, Austin made changes to their program where it made sense to do so. In Austin’s first iteration of the program, they planned to require home sellers to make efficiency upgrades to their homes before selling. After listening to concerns from the real estate community that this type of mandate would significantly slow down the selling process, Austin changed its plan and does not require the upgrades before the time of sale.

It is also important to engage stakeholders from underserved communities to get their input and perspectives on how they might use, benefit from, or be impacted by home energy labels.

Minneapolis and Berkeley suggested reaching out to the media early in the process so that they understand the facts of the program. Both saw that when misinformation was reported, particularly negative misinformation, it generated opposition where there previously had been none.
It is also important to regularly engage stakeholders within the program. After realizing that contractors were neither correctly implementing the home energy labeling program nor fully supporting it, Connecticut reengaged their contractors to revamp the program in a way that better complemented their business needs. This effort included a series of trainings with contractors. Home Energy Score technical staff attended and addressed specific technical questions and explained how to correctly use the tool, while the state’s Department of Energy & Environmental Protection staff covered ways to incorporate the tool into contractor business models. This underscores that to implement a credible and accurate home energy labeling program, the technicians delivering the Home Energy Scores need to fully understand the score, how to use it, and how to support its implementation.

Finally, Minneapolis, Austin, and Berkeley found that stressing the benefits of the label was helpful for bringing in stakeholders. It is important to remember that different stakeholders in different locations will value different benefits. For instance, Berkeley residents were motivated to achieve their city’s climate action plan goals, but apartment building managers in Austin responded to the benefit of being able to use the audit to plan for improvements. While there will be common benefits across all labeling programs, focusing on the ones that will resonate best with each local market is instrumental to success.

**Upgrade Recommendations and Implementation**

Minneapolis, Vermont, Berkeley, Austin, and Denver all agree that the label should include upgrade recommendations that are tied to utility rebates. An Austin focus group with building owners found that this group valued a rebate/incentive package tied to recommended improvements. This group also reported valuing the free water upgrades Austin added to their rebate package. Austin did this to incentivize rental property owners to make energy upgrades, which owners do not immediately benefit from as tenants pay energy costs; however, building owners do pay for water costs.

Renters in Eugene, Oregon asked for next-step recommendations for reducing their energy bills that were not related to building infrastructure upgrades as they have no control over these features. Hearing this feedback, Eugene added a page to the report with suggestions specifically for renters, such as adjusting the thermostat or installing LED lightbulbs. This example is included in Appendix B.

Minneapolis, Denver, and Berkeley spoke on the importance of customizing upgrade recommendations to the local housing stock and climate and ensuring that the top recommendations are cost-effective. For instance, Minneapolis explained that duct sealing is not an applicable recommendation for their housing stock because heating ducts are within the building envelope in Minneapolis, so this is not a cost effective upgrade. To reflect local priorities and efforts not included in the standard Home Energy Scoring Tool, the City of Berkeley tailored their home energy labeling program by using Home Energy Score to inform a custom scorecard with localized greenhouse gas emission values, utility rates, and recommendations. Minneapolis homeowners and real estate agents reported a desire for their rating to be normalized against a version of the same house where all the cost-effective improvements have been implemented.

Moving forward with upgrades could be a roadblock for homeowners who do not know where to begin or whom to trust. Several programs addressed this issue by including next-step information. Focus
groups in Minneapolis wanted an easy, clear path that would walk them through next steps for completing upgrades. To address that issue, they have a post-assessment follow-up service. Energy advisors give work quotes after the audit is complete and are able to schedule the work with the contractor on behalf of the homeowner. Denver’s report includes customized information on rebates from the local utility, local financing options, and information on finding licensed contractors. Austin’s report includes the audit and a page with recommendations for moving forward.

Alongside the recommended improvements, the City of Portland’s Home Energy Score Report (shown in Appendix B) gives recipients information about how to find an energy contractor and links to explore local financing options. This report customization helps ensure consumers have all the information they need to act upon the recommended energy improvements.

Data Collection and Analysis
Some programs report data collection as a challenge and stress the importance of setting up systems in advance of program implementation. It’s particularly important to overlay Census data onto the labeling data and gain insight on how to reach underserved populations. Berkeley described a rocky implementation because they did not have an IT system set up to collect the data from the Home Energy Scores. They encouraged programs to have a data management system ready to go before program implementation. Austin reports the same lesson learned as they have to manually update the property tracking ID; however, they are working to update to a different system.

If a program is interested in tracking the relationship between receiving a label and moving to upgrades, Denver says it is important to set up a method for data collection in advance. Connecticut has a best practice for data tracking this metric. They set up the Connecticut Energy Dashboard where one can see both the recommend and completed measures.

Connecticut pointed out that if a future goal is to automatically populate labels into a public database or multiple listing service (MLS), they should build in homeowner consent to share the label at the beginning of the program. In January 2018, Connecticut began including the home energy labels in Northeast Energy Efficiency Partnership’s Home Energy Labeling Information Exchange, a database that could eventually automatically populate MLSs. However, because consent to share the home energy label had not been included, the 25,000 assessments completed before 2018 are not included in the database. Going back to collect consent after the fact is an expensive, time-consuming, and difficult endeavor.

Portland, Oregon uses Earth Advantage’s Green Building Registry® coupled with a local Building ID to track how the score in their label changes over time. RMLS, the local MLS serving Portland, is connected to the Green Building Registry to allow data to populate home listings and meet the needs of the City’s ordinance. The Green Building Registry also allows stakeholders to see how the building stock is changing in different neighborhoods. This could be especially useful for understanding the energy features of housing stock in low-income areas and in designing programs to target needs in these areas.
Centering Access to Labels and Upgrades for Underserved Markets
To ensure that a program successfully reaches underserved populations, it is imperative to build that goal into the program during the design phase. Eugene’s program began when the Eugene Water & Electric Board (EWEB) made it a priority to encourage landlords of single-family home rentals to complete energy efficiency upgrades. Eugene’s program is accomplishing its goals by encouraging tenants to request the Home Energy Score for their single-family rental. When the assessment is complete, the report is sent to the renter and, if the renter agrees, to the building owner. Both parties receive recommendations that they can implement. As of 2017, over 410 rentals have been scored. About 10% of rental owners have followed up and voluntarily made efficiency upgrades.

Minneapolis has also built reaching rental units into their program. To reach large multifamily buildings, they expanded their pre-existing rating and disclosure commercial benchmarking ordinance to include residential properties that are 50,000 square feet and larger. Through their newest program update, small residential property owners also must disclose a short report on energy costs to all potential tenants. Additionally, Minneapolis has 0% financing available for all residents that complete recommended energy upgrades. From the beginning of the program, Minneapolis defined goals to target LMI renters. The city plans to help 75% of renters and rental property owners participate in efficiency retrofit programs by 2025 in a manner that proportionally represents the income distribution of the city.

As mentioned above, Austin is working to further incentivize property owners to make improvements by tying energy improvements to free water improvements because the owner pays for water costs, but the tenants pay and benefit from the energy improvements. Austin also provides renters with an energy guide that estimates costs based on average annual EUI per squared foot for the community by the average square footage and compared to like cohorts based on the age and energy fuel type. Owners are required to give the guide to prospective renters and when signing the lease if the building is 10 years or older.

To help sellers overcome the potential barrier of paying for a Home Energy Score, the city of Portland, Oregon created a fund to help qualifying sellers access free Home Energy Scores. Sellers can apply online by showing they meet the income eligibility requirement of at most 60% area median income, in which case the city will cover the cost of the Score report. The going rate for a Home Energy Score in Portland is roughly $125, and to date the fund has not been extensively used. The city also allows sellers to apply for exemption from the ordinance if they provide proof of hardship, such as undergoing foreclosure or other financial distress. These systems give flexibility and relief to homeowners and sellers should the home energy labeling policy present undue hardship.

Beyond city-level assistance and exemptions related to the home energy labeling ordinance, Oregon has a robust set of programs and financial incentives that can be used by low-income sellers and homeowners with energy efficiency upgrades.

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8 City of Portland, 2019
9 City of Portland, 2019
Unfortunately, the landscape of home energy labeling programs across the country targeting manufactured housing residents and most multifamily residences remains sparse. This means residents in these housing types, which are often underserved by efficiency programs, often do not have access to information about how their residence uses energy and improvements that could increase affordability. There may be technical barriers to implementing these programs as there are not market-ready energy labels available for individual units in multifamily buildings or new manufactured homes. Continued research in this area may find a consumer base interested in this information if the label existed.

Next Steps for Existing or Nascent Programs

Through interviews, we learned that ensuring underserved households benefit from residential energy labels is possible. As with most program design, it’s imperative that the goals of the program are well understood to inform program function. Goals could include better understanding the housing stock, moving people to action on efficiency investments, reducing greenhouse gas emissions or energy use, or engaging the real estate community. Due to the resource constraints of LMI consumers, whether the program is born of policy or simply by a motivated group of stakeholders, it is essential that the program consider providing low-cost or free labels and access to reduced-cost upgrades. Additionally, the housing stock you intend to include in the program may dictate the type of label used. Not all labels are appropriate for single-family and multifamily housing.

Many labeling programs, even those that do not focus on underserved populations, are investigating ways to improve their programs. A new working paper about Austin’s program posits that sellers are not often leveraging their energy reports when listing homes because they don’t understand how their home compares to others’ energy efficiency.10 This knowledge gap should be addressed in all programs, but especially those that seek to work with underserved populations.

Advantageous partnerships may surface in unexpected areas. In EWEB’s program, Home Energy Scores are available to renters and the assessment is conducted by University of Oregon undergraduate and graduate students who have undergone training. The City of Eugene provides the funds for the students and EWEB coordinates the program and provides the requisite utility bill history. This program encourages dialogue between landlords and tenants and provides concerned tenants a way to learn more about their home.

Still, significant further research is needed on the most effective ways to reach apartment units and manufactured homes. In Europe, labeling for multifamily buildings is standard practice, with 76% of apartments requiring some type of energy performance certificate11. Transparency in the energy performance of homes is gaining traction across the country, and it is essential that underserved markets are not left behind.

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10 Myers, Puller, & West, 2019
11 United Nations Economic Commission for Europe, 2018
## Appendix A

<table>
<thead>
<tr>
<th>Location</th>
<th>Program Name</th>
<th>Target Population</th>
<th>Description</th>
<th>Program Implementer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denver, CO</td>
<td><strong>Home Energy Score Pilot</strong></td>
<td>May 2018 to December 2019</td>
<td>New homebuyers and sellers are offered a free Home Energy Score as long as the property is located within the City and County of Denver. Outreach messaging focuses on the long-term affordability of owning a home. City goals for promoting an energy label are tied to emissions reductions.</td>
<td>Department of Public Health and Environment</td>
</tr>
<tr>
<td>Connecticut</td>
<td><strong>Home Energy Solutions</strong></td>
<td>Adopted in 2015</td>
<td>Home Energy Score is generated as part of the existing in-home services program, Home Energy Solutions, which is Connecticut’s flagship residential energy retrofit program serving all existing residential single-family properties.</td>
<td>Energize Connecticut</td>
</tr>
<tr>
<td>Eugene, OR</td>
<td><strong>Home Energy Score Program</strong></td>
<td>Adopted in 2016</td>
<td>Landlords and tenants of single-family home rental properties can request a Home Energy Score through an online application. If a tenant has requested the score, the final score and report are sent to the property owner if approved by the renter.</td>
<td>Eugene Water &amp; Electric Board</td>
</tr>
<tr>
<td>Austin, TX</td>
<td><strong>Energy Conservation Audit and Disclosure Ordinance</strong></td>
<td>Adopted in 2009</td>
<td>In 2009, Austin passed an ordinance requiring an energy audit at the time of sale. In 2011, they updated the ordinance to address multifamily buildings (5+ units). Building owners must conduct a</td>
<td>Austin Energy</td>
</tr>
</tbody>
</table>
specialized energy audit of the property when it turns 10 and must make energy audit results available to potential and current residents.

<table>
<thead>
<tr>
<th>State/City</th>
<th>Program Name</th>
<th>Year/Adoption</th>
<th>Home Type</th>
<th>Description</th>
<th>Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vermont</td>
<td>Home Energy Profile Pilot</td>
<td>2015-2017</td>
<td>Single-family homeowners</td>
<td>Efficiency Vermont worked with participating home energy assessors to offer a state-specific home energy label called the Vermont Home Energy Profile on a pilot basis.</td>
<td>Efficiency Vermont</td>
</tr>
<tr>
<td>Berkeley, CA</td>
<td>Building Energy Saving Ordinance</td>
<td>Adopted in 2015</td>
<td>Single-family home sellers, large multifamily, and small multifamily to be phased in through 2022</td>
<td>This requires homeowners and building owners of 25,000 ft² or less to complete and publicly report a comprehensive energy assessment before the time of sale. Buildings over 25,000 ft² must have an energy assessment every five years and produce an annual benchmarking report through ENERGY STAR® Portfolio Manager. Through 2022, a new requirement will be phased in for buildings under 15,000 ft² to have an energy assessment every 10 years.</td>
<td>City of Berkeley</td>
</tr>
<tr>
<td>Portland, OR</td>
<td>Home Energy Score Program</td>
<td>Launched January 2018</td>
<td>Single-family home sellers</td>
<td>Sellers of single-family homes in Portland, Oregon are required to obtain and disclose a Home Energy Report estimating the energy-related use, associated costs, and cost-effective solutions to improve the home’s efficiency.</td>
<td>City of Portland</td>
</tr>
<tr>
<td>Minneapolis, MN</td>
<td>See expanded table below</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### The City of Minneapolis, Minnesota Center for Energy and Environment

<table>
<thead>
<tr>
<th>Policy</th>
<th>Buildings Affected</th>
<th>Goal</th>
<th>Requirements</th>
<th>Initial Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time of Sale Energy Disclosure</strong></td>
<td>One- and two-unit properties</td>
<td>Inform market via an energy asset rating, similar to MPG for cars</td>
<td>TISH evaluators collect data during inspection and energy report becomes part of TISH report</td>
<td>2020</td>
</tr>
<tr>
<td><strong>Time of Rent Energy Disclosure</strong></td>
<td>&lt;50,000 ft² (one to approximately 50 units)</td>
<td>Inform renters of energy costs, total cost of renting</td>
<td>Landlord provides link to energy portal from the portal at time of rent</td>
<td>2021</td>
</tr>
<tr>
<td></td>
<td>&gt;50,000 ft² (approximately 50 units)</td>
<td>Inform renters of energy costs, total cost of renting</td>
<td>Landlord provides access to benchmarking results virtually or printed benchmarking results at time of rent</td>
<td>2021</td>
</tr>
<tr>
<td><strong>Multifamily Energy Benchmarking</strong></td>
<td>&gt;50,000 ft² (approximately 50 units)</td>
<td>Create efficiency awareness of property owner and inform the market of building energy performance</td>
<td>Property owner submits whole building energy performance through Portfolio Manager and low performers complete energy evaluation</td>
<td>June 2019 (benchmarking), June 2020 (evaluations)</td>
</tr>
</tbody>
</table>
Appendix B: Examples of Energy Labels
The U.S. Department of Energy’s Home Energy Score assesses the energy efficiency of a home based on its structure and heating, cooling, and hot water systems. For more information, visit HomeEnergyScore.gov.
Home Facts

The Home Energy Score’s Home Facts includes data about the home’s current structure, systems, and estimated energy use. For more information on about how the score is calculated, visit our website at HomeEnergyScore.gov.

About This Home

**ASSESSMENT**
- **Type**: Initial
- **Assessor name**: [Redacted]
- **Scoring tool version**: [Redacted]

**HOME CONSTRUCTION**
- **Year built**: 1969
- **Number of bedrooms**: 4
- **Stories above ground level**: 2
- **Floor-to-ceiling height**: 8 ft
- **Conditioned floor area**: 1,231 ft²
- **Direction faced by front of house**: South
- **House shape**: Rectangle
- **Air leakage rate**: 1658 CFM50

Estimated Annual Energy Use

**ENERGY BY TYPE**
- **Total**: 122 MBtus
- **Score basis**: 69 MBtus
- **Energy use per square foot**: 67 kBtu / ft²
- **Electricity**: 6,028 kWh
- **Natural gas**: 623 therms

**ENERGY COST ESTIMATES**
- **Total annual energy costs**: $1,820
- **Energy cost per square foot**: $1.48 ft²
- **Electricity**: $0.176 / kWh
- **Natural gas**: $1.332 / therm

**DEFINITIONS & CONVERSIONS**
- **MBtu**: Million Btu; thermal units; general energy unit
- **kBtu**: Thousand Btu; thermal units; general energy unit
- **KWh**: Kilowatt-hour; electricity unit
- **Therm**: 100,000 Btu; heat energy unit
- **Electricity conversion**: 1 MBTU = 293 kWh
- **Heat conversion**: 1 MBTU = 10 therms
### Roof / Attic

<table>
<thead>
<tr>
<th>ROOF / ATTIC 1</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Att c floor area</td>
<td>615 ft²</td>
</tr>
<tr>
<td>Roof construct on</td>
<td>Standard / Composton Shngles or Metal / R-15</td>
</tr>
<tr>
<td>Roof color</td>
<td>Medium dark</td>
</tr>
<tr>
<td>Att c / ceiling type</td>
<td>Unconditioned attic</td>
</tr>
<tr>
<td>Att c floor insulation</td>
<td>R-11</td>
</tr>
</tbody>
</table>

### Foundation

<table>
<thead>
<tr>
<th>FOUNDATION / FLOOR 1</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor area</td>
<td>615 ft²</td>
</tr>
<tr>
<td>Foundation type</td>
<td>Unconditioned basement / R-13</td>
</tr>
<tr>
<td>Foundation walls insulation</td>
<td>R-0</td>
</tr>
</tbody>
</table>

### Walls

<table>
<thead>
<tr>
<th>WALL CONSTRUCTION</th>
<th>TYPE / EXTERIOR FINISH</th>
<th>INSULATION VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>Wood frame / Vynyl siding</td>
<td>R-7</td>
</tr>
</tbody>
</table>
### Windows & Skylights

**WINDOW AREA**
- Front: 66 ft²
- Back: 73 ft²
- Right: 0 ft²
- Left: 66 ft²

**WINDOW CONSTRUCTION**
- All: Double

**FRAME**
- Wood or vinyl

**GLAZING**
- Insulating low-E

**SOLAR SCREEN**
- No

**SKYLIGHTS ROOF / ATTIC 1**
- Present?: No
Home Facts

The Home Energy Score's Home Facts includes data about the home's current structure, systems, and estimated energy use. For more information on how the score is calculated, visit our website at HomeEnergyScore.gov.

Systems

**HVAC SYSTEM 1**
- Percent conditioned area served: 100%
- Heating type: Gas boiler
- Heating efficiency value: 78% AFUE

**DUCT SYSTEM 1**
- Insulated?:
- Sealed?:
- Percent of ducts in this location:

**HOT WATER**
- System type: Natural gas storage
- Efficiency value: 0.78 EF
Recommendations

The Home Energy Score’s Recommendations show how to improve the energy efficiency of the home to achieve a higher score and save money. When making energy-related upgrades, homeowners should consult with a certified energy professional or other technically qualified contractor to ensure proper sizing, installation, safety, and adherence to code. Learn more at HomeEnergyScore.gov.

Recommended Improvements

**REPAIR NOW.** These improvements will save you money, conserve energy, and improve your comfort.

- Attic 1: Increase attic floor insulation to at least R-19 to save $37 / year
- Air tightness: Have a professional seal the gaps and cracks that leak air into your home to save $54 / year

**REPLACE LATER.** The Home Energy Score model did not identify any cost-effective replacements. Please ask your assessor for more information.

Comments

CT191262725
The Home Energy Score is a national rating system developed by the U.S. Department of Energy. The Score reflects the energy efficiency of a home based on the home's structure and heating, cooling, and hot water systems. The average score is a 5. Learn more at HomeEnergyScore.gov.

Made possible through a partnership between EWEB, University of Oregon, and the City of Eugene.

HOW MUCH ENERGY IS THIS HOME LIKELY TO USE?

<table>
<thead>
<tr>
<th>Energy Type</th>
<th>Usage</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric</td>
<td>16,698 kWh</td>
<td>$1,837</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>0 therms/yr</td>
<td>$0</td>
</tr>
<tr>
<td>Other</td>
<td>0 gal/yr</td>
<td>$0</td>
</tr>
</tbody>
</table>

TOTAL ENERGY COSTS PER YEAR $1,837

This Home's Carbon Footprint:

- as measured in metric tons of CO2 equivalent per year

What should my home’s carbon footprint be? Oregonians should reduce carbon pollution per household to 7.1 tons per year by 2020, and to 1.9 tons per year by 2050 to reach our climate goals.

- Actual energy use and costs may vary based on occupant behavior and other factors.
- The carbon footprint is based only on estimated building energy use.
- Carbon emissions are calculated based on utility- and fuel-specific emissions factors provided by the Oregon Department of Energy.
- Estimated energy costs are calculated based on current utility prices ($0.11/kWh for electricity).

This report meets Oregon’s Home Energy Performance Score Standard.
TACKLE ENERGY WASTE TODAY!

Enjoy the rewards of a comfortable, energy efficient home that saves you money.

- Get your home energy assessment (Done!)
- Choose which energy upgrades to address first.
- Get a bid. Find an EWEB-participating contractor by visiting our list online at bit.ly/EWEBcontractor.
- Complete energy improvements. For eligible measures, EWEB may be able to offer a rebate or a 0% interest loan. For more details, visit eweb.org/saveenergy or call EWEB at 541-685-7088.

* PRACTICAL ENERGY IMPROVEMENTS - COMPLETE NOW OR LATER

To achieve the "score with improvements," all recommended improvements listed below must be completed. Improvements likely will have a simple payback of ten years or less and may be eligible for EWEB funding and possible mortgage financing. For a more detailed explanation of costs and payment, please get a bid from a contractor.

<table>
<thead>
<tr>
<th>FEATURE</th>
<th>TODAY'S CONDITION</th>
<th>RECOMMENDED IMPROVEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attic insulation</td>
<td>Ceiling 1: Vaulted, R-0; Ceiling 2: R-11</td>
<td>Add attic insulation to R49 as space allows</td>
</tr>
<tr>
<td>Floor insulation</td>
<td>R-21</td>
<td>-</td>
</tr>
<tr>
<td>Wall insulation</td>
<td>R-11</td>
<td>-</td>
</tr>
<tr>
<td>Envelope/Air Sealing</td>
<td>Not professionally air sealed</td>
<td>Have the home professionally air sealed</td>
</tr>
<tr>
<td>Windows</td>
<td>Double-pane wood or vinyl</td>
<td>-</td>
</tr>
<tr>
<td>Skylights</td>
<td>None</td>
<td>-</td>
</tr>
<tr>
<td>Heating system</td>
<td>Baseboard, Electric</td>
<td>Install an efficient heat pump</td>
</tr>
<tr>
<td>Cooling system</td>
<td>No cooling system</td>
<td>-</td>
</tr>
<tr>
<td>Duct insulation</td>
<td>No ductwork</td>
<td>-</td>
</tr>
<tr>
<td>Duct sealing</td>
<td>No ductwork</td>
<td>-</td>
</tr>
<tr>
<td>Water heater</td>
<td>Electric storage</td>
<td>Install a heat pump water heater</td>
</tr>
<tr>
<td>Solar PV</td>
<td>None</td>
<td>Visit bit.ly/EWEBsolar for more info</td>
</tr>
<tr>
<td>Housing type</td>
<td>Single-family home</td>
<td>-</td>
</tr>
</tbody>
</table>

The above energy improvements are recommended by EWEB to improve the score and lower the home's carbon footprint. Some improvements may not be recommended by the U.S. Department of Energy due to cost-effectiveness or fuel conversion reasons. USDOE recommendations may be provided upon request.

WATER EFFICIENCY FEATURES

<table>
<thead>
<tr>
<th>FEATURE</th>
<th>TODAY'S CONDITION</th>
<th>RECOMMENDED IMPROVEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toilet flush rate(s)</td>
<td>Toilet #1 = 1.6 gpf; Toilet #2 = 3.5 gpf</td>
<td>Replace toilet(s) with water-efficient low-flow toilet(s) using 1.28 gpf or less.</td>
</tr>
<tr>
<td>Water leaks</td>
<td>Number of toilet leaks = 1; Number of non-toilet leaks = 0</td>
<td>Repair water leaks</td>
</tr>
</tbody>
</table>

For more information about how EWEB can help with water efficiency improvements, visit bit.ly/EWEBwater.
LOW-COST TIPS TO LOWER YOUR BILL

☐ $55
Adjust your thermostat by two degrees. Turn it down in winter, up in summer. Dress for the season.

☐ $60
Reduce your hot water use: (1) Take showers & not baths, (2) shorten showers, (3) wash clothes with cold water, (4) install low-flow shower heads and faucet aerators.

☐ $55
Heat and cool a smaller space by closing off unused rooms & turn off the heating & cooling in those rooms.

☐ $60
Get rid of your television.

☐ $25
Replace your most commonly-used lights with LEDs.

☐ $25
Unplug electronics when not in use. Avoid standby power use by unplugging devices or using smart power strips.

☐ $75
Set your thermostat back at night or while you are away. Adjust manually, or use a programmable Tstat. (Myth-buster: It does not cost you more to get the space back to temperature.)

Total: $355 per year in potential savings

OTHER WAYS TO MANAGE YOUR BILLS

<table>
<thead>
<tr>
<th>ACTION</th>
<th>POTENTIAL RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use a thermometer</td>
<td>Some energy savings</td>
</tr>
<tr>
<td>For a reality check and better control, purchase a thermometer and check the space temperature before adjusting the thermostat.</td>
<td></td>
</tr>
<tr>
<td>Reduce drafts</td>
<td>Better comfort, some savings</td>
</tr>
<tr>
<td>Seal up gaps around windows and doors with weatherstripping or even towels. Close chimney damper between fires, or seal it off if not used. Avoid heating with a fireplace, they heat poorly and bring cold air into the house.</td>
<td></td>
</tr>
<tr>
<td>Limit your use of space heaters</td>
<td>Some energy savings</td>
</tr>
<tr>
<td>Electric space heaters can be expensive to run, costing around ten cents an hour.</td>
<td></td>
</tr>
<tr>
<td>Lower water use to save on water and wastewater bills</td>
<td>Water &amp; wastewater savings</td>
</tr>
<tr>
<td>Fix any water leaks, and limit irrigation or plant water-efficient plants.</td>
<td></td>
</tr>
<tr>
<td>Monitor your consumption each month</td>
<td>Smarter consumption</td>
</tr>
<tr>
<td>Compare your actual energy bills with the estimates above. Your actual electricity bills were $1692 over the last 12 months.</td>
<td></td>
</tr>
</tbody>
</table>

Total: $355 per year in potential savings

YOUR HOME’S ENERGY USE *

- Water heating
- Other electric loads
- TV
- Fridge
- Lighting
- Heating
- Other electric loads

* The chart above shows where your energy dollars go: mostly space and water heating. Included with "Other electric loads" are your stove, clothes washer & dryer, and other devices.

Compare your actual energy bills with the estimates above. Your actual electricity bills were $1692 over the last 12 months.
Understanding the ECAD Audit Form
Learn to interpret the audit and translate results into energy-saving home improvements

- Are you prepping to buy or sell a home?
- How old is the air conditioner?
- Is the home more than 10 years old?
- Does the home feel too humid?
- Want to reduce home energy costs?

Apply audit findings to anticipate and manage your home’s efficiency
Thank you for complying with the City of Austin’s ECAD Ordinance, which requires homeowners to provide these energy audit results to buyers. This audit helps you identify energy efficiency improvements that could lower your monthly energy costs and make your home more comfortable. Austin Energy’s Home Performance with ENERGY STAR® program offers rebates and low-interest loans that make these improvements more affordable. Before you begin making any home energy efficiency improvements, be sure to get the latest program details from austinenergy.com or by calling 512-482-5346.

**ENERGY AUDIT SUMMARY**

<table>
<thead>
<tr>
<th>Action Recommended?</th>
<th>Potential Annual Savings*</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Windows and Shading</td>
<td>Yes</td>
</tr>
<tr>
<td>B. Attic Insulation</td>
<td>Yes</td>
</tr>
<tr>
<td>C. Air Infiltration and Duct Sealing</td>
<td>Yes</td>
</tr>
<tr>
<td>D. Heating and Cooling System Efficiency (HVAC)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Total Annual Savings:** $590

**HOME IMPROVEMENT RECOMMENDATIONS:**

Austin Energy recommends the following actions based on the energy audit performed by Greenmon G. Greenburg of Gone Green Audits, Inc.

A. Adding shade to south-, east-, and west-facing windows reduces the heat that the Texas sun adds to your house.

B. Adding insulation to your attic can save you money. Look into insulating and sealing attic stairs and hatches, wall chases and openings between floors. This will prevent your house from heating up rapidly during summer and cooling down quickly during winter.

C. Weatherstrip your doors and seal places where pipes enter your home to prevent outdoor air leaking into your home, making it hot and humid during the summer and cold and drafty during the winter.

D. Consider replacing your HVAC system with an energy-efficient model. Show the audit results to an HVAC professional, who will ensure that your heating and cooling system is right-sized and operating efficiently.

We appreciate your support of the ECAD ordinance and your efforts to make Austin the most livable city in the country.

**DISCLOSURES:** Figures are based on an estimate from the average single-family house in Austin (1800 – 2000 sq. ft.) that has made improvements through an efficiency program by Austin Energy or Texas Gas Service. Weather, equipment installation and electric usage will all affect actual savings. There is no guarantee or warranty, either expressed or implied, as to the actual effectiveness, cost or utility savings if you choose to implement these recommendations.

The Energy Conservation Audit and Disclosure is not required to be included in the sales contract nor the Seller’s Disclosure form (Texas Real Estate Commission), but instead is a stand-alone requirement of the City of Austin.

**What is ECAD?**

The Energy Conservation Audit and Disclosure (ECAD) ordinance requires home sellers to disclose comprehensive energy audit details to buyers during a real estate transaction. The ordinance applies to homes more than 10 years old, serviced by Austin Energy, within the Austin city limits. While anyone who owns a home at least 10 years old can benefit from an ECAD audit, this audit is typically completed and provided at the time of listing.
Understanding the Audit Data

SINGLE FAMILY

DATA SUMMARY

PROPERTY

Submission Date: 12/12/2012

Austin Energy Electric Meter Number: 33224455
Tax Assessor's Property ID: 123456
Owner Name: Jane Doe
Year Built: 1995
Street Address: 1234 N Texas ST Austin, TX
Estimated Square Footage: 2,200
City, State, Zip Code: Austin, TX, 78701

AUDITOR

Auditor: Greenmon G. Greenburg
Phone Number: 512-441-4141
Company Name: Gone Green Audits, Inc.
Property Audit Date: 12/12/2012

WINDOWS & SHADING

Type(s) of Window(s): Double Pane Windows Installed
Type(s) of Existing Solar Shading: Solar Screens, Awnings providing shading.

ATTIC INSULATION

Attic Insulation Type: Batts - Fiberglass
Average R-Value: 19
Open Chases(s): Insulate and/or seal open building chases.

HEATING & COOLING AIR DUCT SYSTEM

HVAC SYSTEM:
Condenser: Manufacturing Date: 1999
Furnace/AH: Manufacturing Date: 1999
HVA Closet Air Leakage: 80
Duct System Type(s): Duct Board
Enrolled in the Austin Energy Power Partner Thermostat Program: Yes

ADDITIONAL SYSTEM:
Condenser: Manufacturing Date: 2004
Furnace/AH: Manufacturing Date: 2004
HVA Closet Air Leakage: 80
Duct System Type(s): Sheet Metal
Enrolled in the Austin Energy Power Partner Thermostat Program: No

AIR INFECTION/WEATHERIZATION

Exterior doors: weather-stripped? No
No weather-stripping
Attic access: weather-stripped? No
No weather-stripping
Plumbing penetrations: sealed? No
Plumbing Penetration Sealing Needed

ADDITIONAL AUDIT INFORMATION

Domestic Water Heater Type(s): Standard
Fuel Type: Electric
Heater Type: Standard, Tankless
Type(s) of Toilet(s): 2 High Efficiency Toilets

ECAD Benefits Await You

- **Identify Hidden Opportunities** - Discover potentially hidden home management-related costs as well as opportunities for valuable home and health improvement.
- **Increase Your Home Value** - Make your house more distinct and attractive in the competitive real estate marketplace with energy efficiency upgrades.
- **Reduce Energy Bills** - Save up to 20 percent or more on monthly energy bills by implementing energy efficiency improvements through Home Performance with ENERGY STAR.
**ECAD AUDIT: Upgrade and Save**

Austin Energy customers with completed ECAD audits benefit from custom recommendations for improving home energy efficiency. These upgrades can help you save energy and money while increasing comfort and indoor air quality.

With your custom upgrade recommendations, you can explore rebates and improvements available through Home Performance with ENERGY STAR. Attractive financing and an average of $1,500 in rebates help cover the cost of upgrades to air conditioning and heating equipment, home weatherization measures and duct systems.

Austin Energy’s Home Performance with ENERGY STAR program includes quality assurance inspections and high standards for registered contractors who can approach your home with the expertise and experience needed to make a real difference in your comfort, your health and your wallet. These registered contractors follow a whole-home approach to address:

- Underperforming air conditioning systems
- Inefficient, leaky and/or poorly designed duct work
- Inadequate attic insulation levels
- Leaks in the shell of the home around doors and plumbing fixtures
- Solar shading needs on windows

Visit austinenergy.com/go/healthyhome to access the registered contractor list or call 512-482-5346 for information on how to begin your Home Performance with ENERGY STAR upgrades.

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**ADDITIONAL SERVICES AND INCENTIVES FOR HOME IMPROVEMENT**

**Power PartnerSM Thermostat Program**

Earn $85 for each qualified Internet-connected thermostat you enroll in the Power Partner Thermostat program.

**Solar Photovoltaics (PV)**

Get rebate assistance for purchased on-site PV installation, warranty and 5-year maintenance. Average system size is 6kW. Since solar equipment leases are available from third parties, often with no upfront cost, they are not eligible for Austin Energy rebates.

**Austin Energy Web App**

Monitor your energy use from anywhere and receive important alerts to save on your bill. Log in by using your online City of Austin Utilities username and password at austinenergyapp.com today.

**Variable-Speed Pool Pump and Motor**

Install a qualified variable-speed pool pump to save energy and earn a $300 rebate.

**Instant Savings**

Save while shopping for energy-efficient products at participating retailers. For a limited time, qualifying energy-saving items are eligible for instant in-store rebates at the cash register. Look for the Austin Energy logo and “Instant Savings” on the store shelf labels. Visit austinenergy.com/go/instantsavings for a list of retailers and eligible products. Rebates vary by season.

**Texas Gas Service**

Gas furnace incentives and high-efficiency tank and tankless gas water heater rebates are available to Texas Gas Service customers. Visit texasservic.com or call 512-370-8243.
The Vermont Home Energy Profile is a report on three related components of home energy: usage, cost, and efficiency. The profile is based on this home’s building features such as size, structure, insulation levels, and mechanical systems. Standardized assumptions are used for variable factors such as weather, occupancy, lights and appliance usage. Energy usage and costs are estimates only. See reverse side for details.

**HOME INFORMATION**

**LOCATION:**
123 Main Street, Anytown, VT 05000

**YEAR BUILT:**
2005

**CONDITIONED FLOOR AREA:**
3,029 sq. ft.

Includes all spaces that are intentionally heated or cooled. This value may differ from a home’s appraised square footage.

**REPORT INFORMATION**

**PROFILE ISSUE DATE:**
6/10/15

**ASSESSOR:**
John Doe

**ORGANIZATION:**
Sample A. Sample Contracting

**PHONE:**
802-555-1111


---

**THIS HOME’S EXPECTED ENERGY USE**

93 MMBtu ANNUALLY

**THIS HOME’S EXPECTED ENERGY COST**

$3,137 ANNUALLY

**U.S. DEPARTMENT OF ENERGY**

**HOME ENERGY SCORE**

9/10

---

**Expected Annual Energy Usage**

This scale represents how much energy this home is expected to use over the course of a year, placed on a scale of 0 to 300+, where zero energy usage is most efficient.

This home’s usage: 93

---

**Expected Annual Energy Costs**

The breakdown of fuel usage is an estimate based on the fuels used in this home and average fuel costs as of January 2016.

- **Propane**
  - $1,578
  - 631 gal
  - $2.50 / gal

- **Electric**
  - $1,559
  - 10,396 kWh
  - $0.15 / kWh

---

**Home Energy Score**

The U.S. Department of Energy (DOE) Home Energy Score uses a 10-point scale to describe this home’s efficiency – where 10 is the most efficient.
This Profile reports on three related components: estimated annual energy use, estimated annual energy costs, and the DOE Home Energy Score. Energy usage and cost are modeled based on this home's building features (such as size, insulation levels, mechanical systems), and standardized assumptions for the number of occupants, occupant behavior, weather, and lighting and appliance usage.

The energy features that contribute to this home's Profile are listed to the right. If you have questions about this Profile please contact Efficiency Vermont at 888-921-5990.

**EXPECTED ENERGY USE**

This section converts the total energy used in this home (electricity and fossil fuels like oil or gas) to a common unit of energy (MMBtu). A low MMBtu identifies a home as energy efficient with a smaller carbon footprint and lower energy costs.

1 MMBtu =
- 7 gal fuel oil
- 10 therms of natural gas
- 11 gal of propane
- 293 kWh of electricity
- .05 cords of wood

**EXPECTED ENERGY COSTS**

Average Vermont fuel prices are used to generate the estimated annual energy costs presented in this section. Values are obtained from the Vermont Fuel Price Report. Current fuel price reports can be found here:


**US DEPARTMENT OF ENERGY HOME ENERGY SCORE**

This section shows how this home compares to others nationwide. The score estimates the fossil fuels and electricity consumed in this home, as well as the energy required to produce, transport and deliver those fuels. 

For more information go to: [www.energy.gov/eere/buildings/home-energy-score](http://www.energy.gov/eere/buildings/home-energy-score)

**Take action!**

Information is power! The Vermont Home Energy Profile can inform the next steps to improve this home's energy efficiency by indicating specific features that can be improved.

If you have questions about how to interpret this Profile please contact Efficiency Vermont at 888-921-5990.

For energy saving tips, links to qualified contractors, financing, and cash back rebates on energy saving equipment and services, contact the organizations listed here:

- **Efficiency Vermont** - 888-921-5990
  [www.efficiencyvermont.com](http://www.efficiencyvermont.com)
- **Vermont Gas Systems** - 802-863-4511
  [www.vermontgas.com](http://www.vermontgas.com)
- **Burlington Electric Department**
  802-865-7342 • [www.burlingtonelectric.com](http://www.burlingtonelectric.com)
- **Vermont's Weatherization Program**
Home Energy Score details

How much energy is this home likely to use?

<table>
<thead>
<tr>
<th>Energy Type</th>
<th>Use</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric</td>
<td>5555 kWh/year</td>
<td>$1135</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>451 therms/year</td>
<td>$682</td>
</tr>
</tbody>
</table>

TOTAL ESTIMATED ENERGY COSTS PER YEAR $1817

This home’s carbon footprint

4.2
This Home

15 tons/year
WORST

0 tons/year
BEST

CALIFORNIA TARGET FOR 2030

- Actual energy use and costs may vary based on occupant behavior and other factors.
- Estimated energy costs were calculated based on average utility prices for the nine Bay Area Counties ($0.204/kwh for electricity; $1.51/therm for natural gas; $3.00/gal for propane; $2.25/gal for fuel oil).
- Carbon footprint is based only on estimated home energy use. Carbon emissions are estimated based on utility and fuel-specific emissions factors provided by the California Public Utilities Commission.
- Your carbon footprint may be lower if you get your electricity through a Community Choice Energy (CCE) provider. For more information visit Cal-CCA.org.

Flip over to learn how to improve this score and use less energy.
**Tackle energy waste today!**

Enjoy the rewards of a comfortable, energy efficient home that saves you money.

- Get your home energy assessment. Done!

- Choose energy improvements from the list of recommendations below.

  Need help deciding what to do first? The BayREN Home Upgrade Advisors offer free phone consults with independent expert home advisors. **Call 866-878-6008.**

- Check out [www.bayareaenergyupgrade.org](http://www.bayareaenergyupgrade.org) for information on Energy Upgrade California® programs and financing opportunities.

- Select a contractor (or two, for comparison) and obtain bids.

- Perform upgrades and enjoy a more comfortable and energy efficient home.

---

**Energy Improvements, customized for your home.**

<table>
<thead>
<tr>
<th>FEATURE</th>
<th>TODAY’S CONDITION</th>
<th>RECOMMENDED IMPROVEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attic Insulation</td>
<td>Insulated to R 11</td>
<td>Insulate ≥ R 38 and air seal</td>
</tr>
<tr>
<td>Floor Insulation</td>
<td>Insulated to R 00</td>
<td>Insulate ≥ R 19</td>
</tr>
<tr>
<td>Wall Insulation</td>
<td>Insulated to R 00</td>
<td>Insulate ≥ R 13</td>
</tr>
<tr>
<td>Water Heater</td>
<td>Gas storage 58% EF</td>
<td>Gas on demand (tankless) ≥ 0.82 EF</td>
</tr>
</tbody>
</table>

**ADDITIONAL COMMENTS AND RECOMMENDATIONS:**

Your natural draft water heater has questionable venting. We suggest upgrading to a high efficient tank-less model.
HOME PROFILE

LOCATION: 7308 SE Something Ave
Portland, OR 97215

YEAR BUILT: 1956

HEATED FLOOR AREA: 2,192 sq. ft.

NUMBER OF BEDROOMS: 4

ASSESSMENT

ASSESSMENT DATE: 01/29/2019

SCORE EXPIRATION DATE: 01/29/2027

ASSESSOR: John Doe
Doe Eyed Home Performance

PHONE: 503-555-1212

EMAIL: jdoe@dehp.com

CCB LICENSE #: 1234567890

How much energy is this home likely to use?

Electric: 11,743 kWh/yr .........................$1,339
Natural Gas: 227 therms/yr ......................$302
Other: 0 gal/yr ......................................$0
Renewable Generation: ..........................($859)

TOTAL ENERGY COSTS PER YEAR $782

This home's carbon footprint:

6.4 tons/year

Estimated average carbon footprint for a similar sized home: 3.8 tons of CO₂ equivalent emissions per year.

- Actual energy use and costs may vary based on occupant behavior and other factors.
- Estimated energy costs were calculated based on current utility prices ($0.11/kwh for electricity; $1.09/therm for natural gas; $2.58/gal for heating oil; $2.21/gal for propane).
- Carbon footprint is based only on estimated home energy use. Carbon emissions are estimated based on utility and fuel-specific emissions factors provided by the OR Department of Energy.
- Relisting 2-7 years after the assessment date requires a free reprint of the Report from: www.greenbuildingregistry.com/portland to update energy and carbon information.
- This report meets Oregon’s Home Energy Performance Score Standard and complies with Portland City Code Chapter 17.108.
### TACKLE ENERGY WASTE TODAY!

Enjoy the rewards of a comfortable, energy efficient home that saves you money.

- Get your home energy assessment. Done!
- Choose energy improvements from the list of recommendations below.
- Select a contractor (or two, for comparison) and obtain bids.
  - Checkout [energytrust.org/findacontractor](http://energytrust.org/findacontractor) or call toll free 1-866-368-7878.
- Explore financing options at [communityenergyproject.org](http://communityenergyproject.org) or [energytrust.org](http://energytrust.org).
- Visit the following resources to learn about easy changes you can make today: [communityenergyproject.org/services](http://communityenergyproject.org/services) or [energytrust.org/solutions/insulation-and-air-sealing/](http://energytrust.org/solutions/insulation-and-air-sealing/)

### Score today: 9

**Score with priority improvements:** 10

**Estimated energy savings with priority improvements:** $267 PER YEAR

**Estimated carbon reduction with priority improvements:** 15% PER YEAR

### *PRIORITY ENERGY IMPROVEMENTS | 10 YEAR PAYBACK OR LESS ¹*

**FEATURE** | **TODAY’S CONDITION ¹** | **RECOMMENDED IMPROVEMENTS**
--- | --- | ---
Duct insulation | Un-insulated | Insulate to R-8
Envelope/Air Sealing | Not professionally air sealed | Professionally air seal
Heating Equipment | Oil furnace 60% AFUE | When replacing, upgrade to ENERGY STAR
| Natural Gas/Propane Furnace | When replacing, upgrade to ENERGY STAR
| Standard electric tank | When replacing, upgrade to ENERGY STAR, minimum 2.76 EF (Energy Factor)

### ADDITIONAL ENERGY IMPROVEMENTS ²

**FEATURE** | **TODAY’S CONDITION ¹** | **RECOMMENDED IMPROVEMENTS**
--- | --- | ---
Attic insulation | Ceiling insulated to R-0 | Insulate to R-38 or R-49 if code requires it
Duct sealing | Un-sealed | Reduce leakage to a maximum of 10% of total airflow
Envelope/Air Sealing | Not professionally air sealed | Professionally air seal
Wall insulation | Insulated to R-0 | Fully insulate wall cavities
Solar PV | Capacity of 7.8 kWh in DC | When replacing, upgrade to ENERGY STAR
Windows | Multiple types | N/A
Air Conditioner | N/A | N/A
Basement wall insulation | Insulated to R-0 | N/A
Floor insulation | N/A | N/A
Foundation wall insulation | N/A | N/A

---

¹. To achieve the “Score with priority improvements” all recommended improvements in this section must be completed. These improvements have a simple payback of ten years or less.

². Additional energy efficiency improvements may take longer than ten years to make a return on investment but can have a significant impact on the comfort, efficiency and environmental impact of your home.

³. If your home has an oil furnace it is recommended you replace it with a high efficiency electric or gas furnace.

⁴. Today’s Condition represents the majority condition for that feature in the home.
Energy Disclosure Report

Home Profile
Location: 1234 Street, Unit 1
Minneapolis, MN 55555
Year built: 1912
House sq. ft.: 1,650
Number of stories: 1
Visit Date: 11/21/19

How it Works
The energy score for your home is similar to MPG for a car, but it evaluates the energy performance of the home. The higher the home scores, the lower your energy bills will be.

Improve your score by completing the energy improvements below. Homes with the highest scores typically sell for 2-6% more.**

When you are ready to begin, contact an Energy Advisor at 651-328-6225. They can answer questions and connect you to helpful resources.

Financing and rebates are available from the City of Minneapolis and CenterPoint Energy to help you complete these energy improvements.

Energy Score

Your home: 49 points

Energy Improvements (by priority) Improvement Points Typical Cost Rebate Yearly Bill Savings

<table>
<thead>
<tr>
<th>Improvement</th>
<th>Points</th>
<th>Cost</th>
<th>Rebate</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall Insulation</td>
<td>20</td>
<td>$2,100–$2,300</td>
<td>Up to $500</td>
<td>$200–$400</td>
</tr>
<tr>
<td>Attic Insulation</td>
<td>16</td>
<td>$1,900–$2,200</td>
<td>Up to $500</td>
<td>$150–$300</td>
</tr>
<tr>
<td>Heating System</td>
<td>13</td>
<td>$3,500–$6,000</td>
<td>Up to $500</td>
<td>$150–$300</td>
</tr>
<tr>
<td>Windows</td>
<td>2</td>
<td>$50–$60 per window</td>
<td>—</td>
<td>$6–$8 per window</td>
</tr>
</tbody>
</table>

Home Energy Summary
The energy improvements below are prioritized by utility bill savings and project cost. The points below show how much your score will improve by completing the project. Visit HomeEnergyHub.org to learn more about these projects.

Contact an Energy Advisor: 651-328-6225 or energyadvisor@mncee.org
Next Step: Contact an Energy Advisor

An Energy Advisor can help:

- Answer your questions
- Connect you to financing and utility rebates
- Refer you to trusted contractors

651-328-6225 or energyadvisor@mncee.org

### Energy Improvements (by priority)

<table>
<thead>
<tr>
<th>Type: Forced Air Furnace</th>
<th>Venting: Induced Draft</th>
<th>Age: &lt; 20 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heating System</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When it’s time to replace your furnace, choose a model that has an efficiency (AFUE) of at least 96% and an electronically commutated motor (ECM). Furnaces typically have a 20 year life. When your furnace is approaching this age, replace it before it stops working. When you replace it, contact an Energy Advisor for guidance. They’ll ensure you upgrade to a modernized heating system that properly removes combustion gases and maximizes your energy savings.</td>
<td>Typical Cost:*</td>
<td>$3,500–$6,000</td>
</tr>
<tr>
<td>Yearly Bill Savings:*</td>
<td>$150–$300</td>
<td></td>
</tr>
<tr>
<td>Rebate Available:</td>
<td>Up to $500</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current Wall</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-Value: R-3</td>
<td>R-11</td>
</tr>
<tr>
<td><strong>Wall Insulation</strong></td>
<td></td>
</tr>
<tr>
<td>Insulate your walls. Walls with little insulation are cold and drafty. Dense packing your walls with insulation will reduce home drafts and improve home comfort. This will also reduce energy waste and save money. Contact an Energy Advisor to learn more and get help with next steps.</td>
<td>Typical Cost:*</td>
</tr>
<tr>
<td>Yearly Bill Savings:*</td>
<td>$200–$400</td>
</tr>
<tr>
<td>Rebate Available:</td>
<td>Up to $500</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current Attic</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-Value: R-15</td>
<td>R-50</td>
</tr>
<tr>
<td><strong>Attic Insulation</strong></td>
<td></td>
</tr>
<tr>
<td>Air seal and insulate your attic to improve the comfort of your home. Air leaks allow air from inside your house to enter the attic, potentially causing comfort issues, ice dams and moisture issues. Sealing these leaks and adding insulation will improve your home’s durability and save energy. Contact an Energy Advisor to learn more and get help with next steps.</td>
<td>Typical Cost:*</td>
</tr>
<tr>
<td>Yearly Bill Savings:*</td>
<td>$150–$300</td>
</tr>
<tr>
<td>Rebate Available:</td>
<td>Up to $500</td>
</tr>
</tbody>
</table>

| Windows | |
|---------| |
| Install a storm window on the exterior of single-pane windows to cost-effectively reduce your energy usage. Although generally not justified by the energy savings alone, you may also consider replacing single-pane windows with double-paned, high efficiency, ENERGY STAR rated windows. | Typical Cost:* | $50–$60 per window |
| Yearly Bill Savings:* | $6–$8 per window |
| Rebate Available: | n/a |

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*The typical cost for each project is calculated by taking the average of thousands of homes of a similar age and construction. The estimated savings is the average reported savings for homes that received a utility rebate. Actual cost and savings may vary. Please contact an Energy Advisor if you have questions.

** Multiple studies referenced by the U.S. Department of Energy show that homes that are labeled as energy efficient sell for 2-6% more.
Appendix C: Energy Labeling Program
Interview Guide

As you know, we’re interested in learning from agencies or organizations that are considering, implementing, managing, or overseeing residential energy labeling programs or pilots. We’re particularly interested in how those programs serve or might have an impact on underserved segments of the market, whether that be rural communities, renters, or low-income households. We plan to combine these conversations into a single document that will serve as a resource for other jurisdictions that are considering similar programs or are looking for similar outcomes. Not everyone that we’re speaking to has been able to successfully implement a residential energy labeling program. Regardless of how far people have gotten, we hope to learn more about the motivations for considering such a program.

Research Goals
1. Understand why and how the municipality/state implemented a labeling program.
2. Learn who the program was designed for and if low-income, rental, and/or rural populations were a particular population they were interested in reaching.
3. Learn what hurdles/pathways were relevant to the development and implementation of the program.
4. Learn how the program operates, how it’s funded, and who benefits.
5. Learn what lessons have been learned through program implementation.

Main Questions
1. Could you tell us a little bit about your program (or pilot)?
   a. Follow ups: How/why was the labeling program started? Who does it serve?
2. What were problems or gaps you saw in the market that made you consider residential energy labeling?
3. Are there resources to move people to action once they’ve received a label? How do these resources work in conjunction with the labeling program?
   a. For example, one city is now able to quantify the energy efficiency potential for low-income census tracts and can now work in partnership with their utility to address this need.
4. What are your strategies for reaching low-income/renter/rural/Manufactured housing populations?
5. How does your program fit in with other programs/ordinances? Have there been legal challenges or other hurdles? What barriers do you believe contributed to underserved markets not reaping the benefits of the program?
6. What have been the outcomes of the programs? How many homeowners/renters have been reached? How costly has the effort been? What benefits do you perceive coming from this program, measurable or otherwise? Have there been outcomes you were not expecting, both positive and negative?
Program/Pilot Profile
[To be filled out without direct questioning to the interviewee and then followed up on after the interview.]

Program or Pilot Information

<table>
<thead>
<tr>
<th>Program/Pilot Name:</th>
<th>Webpage:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agency Name:</td>
<td>Agency Type:</td>
</tr>
</tbody>
</table>

1. Is the label a required or optional piece of documentation for homeowners to gain access to certain programs, financing, or real estate listings generally?

2. Background
   a. Why was the program started? (Who were the main actors driving this forward? Was it driven by local government, the utility, or someone else? Was it seen as helping reach a specific need?)
   b. Did it start as a pilot?
   c. How long did it take to develop the program?
   d. How many people staff the program?
   e. What overall problems are residents in your jurisdiction facing in terms of housing (e.g., costs, quality, health triggers, etc.)?
   f. What are policy and program priorities your organization has for residents in your jurisdiction?

3. Program Description
   a. What is the goal of the program? Did you design the program with certain populations in mind (e.g., low-income individuals, renters, rural homeowners)? If not, why not? Do you have plans to reach these populations?
   b. What key information do you hope to showcase to consumers through the label?
   c. Does your program have an intended audience for the label other than consumers (e.g., real estate agents, lenders, etc.)?
   d. Do you offer resources to residents to move them to action once they have efficiency information?
   e. For how many years has the program been offered? Is it still running?
   f. Who is the target population? How did you determine this?
   g. How is this program funded?
   h. Are there participant costs? What are the contingencies for low-income participants?
   i. Do you run the program with other partners?
   j. How do (or don’t) you include hard-to-reach customers (e.g., tenants in multifamily buildings, renters, low-income populations, manufactured housing residents, or rural homeowners)?

4. Outcomes
   a. What is the participation rate?
b. Are there specific populations more likely to take advantage of the program? Are there specific populations more likely to move forward with upgrades?
c. What are the program costs?
d. What are the calculated energy savings?
e. How would you rate the ease of administration of the program?
f. What are some primary successes of the program?
g. Do you have plans to expand the program?
h. Are there any lessons learned you could offer?

5. What would you change about the program if you could?
   a. Is the program meeting its goals/objectives?
      i. Why or why not?
   b. Do you have any publicly available annual reports on the program or measure?

6. Other
   a. If you were to develop a toolkit for other municipalities developing a labeling program, what would you include to help them move forward?
   b. Are there any labeling programs that you would recommend we explore or that you’ve learned valuable lessons from?
   c. Is there anything we didn’t ask about your program that you think is worth discussing?
   d. Are there any program best practices that you would recommend to others?