

# Residential Energy Labeling for Underserved Markets

A Program Landscape Assessment

December 2019



# Acknowledgments

We thank our colleagues who provided their insights and expertise to inform this white paper. While the paper has benefited greatly from their guidance, they may not agree with all the interpretations or conclusions of this paper.

- Leslie Badger, Vermont Energy Investment Corporation
- Julia Dumaine, Connecticut Department of Energy and Environmental Protection
- Jessica Galloway, Austin Energy
- Wendy Koelfgen, City of Portland
- Matt Lutter, Eugene Water & Electric Board
- Madeline Salzman, US Department of Energy
- Julie Saporito, City and County of Denver
- Isaac Smith, Center for Energy Environment
- 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 access 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

EWEB HOME ENERGY SCORE Know the score. Outsmart energy waste	U.S DEPARTMENT OF ENERGY THIS HOME'S SCORE	THIS HOME'S ESTIMATED ENERGY COSTS \$1,718 PER YEAR
	Better Buildings	Home Energy Score
123 Main St Eugene, OR, 97405	Your home's 3	
YEAR BUILT: 1952	Uses more 1 2 3 4 energy	5 6 7 8 9 10 Uses less energy
HEATED FLOOR AREA: 1250 sq. ft.	Official Assessment ID# 100001	
NUMBER OF BEDROOMS: 3	The Home Energy Score is a national rating system deve energy efficiency of a home based on the home's structu score is a 5. Learn more at HomeEnergyScore.gov. Made possible through a partnership between EWEB, UI	sloped by the U.S. Department of Energy. The Score reflects the re and heating, cooling, and hot water systems. The average niversity of Oregon, and the City of Eugene.
ASSESSMENT ASSESSMENT DATE:	HOW MUCH ENERGY IS THIS HOME L	IKELY TO USE?
EXPIRATION DATE: 2026-02-04	Electric: 8,695 kWh Natural Gas: 406 therms/yr	\$956 How much energy does \$762 this home
ASSESSOR: Emily Ryba	Other: 0 gal/yr	\$0 generate? zero kWh/yr
PHONE:	TOTAL ENERGY COSTS F	PER YEAR \$1,718



#### 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.

FEATURE	TODAY'S CONDITION	RECOMMENDED IMPROVEMENTS
Attic Insulation	R-9	Add insulation to R49 as space allows
Floor Insulation	R-0	Insulate floors to R30 or as space allows
Wall Insulation	R-7	-
Envelope/Air Sealing	Not professionally air sealed	Have the home professionally air sealed
Windows	Double-pane wood	-
Skylights	None	-
Heating system	Central furnace, Gas	Install an efficient heat pump
Cooling system	No cooling system	-
Duct insulation	Not fully insulated	Insulate exposed ducts to R11
Duct sealing	Ducts not fully sealed	Have ducts tested for leaks & seal if necessary
Water heater	Electric storage	Install a heat pump water heater
Solar PV	None	Visit bit.ly/EWEBsolar for more info

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.

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.



#### Figure 2. How to Read and Interpret the ECAD Audit



### 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.

#### 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.

### Understanding the Audit Data



A. Identifies the audited property. Square footage represents actual size, not necessarily property appraisal district size.

B. Gives auditor contact information. Contact the auditor for more information on possible improvements or to update the audit data after improvements have been made.

C. Lists all types of windows and shade providers, including trees and other buildings.

D. Details insulation type and R-Value for entire overhead, including any cathedral ceilings. Chases are "tunnels" for the duct system, for plumbing or for wiring which should be insulated.

E. Lists key efficiency information and measurement for up to two HVAC systems. If more than two, see additional audit data sheets.

F. Identifies common locations for potential weatherization and air sealing improvements that affect the performance of the home, or identifies if those improvements are in place.

G. Highlights additional opportunities for energy and water efficiency improvements in the house, as applicable.

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<sup>1</sup>.

<sup>&</sup>lt;sup>1</sup> 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<sup>2</sup>. 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<sup>3</sup>. 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.<sup>4</sup> 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.<sup>5</sup> 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.<sup>6</sup>

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.<sup>7</sup>

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).

<sup>&</sup>lt;sup>2</sup> Carliner, 2013

<sup>&</sup>lt;sup>3</sup> Bird & Hernández, 2012

<sup>&</sup>lt;sup>4</sup> U.S. Census Bureau, 2018

<sup>&</sup>lt;sup>5</sup> Drehobl, Ross, & Stickles, 2019

<sup>&</sup>lt;sup>6</sup> U.S. Government Accountability Office, 2012

<sup>&</sup>lt;sup>7</sup> 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<sup>®</sup> 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<sup>8</sup> 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<sup>9</sup> 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.

<sup>&</sup>lt;sup>8</sup> City of Portland, 2019

<sup>&</sup>lt;sup>9</sup> 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.<sup>10</sup> 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 certificate<sup>11</sup>. Transparency in the energy performance of homes is gaining traction across the country, and it is essential that underserved markets are not left behind.

<sup>&</sup>lt;sup>10</sup> Myers, Puller, & West, 2019

<sup>&</sup>lt;sup>11</sup> United Nations Economic Commission for Europe, 2018

# Appendix A

Location	Program Name		Target Population	Description	Program Imple <u>menter</u>
Denver, CO	<u>Home Energy</u> <u>Score Pilot</u>	May 2018 to December 2019	Home sellers, buyers, and those who have purchased a single-family home within the last 12 months	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.	Department of Public Health and Environment
Connecticut	Home Energy Solutions	Adopted in 2015	Single-family homeowners	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.	Energize Connecticut
Eugene, OR	<u>Home Energy</u> <u>Score Program</u>	Adopted in 2016	Owners and tenants of single-family home rentals and limited income owner- occupied homes	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.	Eugene Water & Electric Board
Austin, TX	Energy Conservation Audit and Disclosure Ordinance	Adopted in 2009	Single-family home sellers, multifamily building owners (5+ units)	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	Austin Energy

Vermont	Home Energy	2015 - 2017	Single-family	specialized energy audit of the property when it turns 10 and must make energy audit results available to potential and current residents. Efficiency Vermont	Efficiency
	Profile Pilot		homeowners	worked with participating home energy assessors to offer a state-specific home energy label called the Vermont Home Energy Profile on a pilot basis.	Vermont
Berkeley, CA	Building Energy Saving Ordinance	Adopted in 2015	Single-family home sellers, large multifamily, and small multifamily to be phased in through 2022	This requires homeowners and building owners of 25,000 ft <sup>2</sup> or less to complete and publicly report a comprehensive energy assessment before the time of sale. Buildings over 25,000 ft <sup>2</sup> 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 ft <sup>2</sup> to have an energy assessment every 10 years.	City of Berkeley
Portland, OR	Home Energy Score Program	Launched January 2018	Single-family home sellers	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.	City of Portland
Minneapolis, MN	See expanded table below				

Policy	Buildings Affected	Goal	Requirements	Initial Implementation
Time of Sale Energy Disclosure	One- and two- unit properties	Inform market via an energy asset rating, similar to MPG for cars	TISH evaluators collect data during inspection and energy report becomes part of TISH report	2020
Time of Rent Energy Disclosure	<50,000 ft <sup>2</sup> (one to approximately 50 units)	Inform renters of energy costs, total cost of renting	Landlord provides link to energy portal from the portal at time of rent	2021
	>50,000 ft <sup>2</sup> (approximately 50 units)	Inform renters of energy costs, total cost of renting	Landlord provides access to benchmarking results virtually or printed benchmarking results at time of rent	2021
Multifamily Energy Benchmarking	>50,000 ft <sup>2</sup> (approximately 50 units)	Create efficiency awareness of property owner and inform the market of building energy performance	Property owner submits whole building energy performance through Portfolio Manager and low performers complete energy evaluation	June 2019 (benchmarking), June 2020 (evaluations)

# The City of Minneapolis, Minnesota Center for Energy and Environment

# Appendix B: Examples of Energy Labels



SCORE TODAY 8

 YEAR BUILT:
 1969

 CONDITIONED FLOOR AREA:
 1,231 FT²

 NUMBER OF BEDROOMS:
 4



The U.S. Department of Energy's Home Energy Score assesses the energy eff c ency of a home based on ts structure and heat ng, cool ng, and hot water systems. For more information visit HomeEnergyScore.gov.

ASSESSMENT: In t al | Oct 03, 2019 |



Page 1 of 6







+

## Home Facts

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

About This Home	
ASSESSMENT Type Assessor name Scor ng tool vers on	In t al
HOME CONSTRUCTION Year bu lt Number of bedrooms Stor es above ground level Inter or floor-to-ce I ng he ght Cond t oned floor area D rect on faced by front of house House Shape A r leakage rate	1969 4 2 8 ft 1,231 ft <sup>2</sup> South Rectangle 1658 CFM50

# Estimated Annual Energy Use

|--|

Total	122 MBtus
Score bas s	69 MBtus
Energy use per square foot	67 kBtu / ft <sup>2</sup>
Electr c ty	6,028 kWh
Natural gas	623 therms

### ENERGY COST ESTIMATES

Total annual energy costs	\$1,820
Energy cost per square foot	\$1.48 ft <sup>2</sup>
Electr c ty	\$0.176 / kWh
Natural gas	\$1.332 / therm

energize

HQY!

### **DEFINITIONS & CONVERSIONS**

MBtu	M II on Br t sh thermal un ts; gener c energy un t
kBtu	Thousand Brt sh thermal un ts; gener c energy un t
kWh	K lowatt-hour; electr c ty un t
Therm	100,000 Btu; heat energy un t
Electr c ty convers on	1 MBTU = 293 kWh
Heat convers on	1 MBTU = 10 therms

CNG

SCG

**EVERSURCE** 



ASSESSMENT: In t al | Oct 03, 2019 |







SCORE

TODAY

8

## Home Facts

Roof / Attic

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

#### ROOF / ATTIC 1 Att c floor area 615 ft<sup>2</sup> Roof construct on Standard / Compos t on Sh ngles or Metal / R-15 Roof color Med um dark Att c / ce l ng type Uncond t oned att c Att c floor nsulat on **R-11** Foundation FOUNDATION / FLOOR 1 615 ft<sup>2</sup> Floor area Foundat on type Uncond t oned basement / R-13 Foundat on walls insulat on R-0 Walls WALL CONSTRUCTION **TYPE / EXTERIOR FINISH** INSULATION VALUE Wood frame / V nyl s d ng All R-7



energize

**EVERSURCE** 

CNG

ASSESSMENT: In t al | Oct 03, 2019 |







## Home Facts

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

Windows & Skylights				
WINDOW AREA Front Back R ght Left	66 ft <sup>2</sup> 73 ft <sup>2</sup> 0 ft <sup>2</sup> 66 ft <sup>2</sup>			
WINDOW CONSTRUCTION	PANES	FRAME	GLAZING	<u>SOLAR</u> SCREEN
All	Double	Wood or v nyl	Insulat ng low-E	No
SKYLIGHTS ROOF / ATTIC 1 Present?	No			



energize

powering you to make nort energy choices

CONNEC

**EVERSURCE** 

L II

CNG

SCG

ASSESSMENT: In t al | Oct 03, 2019







## Home Facts

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

## Systems



HVAC SYSTEM 1 Percent cond t oned area served 100% Heat ng type Gas bo ler Heat ng eff c ency value 78% AFUE

DUCT SYSTEM 1 INSULATED? SEALED? PERCENT OF DUCTS IN THIS LOCATION

HOT WATER System type

Eff c ency value

Natural gas storage 0.78 EF







**EVERSURCE** 





## Recommendations

The Home Energy Score's Recommendat ons show how to mprove the energy eff c ency of the home to ach eve a h gher score and save money. When mak ng energy related upgrades, homeowners should consult w th a cert f ed energy profess onal or other techn cally qual f ed contractor to ensure proper s z ng, nstallat on, safety, and adherence to code. Learn more at HomeEnergyScore.gov.

## **Recommended Improvements**



8

SCORE

TODAY

REPAIR NOW. These mprovements w II save you money, conserve energy, and mprove 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

<u>REPLACE LATER</u>. The Home Energy Score model d d not dent fy any cost-effect ve replacements. Please ask your assessor for more nformat on.

# Comments

CT191262725



energize

**EVERSURCE** 

ASSESSMENT: In t al | Oct 03, 2019



# EWEB HOME ENERGY SCORE Know the score. Outsmart energy waste.

### **HOME PROFILE**

LOCATION:

123 Main St

Eugene, OR, 97401

YEAR BUILT: 1954

HEATED FLOOR AREA:

789 sq. ft.

NUMBER OF BEDROOMS: 2

### ASSESSMENT

ASSESSMENT DATE: 1/27/2019

**EXPIRATION DATE:** 

1/27/2027

ASSESSOR:

Matt Lutter EWEB

PHONE: 541-685-7545

EMAIL: matt.lutter@eweb.org

CCB LICENSE #:

(Public institution, exempt from licensure)

Flip over to learn how to improve this score and use less energy!





### Official Assessment ID# 100003

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.



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



Score with improvements:\*

Estimated **energy savings** with improvements:



**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.

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

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

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

For more information about how EWEB can help with water efficiency improvements, visit **bit.ly/EWEBwater**.





44%

# LOW-COST TIPS TO LOWER YOUR BILL

These actions can save you: 55

	\$55	Adjust your thermostat by two degrees. Turn it winter, up in summer. Dress for the season.	down in		
	\$60	Reduce your hot water use: (1) Take showers & not baths, (2) shorten showers, (3) wash clothe with cold water, (4) install low-flow shower head and faucet aerators.	s ds	W	/ater
	\$55	Heat and cool a smaller space by closing off unused rooms & turn off the heating & cooling in those rooms.	lecting	YOUR HOME'S	ating
	<b>\$60</b>	Get rid of your television.	leating		electric
	\$25	Replace your most commonly-used lights with LEDs.		USE	loads
	\$25	Unplug electronics when not in use. Avoid standby power use by unplugging devices or using smart power strips.		TV Fridge	
	\$75	Set your thermostat back at night or while you a Adjust manually, or use a programmable Tstat. buster: It does not cost you more to get the spa temperature.)	are away. (Myth- ice back to	* The cl your er spac Includ loads"	nart above shows where nergy dollars go: mostly e and water heating. ed with "Other electric are your stove, clothes
Total	: \$355	per vear in potential savings		wash	er & dryer, and other devices.

### Total: \$355 per year in potential savings

₫£÷Æ÷

EWEB

# OTHER WAYS TO MANAGE YOUR BILLS

ACT	ION	POTENTIAL RESULTS
	Use a thermometer	Some energy savings
	For a reality check and better control, purchase a thermometer and check the space temperature before adjusting the thermostat.	
	Reduce drafts	Better comfort, some savings
	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.	
	Limit your use of space heaters	Some energy savings
	Electric space heaters can be expensive to run, costing around ten cents an hour.	
	Lower water use to save on water and wastewater bills	Water & wastewater savings
	Fix any water leaks, and limit irrigation or plant water-efficient plants.	
	Monitor your consumption each month	Smarter consumption
	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



# Understanding the Audit Cover Letter

	SINGLE FAMILY Austin City Code Chapter 6-7, June 2009
	ECAD Energy Audit Results
	For Residence: 1234 N Texas ST Austin, TX Audit Date: 12/12/2012
	Thank you for complying with the City of Austin's ECAD Ordinance, which requires homeowners to provide these energy audit results to buyers.
	SAVE THIS FORM! This ECAD audit is valid for 10 years after the audit date.
	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 <b>austinenergy.com</b> or by calling <b>512-482-5346</b> .
	ENERGY AUDIT SUMMARY
	Action Recommended? Potential Annual Savings*:
B	A. Windows and Shading Yes B. Attic Insulation Yes C. Air Infiltration and Duct Sealing Yes D. Heating and Cooling System Efficiency (HVAC) Yes
	HOME IMPROVEMENT RECOMMENDATIONS:
	Austin Energy recommends the following actions based on the energy audit performed by Greenmon G. Greenburg of Gone Green Audits, Inc.
	<ul> <li>A. Adding shade to south-, east-, and west-facing windows reduces the heat that the Texas sun adds to your house.</li> <li>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.</li> <li>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.</li> </ul>
D	Sealing or replacing the air conditioning ductwork can reduce your electric bill and make your nome more comfortable. The duct system must be properly sized and in good condition or the heating and cooling system will run longer and cool less efficiently.
	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.
	SAMPLE AUDIT

**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.

### 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.

## 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**



**A. Identifies** the audited property. Square footage represents actual size, not necessarily property appraisal district size.

**B. Gives** auditor contact information. Contact the auditor for more information on possible improvements or to update the audit data after improvements have been made.

**C. Lists** all types of windows and shade providers, including trees and other buildings.

**D. Details** insulation type and R-Value for entire overhead, including any cathedral ceilings. Chases are "tunnels" for the duct system, for plumbing or for wiring which should be insulated.

**E.** Lists key efficiency information and measurement for up to two HVAC systems. If more than two, see additional audit data sheets.

**F. Identifies** common locations for potential weatherization and air sealing improvements that affect the performance of the home, or identifies if those improvements are in place.

**G. Highlights** additional opportunities for energy and water efficiency improvements in the house, as applicable.

### **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.

# ENERGY STAR

# A City of Austin program Austin Energy rebate levels and program details subject to change.

# ADDITIONAL SERVICES AND INCENTIVES FOR HOME IMPROVEMENT



### Power Partner<sup>sM</sup> 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 **texasgasservice.com** or call 512-370-8243.

© 2016 Austin Energy. All rights reserved. Austin Energy and the Austin Energy logo and combinations thereof are trademarks of Austin Energy, the electric department of the City of Austin, Texas. Other names are for informational purposes only and may be trademarks of their respective owners.



austinenergy.com/go/ecad



### THIS HOME'S EXPECTED ENERGY USE

93 MMBtu

93<sub>MMBtu</sub>

### THIS HOME'S EXPECTED ENERGY COST

**\$3,137** 

This scale represents how much energy this home is expected to use over the course of a year,



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

A project of the Vermont Residential Energy Labeling Working Group: www. publicservice.vermont.gov/ energy\_efficiency/ buildingenergy\_labeling



# Expected Annual Energy Costs

**Expected Annual Energy Usage** 

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

\$3,137





# 9/10

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.



# How does the Vermont Home Energy Profile work?

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.

	THIS HOME	LOW ENERGY USE	VERMONT ENERGY CODE	HIGH ENERGY USE
Building Tightness	1.6 ACH50	1 ACH50	3 ACH50	7 ACH50
Attic Insulation	R-38	R-60	R-49	R-19
Wall Insulation	R-18	R-25+	R-25	R-3
Basement Wall Insulation	R-19 cavity	R-40	R-20 (cavity) or R-15 (continuous)	R-0
Windows	Double-Pane	Triple-Pane, LowE, High Solar Gain	Double-Pane, LowE (U-0.32)	Single-Pane, Clear
Heating System Efficiency	80 AFUE	90+ AFUE	Federal minimum, ~80 AFUE	70% or less AFUE
Primary Heating System/Fuel	Propane Boiler			
Hot Water System/Fuel	Propane, Indirect			
Solar PV Present?	No			

# What are the components of the Vermont Home Energy Profile?



#### **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

# 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.



#### **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:

www.publicservice.vermont.gov/publications/ fuel\_report



#### 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

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

Vermont Gas Systems • 802-863-4511 www.vermontgas.com

Burlington Electric Department 802-865-7342 • www.burlingtonelectric.com

Vermont's Weatherization Program www.dcf.vermont.gov/oeo/weatherization

## U.S. DEPARTMENT OF ENERGY



Know your home. Know your Score.

#### HOME PROFILE

LOCOTION: 123 Main Street Oakland, CA,94610

YEAR BUILT: 1924

HEATED FLOOR AREA: 1387 sq. ft.

NUMBER OF BEDROOMS: 2

THIS HOME'S HOME ENERGY SCORE

**5** out of 10

### THIS HOME'S ESTIMATED ENERGY COSTS

**\$1817** per year

## **Home Energy Score details**



#### Official Assessment | ID#123456

Home Energy Score is an easy way to see how energy efficient this home is compared to other homes. A higher score is better. This report also contains ways you can make your home more efficient and more comfortable.

### How much energy is this home likely to use?

Electric	5555 kWh/year	\$1135
Natural Gas	451 therms/year	\$682

TOTAL ESTIMATED ENERGY COSTS PER YEAR \$1817





Flip over to learn how to improve this score and use less energy. • 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-specifc 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.

### ASSESSMENT

ASSESSMENT DATE: 1/31/2018

ASSESSOR: John Doe

PHONE: 510-867-5309

EMAIL: john@doe.com

### **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 frst? The BayREN Home Upgrade Advisors offer free phone consults with independent expert home advisors. **Call 866-878-6008.** 

- Check out **www.bayareaenergyupgrade.org** for information on Energy Upgrade California<sup>®</sup> programs and fnancing opportunities.
- Select a contractor (or two, for comparison) and obtain bids.
- Perform upgrades and enjoy a more comfortable and energy efficient home.

score today 5 out of 10

### Energy Improvements, customized for your home.

FEATURE	TODAY'S CONDITION	RECOMMENDED IMPROVEMENTS
Attic Insulation	Insulated to R 11	Insulate $\ge$ R 38 and air seal
Floor Insulation	Insulated to R 00	Insulate ≥ R 19
Wall Insulation	Insulated to R 00	Insulate ≥ R 13
Water Heater	Gas storage 58% EF	Gas on demand (tankless) $\ge$ 0.82 EF

#### **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

Flip over to learn how to improve this score and use less energy!





### THIS HOME'S ESTIMATED ENERGY COSTS



PER YEAR



#### Official Assessment | ID# 206779

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

HOW MUCH ENERGY IS THIS HOME LIKELY TO USE?		
<b>Electric:</b> 11,743 kWh/yr\$1,339		
<b>Natural Gas:</b> 227 therms/yr\$302		
<b>Other:</b> 0 gal/yr \$0		
Renewable Generation:		

How much renewable energy does this home generate?

<u>7,805</u> kWh/yr

### TOTAL ENERGY COSTS PER YEAR \$782

### THIS HOME'S CARBON FOOTPRINT:



Estimated average carbon footprint for a similar sized home: 3.8 tons of CO<sub>2</sub> 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.
- www.greenbuildingregistry.com/portiand 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.





Estimated **carbon reduction** with **priority** improvements:



### **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 or call toll free 1-866-368-7878.
- Explore financing options at **communityenergyproject.org** or **energytrust.org**.
- Visit the following resources to learn about easy changes you can make today: communityenergyproject. org/services or energytrust.org/solutions/insulation-and-air-sealing/

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

#### FEATURE

Duct insulation Envelope/Air Sealing Heating Equipment Heating Equipment Water Heater

### **TODAY'S CONDITION<sup>4</sup>**

Un-insulated Not professionally air sealed Oil furnace 60% AFUE Natural Gas/Propane Furnace Standard electric tank

#### **RECOMMENDED IMPROVEMENTS**

Insulate to R-8 Professionally air seal When replacing, upgrade to ENERGY STAR <sup>3</sup> When replacing, upgrade to ENERGY STAR When replacing, upgrade to ENERGY STAR, minimum 2.76 EF (Energy Factor)

## **ADDITIONAL ENERGY IMPROVEMENTS**<sup>2</sup>

#### FEATURE

#### Attic insulation Duct sealing Envelope/Air Sealing Wall insulation Solar PV Windows Air Conditioner Basement wall insulation Floor insulation Foundation wall insulation

### TODAY'S CONDITION<sup>4</sup>

Ceiling insulated to R-0 Un-sealed Not professionally air sealed Insulated to R-0 Capacity of 7.8 kWh in DC Multiple types N/A N/A Insulated to R-0 N/A

#### **RECOMMENDED IMPROVEMENTS**

Insulate to R-38 or R-49 if code requires it Reduce leakage to a maximum of 10% of total airlfow Professionally air seal Fully insulate wall cavities

When replacing, upgrade to ENERGY STAR

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.



# 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.

	Energy Improvements (by priority)	Improvement Points	Typical Cost	Rebate	Yearly Bill Savings
Wall Insulation	Insulate your exterior walls	20	\$2,100– \$2,300	Up to \$500	\$200-\$400
Attic Insulation	Air seal and insulate your attic	16	\$1,900– \$2,200	Up to \$500	\$150-\$300
Heating System	Upgrade your furnace when it's 20 years old	13	\$3,500– \$6,000	Up to \$500	\$150-\$300
Windows	Add a storm window to your single-pane windows	2	\$50–\$60 per window		\$6-\$8 per window





## **Next Step: Contact an Energy Advisor**





Mike

Kat

An Energy Advisor can help:



Answer your questions

an Energy Advisor to learn more and get help with next steps.



Connect you to financing and utility rebates



651-328-6225 or energyadvisor@mncee.org

# Energy Improvements (by priority)

**Current Wall** R-Value: R-3 Recommended R-Value: R-11

### **Wall Insulation**

### **20** improvement points **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

**Typical Cost:\*** \$2,100-\$2,300 Yearly Bill Savings:\* \$200-\$400 **Rebate Available:** Up to \$500

**Current Attic R-Value:** R-15 Recommended **R-Value:** R-50

### Attic Insulation

### **16** improvement points

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.

**Typical Cost:\*** \$1,900-\$2,200 Yearly Bill Savings:\* \$150-\$300

**Rebate Available:** Up to \$500

Type: Forced Air Furnace Venting: Induced Draft Age: < 20 years old

### **Heating System**

**13** improvement points 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.

# of single pane windows: 2

### Windows

### **2** improvement points Install a storm window on the exterior of single-pane windows to costeffectively 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:\*** \$3,500-\$6,000 Yearly Bill Savings:\* \$150-\$300 **Rebate Available:** Up to \$500

Typical Cost:\* \$50-\$60 per window Yearly Bill Savings:\* \$6-\$8 per window **Rebate Available:** n/a

201911210000450

<sup>\*</sup> 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.

<sup>\*\*</sup> 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 lowincome 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**

Program/Pilot Name:	Webpage:
Agency Name:	Agency Type:

- 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?