

Learning the Score: Lessons from Developing and Deploying the Nation's First Mandatory Home Energy Score Policies

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ABSTRACT

The cities of Berkeley, California and Portland, Oregon are both implementing programs that require Home Energy Scores be provided as part of residential real estate transactions. Both cities mandate the disclosure of the Home Energy Score and an associated home energy report to inform buying, lending, and home improvement decisions. As a result, energy efficiency is becoming a much more visible part of thousands of annual real estate transactions. While both cities launched the mandatory Home Energy Score initiatives to achieve policy goals tied to their respective climate action plans, the scoring policies themselves and the resulting programmatic structure have some notable differences. This paper explores the steps each city took in policy development, how each city selected the specific regulations best suited for the realities of their jurisdiction, the varying outcomes that resulted from program design choices, and early lessons learned from each city's program implementation experience.

Introduction

Two cities—Berkeley, California and Portland, Oregon—are the first United States jurisdictions to have successfully approved policies requiring the disclosure of Home Energy Scores as part of almost any residential real estate transaction. Purchasers of residential real estate in both of these cities will receive consistent and verifiable energy-related metrics that can be used to inform buying, lending, and home improvement decisions. As a result, energy efficiency is becoming a more visible part of thousands of annual real estate transactions. Scores, labels and ratings are a regular part of how societies communicate information. We consult miles-per-gallon ratings on cars, nutrition labels on food, and EnergyGuide labels on appliances to make informed consumer decisions. However, consumer energy labeling for homes is inconsistent and unavailable in most real estate markets. For example, of Portland's 160,000 single-family homes, it is estimated that less than 5 percent have received an energy score via an in-home assessment, and a significantly lower percentage conveyed that information to prospective buyers during a real estate transaction¹.

Both cities implemented mandatory Home Energy Score initiatives to achieve policy goals tied to their respective climate action plans. The cities determined they could not achieve their respective climate goals to reduce carbon emissions unless there was a significant acceleration in energy efficiency and renewable energy activity in the residential sector. Residential buildings contribute nearly half of the emissions from buildings in both Portland and Berkeley. Each of the cities also see local government as a critical actor in making it easier for

¹ A vast majority of energy scoring activity in Portland was conducted through Energy Trust of Oregon's delivery of Energy Performance Scores (EPS™) for both existing and new homes.

citizens to save energy, protect against future rising energy prices and reduce carbon pollution. Requiring home energy scores was one of the policy tools these cities had available to them in support of carbon reduction goals. Based on prior local program experiences, both cities deemed home energy scores an effective means of conveying helpful information to buyers and sellers of homes, as well as to other real estate industry participants like appraisers and lenders².

While both cities engaged in similar stakeholder engagement strategies during policy development and decided to use the US Department of Energy (DOE) Home Energy Score (HES) as the underlying scoring tool, their programmatic structures have some notable differences, including; 1) scoring information is conveyed at different points in the real estate transaction 2) different information and data points are provided in the Home Energy Score reports 3) data connections to the local Multiple Listing Services (MLS) differ significantly 4) strategies to encourage retrofit activity following the issuance of the score are structured differently. These different policy development approaches and deployment strategies can inform planning efforts by other jurisdictions and provide guidance on how the market responds to the availability of this Home Energy Score information.

Policy Development

Berkeley has a unique policy background related to the intersection of residential energy programming and real estate transactions. Their 1980s-era Residential Energy Conservation Ordinance (RECO) required a minimum set of simple efficiency measures be installed at time-of-sale. When the Berkeley Climate Action Plan was passed in 2009, the city analyzed existing building policies and found that RECO was missing opportunities for deeper savings because it wasn't using a whole-building approach and didn't align with rate-payer funded incentive programs. As part of the Berkeley Climate Action Plan implementation, the Building Energy Savings Ordinance (BESO) was launched in late 2015 as a way to more effectively address existing buildings as a key emissions reduction strategy. BESO requires whole-home assessments and Home Energy Scores at time-of-sale. Homeowners must select from a list of registered energy assessors who meet minimum qualifications to get their homes assessed. Berkeley allows a time-of-sale deferral, allowing responsibility of the assessment to be transferred to the buyer for a fee. The deferral allows the buyer 12 months to complete the assessment, with the goal of engaging new homeowners who are the most likely to undertake an upgrade. Berkeley has approximately 21,000 single family homes that may be subject to the ordinance requirements, with 800-1100 sales occurring annually. New homes and some condominiums are exempt from the policy requirements.

In Oregon, energy scoring has a relatively long history providing the City of Portland with a strong foundation to develop a mandatory policy. In 2008, Energy Trust of Oregon began researching and testing an energy scoring system that was later introduced into the market, called the Energy Performance Score (EPSTM). In 2009, the Oregon Legislature established a voluntary framework for home energy scoring. Additional legislation in 2015³ created licensing and training for certified professionals who can assess homes and produce scores. However, as of

²The Money for Energy Efficiency (ME2) program previously run by the City of Berkeley was a helpful foundation for the city's Home Energy Score policy, providing examples of using whole-home assessments to encourage whole-home upgrades. The City of Portland referenced their prior experience developing Clean Energy Works, which integrated energy scores into the delivery of whole-home retrofits.

³ Oregon HB 2801

2016, most homes in Portland did not have energy scores. This prompted city staff to re-engage with the city council to propose a mandatory home energy score policy, which had been a planned action in the city's Climate Action Plan since 2009.

The City of Portland developed their policy to require sellers of single-family homes to obtain and disclose a Home Energy Score and report prior to listing the home for sale. The policy impacts the approximately 10,000-14,000 single family homes listed for sale each year. The Home Energy Score and report is required to be disclosed to the public through real estate websites, such as the Regional Multiple Listing Service (RMLS™), which serves the Portland metropolitan area. Sellers must also make the Home Energy Score and report available to any prospective buyer who comes to the home. This can be accomplished either by having a supply of printed reports available in the home or by posting information in a label format inside the home. Portland's requirement applies to all single-family homes, including existing and new detached and attached single-family homes⁴. In contrast to Berkeley's time-of-sale disclosure with post-close deferral option, Portland determined that a time-of-listing requirement met their policy goals most effectively. The time-of-listing requirement ensures that sellers are always responsible for acquiring the score before placing their home for sale and that home buyers are provided the Home Energy Score and report as they are comparing homes for purchase. This earlier timing allows prospective buyers to see the potential costs they will incur and potential investments that they could make to the home. The time-of-listing requirement also offers buyers the opportunity to consider mortgage products tailored to spur investment in energy-efficiency upgrades⁵.

Stakeholder Engagement

Berkeley: Berkeley did extensive outreach to a wide variety of groups, including REALTOR® associations, title companies, property owner associations, community groups, regional sustainability partners, and various related city commissions, in addition to several public workshops. The community-wide greenhouse gas inventory, completed each year since the passing of Berkeley's Climate Action Plan, clearly indicated that emissions reductions from existing building requirements needed to be accelerated in order to reach the ambitious goals voted for by the community. A recommendation from the city's Energy Commission to update the existing RECO ordinance helped framed the outreach to the community as a discussion of design options for an updated efficiency requirement, rather than a discussion of the need for a completely new requirement.

The community identified three key criteria for the updated requirement; that it must be easy, valuable, and affordable. The city weighed each policy option against these criteria prior to gaining community feedback. This process also helped the city design specific deferrals and exemptions into the policy so that the energy assessment was required only in instances when it met all three criteria. Exemptions are provided for homes that have already completed whole-home upgrades, are highly efficient already, or have participated in an income-qualified upgrade program. A technical advisory group was convened by the city and included technical field experts from third-party energy-efficiency program providers, partners at Lawrence Berkeley National Laboratory, and community experts. The city established an iterative process using data-driven analysis from the advisory group that also incorporated feedback from the

⁴ Attached structures must be side-by-side units, such as townhomes. Stacked units are not eligible.

⁵ Both Fannie Mae and FHA have developed lending products that reference the use of the Home Energy Score Report as a means of verifying improvement opportunities eligible for financing.

community. This iterative process eventually produced a proposed program framework, which moved the program from the prescriptive approach of RECO to a performance-based modeled energy savings approach. The advisory group also helped develop a program structure that contributed to the final ordinance and administrative regulations.

Berkeley's outreach experience to the real estate community was unique in that the city had RECO already in place, which was also a time-of-sale requirement. During the outreach for the ordinance, realtors brought up that the RECO requirements were outdated, cumbersome to complete at time-of-sale, and often cost prohibitive. From this feedback, a deferral was built into the ordinance that would allow the responsibility of the assessment to be transferred to the buyer for a fee and completed within 12 months of the sale. This alleviated the perceived pressure the real estate community felt on a time-of-sale requirement, especially given the short sale cycles that often occur in Berkeley. The option for home inspectors to be listed as registered assessors came from concerns voiced by this constituency group, hoping to provide a non-biased option not involved in contracting the upgrades themselves. The ordinance did initially include a mandate to phase-in of all Berkeley homes by a predetermined deadline, but this was ultimately scaled back by city council to only focus on a time-of-sale requirement.

Portland: City of Portland staff had one year to bring the policy before their city council. Staff knew that the politics of home energy scoring likely precluded a consensus among the affected stakeholders, which were identified as: real estate and lending industry, energy efficiency and home performance industry, new home builders (code-built and high-performance), climate advocates, low-income Portlanders, people and communities of color, tenant advocates, elders, and housing and homeownership advocates and agencies. Portland engaged a research, evaluation, and facilitation expert to help develop and execute the public engagement strategy during policy development. Staff and the consultant mapped out a strategy to gauge receptivity to the proposed policy and to determine what program approaches would resonate most clearly with Portland households and specific stakeholder groups. The three-pronged approach included professionally-run consumer focus groups; facilitated discussions with industry stakeholders; and a separate forum to focus on equity issues raised by the policy, given historic and ongoing racial/social justice issues embedded in Portland's residential real estate market.

Throughout the policy and program development processes, BPS staff consulted with an informal technical advisory group who assisted in formulating strategies for introducing the Home Energy Score policy to the real estate market. Many of the technical advisory group had been engaged for several years with energy scoring programs and with state-level energy scoring rulemaking. They were therefore able to assist city staff with the nuances of scoring systems and credentialing requirements for energy assessors, best practices for training home energy assessors, and technical considerations for achieving the policy goals of public disclosure of the Home Energy Score and linkage to the RMLS.

Both cities undertook several public meetings with specific stakeholder audiences. Of particular importance in the development of any policy that impacts a real estate transaction is the real estate industry, specifically the local and/or state real estate association. Throughout the policy development process, city staff in both Portland and Berkeley recognized the firm opposition that the local real estate associations had toward any requirements affecting real estate association members or that might be perceived to negatively impact a real estate transaction. Both local real estate associations questioned whether providing energy information to home buyers would actually result in energy efficiency improvements. These associations also feared

that a lower score would inhibit the sale of less efficient homes. In Portland, the Portland Metropolitan Association of Realtors® (PMAR) also expressed considerable concern that an inadequate number of professionally trained energy assessors would greatly delay the ability for a seller to list a home for sale. City of Portland staff provided several opportunities for the real estate industry to weigh in on both the intent and the structure of the policy. Following the passage of the ordinance, PMAR provided a number of timely, detailed recommendations for how the implementation of the policy could be improved for their members. Stakeholder meetings focused on an equity group which represented affordable housing and elder care advocates and environmental justice organizations. A significant focus of these meetings was to address the cost incurred to low-income sellers under the policy and how that cost could be addressed through a city-developed fund. Through this fund, home sellers at or below 60% of median household income are eligible for free Home Energy Scores and can apply for assistance through the city of Portland. The city then schedules with a pre-selected assessment company to provide this service.

Program Development

Program Structure

Berkeley works with the regional Home Energy Score Partner, StopWaste, and their implementation contractor, Frontier Energy. Berkeley is the only San Francisco Bay Area municipality with a mandatory Home Energy Score policy, therefore a majority of the Bay Area Home Energy Scores administered by StopWaste are generated in Berkeley.

City of Berkeley - Local Coordination	StopWaste - DOE HES Partner
Leadership and oversight of policy development, program development and rulemaking	Home energy assessor recruitment, onboarding, and training
Local communications and messaging	Quality assurance of home energy assessors
Compliance and enforcement	Manage scoring data
Maintenance of local list of registered assessors	Design local Home Energy Score report

Portland has a constellation of private firms, nonprofits and mission-driven organizations that are involved and invested in the residential energy scoring. This existing local industry vocally advocated for the new policy to city council. An active association of home performance contractors developed an advocacy campaign centered around a message of Portlanders “Right to Know”. After the Portland city council passed the ordinance, this community of energy efficiency professionals provided the program with the ability to move quickly to develop program processes, technology systems, a deep pool of qualified assessors, and a robust and competitive home energy scoring market. After investigating several possibilities for filling the official US Department of Energy (DOE) Home Energy Score Partner role, stakeholders came to a consensus that a public-sector organization like the City of Portland, specifically the Bureau of Planning and Sustainability (BPS), which had led the policy and program development

processes, would be the most effective Partner. BPS began working with Earth Advantage® to provide technical support and many of the required HES Partner functions.

City of Portland - USDOE HES Partner	Earth Advantage - Program Implementer
Leadership and oversight of policy development, program development and rulemaking	Home energy assessor recruitment, onboarding, training, and maintenance of authorized assessors
Communications and messaging - Portland Home Energy Report design, program branding, public relations strategy, advertising	Quality assurance of home energy assessors – via in-field QA and automated review of assessor’s data inputs through Green Building Registry™
General program inquiries	Green Building Registry - publicly accessible database, localized Home Energy Report generator, direct conduit to MLS
Compliance and enforcement	Real estate industry outreach and training

Integration with Utility Programs

In Berkeley, BESO is structured to encourage participation in incentive programs available in the region—predominantly Energy Upgrade California (EUC). EUC is a home upgrade program that adopts a whole-house approach to improve the overall energy efficiency, comfort and health of the home. Homeowners work with a registered contractor who does the assessment and homeowners receive recommended improvements that are also often eligible for incentive payments. If evidence of enrollment in the completion of the program is provided, an advanced EUC assessment is accepted in lieu of the Home Energy Score, and the filing fee is waived. While this utility program connection is extremely beneficial, the city has encountered some barriers to tracking data on potential upgrades that were prompted by the Home Energy Score program activity.

Unlike the San Francisco Bay Area Home Energy Score infrastructure, Portland does not receive direct utility funding to manage its Home Energy Score program. Despite being less formally integrated into utility infrastructure and funding, Portland did collaborate with Energy Trust of Oregon program staff to ensure that “call-to-action” messaging on the customized City of Portland Home Energy Score report directed home sellers and buyers to utility program offerings. One key area in which utility program funding is supporting the City of Portland Home Energy Score program is through outreach, messaging, and training of the real estate industry. Energy Trust of Oregon recognized that real estate professionals were an effective market channel to reach home sellers and home buyers who will be considering the energy-efficiency recommendations represented on the home energy report.

Customized Home Energy Score Reports

When Home Energy Scores were first piloted in the San Francisco Bay Area, it became clear that the HES recommendations were not appropriate to the East Bay’s mild climate due to its payback period calculations. For example, the HES tool would recommend replacing a home’s furnace before suggesting insulation or air sealing, a more effective solution for most Berkeley homes. The City of Berkeley, in collaboration with StopWaste and their technical

consultant Frontier Energy, designed a custom recommendations sheet to be accompanied with all Home Energy Scores completed in the Bay Area. This sheet allowed assessors to choose their own recommendations, following the Home Energy Score training and quality assurance requirements. An added benefit was the ability to list additional notes, including health and safety concerns. This sheet was replaced by a custom report similar to the City of Portland's at the beginning of 2018, which continues to reflect the assessor's custom recommendations. This was made possible by the creation of a dashboard interface between Frontier Energy and the assessors to make the process of submitting custom recommendations and corrections to the reports more streamlined and instantaneous. In addition, the custom report reflects local utility rates and emissions factors as well.

To meet state regulations and local policy objectives, Portland designed and developed a localized City of Portland Home Energy Score report that condensed HES information into a readable 2-page format. The City of Portland Home Energy Score report includes the following information: 1) A score and an explanation of the score. 2) An estimate of the total annual energy used in the home, by fuel type. 3) An estimate of the total monthly or annual cost of energy purchased for use in the home, in dollars, by fuel type. 4) The current average annual utility retail energy price, by fuel type. Unlike standard HES reports, Portland utilizes local utility rates in the energy cost savings figures and local, utility-specific emissions factors for the carbon footprint information. The Portland report includes customized descriptions of some of the HES-generated energy-efficiency measure improvement recommendations to match local utility program offerings and energy code requirements. The report also includes a localized "call-to-action" message to make it easier for users to take next steps. A City of Portland Home Energy Score is valid for eight years after issue, provided that no home upgrades occur that change the mechanical systems, energy efficiency, or the square footage of the home. However, if the report is to be used again in a new real estate listing after two years from the initial assessment date, a new report must be reissued so that current energy rates and carbon emissions can be used in calculating the home's updated estimated energy costs and carbon footprint. Reissuing a City of Portland Home Energy Score report does not require a new in-home assessment. The homeowner can go to the program's Green Building Registry page to search their address and download a new report. The program's Green Building Registry auto-generates updated reports with the most recent utility and carbon emissions information.

Assessor Recruitment and Training⁶

Berkeley was able to leverage the StopWaste-DOE partnership to assist in creating a pool of assessors that met the requirements identified by the ordinance and who had completed the required DOE training for the Home Energy Score tool. Fortuitously, money was also granted to Berkeley by PG&E for being a semi-finalist in the Georgetown University Energy Prize. This funding was able to go toward a \$200 rebate for 75 homes applying for early compliance at the beginning of the ordinance. This funding also helped offset costs of building a pool of assessors and growing their familiarity with the programmatic requirements and tools. Berkeley relied on StopWaste as the HES Partner to provide official training and to authorize the assessors to offer the Home Energy Score.

The potential lack of qualified home energy assessors was a significant concern for the real estate industry in Portland. To address this concern, Portland relied on an analysis from Energy Trust of Oregon that determined that on average 30 full-time assessors would be needed

⁶ Both [Berkeley](#) and [Portland](#) maintain a list of authorized home energy assessors.

to meet the market demand under scenarios in which there was 100% market compliance with the ordinance requirements. Assessor recruitment emphasized the new business opportunity that the policy offered, especially for existing energy assessors, home performance contractors, and home inspectors. The program reached out to other potential market allies as well, including to construction-related training and apprenticeship programs. The program developed a 7-step process that guided prospective assessors through the training and credentialing process. 73 assessors were authorized to provide the City of Portland Home Energy Score by the time the program launched, with another 62 assessors subsequently becoming authorized in early 2018. Because of this successful recruitment and onboarding process, the program was able to dispel local real estate industry concerns that the Home Energy Score requirement would cause inconvenient delays for sellers.

Both the Berkeley and Portland programs offered technical support to prospective assessors on the DOE-developed Home Energy Score Simulation (SIM) training. The DOE-required SIM training and test had proven a challenging step in voluntary Home Energy Score programs in other regions, with a high percentage of prospective assessors finding the technology difficult to use. Both city programs offered a guided three-day SIM “bootcamp” to prospective assessors, in addition to on-call technical support. The program’s training and on-call technical support helped to expedite the onboarding of assessors.

Quality Assurance

In Berkeley, StopWaste and their implementation partner Frontier Energy provides Berkeley with Quality Assurance (QA) oversight as part of their Bay Area Partner role. In this capacity, StopWaste reviews every submitted report and shadows assessors on 5% of home visits. This protocol is used to assure that assessors are using the Home Energy Score tool as accurately and thoroughly as possible and that the upgrade recommendations in the Home Energy Report are in the appropriate loading order.

Portland also conducts the required 5% field QA. This is accomplished by the QA team co-scoring a home along with the selected assessor. If a home seller disputes the results of the assessment, the QA staff first reviews the assessment to determine if a field visit is warranted. If a field visit is made, the assessment generated by the QA team becomes the score of record for that home. In addition, Earth Advantage developed a data validation protocol within the Green Building Registry to help ensure that scoring is conducted in a consistent manner across all authorized home energy assessors. The data validation logic in Green Building Registry automatically identifies any potential data input anomalies and communicates those potential inconsistencies to the home energy assessor. Depending on the type of data input anomaly, the assessor then receives a message that either recommends or requires them to review their data entry and make necessary adjustments. Additionally, Portland’s QA team conducts aggregate data reviews to identify assessors who appear to regularly generate results that differ from average program results. The assessors are then contacted to discuss their understanding of technical building science issues and potential irregularities.

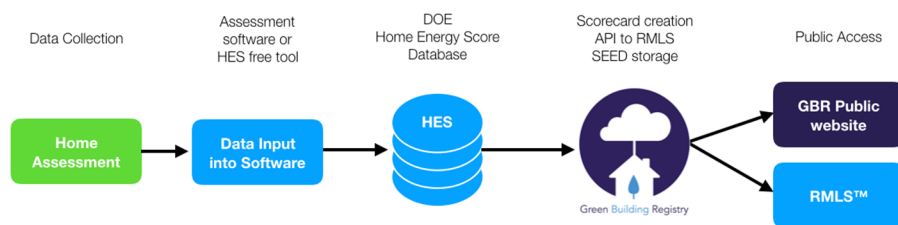
Program Implementation

Data Flow

The San Francisco Bay Area-DOE partnership recently launched a Home Energy Score dashboard that manages initial data submissions from energy assessors directly from the DOE’s

Home Energy Score (HES) platform. The platform supports clarifications and corrections to an assessment and confirms when the data has been approved for an official score. It also allows assessors to input custom recommendations from a list that aligns with the regional Energy Upgrade California rebate programs, as the recommendations automatically generated by the HES tool were not aligning with Berkeley’s mild climate. The dashboard then allows the assessor to access a complete HES Report to submit to the homeowner and the city, as well as a custom report, similar to the one developed for Portland, that incorporates local data such as rates and emission factors. Once the City of Berkeley has received the energy report from the registered assessor, along with an application and filing fee from homeowner, a compliance form is generated and sent back to the applicant to be included in closing documents and shared with any potential or current tenants or buyers. The ordinance also allows for public disclosure of the Home Energy Score information, which in the future will be sent to the multiple listing services in the region and displayed on a property status list on the city’s website, alongside current compliance status. Home Energy Score data inputs and recommendations are tracked and stored in the DOE’s Standard Energy Efficiency Data Platform™ (SEED Platform), which will inform future policy supporting energy-efficiency improvements in Berkeley’s building stock.

Portland had two data-related goals when developing the program: 1) localize information as much as possible, using local utility rates and carbon emissions factors; and, 2) convey the Home Energy Score data directly to the real estate market. Portland uses Earth Advantage’s Green Building Registry™ to fulfill these objectives. The Green Building Registry meets these program goals by providing four primary functions: 1) a tool to translate Home Energy Score data into a custom-designed City of Portland report that uses local utility rates, carbon emission factors, and call-to-action messaging; 2) a portal for assessors to generate those localized reports using the data entered into HES-approved tools and then deliver the localized reports in real-time to customers; 3) a searchable, publicly-accessible repository of Portland Home Energy Scores and reports; 4) a database hub that automatically communicates the home information to the local Multiple Listing Service (RMLS) so that the numerical Home Energy Score (1-10) and report URL link are populated in each home listing through one-click by the listing agent. The diagram below represents the data flow in Portland as information moves from the inputs made by the assessor to the eventual delivery of the score and Portland-specific report to the local MLS (RMLS) and then to real estate web portals⁷:



Real Estate Industry Engagement

Berkeley staff did outreach and presentations to real estate groups and title companies during early program implementation. Subsequently, the program has coordinated with the local association on a handful of events and takes inquiries through their BESO help desk. Program

⁷ Because the Portland Home Energy Score data is sent to the local MLS (RMLS) at time of listing, the score and related information is also subsequently automatically made available through RMLS to the public via real estate web portals such as Redfin, Trulia, etc.

staff provides one-on-one support to real estate professionals who have questions about program rules or available incentives and provide presentations to real estate offices upon request.

In Portland, Energy Trust of Oregon supports real estate training activity conducted by Earth Advantage. During the policy development and pre-implementation phase, these trainings were a key means to explain the new policy to the real estate industry. Earth Advantage conducted two early introductory webinars following the announcement of the policy that attracted several hundred real estate professionals. Program staff also recognized that Home Energy Assessors would naturally seek to make connections with the real estate industry in order to establish future business pipelines. To ensure that consistent, accurate information was conveyed by the Home Energy Assessors during their interactions and presentations with real estate professionals, the Portland program developed an introductory program presentation and established a list of approved real estate trainers who agreed to use the approved presentation. The local real estate association also disseminated FAQ's to their members. Local real estate professionals receive frequent program updates from Earth Advantage via e-blasts and webinars. Real estate professionals are also provided with informational tools, such as short videos on a variety of energy scoring topics, that can be shared with their buying and selling clients.

Program Exemptions

Berkeley's ordinance provides an exemption for homes that participate in the Energy Upgrade California program, a performance-based rebate program. This encourages homeowners to leverage available incentive funds, along with access to a network of participating contractors to complete an upgrade project. A deferral is also available for the completion of an extensive renovation completed outside the program if it included the replacement of all energy-related equipment *and* at least half the building envelope. The program also exempts homes that were certified by several third-party certification programs.

In Portland, home builders who build high-performance new homes that receive an Energy Trust of Oregon EPS can sign and submit a waiver request to the City of Portland Home Energy Score program attesting that the new construction home will be built to above-code standards. New home builders not participating in Energy Trust's above-code program are required to comply with all requirements of the City of Portland Home Energy Score program. Several housing types were not covered by the policy, such as: manufactured homes, multiple housing units that are vertically stacked, single-dwelling units used primarily for commercial purposes, etc. In addition, real estate and equity stakeholders helped Portland identify types of title transfers that are exempted from the policy. The city has the authority to waive the requirement in demonstrated cases of financial or other hardship and permanent exemptions for situations such as foreclosure sales, trustee's sales, and deed-in-lieu of foreclosure sales.

Program Funding

In Berkeley, internal funding by the city and homeowner filing fees are used to cover administrative costs associated with the ordinance. However, the StopWaste San Francisco Bay Area-DOE partnership is funded through energy efficiency rate-payer dollars. StopWaste and their implementer Frontier Energy Inc. provide program quality assurance and technical support throughout the region. The passing of a mandatory policy in Berkeley helped bolster support for creating and funding the San Francisco Bay Area-DOE partnership, which is now in effect as a voluntary offer in multiple jurisdictions across the region.

During the year of policy development, Portland devoted 1.4 FTE of existing staff to the Home Energy Score (60% of a program manager and 80% of a policy analyst). During the subsequent year of program development, BPS added some new staff capacity, bringing the FTE closer to 2. BPS expects to run the program on an ongoing basis with 2 FTE. BPS spent approximately \$60,000 on outside contracts during policy and program development and expects this level of investment will continue. BPS is using bureau resources to fund policy compliance for low-income home sellers for calendar year 2018. Beyond some initial start-up grant funds provided by the City of Portland and Energy Trust of Oregon, a majority of Earth Advantage's costs are recouped through a market-driven fee of \$25 per score.

Compliance and Enforcement

Berkeley has a 5-step enforcement process that includes warnings and fines. City staff analyze monthly sales data provided to the City by the County, to cross-reference compliance and identify non-compliant sales. The internal database also manages partial compliance and expired deferrals that may become non-compliant as well. Letter campaigns, when completed on a consistent, monthly basis, can be very successful, approaching an almost 95% compliance rate.

Portland's policy states that non-compliance could result in a written warning followed by the issuance of a civil penalty of up to \$500 after 90 days of non-compliance. City staff regularly review listings for non-compliance and began issuing warning letters shortly after the program launch date. Enforcement is a key to long-term program success, but Portland is taking a measured approach to early enforcement. The city has chosen to focus more on engagement and education in the first year. Portland staff are documenting compliance rates and will request that city council provide the authority to levy fines sooner than 90 days, if necessary. Issuing warning letters for listings without scores has been effective, with early compliance rates starting at approximately 55% but having improved each month since program launch. The program is on target to meet or exceed approximately 80% compliance by the end of the first year.

Quantifying Results⁸

Berkeley has completed over 975 scores. Approximately 70% of buyers take advantage of the time-of-sale deferral to complete the assessment within a year⁹. 74% of homes received a 6 or below. To date, most common recommendations have included floor insulation, attic insulation and air sealing. Berkeley surveyed homeowners and found that 62% of residents found the HES easy to understand, and 35% found it motivational.

City of Portland Home Energy Scores were officially required on January 1, 2018. Scoring activity pre-dated that program launch date as home sellers prepared their homes for sale in late 2017. City of Portland Home Energy Scores began being issued in November 2017 and since that time 5,209 scores have been issued¹⁰. The average Portland score is currently a 4.5 and the average score if all cost-effective recommended improvements were undertaken is currently 7.2. 40% of homes have received an initial score of 3 or below and 50% of homes have the opportunity to cost-effectively improve to a score of 8 or above. Early program results have

⁸ As of May 2018

⁹ Title companies are integral to Berkeley's enforcement. BESO compliance is included in the list of legal requirements for all home sales and therefore technically a sale cannot close in escrow without complying.

¹⁰ Scoring activity as of June 18, 2018. Portland anticipates approximately 9000 scores will be issued in the first year of program activity.

already highlighted both geographic and technological opportunities for energy efficiency program interventions.

Lessons Learned

Both cities experienced some similar takeaways and lessons learned from policy development and early program implementation. Local governments should: 1) plan to engage with the real estate industry, know their pain points, be prepared to counter their criticisms, and know that they could expend significant resources to defeat this kind of policy; 2) plan to emphasize the benefits and address the potential burdens of the policy on low-income home sellers, elders, communities of color, and residents with limited English proficiency; 3) seek technical support and assistance from entities with experience with scoring system methodologies; 4) identify internal and external technical resources to manage the data flows prior to implementation.

Because the Berkeley and Portland Home Energy Score programs require action by real estate participants they receive scrutiny from the real estate industry, media, and general public. Quality assurance protocols become even more important in these types of programs, especially to ensure there is consistency in the scoring irrespective of the individual home energy assessor issuing the score. As a program is launching, new assessors should receive on-going technical support to help ensure they are inputting the home data using the same methodology and assumptions as other program assessors.

The differing time-of-listing versus time-of-sale structures provides unique opportunities and challenges for each program. In Berkeley, buyers of homes receiving a score of 6 or less are contacted directly through a Home Upgrade Advisor, an Energy Upgrade California service geared toward helping homeowners navigate the rebate programs and discuss their best options. This structure appears well-suited to spur upgrades, but the city has found it difficult to analyze the retrofit activity because of data access constraints. Berkeley is potentially considering restructuring their deferral and fee structure to encourage sellers to participate in the program with more frequency. This restructuring has the potential to motivate sellers to undertake upgrades themselves and for scores to be produced earlier in the real estate transaction. Berkeley's deferral and fee structure also requires considerable administrative oversight and the city has identified a need for a CRM system that automates payment receipt, compliance tracking, and would improve the effectiveness of customer follow up after each assessment.

While Portland sellers are acquiring and publicly disclosing the score in real estate listings at increasing rates, the city will be working in coordination with local partners, including utility programs run by Energy Trust of Oregon, to target-market energy efficiency improvement offers to buyers with related Home Energy Score improvement recommendations. A benefit to Portland's time-of-listing structure is that homebuyers can more easily identify and prioritize energy-related improvements and wrap those costs into their home loan prior to closing. For example, Fannie Mae's HomeStyle[®] Energy loan provides homebuyers with a means to finance energy improvements recommended on the Home Energy Report through their home loan. However, while a handful of local lenders have become aware of this product, they are not yet marketing this type of loan offer to Portland homebuyers. The city and partners are beginning to address this gap and believe that as the program matures more lenders will seize upon the opportunity of integrating the Home Energy Score into the promotion of their lending products.