

Mass Save® Innovates with Home MPG

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ABSTRACT

Massachusetts hosts a nationally recognized, statewide energy efficiency program called Mass Save®. To further catalyze the residential energy retrofit market, the Massachusetts Department of Energy Resources (DOER), along with utilities and their vendors, implemented an initiative called “Home MPG” in eight communities. Funded by a U.S. Department of Energy grant, Home MPG integrated several innovations into the Mass Save Home Energy Services program, including:

- An Energy Performance Score (EPS), similar to a car’s miles per gallon (MPG) rating;
- Thermal imaging analysis to highlight insulation opportunities;
- “Bonus” financial incentives for “deeper” efficiency and renewable thermal measures;
- Technical assistance to homeowners to facilitate HVAC/hot water system upgrades; and,
- Training for realtors and appraisers to build awareness and support for incorporating a home’s energy performance into the appraisal and home valuation process.

These innovations were designed to help lay the groundwork for a residential real estate market that appropriately values a home’s energy performance. Home MPG provided a “test-bed” for these, and other, innovations. This paper presents process, initial results, and lessons learned.

Executive Summary

Massachusetts hosts a nationally recognized, statewide energy efficiency program called Mass Save® which has contributed greatly to the state’s ACEEE designation as “most energy-efficient” for the past three years. To further catalyze the residential energy retrofit market, the Massachusetts Department of Energy Resources (DOER), along with utilities (Columbia Gas of Massachusetts, Western MA Electric Company, and National Grid), efficiency program providers (Conservation Services Group and Honeywell, Inc.), the Earth Advantage Institute, and other partners, implemented an initiative called “Home MPG”. Home MPG implementation began in late March/early April 2012, and ended on March 31, 2014.

Funded by a U.S. Department of Energy grant¹, Home MPG (adopting the terminology of the familiar “miles per gallon” rating system) integrated innovations into the existing Mass Save Home Energy Services program in eight Western Massachusetts communities: Belchertown, East Longmeadow, Hampden, Longmeadow, Monson, Palmer, Springfield, and Wilbraham. Innovations included:

¹ Home MPG was funded by a 2.6 million grant/cooperative agreement from the U.S. Department of Energy's Better Buildings Neighborhood Program.

- Providing an Energy Performance Score (EPS), similar to a car miles-per-gallon rating, via initial energy assessments and again after implementing efficiency improvements;
- Making thermal images and analysis, which highlights weatherization opportunities, available to homeowners prior to an energy assessment;
- “Bonus” financial incentives to motivate “deeper” efficiency improvements;
- Technical assistance to homeowners to facilitate HVAC/hot water system upgrades;
- Training for real estate brokers and appraisers to build awareness and support for incorporating a home’s energy performance into the appraisal and home valuation process.

An underlying premise of the Home MPG program design was that homeowners will be motivated to invest in efficiency improvements in their homes if they better understand their homes expected energy usage, and further if the real estate market appropriately values energy performance. Although achieving this latter long-term goal is beyond the time period of the Home MPG pilot, two of the innovations described above—the EPS scorecard, and training for the real estate industry—were designed to support such appropriate valuation.

The scorecard’s intent is to express “home energy performance” in a way that is transparent and that allows consumers and other residential real estate market actors (e.g., real estate brokers and appraisers) to make home-to-home comparisons. To do this, the scorecard presents two metrics: the home’s energy performance score, expressed as the expected total energy usage in one year (in units of MMBtu’s), and the home’s carbon footprint, expressed as tons of CO₂ emissions per year. The scorecard provides the home’s current energy performance score and carbon footprint, as well as what the score would be if recommended cost-effective efficiency upgrades were made (i.e., the home’s current state versus the potential it could readily achieve). The scorecard also provides the EPS and carbon footprint of an average home in the area as a motivational point of reference. Both the EPS and the carbon score are asset ratings; as such they are based on an energy model of the home’s physical characteristics such as the insulation level, and the type and rated efficiency of the HVAC/hot water equipment, fixtures, and appliances, rather than on occupant behavior as reported in utility bills.

Home MPG was launched in April 2012 and ran through March 2014. During that timeframe, the initiative provided 3,866 scorecards to homeowners via Mass Save home energy assessments, and over 1,600 home efficiency projects were completed (at the time of this writing) with an average energy savings of 20% per home² (for a total annual energy savings of 40,689 MMBTUs). Homeowners that implemented efficiency work received an updated scorecard showing the improvement in the home’s energy performance. Homeowner response to the scorecard has been favorable, and home energy specialists found it a promising tool in their efficiency improvement sales toolbox. Moreover, statewide demand for scorecards is growing—other Massachusetts communities have requested that Mass Save provide scorecards to their residents, and a pilot program involving scorecards is underway in the city of Worcester. Two Massachusetts efficiency program implementers, CSG and Honeywell, now have “energy performance scorecard capability” as part of their existing energy audit software.

To further support a residential real estate market that appropriately values home energy performance, Home MPG also provided training for residential real estate brokers and

² Average energy savings was calculated based on the average energy savings of Columbia Gas and WMECO customers that completed retrofit projects. In the future this calculation will be updated to include National Grid customers that completed retrofit projects.

appraisers. A total of 102 real estate brokers and 62 appraisers received training on the concept of home energy performance and how performance metrics can be integrated into the residential real estate sales and appraisal processes. Feedback from course attendees was very positive, there was great interest from the real estate community in receiving more training on energy performance, and future training via a Massachusetts-based broker education school and a Massachusetts appraiser organization is in the works. Home MPG provided a valuable testing ground for integrating innovations into Mass Save. Because Home MPG piloted several innovations, the retrofits and energy savings achievements cannot be definitively attributed to the EPS scorecard, or to any other single innovation piloted. Nonetheless, Home MPG was an important initial step towards a residential real estate market that appropriately values energy performance, and, looking to the future, Massachusetts is well positioned to continue leadership in this arena.

Background

Massachusetts has one of the most robust statewide energy efficiency programs in the country. The statewide program, called Mass Save[®], is administered by the state's investor-owned utilities and municipal aggregators, and covers the commercial, residential, and low income sectors. Through the 2013-2015 three-year efficiency investment plan, which lays out how Mass Save will be administered, the Commonwealth of Massachusetts will benefit from \$1.69 billion in utility sponsored electric program investments, and over \$554 million in natural gas program investments. These energy efficiency investments are expected to bring net benefits of approximately \$6.2 billion over the life of the installed measures. Financial savings are predicated on planned annual electric savings of over 3.7 million MWh, and annual natural gas savings of over 72 million therms. These policy, investment, and savings accomplishments have been recognized by ACEEE's 2011, 2012 & 2013 State Energy Efficiency Scorecards, which ranked Massachusetts #1 in energy efficiency for the past three years.

In 2010, to further catalyze "more and deeper" residential efficiency improvements, the Massachusetts Department of Energy Resources (DOER) partnered with three utilities (Columbia Gas of Massachusetts, National Grid, and Western MA Electric Company), their efficiency program vendors (Honeywell, Inc. and Conservation Services Group), the Earth Advantage Institute, and others, to integrate innovations into the Mass Save Home Energy Services Program through an initiative called "Home MPG" (adopting the terminology of the familiar "miles per gallon" rating system). More specifically, the Home MPG initiative sought to:

- Promote consumer awareness of home energy performance through the creation and distribution of home energy performance scores,
- Support a residential real estate market that appropriately values energy performance through education and training for residential real estate brokers and appraisers,
- Achieve "more and deeper" home energy efficiency projects.

The initiative was officially launched in April 2012 and ran through March 2014. Different program elements, which are described below, came online at different points during the pilot period, and significant improvements were made in the program deployment. Over the course of the pilot, Home MPG initiative partners were able to achieve the significant results

described in this paper and set the stage for the possible future use of residential home performance scores in the Commonwealth.

Home MPG Key Program Design Elements

Energy Performance Score (EPS)³

The home EPS provides consumers with an energy efficiency metric that facilitates home-to-home comparisons, just as car MPG ratings allow consumers to compare cars. An EPS is an “asset rating”—it is based on the home’s physical properties such as the insulation level, and the type and rated efficiency of the HVAC/hot water equipment, fixtures, and appliances, rather than on occupant behavior. The EPS is calculated through the use of a relatively simple home energy model either built into or connected to home energy audit software. The software uses inputs gathered during a home energy assessment to build a model that estimates a home’s expected energy use based on the characteristics of the home⁴ based on typical rather than actual occupant’s behavior.

Although consumers can adjust their behaviors to improve car MPG performance to some degree (via proper tire inflation, careful use of brakes and acceleration, tune-ups, etc.), to greatly improve one’s automobile MPG performance requires buying a new car. In contrast, home energy performance can be greatly improved with targeted investments in home efficiency upgrades. To that end, the scorecard presents the home’s energy performance with and without recommended efficiency improvements, along with the estimated energy savings associated with those improvements. This demonstrates to homeowners the potential for energy performance improvements expressed as an improved energy performance rating, as well as a short term estimate of cost savings.

The scorecard, shown in Figure 1 below, provides the home’s on-site annual energy use, expressed in MMBtus, as well as the home’s source-based carbon footprint, expressed as tons of CO₂ emissions. These metrics were chosen after a period of research⁵ and evaluation, including discussions with other countries with established home energy performance rating systems as well as research regarding how people understand and respond to numbers.⁶ The specific look of the scorecard was not mandated in MA; instead, CSG and Honeywell were required to meet certain criteria around information provided, similar to the design guidelines used by Energy Trust of Oregon. While the unit MMBtus is not broadly familiar, it is both highly transparent and durable over time. Equally important, the concept of total annual energy use is highly intuitive, and was preferred to a per-square foot metric on the basis that, *ceteris paribus*, larger homes are expected to use more energy and have a higher score. When presented in MMBTUs, the home’s annual energy use results in numbers between 50 and 200⁷. According to research, 2-3 digit numbers are most easily understood and processed. Moreover, the granularity of the MMBTU metric allows homeowners to see significant reductions in their score if they make efficiency

³ In addition to Massachusetts, three other states—Alabama, Virginia, and Washington—received DOE funding to pilot energy performance scores.

⁴ This data is gathered during a Mass Save home energy assessment or at the time that efficiency improvements are made, and may include data from blower door testing.

⁵ Massachusetts interviewed and met with experts from Austria, Australia, Denmark, Germany, Ireland, Portugal and the U.K. – all countries with established residential labeling programs, before developing proposed metrics.

⁶ This research was conducted by a Harvard mathematics intern.

⁷ This range covers almost all single family homes in New England.

upgrades, and many typical Massachusetts homes can move from above to below the psychologically important "100" threshold. High performance homes can also be compared to the "Net Zero" level on the scale. The carbon emissions score (i.e., annual tons of CO₂ emissions) represents "source energy" in a tangible way, and recognizes that different fuels (for heating and electricity) impact climate change differently. Although not as granular as the MMBtu site energy metric, the carbon score builds awareness of the home's impacts on climate change and illustrates an important non-energy benefit of energy efficiency (including the possibility of residential carbon savings becoming a valuable market commodity in the future.)

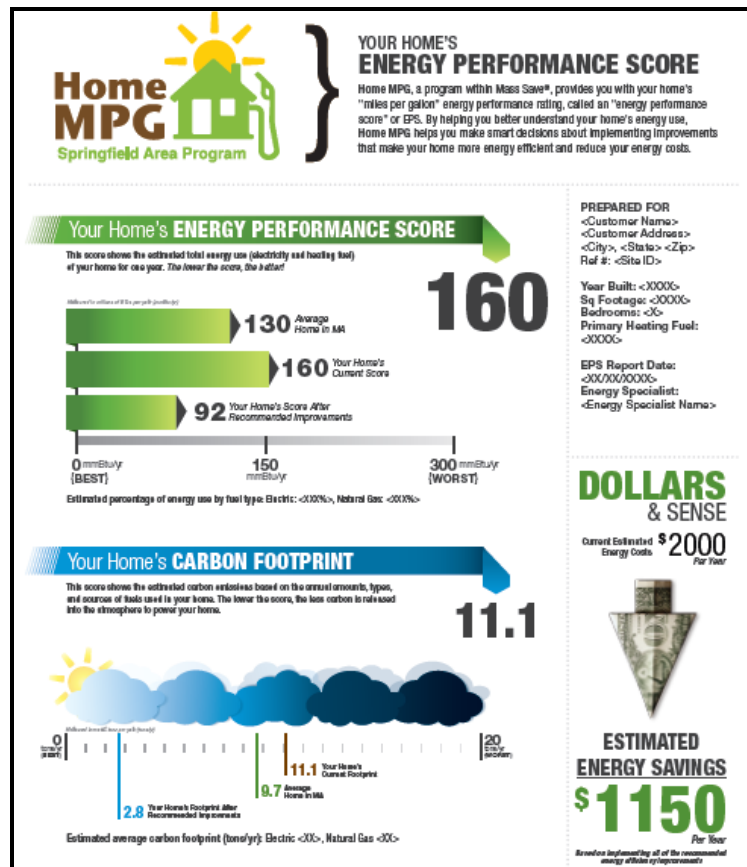


Figure 1. Example Home MPG energy performance score.

Homeowners received their initial scorecard in conjunction with a free Mass Save home energy assessment. If the homeowner performed any of the recommended efficiency work (i.e., air sealing, insulation improvements, or equipment upgrades) s/he received a second scorecard showing the home's new EPS and carbon footprint, providing direct feedback on the value of their efficiency investment. To accomplish this, the two Mass Save lead vendors delivering home energy assessment services in Home MPG communities, Conservation Services Group

(CSG) and Honeywell, Inc. (Honeywell)⁸, integrated energy performance scorecard capability into their home energy assessment software.⁹

The idea behind the scorecard is to make energy performance understandable to the homeowner and, longer term, to facilitate home-to-home comparisons in the real estate arena. The EPS can be incorporated into real estate listings like the MLS and, ultimately, create a market value for efficiency upgrades.

“Bonus” Incentives and Rebates

Home MPG provided Mass Save customers¹⁰ with “bonus” financial incentives and rebates for insulation and high efficiency HVAC and hot water system equipment. These rebates were a “bonus” on top of existing Mass Save rebates. The bonus rebates were designed to facilitate “deeper” energy and economic savings by mitigating more of the upfront cost of efficiency improvements – but only for the most efficient options, thereby making it more affordable to invest in deeper efficiency upgrade projects. The Home MPG bonus equipment rebates included significant rebates for specific high efficiency renewable¹¹ HVAC and hot water technologies (i.e., cold climate ductless mini-split heat pumps, heat pump water heaters, and wood pellet boilers/furnaces)¹² that typically save money for customers with existing oil or propane based heating systems.¹³ Home MPG provided the following bonus rebates and incentives:

- Insulation rebates of 75% off, up to \$3,750 per housing unit (compared with a \$2,000 cap for “standard” Mass Save customers)
- Additional rebates for high efficiency non-renewable HVAC and hot water equipment¹⁴

Technical Assistance

Home MPG added a technical assistance service option (relatively late in the pilot period) for customers interested in HVAC and hot water system upgrades. Homeowners are often uncertain about what choice to make when faced with the possibility of replacing their heating or hot water system with something other than their home’s existing fuel source,

⁸ At the time of this writing, these two companies are “lead vendors” (i.e., employed by the utilities to provide energy efficiency services). During Home MPG implementation, together, they covered most of Massachusetts.

⁹ In the original program design, scorecards were to be provided using Earth Advantage (now CakeSystems) audit software. The software used by Honeywell accesses the heat loss model in the CakeSystems software via an API.

¹⁰ For more detail on Mass Save rebates and incentives, see <http://www.masssave.com/residential>. In addition to rebates and incentives, Mass Save provides a 0% loan, called the HEAT Loan, to finance the cost of certain energy efficiency measures. For more information on the HEAT loan, see <http://www.masssave.com/residential/offers/heat-loan-program>. Home MPG actively promoted all available incentives and rebates, including standard Mass Save incentives/rebates, Home MPG “bonus” incentives/rebates, and recruited three local banks to become Mass Save HEAT Loan providers in what was previously an underserved region of the state.

¹¹ The term “renewable” here includes technologies that use renewable sources of thermal energy in addition to electricity which may be from non-renewable sources.

¹² The Home MPG bonus rebates were as follows: \$2000 for qualifying mini-splits; \$1000 for qualifying heat pump water heaters; 75% up to 16,000 for qualifying pellet boilers.

¹³ About 50% of residents in Home MPG communities heat with oil or propane, and a significant portion of those do not have access to natural gas.

¹⁴ Home MPG bonus rebate amounts ranged from \$300 to \$1500, depending on the equipment.

particularly when the technologies are newer. Home MPG customers were given the opportunity to consult with a technical assistance provider to get customized, objective advice about different HVAC and hot water system options. The technical assistance provider was also available to perform a site visit upon request. The service was primarily designed for customers considering replacing existing oil or propane-fueled HVAC or hot water systems with cold climate ductless mini-split heat pumps, heat pump water heaters, and wood pellet boilers/furnaces¹⁵. Although it was not broadly marketed, the service was available to all Home MPG customers.

Infrared Thermal Imaging¹⁶

Thermal imaging and analysis can be a compelling way for homeowners to visualize where their home is leaking heat (or cooled air) and wasting energy and money. As the saying goes, a picture is worth 1,000 words. DOER hired Sagewell, Inc., a Massachusetts-based start-up, to perform thermal imaging and analysis on thousands of homes in the Home MPG communities. Homeowners could request access to his/her home's image and analysis through a secure website¹⁷. The image and analysis made it easy for homeowners to see and understand the building envelope inefficiencies in their home, and the website streamlined the process for setting up a Mass Save home energy assessment.



Figure 2. Example Home MPG thermal image.

¹⁵ These were considered to be alternative thermal technologies.

¹⁶ Image courtesy of Sagewell.

¹⁷ DOER provided for an opt-out option.

Sustainability Training for Real Estate Professionals

Home MPG provided training for residential real estate brokers and appraisers to help these professionals understand home energy performance and how it can be integrated into the sales and appraisal processes. Broker and appraiser education is an important step toward integration of energy performance scores into the multiple listing service (MLS) and institutionalizing “energy performance” in the residential real estate market. Home MPG funded and promoted six trainings focused on the high performance housing market, including the EPS. DOER worked with the Earth Advantage Institute, an Oregon-based energy education non-profit, to offer 2 two-day appraiser courses for 60 attendees who earned 14 continuing education hours toward their Massachusetts license renewals. Earth Advantage also offered an optional third training day toward a “high performance home appraisal” certification for 30 appraisers. The Leading Edge Academy, a Massachusetts-based broker education school, conducted 4 broker courses that offered 102 attendees 2 continuing education units (CEUs). Both sets of courses offered background on Home MPG, the EPS, (and other types of home energy ratings such as Energy Star for Homes), and asset ratings, as well as legislation and policies that aim to build energy performance into the real estate market.

Home MPG “By the Numbers” and Other Highlights

Table 1 provides a quantitative overview of Home MPG accomplishments, including total energy and cost savings achieved across individual residential retrofit projects

Table 1. Program totals through March 2014¹⁸

Audits (Home Energy Assessments)	3,866
Homes with Scorecards	3,866
Retrofits (insulation/air sealing/HVAC/hot water equipment)	1,611
Homes with Second Scores (revised to reflect work performed)	1,611
Percent of Homes Audited that Completed Efficiency Work	42%
Total Annual Energy Savings (MMBTU) ¹⁹	40,689
Total Annual Cost Savings	\$1,194,269
Average Energy Savings per efficiency project (MMBTU) ²⁰	21
Homeowners who Received Technical Assistance	83
“Bonus Rebate” Weatherization Projects	455
“Bonus Rebate” Equipment Installations	312
Cold Climate Mini-split Air Source Heat Pumps	142
Air Source Heat Pump Water Heaters	31
Central Biomass Pellet Boiler Heating Systems	1

¹⁸ These numbers will be updated to include homes that completed a Home MPG assessment and received an initial scorecard by 3/31/14, but completed efficiency work after 3/31/14.

¹⁹ Energy savings are calculated by program implementation partners using deemed savings for individual efficiency measures.

²⁰ Average savings is based on homes that completed weatherization and/or air sealing work, and/or installed high efficiency equipment, in addition to completing the initial home energy assessment.

Favorable Response to Energy Performance Scorecards

Response to the energy performance scorecards has been very favorable. Based on a telephone survey of 69 Home MPG participants conducted by The Cadmus Group, Inc.²¹, 98% of homeowners stated that the scorecard was either very or somewhat useful, and all of the homeowners who recalled receiving a scorecard (84% of homeowners surveyed) said that the scorecard was either very or somewhat easy to understand.²² In addition, several CSG and Honeywell energy specialists who conducted Mass Save home energy assessments and provided the scorecard were in favor of integrating the scorecard into Mass Save statewide.

In addition, statewide demand for the EPS is growing. Several other Massachusetts communities have requested that scorecards be integrated into their Mass Save home energy assessments, and a pilot program involving scorecards is now underway in the City of Worcester.

Favorable Response to “High Performance Homes” Training for Brokers and Appraisers

Broker and appraiser course attendees rated the courses favorably and expressed interest in receiving more training to help them integrate energy performance into their work. 82%²³ of brokers who completed course evaluations said the broker course material would “be useful in their real estate practice,” but that same percentage said that they do not “feel that they can speak confidently about high performance homes” after attending the 2 hour / 2 continuing education unit (CEU) course. 100% of respondents said that further courses would be helpful and 100% said they “would be interested in learning more,” with 75% saying 2 more courses would be sufficient to “speak confidently about high performance homes.”

95% of survey respondents²⁴ rated the appraiser course instructor as “excellent”. 100% of respondents said they would recommend the course to their colleagues, with 86% saying they can “apply course content to appraisal assignments in the field” and 81% saying they can now “confidently articulate the purpose of the energy performance score.”

Meanwhile, demand for the training is growing. Massachusetts regional real estate associations, as well as a town Chamber of Commerce, have expressed interest in hosting the broker training. The Massachusetts Board of Real Estate Appraisers, a 600 member appraiser group, is in conversations with the Earth Advantage Institute about licensing the appraiser course curriculum for future use.

Deeper Energy Savings Through Renewable Thermal Technologies

As described previously, one strategy for achieving deeper energy savings per home was to provide bonus rebates for high-efficiency, cold-climate-optimized mini split heat pumps, heat pump water heaters, and wood pellet boilers/furnaces. These technologies are particularly important energy and cost saving strategies in states like Massachusetts, where a significant

²¹ Massachusetts and the three other states piloting EPSs collectively chose Cadmus to perform a process evaluation of each state’s pilot program. This report is available at www.naseo.org.

²² An on-line survey of program participants to gather additional feedback about the scorecard was conducted in the spring of 2014. Results will be available in summer 2014.

²³ 21 brokers (out of 62 who attended trainings), provided course evaluations.

²⁴ 43 appraisers, out of 58 course attendees, provided course evaluations.

portion of the population heats with oil and has no access to natural gas. Through Home MPG, 142 units were installed. Rebates for these technologies will continue after Home MPG ends, and DOER is looking to continue integration of these and other renewable technologies into the Mass Save program on an ongoing basis.

Home MPG Lessons Learned

While integrating Home MPG into an existing, well-defined efficiency program has overwhelming benefits in terms of being able to expand and sustain the innovations on a long-term basis, it also presented implementation challenges that resulted in a delayed start for the initiative by over 12 months and in data reporting challenges. In addition, innovations were added along the way, making it difficult to disaggregate the impact of the scorecard by itself on the number and depth of efficiency improvements.

Energy Assessment Software

The initial program design was that Mass Save home energy specialists would use software developed by Earth Advantage to generate the EPS scorecard. However, this proved unworkable because the Mass Save lead vendors, CSG and Honeywell, already used software that was tailored to the needs of Mass Save. Ultimately, CSG and Honeywell integrated energy performance scorecard capability into their existing audit software, which, although beneficial from the standpoint of future statewide expansion, resulted in the noted Home MPG implementation delays.

Home MPG Program Elements Added Mid-stream

In an effort to help achieve deeper savings per household, program elements not contemplated at the outset of Home MPG (e.g., bonus rebates and incentives) were added, making it difficult to isolate the effect of the scorecard or any other program element on the number of customers implementing efficiency improvements and the associated energy savings per household.

Where We Go From Here

In order to motivate more homeowners to undertake deeper home energy efficiency improvements, energy performance must become a standard consideration in real estate transactions. The real estate market should seek to appropriately value home energy performance, which translates into lower cost of ownership. Home MPG was a step toward this goal, and Massachusetts' ongoing efforts are described below.

Integration of Energy Performance Scorecards Into Mass Save

DOER will engage with the utilities and their lead vendors to explore integration of energy performance scorecards into Mass Save statewide. As a result of Home MPG, both CSG and Honeywell, two vendors that, at the time of this writing, implement Mass Save for most of the state, have integrated scorecard capability into their energy audit software. This is a critical

step toward long-term integration of scorecards into the full Mass Save program. In the meantime, other Massachusetts communities are already requesting that energy performance scores become a standard part of Mass Save home energy assessments in their jurisdictions, and the City of Worcester is implementing its own pilot program using energy performance scores.

Thermal Imaging

Efficiency program implementers should consider how to use thermal imaging and analysis in their marketing. They should also consider making thermal imaging analysis available to energy specialists prior to assessments. This would allow for more targeted marketing opportunities, and pave the way for targeted and well-informed recommendations for efficiency improvements.

Outreach to the Real Estate Community and MLS

As previously discussed, Home MPG sponsored several training sessions for real estate brokers and appraisers to inform them about home energy performance and how it can be used in the real estate sales process. In doing so, DOER worked with a local real estate training organization, Leading Edge Academy, to develop the broker course content, and Leading Edge will continue to teach the content going forward. Demand for more appraiser training is apparent from the interest of the Massachusetts Board of Real Estate Appraisers, a 600 member appraiser group, which is in conversations with the Earth Advantage Institute about licensing the appraiser course curriculum for future use in the State. From the feedback received it is evident that training on the high performance housing market is beneficial across the real estate value chain. Furthermore, demand for increased broker training is apparent.

DOER is also interested in linking energy performance scores/scorecards to the MLS, and is working to develop a database for this purpose.

Residential Scorecards on a Nationwide Scale

Massachusetts has been a leader in the effort to provide consumers and building owners with building energy performance information for several years. During the course of Home MPG, Massachusetts has engaged with DOE's efforts to develop and promote the Home Energy Score, and has collaborated with three states (Alabama, Washington, and Virginia—the other states that received DOE funding to pilot the EPS) on their efforts to pilot energy performance scores. Most recently, DOER helped organize a meeting in Washington DC that included DOE, and other interested states/parties around the issue of energy performance/building rating and labeling. Massachusetts expects to remain engaged in these efforts on an ongoing basis.

Conclusion

Home MPG provided a valuable testing ground for integrating various innovations into Mass Save. From April 2012 through March 2014, the initiative provided over 3800 energy performance scorecards to homeowners via Mass Save home energy assessments, and over 1600 home efficiency projects were implemented, for a total annual energy savings of 42,943 MMBTUs. Because Home MPG piloted various innovations, the retrofits and energy savings

achievements cannot be definitively attributed to the integration of the scorecard into Mass Save. Nonetheless, initial homeowner response to the scorecard was very favorable, and statewide demand for scorecards appears to be growing—other Massachusetts communities have requested that Mass Save provide scorecards to their residents, and a pilot program involving scorecards is underway in Worcester. Two Massachusetts efficiency program implementers, CSG and Honeywell, now have “energy performance scorecard capability” as part of their existing energy audit software. In addition, over 160 real estate professionals received training regarding energy performance—an important initial step towards a residential real estate market that appropriately values energy performance. Looking to the future, Massachusetts is well-positioned to continue leadership in this arena.

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