Bridging the Gap Between Direct Install and Whole House Programs: Minneapolis Home Energy Squad Residential Engagement Pilot

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ABSTRACT

Since early 2015, CenterPoint Energy and the Center for Energy and Environment (CEE), with Xcel Energy's cooperation, have been conducting a pilot program seeking to increase follow-through on major upgrade recommendations among residential customers participating in the Home Energy Squad (HES), a successful and popular joint gas/electric direct-install program. The goal of the pilot is to evaluate whether adding additional customer support, engagement and convenience in a "one-stop" design can successfully and cost-effectively increase implementation of recommended air-sealing and insulation upgrades. An estimate is provided at the direct-install visit for a partnering insulation contractor to perform upgrade work, and additional supporting services encourage implementation of the upgrades. The program implementer (CEE), who has experience in developing work scopes in nearly 10,000 homes, gets competitive pricing on a standard scope of work on behalf of the homeowner, avoiding the hassle to the homeowner of getting multiple bids with potentially different scopes of work. The pilot is limited to HES participants within Minneapolis while customers outside Minneapolis receive "standard" HES services, allowing for test/control group evaluation of the incremental impact of the additional services provided. We present data and results of the first 9 months of home visits in the program (about 600 homes), including lessons learned for program design of whole-house programs and partnering with insulation contractors, and assess the cost-effectiveness of the additional services.

Introduction

Background

CenterPoint Energy, in conjunction with Xcel Energy, has been running a successful direct install program, called the Home Energy Squad (HES), since 2010, that offers a comprehensive array of installs. This includes lighting (about 15 bulbs/house), programmable thermostats, faucet aerators, showerheads, door weatherstripping, and water heater blankets. The program was a 2013 ACEEE "Exemplary Program" (Nowak et al. 2013) and profiled as a successful example of gas and electric utility collaboration in 2014 (Nowak, Kushler, and Witte 2014).

In early 2015, CEE and CenterPoint Energy began a pilot effort to explore whether the inclusion of additional customer engagement efforts could increase the rate at which customers moved from visit to installation of recommended improvements.[1] CenterPoint Energy offers two

[1] The pilot was proposed by CenterPoint Energy in 2014 and approved by Minnesota regulators for implementation in 2015 and 2016.

home visit programs, the HES and a Residential Energy Audit (REA) program. The primary differences between these offerings are the level of detail in the investigation of a customer's home,[2] and the inclusion of direct installation of efficiency measures (low-flow faucets, aerators, CFLs, etc.) in the HES. Both programs had a conversion rate – measured in terms of customers who received a home visit who went on to perform an energy upgrade – of well under ten percent.[3] Clearly, identifying cost-effective ways to increase that rate would be desirable.

Pilot Design

The Residential Engagement Pilot ("pilot") was designed to build upon the HES by adding additional services and simplifying the customer's path to completing home upgrade projects. Participants received all of the standard components of the HES visit (i.e., direct-install of energy saving devices, diagnostics, and a report of recommended upgrades). In addition, if insulation work was recommended for the home, an estimate was provided for a partnering insulation contractor to perform upgrade work, and additional supporting services encourage implementation of the upgrades. Thus, the pilot was intended to streamline the process for customers to install recommended upgrades (see Figure 1). Individual components of the streamlined process, as well as elements designed to better motivate the customer, are discussed in more depth in subsequent sections.

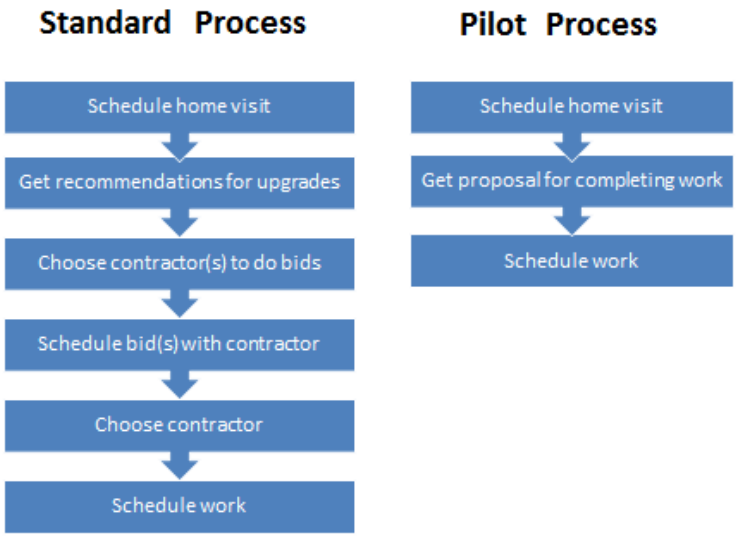


Figure 1: Customer process for moving from home visit to scheduling upgrades in the standard HES and pilot models

[2] The HES offers a blower door test, and a report with recommendations for major upgrades (e.g., insulation, air sealing, HVAC upgrades). The REA offers these services, as well as an infrared scan, and some specific work scope details for completing weatherization work.

[3] During an earlier period (2010-2012), customers were required to obtain an energy audit in order to receive a rebate for air-sealing and insulation work. During this time, the apparent conversion rate for the audit program was significantly higher (closer to 30 percent), but this is probably misleading due to the audit requirement for the insulation rebate.

The pilot services are currently offered only to customers located within Minneapolis; customers outside Minneapolis receive the standard HES visit. Thus, Minneapolis customers represent the "treatment" group for purposes of evaluating the pilot's effectiveness, while customers outside Minneapolis represent the "control."[4] The pilot is not advertised to customers, in order to better facilitate comparison between those receiving home visits under the pilot and standard programs. Although customers are recommended a number of upgrades at the HES visit, insulation and air sealing represent a majority of the potential savings, and thus was the main focus for the pilot.

Coordination with Contractors

CEE identified several insulation contractors to participate in the pilot. Based on CEE's past work, they developed a pricing sheet and methodology for conducting the bids. CEE trained its HES crews on this bidding methodology, with the involvement of insulation contractors to ensure consistency in the process. CEE developed tracking software to allow HES crews to directly enter job information via iPads and automatically generate bids during the home visit. CEE worked with the contractors to develop a cloud-based scheduling system, so that both CEE office staff and HES field crews can schedule work on behalf of the contractors, based on multiple contractors' availability and what times work best for the customer.

HES crews also conduct health and safety checks as part of the visit, which can be relevant to the work scope. The main issues that the crews check for are the presence of vermiculite insulation, knob and tube wiring, combustion safety, and the existence of adequate ventilation. When any issues are found, they are discussed with the homeowner and included in the home visit report. These health and safety concerns are also a part of the conversation for completing work, and in some cases can deter homeowners from completing work as they add cost to the job (see below).

The customer participation agreement stipulates that all upgrades customers pursue through contractors facilitated by CEE will be separate business transactions independent of CEE and the sponsoring utilities. CEE also makes it clear that while bids are provided as a convenience, the customer can still do the work with other contractors, and would still be eligible for rebates as long as the work is performed by contractors participating in CenterPoint Energy's rebate program. All of the contractors participating in the pilot are also qualified to perform work for the rebate program.

Motivating Homeowners

While the pilot goal is to help motivate customers to conduct the upgrades, it is important not to turn off the customer with a high pressure sales approach. Thus, CEE consciously developed a consultative and solutions-based approach that positioned the crews as energy advisors and technical experts, rather than insulation sales people.

To develop this approach CEE hired a consultant to train field staff, as this was a new area of focus. The general approach is to:

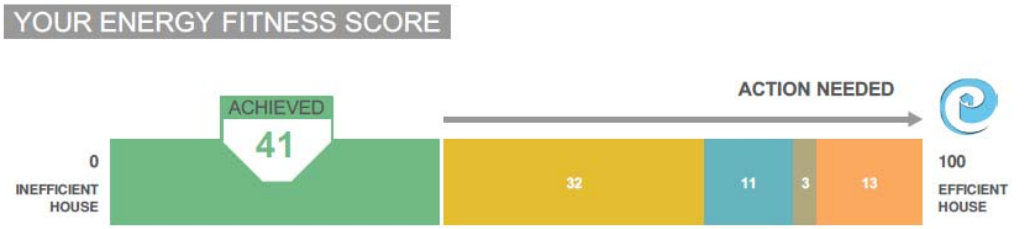
[4] As noted under "Limitations" below, this "natural" division of customers into treatment and control groups is not ideal from an experimental design standpoint – in particular, the older housing stock in Minneapolis may mean that those customers have more opportunities for savings, which could influence the conversion rate.

- Understand the homeowner's needs/wants through asking questions
- Demonstrate solutions and explain benefits as related to their needs and goals for the visit
- Answer their concerns about possible solutions
- Ask if they are interested in moving forward

This approach helps crews identify the homeowner's goals for the visit and concerns with their home's performance. Then the crew can offer solutions to their problems and explain the benefits of these home improvements.

As a knowledgeable third party to the transaction, the crew members present themselves as consultants to help improve the home rather than salespeople. That said, many homeowners have concerns, such as needing to discuss options with a spouse, currently completing other projects, wanting to do it themselves, considering remodeling, wanting to receive another bid, and cost. When these arise the crew members listen and ask questions to get more detail. They then answer concerns and give advice when applicable.

As part of the report to customers, simple energy modeling was used to create an "Energy Fitness Score" of the home (Figure 2 below). This tool was developed by CEE to help homeowners prioritize their upgrades and provides a visualization of the magnitude of potential energy savings. It thereby helps facilitate the conversation about the importance of completing the upgrade. By comparing the magnitude of savings and showing the typically high level of savings from wall insulation, it also helps prioritize wall insulation, which historically has a low level of implementation due to the higher cost and complexity compared to attic insulation. CEE estimates that nearly 25% of Minneapolis homes have virtually no wall insulation.



ACHIEVED	ACTION NEEDED *by priority*	COST ($)	REBATE ($)
80% AFUE heating system	Insulate your exterior walls	2625 - 3150	300
Partial attic insulation and air sealing	Air seal and insulate your attic	3650 - 4375	500
Approximately 79% of windows meet minimum efficiency standards	Add storm windows to your single-pane windows	-	-
	Replace your furnace with 95% AFUE model before failure	3500 - 6000	400

Figure 2: Sample scoring and prioritization tool

If the customer does not choose to schedule the work at the time of the visit, the crew lets them know that an "Energy Advisor" will contact them to answer any additional questions they have and assist them as necessary.

Energy Advisors

The potential impact of an Energy Advisor in helping customers to complete energy efficiency upgrades, and the benefits of including such services in home upgrade programs, has been noted elsewhere (Billingsley, Stratton, and Martin Fadrhonc 2016). In the pilot, the Energy Advisor plays two roles. The first is to follow-up with customers who received recommendations for upgrades within two weeks of completing the visit. The goal of these calls is to remind the customers about the visit, recommended work, and the option for CEE to facilitate scheduling the work. During these calls CEE lets the homeowner know that the Energy Advisor is available as a resource for them – on hand to answer any questions about the visit, recommended work, or insulation quote. Often homeowners are interested in completing the work, but life is busy and completing upgrades gets left on the back burner. These calls serve as a friendly reminder of their previously-expressed interest and the opportunity to get this home improvement completed.

The second role is to provide an easy resource for scheduling the work. Through this process, homeowners develop a relationship with CEE as a trusted resource. Being able to schedule the work with CEE makes it easy for them to move forward once they have made the decision to do so. For many customers, having to call a contractor themselves may be another barrier to completing the work, as they do not know how to choose the "best" installer, who they can trust, or how to compare bids. The Energy Advisor adds another level of customer service that makes it easier for homeowners to follow through.

Results

Participation

As summarized in Table 1, the pilot achieved a conversion rate of more than double that of the REA and more than seven times that of the basic HES.

Table 1: Pilot, base HES, and REA participation and conversion rates

	Pilot	2015 base HES	2015 REA
Total Participants	589	1,802	1,615
Rebates Paid	62	38	112
Work Scheduled	29	n/a	n/a
Total Rebates	91	38	112
Conversion Rate	15.4%	2.11%	6.9%
Significance		8.7	5.3

Total Rebates = Rebates Paid + Work Scheduled; Conversion Rate = Total Rebates / Total Participants; Significance = z-statistic for the increased conversion rate of the pilot compared to HES or REA.

Of the 589 pilot participants, 458 (77.8%) had recommendations for upgrade work while the remaining 131 did not. Arguably this would mean that the conversion rate for the pilot is slightly higher (20.3%) than shown in Table 1. However, the number of base HES and REA participants who were not candidates for upgrades is not known, so for comparison purposes it is reasonable to use the full number of participants for each program. In addition, the pilot services were provided (and paid for) for all 589 participants, and so the higher number should be used in considering the program's cost-effectiveness.

Energy Savings

Energy savings for insulation and air sealing are based on the initial R-value consistent with the approved deemed values for CenterPoint Energy's Residential Weatherization Rebate (RWR) program, as shown in Table 2.[5] Energy savings from the direct install component of the HES visit is not included in the consideration of the incremental savings driven by the pilot. Since the additional pilot services were not marketed to participants, it is assumed that the direct install savings would be the same with or without the pilot and those savings can be ignored when evaluating the increase in savings driven by the additional services. Direct install savings is included in the evaluation of the pilot's effect on the overall portfolio cost-effectiveness (below).

Table 2: Deemed energy savings for insulation and air sealing work

Existing R-value range	Savings claimed per job (Dth)
R-0 to R-5 (attic)	33.6
R-6 to R-10 (attic)	22.2
R-11 to R-15 (attic)	17.2
R-16 to R-20 (attic)	14.4
R-21 to R-30 (attic)	11.4
Air-sealing only	8.8
Wall insulation	32.9

To qualify for a rebate, existing attic insulation must be below R-30 and the work must bring it to R-50 or higher.

For pilot participants, both completed upgrades and those scheduled for completion (corresponding to the "Total Rebates" line in Table 1) are included this analysis and discussion. This reflects a simplifying assumption that all scheduled work will be completed; this assumption is discussed further under "Limitations" and is made here for clarity.

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Table 3 shows the air sealing and insulation savings for pilot participants, base HES participants, and REA participants.

[5] Note that while the RWR rebate is considered a separate program for regulatory purposes, and all insulation savings driven by the HES and REA programs are claimed through this program, from the customer's standpoint it is not delivered as a separate program; e.g., the insulation contractors fill out the rebate forms for the customer, regardless of which program they come through. Also worth noting is that the deemed savings values for attic insulation in Table 2 include savings from air sealing.

Table 3: Air sealing and insulation savings realized by home-visit program participants

	Pilot	2015 HES	2015 REA
Total Participants	589	1,802	1,615
Participants pursuing upgrades	91	38	112
Savings (Dth)	2,242.1	699.4	1,735.8
Average Savings per Participant (Dth)	3.8	0.4	1.1
Average Savings per Completed Job (Dth)	24.6	18.4	15.5

Cost-Effectiveness

The cost of providing the additional services through the pilot was $295 per visit. Assessment of the cost effectiveness of this spending was approached in two different ways: By considering whether the incremental $295 (which must be spent for each recipient of a visit featuring the additional services) drives sufficient incremental savings to justify the expense, and by considering whether the overall cost effectiveness of offering the HES and RWR programs is increased or decreased with the inclusion of the piloted services in HES.

For all analyses, cost-effectiveness was calculated according to the methodology approved for CenterPoint Energy's current energy efficiency programs. The principal tests used in Minnesota are the Utility Test and Societal Test; results of each test are presented in the tables below. Minnesota's energy efficiency programs use a Societal Test rather than a Total Resource Cost (TRC) test; in practice this amounts to a TRC test plus a small ($0.35/Dth) environmental externality value.

Incremental Savings. Incremental savings is defined as the increase in average savings per participant for the pilot relative to the rebated savings for participants in the base HES and the REA. The incremental average savings for the pilot was 3.42 Dth relative to the base HES and 2.73 Dth relative to the REA. For this analysis, it was assumed that the incremental services from the pilot could be added to the REA for the same cost ($295 per visit). The resulting cost-effectiveness ratios are shown in Table 4.

Table 4: Pilot incremental cost-effectiveness

	Utility Test Ratio	Societal Test Ratio
Pilot vs. base HES	1.14	1.76
Pilot vs. REA	0.91	1.40

These results suggest that the additional services provided may be resulting in a sufficient increase in energy savings to justify their cost from both a utility and societal perspective.

Overall Impact. In order to assess the overall impact of including the pilot services on the utility's efficiency portfolio cost-effectiveness, 2015 participation in the base HES was analyzed. Separately, RWR was analyzed for all participants who did not receive pilot services. For both the Utility and Societal tests, the present value of the benefits for each program was summed and compared to the present value of the costs. Thus, both the direct install savings and the air sealing and insulation savings are included, as well as the cost of delivering both programs. The

analysis was then compared to the cost of the same programs for those customers who did participate in the pilot. The results are provided in Table 5.

Table 5: Overall cost-effectiveness

	Utility NPV	Utility Ratio	Societal NPV	Societal Ratio
HES + RWR (base)	$1,101,960	1.96	$319,044	1.10
HES Pilot + Incremental RWR participation	$19,981	1.05	($8,968)	0.98

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To estimate the cost-effectiveness of including the pilot services in all HES visits, Table 6 compares the combined cost-effectiveness of HES and RWR (from Table 5) to the projected cost-effectiveness if the pilot were scaled to the full HES offering (2,391 visits in the time period under consideration) with an incremental conversion rate of 13.4 percent. In this case, the utility would realize both the incremental savings from an increased conversion rate as well as the savings of RWR participants who did not receive HES visits (a major driver of the net benefits reflected in the base HES and RWR scenario, but not included in the analysis of the pilot impact in Table 5 above). Nearly 50 percent of the benefits resulting from the projected fully-scaled scenario are attributable to the incremental participation in RWR driven by the pilot.

Table 6: Projected cost-effectiveness of fully-scaled services

	Utility NPV	Utility Ratio	Societal NPV	Societal Ratio
HES + RWR (base)	$1,101,960	1.96	$319,044	1.10
HES with pilot services for all participants + RWR + Incremental RWR participation	$1,018,008	1.48	$121,205	1.03

Discussion

Based on the information and analysis above, it appears that there is sufficient information to draw a preliminary determination that the pilot services do indeed appear to be driving higher conversion rates for the HES program. The pilot seems to be producing higher levels of savings per job than are realized by RWR participants who do not receive pilot services, and doing so in an overall cost-effective or nearly cost-effective manner from both the utility and societal perspective.

Limitations

As noted above, the analysis presented is based on data from the first nine months of a pilot that was designed to run for two years. While the increase in conversion rate is sizeable and encouraging, it is possible that the additional services provided through the pilot simply encourage customers to act earlier than they otherwise would have, without increasing the total number of insulation upgrades that occur. This phenomenon has been noted in other examinations of customer engagement efforts (e.g. Scott, Kociolek, and Castor 2014, though that

study was not a perfect analog to the program design in this case). A review of the conversion rate at the end of the pilot will provide an interesting comparison.

Similarly, the fact that rebate data are available only up until the time of the analysis (while insulation jobs are scheduled into the future) makes it difficult to present a completely fair comparison of the programs. As previously noted, the analysis here makes a simplifying assumption that all scheduled upgrades will be completed, and includes those future savings in evaluating the pilot. However, it is impossible to know whether participants in the base HES or REA might also have decided to move forward with upgrades; there is also the potential that pilot participants with scheduled work might decide to cancel. In practice, the assumption seems justified given that the cancellation rate seen in the pilot has been quite low, and that both HES and REA have been ongoing for a number of years (and so a relatively constant conversion rate for each can be assumed). Nevertheless, it is an important factor to bear in mind: 29 of the 91 total upgrades through the pilot are future jobs; excluding those savings from the analysis is enough to tip the balance on the overall cost-effectiveness of the pilot. Again, having a full data set at the conclusion of the pilot – along with more data about the control group – will allow a better comparison and should reduce the need for this assumption.

It is also worth noting the presence of some confounding variables in the analysis. In 2014, CenterPoint Energy, Xcel Energy, and the City of Minneapolis came together to form a first-of-its-kind city-utility Clean Energy Partnership with the intent of collaborating to promote energy efficiency, increase the use of renewable energy, and reduce greenhouse gas emissions in the City. As one of the efforts of this Partnership, in late 2015 the City contributed funding to provide zero-interest financing for homeowners to complete insulation upgrades, as well as paying the HES copay charge for customers self-identifying as having a household income below 300 percent of poverty. The availability of these offerings was advertised, and subsequently 126 customers received free HES visits with the pilot services and 31 customers took advantage of the zero-interest financing (only three customers both received a free visit and utilized the financing). 76 of these visits occurred before the November visit cutoff used for this analysis. Much of this participation occurred in December 2015 (after the November visit cutoff used for this analysis) but some did occur earlier. There is not currently sufficient data to fully understand the impact of the free visits on the overall conversion rate (if indeed there was one). Similarly, it is difficult to determine at this time whether the zero-interest loans or pilot services had a greater impact on a customer's decision to move forward with upgrades.

Cost Effectiveness

Obtaining data that allows a better understanding of the pilot's performance over a longer term will be important in a final determination of cost-effectiveness. However, there is reason for optimism, given that both HES and REA are programs that have existed in a fairly static form for several years. That being the case, it seems reasonable to expect that the additional data obtained for the control group will not show a major difference in their conversion rate from that observed here. If that is true, the analysis of the incremental cost-effectiveness shown above could prove accurate.

In addition, the results are sensitive to the cost of the pilot services as well as to the conversion rate. Reducing the incremental cost of the pilot from $295 to $250 results in benefit/cost ratios greater than 1.0 for both the Utility and Societal tests even if the assumed savings from future installations (discussed above) are excluded.

The projected cost-effectiveness of the fully-scaled program suggests that the incremental savings driven by the additional services justifies their cost. The NPV of the Utility Test for the fully-scaled offering is nearly as high as that of the HES and RWR program alone, and close enough that reducing the price of the services – or targeting them to customers most likely to benefit (see below) – can close the gap. In other words, if the initial results seen here are borne out by the rest of the pilot, it appears that the utility portfolio is better off including the additional services than running the HES and RWR programs without them.

Implications for Program Design

Many of the services offered through the pilot are more typically features of home performance or audit programs than direct install programs (U.S. Department of Energy 2014). Many homeowners who sign up for direct install programs may not be anticipating learning about their home's overall performance during the visit, or have any intention of beginning home improvement projects when they schedule the initial visit. This is evidenced by the significantly lower conversion rate seen for the base HES compared to the REA. This pilot demonstrates that providing customers with information about their home, making it easy to arrange for the work to be completed, and providing continued engagement and support can indeed result in a higher number of homeowners moving forward with improvements. While it is not unusual (U.S. Department of Energy 2014) for home performance and audit programs to include some direct install measures (in order to capture some level of savings "as long as we're in the home"), the initial results from this pilot suggest that adding engagement services to direct install visits can be a powerful means to drive savings. Other findings and considerations from the initial stage of the pilot are given below.

Training and Planning. Based on surveys of participating customers, homeowners appreciate the additional services and assistance that is offered through the pilot. Receiving the bid makes the concept of completing upgrade work more tangible, where a recommendation is something to consider pursuing and requires follow-up work by the homeowner. Knowing the exact price and seeing a clear path to move forward makes the decision easier for homeowners. Most homeowners have never purchased insulation, so guidance is needed as they are hesitant to follow through with little knowledge of contractors, who to contact, or how to evaluate bids.

However, developing the process required significant planning and training for HES crews to learn how to bid jobs correctly and ensure they were capturing all of the elements that need to be treated by participating contractors. This meant HES crews and contractors needed to work together and develop a relationship, which has benefited both sides: HES staff have gained knowledge on developing quotes and insulation treatment options, while contractors have a better understanding of program offerings and CEE's communication with homeowners.

Training was also required to ensure that CEE staff could talk to homeowners and encourage them to move forward without appearing to adopt a "hard sell" approach. The fact that homeowners value the "third party" approach to providing a bid, and trust CEE as a knowledgeable third party that is not trying to sell them something, suggest that this training has been effective. At the same time, the crews have learned that it is always important to ask directly if customers are interested in completing the work. Some homeowners that do not seem interested may turn out to wish to move forward with work, but might not have done so without specific prompting.

Timing. There can be a significant lag between visit and the time work is scheduled. This underscores the importance of the Energy Advisor and follow-up contact. While some customers choose to schedule the work at the visit, more frequently they need to discuss it with a spouse, and schedule a week or even several months after the visit. In addition, homeowners often wait until fall to move forward with work (or make their decision faster if the home visit occurs in the fall), as the approaching winter creates a sense of urgency. However, the same factor means that contractors' schedules tend to be full in the late fall and winter – homeowners may decide to move forward faster in the winter, but contractors may not be available as soon.

Wall Insulation. The pilot appears to have been particularly successful in encouraging customers to install wall insulation; wall insulation jobs represent 41 percent of savings and 26 percent of all jobs (including scheduled work). This is likely due to the Energy Advisor being able to spend time to explain the importance of wall insulation, as well as the older housing stock in Minneapolis and high number of homes with no wall insulation at all. Homeowners are typically not aware that their walls lack insulation.

Safety. In homes where efficiency upgrades were recommended and no safety concerns were found, 20 percent of homeowners moved forward with the efficiency recommendations. In homes with efficiency opportunities where safety issues were identified, the conversion rate was only 13 percent.[6] The lower conversion rate is presumably because the additional cost of dealing with the safety concerns was a barrier for some homeowners. However, the pilot was focused on efficiency upgrades, and data is lacking regarding the specific nature of the safety issues and on whether or not customers had them addressed (separately from whether they proceeded with efficiency improvements). This may present an opportunity to develop a separate or supplemental offering that would help customers address safety concerns. Given that 25 percent of participants (147 homes) had safety concerns, it is important to find ways to help them address those issues whether or not they move forward with efficiency upgrades (though some improvements can of course address both safety and efficiency).

Future Work

The importance of understanding the impact of the pilot services on the conversion rate over a longer period of time has already been noted. Other key factors for future consideration include housing stock and the cost of providing services.

Minneapolis has significantly older housing stock than much of the rest of CenterPoint Energy's Minnesota gas service area. Accordingly, it is reasonable to expect that there are more opportunities for savings than might be found in more recently developed parts of the service area. Whether the conversion rate seen in the pilot can be expected to continue if the pilot is brought to greater scale is an important consideration, since cost-effectiveness depends on the conversion rate that can be achieved. Even if a high conversion rate can be sustained, the level of savings per customer may decrease in newer, tighter homes.

As seen above, program cost-effectiveness is also highly sensitive to the cost of the services provided in the pilot. Bringing these costs down will likely be important if the pilot services are to be added as a standard part of HES. The current $295 per customer cost of the services provided is to some degree a one-time fixed cost of developing software, training crews,

[6] The z-statistic of this difference is 1.90.

etc. It may be that the cost per customer would come down naturally in the future as the program moves out of the pilot phase.

Both conversion rates and cost could potentially be improved through intake screening and targeting services. For example, screening could potentially be developed that could help identify customers who are unlikely to have opportunities for insulation savings (e.g., customers in recently-constructed homes); the full pilot services need not be provided to these customers. Similarly, a customer's response once a crew is on-site might provide clues as to how likely they are to move forward with any opportunities the crew identifies. By focusing efforts on those customers most likely to move forward, both conversion rate and average cost could be reduced.

Finally, the additional services were not advertised during the pilot, in order to study the effect of the services without distorting the results. Once the pilot phase is completed, assuming the services are made a standard part of the HES offering, these features could be advertised so that interested and motivated homeowners would be aware of them – this could potentially increase the number of customers who quickly schedule upgrades and could have a beneficial effect on cost-effectiveness.

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