Community Home Energy Labeling Toolkit

As more communities pursue residential labeling policies and programs, there are many factors to consider. This toolkit provides a schedule of considerations and key decisions, comparisons of common labeling approaches, and example policies that are already in place. Please contact Chase Macpherson, Community Decarbonization Associate, at cmacpherson@neep.org with questions.

Why Pursue Home Energy Labeling?

Home energy labels provide information similar to a miles-per-gallon rating for a car, often through in-home audits or software that incorporate information on a home's heating system and age, insulation, windows, and so on. Residential labeling policies can incentivize or mandate the creation of these labels and their inclusion in processes such as real estate listings, and they enable transparency and valuation of home energy efficiency. The increased transparency and awareness around a home's energy use equips home buyers and renters with information about operating costs of the building, can encourage efficiency upgrades, and inform homeowners about local utility programs and incentives.

Establishing a Labeling Policy

1. Establish the primary goal of the program

a. Goals could include reducing energy burden, driving retrofits, increasing utility program participation, reducing emissions, and providing transparency and consumer protection. Establishing clear goals early in the process will help guide many later decisions in policy design and metrics.

2. Understand assessment and disclosure options

a. There are various audit types, scores, certifications, and ways to disclose home energy information. These include labels from in-home audits, virtual assessments (also known as automated energy models), and utility bill disclosure.

3. Understand the local housing market

Key information for jurisdictions to understand includes:

a. Labor market metrics
    i. Number of trained HERS/HES assessors (if selected) in the area
    ii. Number of certified home inspectors
    iii. Number of real estate firms with green designation and green appraisers (see Green Resource Council)
b. Housing market metrics
    i. Residential building types
    ii. Ratio of owner-occupied to rental units
    iii. Number of low-to-moderate income residents
    iv. Sale trends (average homes sold annually) / rental trends

4. Review state and local laws

Pursuing a home energy labeling policy at the local level will require a review of state and local laws to identify a source of legal authority and check for any preemption by other jurisdictions.

a. Define a source of local authority, which could include:
    i. Municipal home rule (in "home rule" jurisdictions)
    ii. Police power
    iii. Building- and zoning-code enabling laws
    iv. Air pollution control authority
    v. Rental housing- or housing quality laws
b. Review for preemption (a higher level of law that blocks a lower level of law):
    i. The three types of preemption are express, conflict, or field preemption
    ii. Conduct a review for preemption in the area of real estate rental or sales contracts
    iii. Ensure that substantive requirements (thresholds that buildings must meet) are not preempted by a statewide building code
    iv. Review public service laws

5. Secure buy-in from leadership and key stakeholders

For larger stakeholder groups such as real estate professionals, community groups, etc., consider public and/or targeted listening sessions to gather input and build consensus. The stakeholders that could be important champions or opponents include:

a. The mayor, town manager, or a designee
b. City council members
c. Municipal staff
d. Real estate agents and associations
e. NGOs
f. Home performance contractors
g. Utility program staff
h. Community health advocates
i. Energy service professionals
j. Building owners/landlords
k. Community stakeholders (residents)

6. Build an ordinance team

a. An ordinance team is a group that will bring various perspectives and interests together, helping ensure that the ordinance is politically viable. This group may include the mayor, city council representatives, community staff, volunteers, city staff (lawyer, building and construction, IT support, etc.), local property owners and renters, landlords, real estate professionals, and representatives from other organizations providing technical assistance.

7. Build the policy

a. When defining the details of the policy, key considerations include:
    i. Covered building types (whether single-family, duplex, condominium, large multifamily, rental vs. owner-occupied, etc. have to comply)
    ii. Trigger point (time of listing, time of sale, etc.)

iii. Documentation type (bill disclosure, certified or custom score, etc.)
iv. Compliance style (voluntary, mandatory, phased)
v. Whether to make aggregated data publicly available – in working with stakeholder groups, try to find a good balance between privacy with the value of public data (as leads for contractors, for example)

b. Standard ordinance provisions include:
   i. Purpose
   ii. Requirements
   iii. Enactment date
   iv. Exceptions
   v. Enforcement
   vi. Penalties and violations or "right of appeal and stay"

8. Prepare for implementation

a. Identify data inputs and output metrics
b. Define the enforcement mechanism
c. Consider subsidies for low-income residents
d. Make information publicly available

9. Communicate the plan

a. Disseminate materials to real estate professionals, home owners, renters, etc.
b. Train key stakeholders on what will be required of them

10. Plan for change

a. Allow opportunities for feedback and improvement

Home Energy Score, HERS Index, and Automated Energy Models

This table compares various aspects of four kinds of home energy evaluations. There are many kinds of automated energy models (AEM); the AEM and AEM+ described here are Energy Estimator, created by NEEP and ClearlyEnergy. Energy Estimator provides an output with just a home address, but users can add more information, as seen in the fourth column.

Metric	Home Energy Score (U.S.DOE)	HERS Index	AEM	AEM+
Parameters	50+	50+	3	25+
Rating System	1-10 (bounded, with 10 being most efficient) Asset-based	0-100 (unbounded, with 0 being a net-zero home and 100 being code compliant) Asset-based	Estimated energy usage and cost as compared to average home of similar size & vintage Asset-based	Estimated energy usage and cost as compared to average home of similar size & vintage Asset-based
Key metrics	Detailed efficiency assessment of building shell and energy systems	Blower door test Detailed efficiency assessment of building shell and energy systems	Age and size of building	Type of fuel Age of building shell and energy systems
Process and Applicability	On-site Existing home Certified contractor	On-site New home Certified contractor	Online Existing or new home Public tax assessor data	Online Existing or new home Homeowner
Time	2-3 hours	2-5 hours	Immediate	10-60 minutes
Cost	$150-250	$400-1000	$15-25*	$15-25*
Policy Objective	Energy efficiency residential retrofits	Efficient residential new building stock	Energy data access and awareness	Energy data access and awareness
Primary Use Cases	Contractor engagement	Compliance with IECC	Real estate disclosure	Real estate disclosure

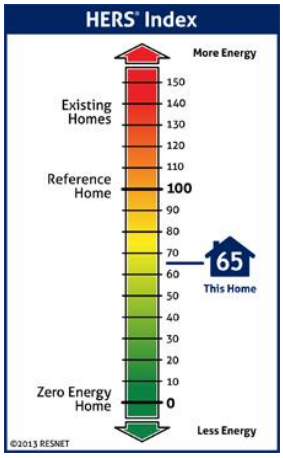
*Estimated cost for Energy Estimator tool

Frequently Asked Questions

What are the differences between U.S. DOE's Home Energy Score and RESNET's Home Energy Rating Score Index?

These two most widely used energy rating systems differ in several ways, including target audience, reference home used in the rating process, and geographic locations. RESNET's Home Energy Rating Score (HERS) Index has historically been used and promoted for new construction homes. Home builders tend to be more interested in obtaining HERS ratings because energy codes, particularly the 2015 IECC and later editions, incorporate the Energy Rating Index (ERI), which relies on the HERS Index, as an optional compliance pathway. According to NASEO's Home Energy Labeling Guide, "When left to the private market, the cost for a customer to obtain an asset-based home energy label as a standalone product from an energy assessor can range from $150-250 for a DOE Home Energy Score (HES) and $400-1000 for a HERS rating." HERS is more expensive, but it can be advantageous to builders complying with the IECC.

The U.S. Department of Energy's Home Energy Score is typically used for existing homes. Fannie Mae developed a white paper titled Energy Efficiency: Value Added to Properties and Loan Performance that compares both the HERS Index score and Home Energy Score. On page two (and pasted below), it describes the rating scales and references.



RESNET's HERS Index ranges from negative to positive infinity, mostly concentrated between 1 and 100. The index reflects a relative scale obtained by comparing the rated home to a reference home designed to be of a similar size, shape, and type that is a standard new home built to the International Energy Conservation Code (IECC). A score of 100 refers to the energy use level for the reference home. A score of 80 indicates 20 percent less energy consumption than the reference home. A typical resale home scores 130, indicating 30 percent more energy use than its reference home. Thus, higher scores indicate less energy efficiency. Most RESNET-rated homes in our sample have a HERS Index of less than 85, meeting industry standards (such as ENERGY STAR certification) for being energy efficient.

Home Energy Score (HES) uses a 1-to-10 scale, where higher scores indicate higher energy efficiency levels. For example, a score of 1 generally indicates that the home's energy usage is in the top 10 percent, while a score of 10 indicates that the home's energy usage is in the bottom 10 percent. According to U.S. DOE, the 10

levels account for location climate by "mapping the zip code for the house address to the nearest weather station. Each weather station has its own definition of score ranges based on local weather" (HES Scoring Methodology, 2017). Property size is not considered when assessing the level of energy use. Therefore, all other things being equal, larger homes will receive a lower HES simply because larger homes are likely to use more energy.

Another report is the Energy Metrics to Promote Residential Energy Scorecards in States (EMPRESS) Project Final Report. Page 58 has information on HERS and HES, including what they are, what policy objectives they can achieve, cases, durability, granularity, how readily they are understood by customers, costs, and recognition in the finance industry.

- Sample Home Energy Score report
- Home Energy Scoring Tool Data Collection Form

What is Energy Estimator? Does it require a physical audit?

Energy Estimator is a tool developed by NEEP and ClearlyEnergy that uses publicly available data (from tax assessor databases) combined with data from HELIX (including HERS and HES, if available) to create a custom label. The tool is an example of an automated energy modeling system. The custom label may include HERS or HES information in addition to other information like the cumulative projected annual energy costs of the home, how the home compares to similar homes, suggestions and resources for efficiency improvements, and more. Energy Estimator is different from HERS and HES scores mainly because it is based on a virtual/remote process and does not require in-home audits. Although it doesn't capture as many data points as an in-home audit, studies show the modeled cost estimate is on average 70-80 percent accurate to the results of a HES. Here is an excerpt from a report on the Energy Estimator's Automated Energy Model (AEM):

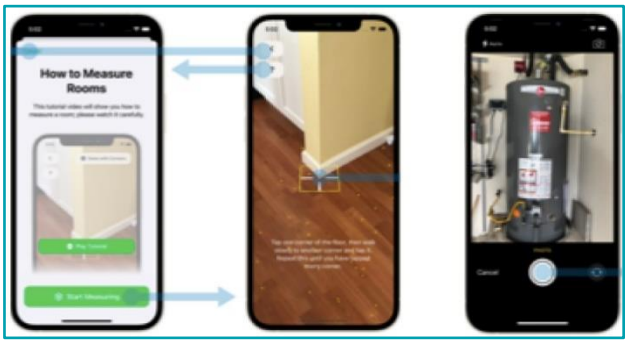
> "A few easy-to-collect parameters go a long way towards reducing model differences between the AEM and the DOE Home Energy Score results and improving the overall distribution of the results. By adding basement, attic and heating system age characteristics, the AEM's average difference to the Home Energy Score results drop to 14-15 percent and the correlation increases to 80-85 percent. This improves the AEM's ability to capture the key features of the home's energy consumption."

The virtual approach is typically easier, more accessible, and less costly and time-intensive, making Energy Estimator a helpful tool to offer in addition to traditional audits. For these reasons, Montpelier and the state of Vermont decided to use Energy Estimator to produce Vermont Home Energy Profiles.

What about virtual energy audit options?

Virtual options for home energy audits became more desirable and more feasible with the onset of the pandemic. Automated energy models take simple information such as age, square footage, and heating fuel of a house to produce an estimate of its energy use. Virtual audit tools take it a step further by using a smart phone or tablet's camera to take measurements, gather more information on the heating system, define the area of the windows and walls, etc.

Virtual energy audit tools streamline the process for homeowners and contractors by cutting down on scheduling, travel, and workforce constraint issues. One such tool is an app that NEEP created with ClearlyEnergy and Signetron, called Remotely. With Remotely, users can collect energy audit data from their iPhone and the app produces a preliminary Home Energy Score. The app also provides personalized home energy improvement project suggestions, connections with local contractors, and information on available rebates.



What are examples of community home energy labeling policies?

Montpelier, Vermont

Home Energy Information Ordinance

After many meetings with residents and members of the real estate industry over the course of a year, the city of Montpelier mandated the inclusion of a Vermont Home Energy Profile (VHEP), generated by Energy Estimator, within the real estate transaction process. This followed the state's development of VHEP for statewide voluntary use. The passage of Montpelier's ordinance followed a two-year stakeholder engagement and tool development process intended to balance accessibility, accuracy, and affordability while helping the city meet its Net Zero goal. After three city council meetings and amendments including capping penalties and delaying the enforcement period, the Home Energy Information Ordinance passed unanimously in May 2021. Mandatory compliance began in July 2022.

- Net Zero Montpelier Home Energy Information Ordinance

Austin, Texas

Energy Conservation Audit and Disclosure (ECAD) Ordinance

Austin's ECAD Ordinance requires energy audits for any facility listed for sale in the city that is at least 10 years old at the time of sale. Multi-family facilities with more than 150 percent average energy use must disclose usage to tenants, and have 18 months to implement efficiency measures to reduce usage by at least 20 percent. Building owners must work with a certified ECAD energy professional to conduct an energy audit.

- Austin Energy ECAD for Residential Customers

Portland, Oregon

City Code Chapter 17.108

In 2015, Portland committed to reducing emissions 80 percent by 2050 community-wide. The municipality is setting an example by committing to transition to 100 percent clean energy by 2040. In 2016, the city adopted an energy benchmarking ordinance and the Bureau of Planning and Sustainability led a policy development process that resulted in the adoption of the Residential Energy Performance Rating and Disclosure chapter of the Portland City Code. After three city council hearings and several amendments, Portland City Council unanimously adopted the Home Energy Score Ordinance in December, 2016. Portland Home Energy Scores are all made publicly available on the Green Building Registry, and the cities of Milwaukie and Hillsboro, Oregon have followed suite in creating mandatory HES policies.

- Portland Home Energy Score

Minneapolis, Minnesota

The Truth in Sale of Housing (TISH) policy in Minneapolis mandates that all housing listed for sale receive an inspection from a licensed evaluator, and that sellers make any required repairs. Beginning in January 2020, the evaluation also includes home energy data and sellers are required to share the energy disclosure report at all open houses and make it available to the public. The report includes a score from 0-100 based on four main areas: attic insulation, wall insulation, heating system, and windows. The full ordinance can be found in Section 75 of Title 12, Chapter 248.

What are appropriate penalties for non-compliance? What is an appropriate cap for penalties?

Montpelier's Home Energy Information Ordinance provides that each day of non-compliance incurs a $25 penalty, to be capped at $500.

In **Portland**, the city may first issue a written warning notice describing the violation and steps required to comply. If the person or entity is still in violation within 90 days, the city may issue a civil penalty of up to $500. The Director of the Bureau of Planning and Sustainability may decide the penalty based on the availability of authorized Home Energy Assessors in the city's program network, whether the person received any benefits from the violation, the seriousness of the violation, etc.

What types of buildings should be covered?

Based on the composition and needs of a community, the policy may cover only residential buildings, or include commercial multifamily buildings, and/or mixed-use buildings. Some phased approaches may begin with larger single-family homes before also including smaller single-family homes, duplexes, and rental and multifamily units. When crafting the policy, it is essential to identify and define what constitutes a covered structure. For example, if covered buildings include single-family residential and multifamily residential buildings, it is important to define both of those building types. Here are examples of building types and definitions from existing policies and ordinances:

Montpelier: "Applicable building" means any residential structure. "Applicable building" does not include single dwelling units used solely for commercial purposes. The primary use of the building shall determine whether the building is considered residential, commercial, or other.

Austin: "Commercial facility" means a building used for civic, commercial, and/or industrial uses, excluding manufacturing, with a gross floor area of 10,000 square feet or greater. "Condominium" means a site that combines separate ownership of individual units with common ownership of other elements such as common areas. "Multifamily facility" means a site with five or more dwelling units. "Residential facility" means a site with four or fewer dwelling units.

Portland: "Covered building" means any residential structure containing a single dwelling unit or house, regardless of size, on its own lot. "Covered building" also includes attached single dwelling unit, regardless of whether it is located on its own lot, where each unit extends from foundation to roof, such as a row house, attached house, common-wall house, duplex, or townhouse. "Covered building" does not include detached accessory dwelling units or manufactured dwellings. "Covered building" also does not include single dwelling units used solely for commercial purposes.

How should the policy be designed to be equitable for low-income residents?

Policymakers should ensure that energy information disclosure policies benefit low-income residents and don't add to any disparate burdens they might already face. If pursuing a policy that requires a costly in-home energy audit, policymakers can create support for low-income homeowners to afford the label. In Montpelier, a partnership with the utility Efficiency Vermont enables the Vermont Home Energy Profile to be free for all residents.

Energy information disclosure policies may have unintended negative consequences for low-income homeowners and renters. Energy information transparency gives buyers and renters relevant information about the operating costs of homes, but if homes get more efficient and rise to unaffordable sale prices, the benefits of energy efficiency won't be distributed equitably. Over the long term, labeling policies can lead to increases in energy efficiency upgrades to homes, which can increase home values and decrease affordability. If low-income homeowners cannot afford to make upgrades, the relative value of their homes may fall. For rental properties, tenants could be displaced during retrofits, or owners could raise rents after making efficiency upgrades.

There are various approaches to providing equitable solutions. Policymakers should engage stakeholders, including low-income advocates, renters, landlords, etc., early in the process. Leveraging down-payment assistance, low-interest loans, and homeowner counseling can help mitigate the effects of increased home prices for low-income buyers. It might also be beneficial to work with the local housing agency, to connect people temporarily displaced by retrofits with housing resources.

How do we reduce the program's burden on affordable housing?

There are many approaches to reducing the burden of a program on affordable housing (naturally-occurring or regulated) while ensuring that some home efficiency needs are met. Many policies provide exemptions for households that have recently participated in a program such as weatherization. Several programs also provide opportunity for financial hardship deferrals approved by program administrators. Below are some examples of exemptions provided by jurisdictions with existing programs.

Portland, Oregon's policy (Section 17.108.050) provides the following exemption:

> The director may exempt a seller from the requirements of this chapter after confirming that compliance would cause undue hardship for the seller under the following circumstances: The responsible party is otherwise unable to meet the obligations of this chapter as determined by the director.

Austin's policy (Section 6-7-13) provides the following exemption:

> This article does not apply to a residential facility if one or more of the following apply: (1) the facility participated in the Austin Energy Free Weatherization Program, or an equivalent Austin Electric Utility program, not more than 10 years before the time of sale; (2) the purchaser of the facility qualifies for and has signed an agreement, in a form acceptable to the director, agreeing to participate in the Austin Energy Free Weatherization Program or an equivalent Austin Electric Utility program, not later than six months after the time of sale.

Austin's ECAD (Section 6-7-4) also provides the following variance:

> The director shall grant a variance from a requirement of this chapter if the director determines that either (1) due to special circumstances unique to the applicant's facility and not based on a condition caused by actions of the applicant, strict compliance with provisions of this chapter would cause undue hardship or (2) due to exhaustion of reasonable energy efficiency measures, full compliance would require performance of work excluded from the scope of Section 6-7-23(B). A variance granted under this subsection (A) must be limited to the minimum change necessary to avoid the undue hardship or excluded work.

Example Policies

Montpelier, Vermont

- Net Zero Montpelier Home Energy Information Ordinance
- Ch. 21 Home Energy Information

Portland, Oregon

- Bureau of Planning and Sustainability Home Energy Score Program
- City Code Chapter 17.108 Residential Energy Performance Rating and Disclosure

Austin, Texas

- Energy Conservation Audit and Disclosure Ordinance
- Chapter 6-7 Energy Conservation

Minneapolis, Minnesota

- Title 3 Chapter 47 Section 190 Commercial and Multifamily Residential Building Rating and Disclosure
- Title 12 Chapter 248 Section 75 Energy Disclosure Report