

Report to Portland City Council on Residential Energy Performance Rating and Disclosure (Ordinance No. 188143)

Ordinance No. 188143 requires the Bureau of Planning and Sustainability (BPS) to report to Portland City Council within 30 months of the effective date of City Code Chapter 17.108. The ordinance directs BPS to address the results of program evaluation including, but not limited to, accuracy of disclosed information, rates of compliance, other program impacts and recommendations for ongoing review. This report serves as BPS's 30-month program evaluation.

Executive Summary

The Home Energy Score program has met, and in some cases exceeded, staff and stakeholder expectations in its first 30 months. More than 20,000 Home Energy Scores are now in the Portland real-estate market, providing unprecedented transparency, insight and data about residential energy performance and carbon emissions. The Home Energy Score program has revealed with great focus the areas of opportunity for Portland's housing stock to become safer, healthier, more efficient and less air- and carbon-polluting. The Home Energy Score program has become a model that multiple Oregon jurisdictions are poised to follow.

Despite concerns from the real-estate industry during policy development, the real-estate market has not been disrupted by the Home Energy Score policy requirements. At an average of \$125 per score, the cost of obtaining a Home Energy Score is within reach for most home sellers. There is an ample supply of Home Energy Assessors for sellers to access and quick turnaround times for scheduling the onsite assessment.

BPS has funded the cost of getting a Home Energy Score for low-income home sellers, reducing concerns about the burden of the policy on low-income Portlanders. Analysis using the City's existing Vulnerability Index shows that enforcing the requirements are not creating disproportionate impacts. BPS staff are monitoring the incidence of non-compliance to ensure that enforcement actions are not geographically clustered in certain parts of the city or amongst homes with lower price points. The analysis completed to date shows an even distribution of non-compliance across all areas of the city as well as listing prices.

While this report outlines some areas for program improvements, BPS is pleased to report that overall, the Home Energy Score program provides a solid foundation from which to scale residential energy upgrades. These upgrades are a critical next step in improving the health, comfort, affordability and safety of Portland homes, while reducing carbon emissions necessary to meet our collective climate action goals. Home Energy Score was never envisioned as an ending point, but as the beginning of a longer path toward eliminating carbon from single-family homes. The first 30 months of HES have put us squarely on that path forward toward the next generation of residential building sector policies and activities.

Background

The City of Portland's Home Energy Score program took effect on January 1, 2018, requiring sellers of single-family homes to disclose a Home Energy Score and Report at the time of listing. The Score and Report must be included in real-estate advertisements, including online listing sites such as the Regional Multiple Listing Service (RMLS), which serves the Portland-metro area.

The mandatory disclosure increases transparency for consumers as they engage in one of the biggest purchasing decisions of their lifetime. Like a miles-per-gallon rating for a car, a Home Energy Score provides credible and consistent energy efficiency information that can easily be compared. The Home Energy Score rates the energy efficiency of a home based on an on-site evaluation of its physical characteristics using a model developed by the U.S. Department of Energy that predicts a home's energy consumption under a typical use scenario. An authorized Home Energy Assessor performs the on-site assessment and collects more than 70 pieces of information about the home's envelope (i.e., foundation, insulation, walls, windows) as well as its heating, cooling and hot water systems.

What Home Energy Score is Designed to Do

Within Multnomah County, 18 percent of carbon emissions come from residential buildings. There are approximately 160,000 single-family homes in Portland and more than three-quarters of them are owner-occupied. The City of Portland and Multnomah County's award-winning and globally recognized Climate Action Plan called for home energy labeling and disclosure to target the substantial carbon emissions generated from heating and powering these homes.

Home energy labeling is a type of information policy that increases awareness around the energy efficiency of a building. That transparency can shift market behavior over time as consumers begin to value energy efficiency features more, which in turn stimulates energy upgrade activity. This is critical in a highly-developed city like Portland because most of the building stock consists of existing, older homes, many of which pre-date more strict building energy codes. Preparing a home for sale or moving into a new home are key milestones at which a homeowner is most likely to invest in upgrades.

Researchers recently completed an academic study of the Energy Conservation and Audit and Disclosure ordinance in Austin, Texas. The ordinance is similar to Portland's and has been in place for more than 10 years. **The study found that disclosure created a premium for energy-efficient homes by daylighting the value of these attributes and led to higher participation in energy efficiency programs.**

Market-based approaches like home energy labeling are relatively low-cost and easy to implement but can take time and thousands of transactions to demonstrate impacts. As such, it is premature to expect to see immediate energy use and carbon reductions within only two and a half years of program launch.

Key Findings

- 1. Despite initial concerns from the real-estate community that Home Energy Score could stall real-estate sales transactions, the policy requirements have caused little to no disruption in the market.**

A Home Energy Assessment can often be scheduled in less than two days. The time it takes for a home seller or realtor to get a Home Energy Score and Report is a function of the number of active Home Energy Assessors working in the market. Currently, there are 60 active Assessors who work for 50 different active assessment companies. Of the most active companies, 70 percent say they can schedule

an appointment the same day or within one to two days of initial contact. Almost all stated that they are able to schedule an appointment within less than a week.

The Assessor labor pool has stabilized and meets market demand. There was initially a tremendous amount of interest in becoming a Home Energy Assessor, with twice as many Assessors and assessment companies at program launch. After two years of program implementation, the assessor workforce has stabilized and effectively meets the market demand, while providing a dependable income stream for many small businesses.

The cost for a Home Energy Score has settled around \$125. During policy development, real-estate sector professionals speculated that the Home Energy Score assessment would be cost-prohibitive for home sellers. The City's policy development team estimated a lower cost based on researching existing market rates for other types of home auditing services. With the policy requirements in place for more than two years, actual market rates for Home Energy Assessments have settled at an average even lower than either of these predictions. The most active Home Energy Score assessment companies charge, on average, \$125 for any home less than 3,000 square feet. The fees for this service range from \$119 to \$180. Some assessors charge an additional fee for larger homes to account for additional time spent on-site.

Low income homeowners can quickly and easily receive a free Home Energy Assessment. Homeowners with a household income at or below 60 percent of median household income for the Portland-Vancouver-Hillsboro, OR-WA Metropolitan Statistical Area qualify for a free Home Energy Assessment. The assessment is paid for by the City of Portland and completed by authorized Home Energy Assessors under an agreement with the Community Energy Project. To date, 89 home sellers applied for this service and 80 met the eligibility requirements.

2. Home Energy Score can be a useful tool for new homeowners both as part of their home shopping process and well after they move in.

BPS staff conducted a survey of homeowners who purchased a home in Portland while Home Energy Score requirements were in place. The online survey was promoted by sending postcards directly to the site addresses of homes purchased in 2018 and 2019 and it received more than 400 responses.

At least two-thirds of respondents stated that they discussed Home Energy Scores with their real-estate agent, regardless of whether or not the home they ended up purchasing had a Score. Survey responses show that homebuyers are using Home Energy Score information in many different ways. Some buyers prefer to seek out higher scoring homes that need few improvements:

- *"A high scoring report was one of the key things we were looking for in a home."*
- *"The house I bought had a high score - I was excited about it."*
- *"We purposely sought the HES for each home we looked at and intentionally sought a house with a high score."*

Some buyers use the information in the Home Energy Report to help calculate the full cost of homeownership or as a factor to weigh in their decision-making process:

- *"It allowed me to budget for energy expenses."*

- *“It’s a great program and more people should be aware of it. It weighed heavily in our home buying process.”*
- *“Thanks for providing the reports! Very helpful in evaluating homes, especially those built long ago.”*

Buyers are starting to reference the report in their negotiations process with the home seller:

- *“I used it to guide improvements I wanted the seller to make before I purchased the home. (He ended up insulating the ductwork and the attic.)”*
- *“Using the information in negotiations as to repairs and final price.”*

The list of recommended home improvements on the home’s Report can be very helpful for these buyers down the road. Respondents ranked this as the most useful part of the Report and 62 percent of respondents acknowledged using the Report to help them understand the types of projects they may want to invest in after they purchased the home:

- *“My wife and I found the energy improvement features list and additional energy recommendations valuable in our decision making process.”*
- *“I really appreciate the Home Energy Score and Report! It was interesting to consider when buying a home and we still frequently reference the Report for project ideas.”*
- *“I really appreciated the score. I will probably look back at the report in retrospect now. First time home buyer so I think I missed a lot of the details in the buying maelstrom.”*

One of the benefits of using the U.S. DOE’s Home Energy Score as the tool for Portland’s scoring policy is that it can serve as documentation for federal lending products. FannieMae’s [HomeStyle Energy Mortgage](#) allows borrowers to finance energy efficiency improvements, using the Home Energy Report as the basis. Borrowers can also qualify for a stretch on their debt-to-income ratios for HomeStyle Energy and other Federal Housing Administration loan products, recognizing that a more efficient home results in lower operating costs. BPS staff are collaborating with nonprofit Earth Advantage, Fannie Mae and Umpqua Bank to increase awareness of these options within the local brokerage community.

Despite being relatively new, there is some early evidence that Home Energy Reports are being used as part of a financing process. More than four percent of survey respondents indicated that they had discussed their Home Energy Score and Report with their mortgage broker, loan officer or an appraiser.

Recommendation for Ongoing Review: Survey recent homebuyers in future years to compare shifts in awareness and sentiment towards Home Energy Score as it becomes more widespread in the marketplace.

3. The benefits of the Home Energy Score policy reach beyond the individual homebuyer, providing an unprecedented view into the existing conditions of Portland’s single-family residential building stock for policy makers and the local energy efficiency sector.

Though home energy labeling is designed to protect the consumer, the data resulting from the requirement is also incredibly valuable to policy makers and providers of energy efficiency programs and private-sector services. To date, more than 20,000 unique homes in Portland have received Home Energy Scores. Prior to this, the best publicly available survey of home energy characteristics was the

Northwest Energy Efficiency Alliance's Regional Building Stock Assessment (RBSA), which includes data for only 110 single-family homes located in western Oregon.

This new higher level of granularity yields benefits for energy efficiency sector stakeholders at a level which was not possible only two and a half years ago. Known uses of the Portland HES data include:

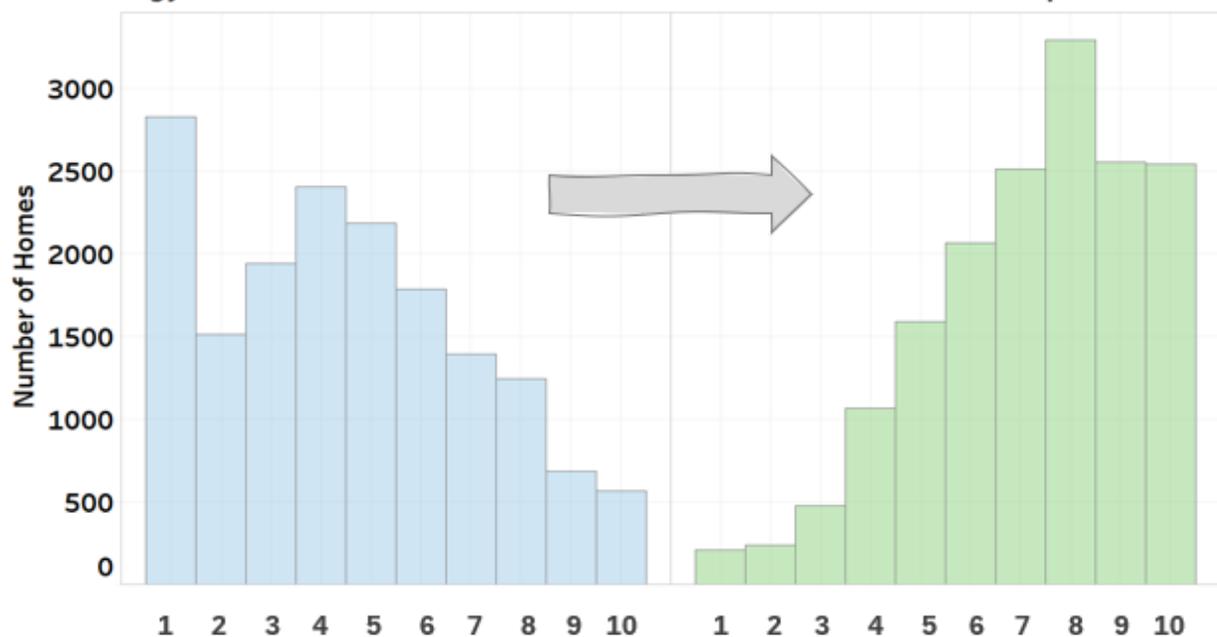
- Local nonprofit *Community Energy Project* is analyzing the relative energy cost impacts on low-income households as compared to the general market. CEP will use HES data to support the advancement of energy efficiency and community benefits in program design for low-income households.
- *Energy Trust of Oregon* is using this data to inform how residential incentives are designed, to target marketing to customers that aligns with the specific technologies their home needs and to support its efforts in addressing communities previously underserved by its programs and incentives.
- HES data will be accessed by *Portland Clean Energy Community Benefits Fund (PCEF)* staff, grant committee and proposing organizations to provide insights into specific energy efficiency opportunities and funding proposal designs.
- *Portland General Electric* is using HES data to help locate customers in its North Portland Demand Response Test Bed who could benefit from smart thermostat, heat pump water heater and HVAC equipment installation.
- *BPS staff* use the HES data set to understand and monitor energy and carbon reduction opportunities in Portland's residential building stock. The data provides real-time visibility into progress on residential decarbonization goals.
- *Academic researchers and national labs* are examining HES data to uncover specific retrofit opportunities and geographic density of retrofit needs in Portland as well as beginning preliminary research to monitor whether Home Energy Scores will impact sale prices and property valuation within the local housing market.

4. Early analysis of Home Energy Score data in 2018 and 2019 demonstrate and reinforce opportunities for home energy upgrades and carbon reductions.

Looking at the first two years of program implementation, 16,212 homes, or more than 10 percent of Portland's single-family homes, received a Home Energy Score and Report. These homes score across the 10-point scale and illustrate significant opportunities for improvements in lower scoring homes that could yield substantial carbon savings. As the chart below shows, homes scoring a "1" are the biggest portion of scores, which means there is still a lot of room for improvement.

The Home Energy Report provides a customized roadmap with recommendations for how to make each home more efficient. These recommendations are categorized according to whether they fall within a 10-year payback window or not. This means that if the improvement is made the investment costs are recouped within 10 years by the reduction in ongoing operating costs. If all homes scored through the end of 2019 completed only the recommendations in their Home Energy Report which offer a 10-year or shorter payback window, it would yield a carbon savings of 22,017 metric tons, which is equivalent to the amount it would take to power 2,541 homes each year.

Home Energy Score Base Scores vs. Potential Scores with Recommended Improvements



The figure above shows the distribution of Home Energy Scores generated for homes in Portland through the end of 2019 compared to the distribution of scores that could be achieved if each of these homes completed the priority recommendations on their Home Energy Report.

In general, heating and cooling system efficiency throughout Portland is low due to decades of only incremental building code increases, which have left significant energy and costs savings opportunities on the table. Homes built prior to building energy codes have little to no insulation, particularly in walls. Hundreds of homes still have outdated and inefficient heating technology such as oil and electric resistance heating. Many of these same homes are also in need of building envelope upgrades and the combination of these measures could yield substantial savings both in carbon emissions and operating costs for their occupants.

The most commonly recommended home energy improvements for homes in Portland include:

- Professionally seal gaps and cracks that allow air leakage into the home
- Professionally seal ducts to reduce airflow leakage
- Upgrade water heater to a heat pump and/or choose one with an Energy Star label
- Upgrade to a higher efficiency heating system and/or to a heat pump
- Insulate exterior walls, attic, basement and crawlspaces

Recent homebuyer survey results indicate that the **two leading barriers to making these improvements are paying the up-front costs to complete the project and not wanting to take on additional debt to complete these projects.** The City relies on other entities, primarily the Energy Trust of Oregon, to deliver incentives that encourage home energy upgrades. Several Energy Trust incentives align with recommendations on a Home Energy Report. BPS is collaborating with Energy Trust to develop a multi-channel marketing campaign that connects Home Energy Report recommendations with existing incentives. The campaign was scheduled to launch during the second quarter of 2020, but it is currently on hold due to the global pandemic. In developing this campaign, BPS and Energy Trust explored how to target low-income households with specific incentive offers.

Recommendations for Ongoing Review:

- Monitor program data to observe trends in scores. As homes are retrofitted for energy efficiency, they will eventually require a new assessment, which should result in upward trends as these homes receive higher scores. Retrofits prior to listing should also result in generally higher scores within the broader dataset.
- Continue working with Energy Trust of Oregon to monitor the extent to which retrofit activity is occurring, by measuring the uptake of ETO’s energy efficiency incentives associated with those homes that have received a Home Energy Score.
- Work with academic researchers and other analysts to establish baselines and monitor shifts in market valuation for home energy efficiency features within the local real-estate market.

5. Compliance with Home Energy Score has met staff expectations but needs to increase to maximize program effectiveness.

At the outset of the program in 2018, BPS staff made the decision to allow the market time to adjust to the new requirement and focused on homeowner, assessor and realtor outreach and education to boost compliance, rather than issuing penalties. Staff established an internal goal of 50 percent compliance without any enforcement. That goal was met.

While we chose not to enforce HES using the full penalties allowed by the code, staff began monitoring compliance at program launch by reviewing publicly available online listings on a weekly basis. Homes that were observed to be out of compliance received a warning notice. BPS staff also sent listing agents a courtesy notification as well, if an email address was available. Both notifications provided instructions on how to get a Home Energy Assessment and upload the Score and Report to RMLS.

In 2019, BPS staff increasingly received feedback from program partners and listing agents that compliance would only improve from its current rate with additional enforcement. In July of 2019, BPS staff updated warning notices to reference the penalty for noncompliance and began issuing fine notices to home sellers who did not respond within 90 days of receiving a warning notice. Compliance began to trend upwards in late 2019, likely as a result of this change.

Year	2018	2019
New listings*	13,761	13,282
Compliance checks	1,301	1,284
% compliant at first check	52%	60%

**estimated to exclude new listings that are not subject to the ordinance*

Corrective action is almost always taken once a seller receives a compliance notification. In 2018, 82 percent of home sellers that received a notification subsequently brought their property into compliance and, in 2019, that figure rose to 92 percent.

Considering impact and burden to vulnerable communities. Prior to issuing violation notices that included a fine, BPS staff evaluated whether enforcement could disproportionately impact vulnerable communities. The analysis consisted of three key questions:

1. Does noncompliance occur at a disproportionate rate amongst homes with a lower price point?
2. Does noncompliance occur disproportionately within certain geographic areas?

3. Does noncompliance occur disproportionately within communities identified as vulnerable? For this analysis, staff used BPS’s existing Vulnerability Index, which measures the concentration of people most at risk of displacement: communities of color, low-income households, educational attainment (adults without a four-year degree), and renter households.

These questions were analyzed by an internal data analyst using both 2018 and 2019 program data. None of these analyses showed a relationship between noncompliance and geography, listing price or the Vulnerability Index, however BPS continues to run and monitor these analyses on an annual basis.

Increasing compliance with Home Energy Score requirements is critically important because it supports the ability of the consumer to easily compare amongst many available options. The Home Energy Report can be a valuable planning tool for a new homeowner and it accelerates the effect transparency has on the marketplace.

Currently, HES enforcement is on hold due to the COVID-19 pandemic. BPS continually monitors the public health situation and will be making decisions about if and when to re-institute enforcement in alignment with overall City, County and State leadership mandates and directives.

Recommendations for Ongoing Review:

- Monitor and improve rate of compliance with Home Energy Score requirements.
- Repeat annual evaluation of program data to ensure enforcement activities are not disproportionately impacting vulnerable communities.
- Consider expanding low-income definition to 80 percent Area Median Income (AMI), to capture more of the upper end of low-income homeowners.
- Consider reducing the amount of time a home seller has to respond to a warning notice for non-compliance to 30 days. Because homes are more commonly on the market for 20 to 60 days, this can make it challenging to complete swift follow-up with home sellers who do not follow the requirements.

6. The Scores produced by authorized Home Energy Assessors using the U.S. Department of Energy’s Home Energy Score tool largely are accurate. Over time, program staff have developed new adaptive approaches to minimize inaccurate scoring.

The City uses the U.S. Department of Energy’s Home Energy Score as the official scoring tool for the policy under a partnership agreement with U.S. DOE. It requires the City to re-score a minimum of five percent of all home scores per quarter to ensure consistent scoring practices. BPS designated local nonprofit, Earth Advantage, to conduct quality assurance (QA) re-scoring on its behalf. Earth Advantage performs QA checks on randomly selected assessors and prioritizes reviews of newer assessors and those with any recent QA issues. Earth Advantage’s trained staff completes an on-site assessment alongside an Assessor. If the resulting Scores differ by more than one point, the Assessor fails the QA check and the official Score is corrected. QA results through the end of 2019 are shown below.

Year	2018	2019
Total Number of Home Energy Scores	8,708	7,528
Number of QA field assessments	442	398
% of total	5.1%	5.3%
Number of Scores passing QA	393	352
% of total	88.9%	88.4%

BPS and Earth Advantage have adaptively developed additional QA measures over the past two and half years to promote scoring integrity and consumer confidence in the scoring system. These included flagging data outside of normal ranges of expected values, developing a scoring dispute resolution pathway and creating alerts to prevent duplicate scoring on the same home.

7. Home Energy Score is operating optimally as designed, however this policy alone cannot deliver the carbon reductions Portland will need to face the rapidly accelerating threats of climate change.

According to its original design, Home Energy Score is well on a pathway to operate successfully and deliver market-based benefits down the road. However, a lot has changed in the short time since this ordinance was passed in 2016. The rapidly accelerating threat of climate change and the need to take bold action has only grown more dire. Just a few months ago, the City declared a climate emergency, amending previous carbon emissions reduction goals to target at least 50 percent reduction in carbon emissions by 2030 – only 10 years away.

In order to achieve deep decarbonization in Portland’s buildings we must use every tool at our disposal to address the whole of Portland’s built environment and accelerate reducing fossil-fuel consumption. We know that energy efficiency is still one of the most cost-effective decarbonization strategies and it also delivers a host of co-benefits related to health, resilience, reducing operating costs and job creation.

The declaration also rightfully prioritizes action, benefits and protections for Black, Indigenous and people of color (BIPOC) communities, renters and low-income residents. The existing Home Energy Score ordinance provides consumer protection and transparency only to homebuyers. However, the Home Energy Score tool could be similarly applied to single-family home time-of-lease transactions to help ensure the City’s most vulnerable residents can also benefit from transparent information about energy operating costs. Other jurisdictions are already exploring the use of the tool for this purpose.

Subsequent to the passage of the Home Energy Score ordinance, Portland voters approved the community-led initiative to create the Portland Clean Energy Community Benefits Fund (PCEF). PCEF will collect and disburse up to \$61 million annually for clean energy, job training programs and green infrastructure projects that prioritize communities living on the frontlines of climate change. The Home Energy Score tool can potentially serve as a consistent, dependable system for documenting carbon reduction resulting from PCEF-funded home energy upgrades. It allows for two types of scores that can be completed before and after retrofits to document the existing condition and improved condition of the home.

Next Steps

Based on the City of Portland’s early success with Home Energy Score, the City of Milwaukie adopted its own ordinance in January 2020, which subsequently went into effect October 1. The ordinance is almost entirely modeled after Portland’s and also uses the U.S. DOE’s Home Energy Score tool. Other Oregon cities are in varying stages of considering or developing similar policy including Hillsboro, Beaverton, Eugene, Corvallis, Ashland, Bend and Hood River. Broader policy adoption will likely lead to greater consumer awareness, more influence within the regional real-estate market and achieving greater economies of scale to support retrofit funding, financing and incentives.

To create more capacity to take the next steps in the effort to reduce carbon emission from buildings in Portland, BPS is working with implementation partner, Earth Advantage, to take on some tasks that support compliance. BPS suspended enforcement of Home Energy Score in March 2020 due to the global pandemic, but is targeting to resume enforcement again in January 2021, depending on a number of public health indicators.

In line with community priorities, BPS will be re-aligning staff resources to address racial justice and carbon emissions from the built environment through the development of building performance standards for residential rental housing and commercial buildings. Commercial buildings larger than 20,000 square feet are the largest source of greenhouse gas emissions from the built environment in Portland. BPS expects to take next steps in advancing building sector policy for single-family homes after these segments have been addressed.