



Process Evaluation of EnergyScoreCards Minnesota

**A Pilot Program to Study Energy and Water
Benchmarking in Multifamily Buildings**

**Conservation Applied Research & Development (CARD)
Process Evaluation**

**Prepared for: Minnesota Department of Commerce,
Division of Energy Resources**

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Executive Summary

EnergyScoreCards Minnesota was a 2-year pilot program to study the effectiveness of an energy and water benchmarking service in multifamily buildings in Minnesota, including measuring the impacts of the service in reducing energy and water usage. The service included an online energy and water usage tracking and benchmarking software tool combined with engagement and assistance services. Over 500 buildings enrolled in the pilot, and participants were split nearly evenly into a treatment group (who received access to the service) and a control group (who did not).

The Center for Energy and Environment (CEE) conducted a process evaluation to qualitatively assess the effectiveness of the EnergyScoreCards service, as well as to gain insights from multifamily building owners and managers into how they perceive, analyze, and implement water and energy savings opportunities. Furthermore, the process evaluation aims to distill lessons learned that will be useful to utilities and others that are looking to design energy efficiency programs targeting the multifamily sector.

At the conclusion of two years of the EnergyScoreCards service, separate surveys were administered for the treatment group, the control group, implementation staff, and utility partners. Detailed results of the survey are presented in the main body of this report, and are a rich source of insights on a wide range of issues related to benchmarking, the pilot, and perceptions of energy and water use and savings opportunities in multifamily properties.

The main conclusions from this evaluation (discussed in depth in the final section) are:

1. Treatment group participants report strong satisfaction with the EnergyScoreCards service and found the tool easy to navigate and supporting services helpful. Control group members perceived the service as highly useful, even though they had not used the tool. It is clear that a benchmarking service like EnergyScoreCards could aid building owners and managers in evaluating and managing energy and water use in their buildings.
2. The engagement and assistance services appear to have been an essential part of the program design, with seventy-three percent of treatment group participants reporting that they took action because of a call or email from a staff member on the pilot implementation team.
3. Although the program did not target resident behavior, eighty-three percent of the control group regarded resident behavior as having a great deal of impact on owner-paid utility bills, with sixty-nine percent reporting conducting tenant education to help reduce this impact. This high level of interest suggests that utility programs that help building owners and managers target resident behavior may be an area for future work.

4. While the program was successful in engaging building owners in their energy and water usage data, it was less successful in identifying specific actions for them to take. This was a limitation by design as the service was not intended to identify specific energy and water savings actions. However, coupling the benchmarking service with this type of assistance could have increased the program impact.
5. The assessment of the EnergyScoreCards Minnesota program suggests that an energy benchmarking service could be a valuable part of a utility-funded program targeting the multifamily sector; this would be most effective when integrated with other technical services that would help building owners identify and implement upgrades.

Pilot Background

The EnergyScoreCards Minnesota program was a two-year pilot (2013-2014) to test the effectiveness of providing an energy and water benchmarking service to the multifamily sector. Over 500 buildings were enrolled in the program, which used an experimental design. Participants were assigned in nearly even proportions to either a treatment group or a control group. In total, there were 46 organizations representing 286 properties in the treatment group, and 47 organizations representing 276 properties in the control group. The treatment group received access to the EnergyScoreCards service, while control group participants did not. However, energy usage was monitored in control group buildings over the entire pilot period. Although the control group did not receive access to the EnergyScoreCards service during the pilot program period, they did volunteer to sign up for the service and it was only after they signed up that the participants were randomly assigned to the treatment and control groups. At the end of the program, a statistical analysis was done to determine if there were greater energy savings in the treatment group compared to the control group. A separate impact evaluation completed by Bright Power (owner of the EnergyScoreCards software) reports the results of this analysis. In addition, CEE conducted an audit of this impact evaluation. Although the EnergyScoreCards tool included both energy and water benchmarking, there is a greater focus on energy in this evaluation, as that is what most interests the funders of this study.¹

Program Design

The EnergyScoreCards service used in the pilot program consisted of two related components that were provided to treatment group participants:

1. ***Access to EnergyScoreCards benchmarking software.*** Bright Power, the lead pilot program implementer, has developed software specifically designed for benchmarking the energy and water usage of multifamily buildings. This software has been used extensively by multifamily building owners in other parts of the country, but prior to the start of the pilot had been used by few Minnesota multifamily property owners. Treatment group participants were provided access via a secure log-in to this cloud-based software for their specific buildings. Energy data from meters that were paid by the building owner were collected electronically on a monthly basis and uploaded onto the website. Water usage for most of the buildings was also uploaded to the software website. In addition to ongoing access to data, users received at least 12 months of historical data uploaded to the site as well. The software has multiple features that provide insight into a building's energy and water usage, including the ability to view breakdowns of their energy usage (e.g., heating only, baseload gas, baseload electric,

¹ The EnergyScoreCards Minnesota Pilot Program was funded by Xcel Energy, Minnesota Housing, and the Minnesota Department of Commerce, Division of Energy Resources, through a Conservation and Applied Research and Development (CARD) grant. This process evaluation was funded entirely through the CARD grant.

etc.), compare usage with similar buildings, track usage over time, identify spikes in usage, and log energy saving actions and track and estimate resulting savings.²

2. *Ongoing engagement and assistance services.* Each organization in the treatment group was assigned an account manager that provided ongoing engagement and assistance. The account managers were staff from the EnergyScoreCards Minnesota partner organizations: Minnesota Green Communities and the Center for Sustainable Building Research at the University of Minnesota. The role of the account managers was to engage participants, facilitate participants learning about their energy usage, and drive participants to take energy-saving actions. Participants received a webinar training on how to use the EnergyScoreCards software. Curricula materials, including worksheets and tip sheets, were created and distributed to program participations as requested or needed. The purpose of these materials was to help building owners identify potential energy and water saving opportunities in their buildings, and the general types of actions they might take to reduce energy usage. For instance, some participants were encouraged to do energy audits of their buildings to find more actions they could take, and others were provided with tip sheets on energy and water efficient maintenance or on making energy savings plans for their buildings. A periodic newsletter was developed and distributed. The account managers provided individualized assistance to participants, could not provide expert advice about specific building upgrades as they were not trained as technical energy or water experts, and did not conduct building site visits or inspections. On a monthly or as-needed basis, the account managers contacted participants by phone, email, and in-person.

Program Goals

The overall goals of the pilot were to:

- Design a scalable program to engage multifamily property owners in benchmarking the energy and water consumption of their properties;
- Improve access to utility information for property owners and managers;
- Provide owners and managers with feedback on building performance to engage their staff and help make decisions on energy and water conservation; and
- Drive participation in energy savings and energy conservation programs in multifamily buildings.

Program Theory

This section documents the desired outcomes from the pilot program and outlines the underlying logic of why the intervention should cause the desired outcomes. While this program logic was not expressed as such in the program implementation plan, much of it was implicit in program documents and further uncovered in discussions with the lead program

² The EnergyScoreCards software and its features are fully described on the [EnergyScoreCards website](http://www.energyscorecards.com) (www.energyscorecards.com), as well as in the forthcoming report on the pilot by Bright Power.

implementer and EnergyScoreCards Minnesota partner organizations. In general, the more cogent and defensible the program theory, the more potential there is for success of the program.

Desired actions from the program

Ultimately, the program sought to spur reductions in energy and water usage in multifamily buildings. Building owners and managers would do this by taking one or more of the following actions in response to feedback and guidance accessed through the service:

- Invest in efficiency capital improvements;
- Take behavioral actions to reduce energy usage, including implementing operations and maintenance activities; and
- Continuously monitor energy and water usage in their buildings to look for additional energy and water saving opportunities, taking corrective action as necessary (e.g., when energy use spikes are observed).

Barriers to desired actions

Multifamily buildings have energy and water waste in part because building owners and operators are suboptimal in their management of energy usage, due in part to the following identified barriers:³

- Lack of information about energy and water bills and context for those bills (i.e., are they higher or lower than they should be);
- Multiple people at the company are responsible for taking energy actions (e.g., one person is responsible for identifying opportunities, another is responsible for prioritizing and approving all capital projects);
- Lack of time to work on energy and water issues as their primary business is leasing space;
- Lack of technical information about what actions to take to reduce energy and water bills; and
- Uncertainty or lack of confidence that taking actions will actually reduce energy and water costs.

How the EnergyScoreCards service causes the desired actions

In order to overcome the barriers listed above, the following are hypothesized to be the mechanisms that would cause the desired actions to occur:

³ Other potential barriers include lack of funding and lack of access to technical support or qualified contractors to do the work; we seek to list here the ones most relevant to the program design. For a discussion of other barriers, see, for example Quantum Consulting, “National Energy Efficiency Best Practices Study, Volume R5 – Residential Multi-Family Comprehensive Best Practices Report,” 2002.

1. The EnergyScoreCards tool helps property owners and managers to facilitate and prioritize efforts to reduce utility bills. It does this by enabling property owners and managers to:
 - Focus energy savings efforts on properties with the greatest potential savings. EnergyScoreCards provides an index of energy and water usage along with a “grade” of A-D for each property, so building owners and managers can get a sense of how their properties compare with their peer group, as well as which buildings are the highest users within their own portfolio.
 - Focus energy savings efforts on the end uses that are using the most energy. In addition to overall energy and water usage indices, energy usage is broken down into heating, baseload gas, baseload electric, and cooling. In addition to the comparison indices, total cost per year is also displayed, encouraging users to focus on the most inefficient, expensive areas. The “energy signature” of a building may also indicate specific energy and water savings strategies that could be employed.
2. The EnergyScoreCards tool allows property owners to track the effectiveness of energy and water retrofits over time. This helps give them confidence that retrofits can make a difference and can provide motivation to implement retrofits on a wider scale in their portfolios. Just the fact that they can track the results of projects may encourage them to undertake retrofits that they may not otherwise have done.
3. The EnergyScoreCards engagement and assistance service can keep multifamily property owners on-track to implement energy savings actions, and can prompt them about insights from the EnergyScoreCards tool that they may not have the time to discover themselves. Property owners are interested in saving energy and water, but because they are busy, “nudging” them and providing assistance will result in a higher implementation rate than simply providing the information and hoping that they will act on it.
4. The EnergyScoreCards tool can support a continuous improvement energy management system. Once energy and water savings actions are done, EnergyScoreCards allows for tracking the savings over time. If savings decays over time (as can frequently happen, for example, with energy controls systems or sub-optimal maintenance of equipment), the EnergyScoreCards tool can identify this and it may motivate the building owner to make appropriate corrections.

Research Method

The research method for the process evaluation consisted of interviews with account managers and participants, as well as a review of the program materials used in the implementation of the program. This evaluation was conducted to qualitatively assess the effectiveness of the software and supporting services, as well as to gain insights from multifamily building owners and managers into how they perceive, analyze, and implement water and energy savings opportunities.

Some specific areas of inquiry included:

- Participants' reasons for wanting to participate in the program;
- How and to what extent participants tracked their energy usage prior to enrollment in the program;
- What actions were taken during the program period;
- What criteria participants had for investing in energy efficiency projects;
- General awareness of opportunities to reduce energy use;
- Perceived usefulness of and overall satisfaction with the EnergyScoreCards tool and service;
- Willingness of participants to pay for the service;
- Aspects of the program that were considered to be successful;
- Aspects of the program that were considered to be most challenging; and
- Lessons learned that may be valuable for incorporating into utility programs.

Population and Sample

Interviews were conducted with three different groups:

- *Control group*: Building owners who enrolled in the EnergyScoreCards Minnesota Pilot Program and were not provided ongoing support or access to the online tool. One contact per company could participate. The survey was conducted between September 26 and October 31, 2014.
- *Treatment group*: Building owners who enrolled in the EnergyScoreCards Minnesota Pilot Program and were provided ongoing support and access to the online tool. Multiple contacts per company could participate (although the initial sign-up was usually done by a single contact, once the program started multiple people from the organization became involved in the program). The survey was conducted between October 13 and November 18, 2014.
- *Program implementers and utility partners*: Bright Power was the lead implementing organization and is the owner of the EnergyScoreCards software. EnergyScoreCards Minnesota partners (Minnesota Green Communities and Center for Sustainable Building Research) provided ongoing account management support for treatment group participants. Utility partners were utilities who funded or provided data in implementing the EnergyScoreCards Minnesota Pilot Program. This series of surveys were conducted between December 15, 2014 and April 16, 2015.

Number of Completed Surveys

The survey received a fairly high response rate:

- 36 control group surveys completed (78% response rate)
- 63 treatment group surveys completed (78% response rate)⁴
- 9 program implementation staff & utility partner surveys completed (90% response rate)⁵

Questionnaire Design

The questionnaires were designed by ANA Research in collaboration with CEE and with input from Bright Power and EnergyScoreCards Minnesota partner organizations. All of the interviews were conducted by telephone, with pre-letter and pre-email invitation sent to achieve a higher response rate. Descriptive statistics were prepared for the treatment group and control group, while the Bright Power, EnergyScoreCards Minnesota partner staff, and utility partner feedback was more open-ended. The actual surveys used for the treatment and control groups and verbatim comments to open-ended questions are included in the appendices.

The survey results are presented in the following sections. Please note that the sample sizes are fairly small, so caution should be used when interpreting the results. Due to rounding, not all graphs add up to 100%.

⁴ As noted above, while only one contact per organization was contacted for the control group, in many cases multiple contacts were contacted for each treatment group organization. This resulted in a higher number of completed treatment group surveys than completed control group surveys.

⁵ One utility participant did not respond to repeated call attempts; all EnergyScoreCards Minnesota staff participated in the survey.

Survey Results: Questions Asked of Both Treatment and Control Groups

This section contains survey results for the questions asked that were common to the treatment group and the control group, except for the questions reported in Figures 4 and 10, which were included for thematic reasons. In addition to the questions common to both the treatment and control groups, many questions were only asked of one group or the other and these responses are reported separately in the subsequent sections. Where relevant, statistical significance between the control group and treatment group is noted.⁶

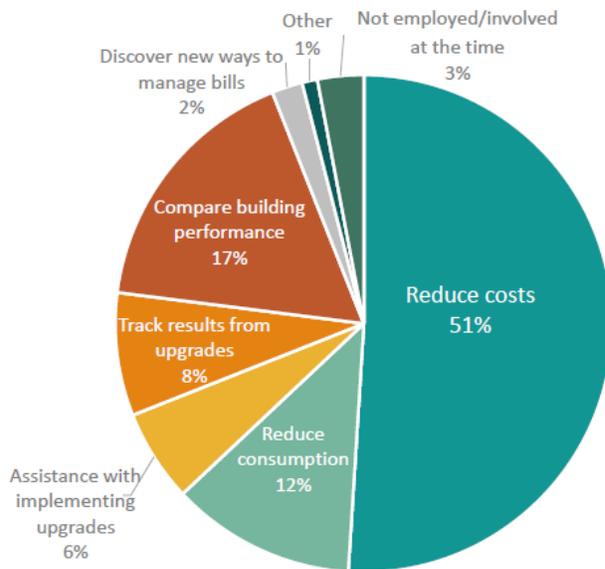
Reasons for Participation

Half of all participants who enrolled in the EnergyScoreCards Minnesota Pilot Program did so with the intention of reducing costs (Figure 1). The top three reasons for participation were the same for the control group and treatment group, in this order:

- Reduce costs;
- Compare building performance; and
- Reduce consumption.

Figure 1 Reason for participating in EnergyScoreCards program⁷

Combined Control & Treatment Group:



	Control Group	Treatment Group
Reduce costs	53%	49%
Compare building performance	14%	19%
Reduce consumption	11%	13%
Track results from upgrades	6%	10%
Assistance with implementing upgrades	8%	5%
Discover new ways to manage bills	0%	3%
Not employed/involved at the time	6%	2%
Other	3%	0%

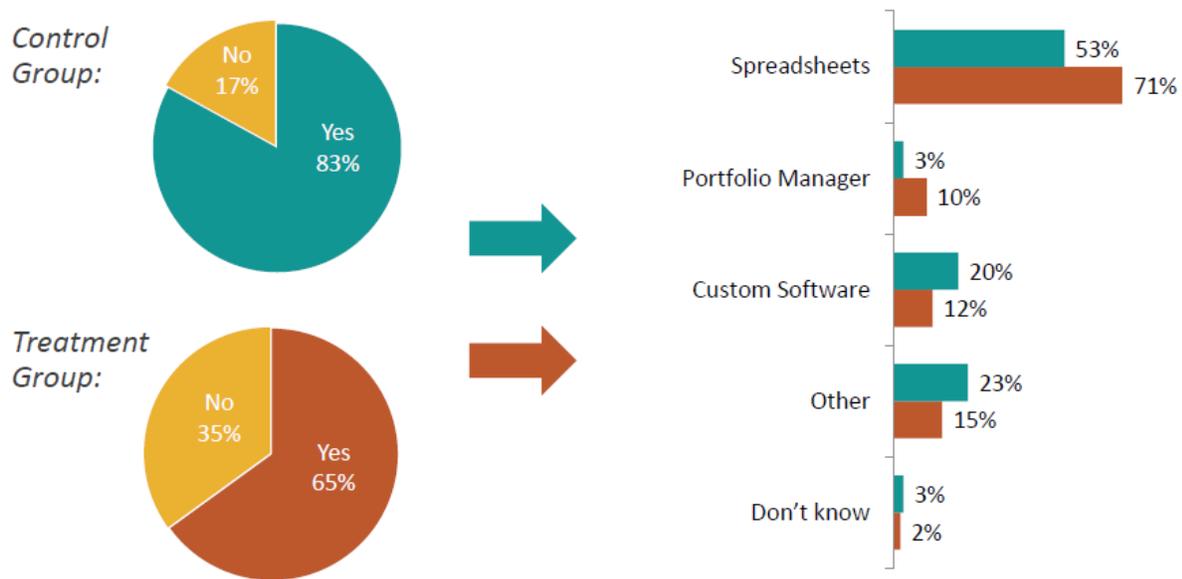
⁶ Test for significance between treatment and control groups was done with a Z-test for proportions at the 95% confidence level.

⁷ Q1: What was the MAIN reason you decided to participate in the EnergyScoreCards program? Base: n = 99 [Control n = 36/Treatment n = 63]

Tracking Utility Costs

The majority of both groups reported that they tracked utility and water costs prior to enrolling the EnergyScoreCards Minnesota Pilot Program (Figure 2). Note that for the treatment group this question asked specifically about practices *before the pilot*. More than half of the participants in both groups tracked utility and water costs by spreadsheet. Among those who stated “Other,” tracking by finance or bill comparison were most mentioned.

Figure 2: Proportion of participants tracking utility costs (prior to using EnergyScoreCards), and method used⁸⁸



Control group and treatment group participants both indicated that the main purposes for tracking costs were for budget review and looking for spikes in utility usage. There is a shift in satisfaction of current tracking methods from control group to treatment group. The treatment group reported higher satisfaction of the EnergyScoreCards tool compared to previous tracking methods, with overall satisfaction increasing significantly with the use of the EnergyScoreCards tool (Figure 3). Figure 4 presents the reasons, for the control group only, for their dissatisfaction with their current tracking methods.

⁸⁸ Control-Q2: Does your company track utility and water costs in your buildings? Base: n = 36

Treatment-Q14: Prior to enrolling in the program, did your company track utility and water costs in your buildings? Base: n = 63. Asked only of those who indicated they are currently tracking utility costs per Q2/Q14.

Control-Q2a/Treatment-Q14a: How do you track this information? Control Base: n = 30/Treatment Base: n = 41.

Figure 3: Purpose of tracking utility costs and satisfaction with tracking method (prior to using EnergyScoreCards) ⁹

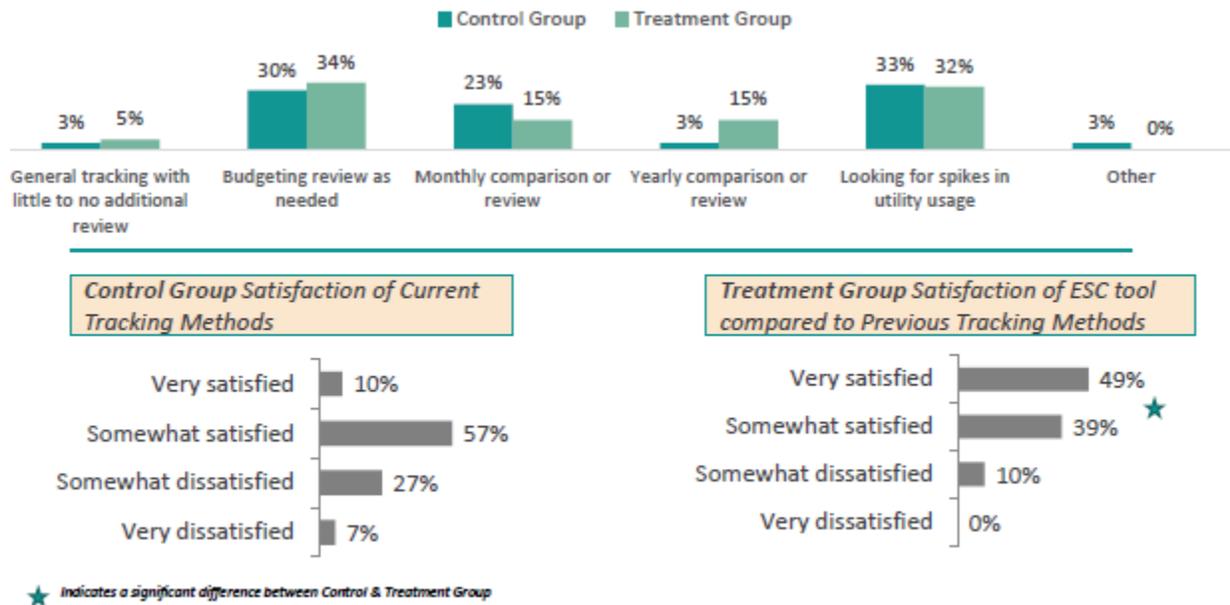


Figure 4: Reason for dissatisfaction in current tracking methods (asked of control group only)¹⁰

Response given	Percent Mentioned
Labor intensive/time intensive (n=5)	50%
Out of date system/Need better way of tracking (n=5)	50%
It does not track consumption/only tracks cost (n=2)	20%
Don't give specifics/consumption per utility/what each tenant uses (n=2)	20%

Actions Taken to Save Energy and Water

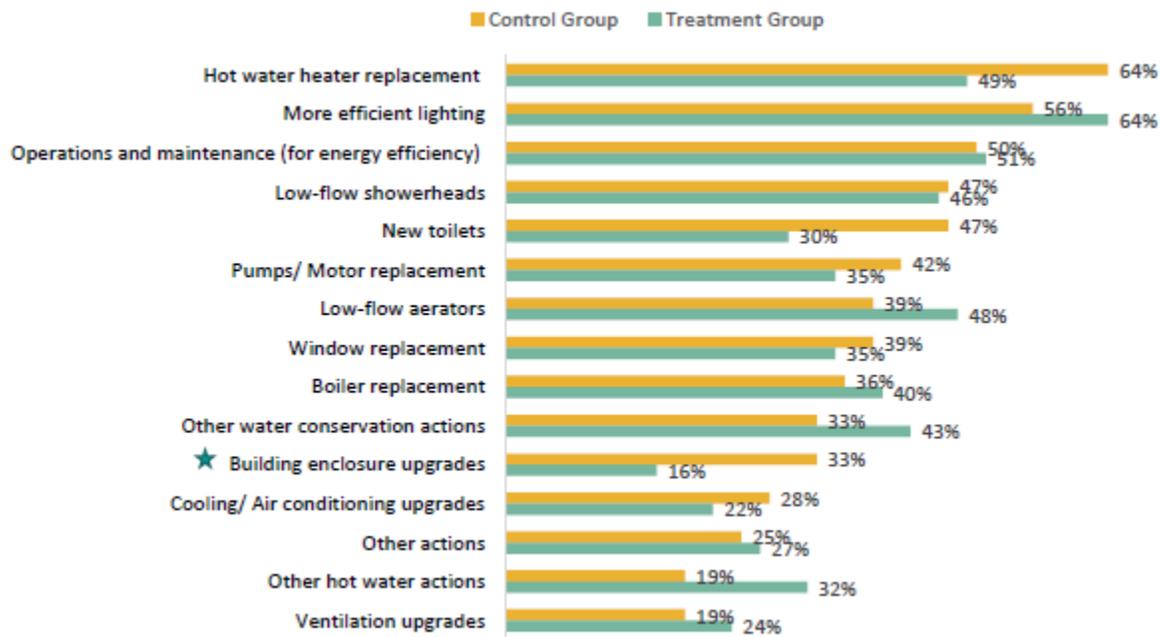
Both groups reported taking a large number of actions over the 2-year period to reduce energy and water usage (Figure 5). There is no clear difference in reported actions between the treatment group and the control group. Hot water heater replacement and more efficient lighting were the highest reported actions taken at sixty-four percent for both groups, although the proportion of organizations reporting replacing hot water heaters seems unreasonably

⁹ Control-Q2b/Treatment -Q14b: Prior to enrolling in the program, what do you use this information for most? Control Base: n = 30/Treatment Base: n = 41 Control-Q2c: How satisfied are you with your current process of monitoring and tracking utility and water costs? Base: n = 30. Q14c: Compared to the previous tracking methods, how satisfied are you with the EnergyScoreCards tool? Base: n = 41.

¹⁰ Control-Q2d: Why were you dissatisfied? Asked only of those who indicated dissatisfaction in Q2c. Base: n = 10

high.¹¹ There was a significant difference between the two groups for building enclosure upgrades with the control group reporting significantly more building enclosure upgrades than the treatment group. However, for the majority of the actions there was no statistically significant difference between the treatment group and the control group. In interpreting these results it is important to note the limitations of the survey data. Actions are for the organization participating in the pilot, not for the specific building; an organization only needed to complete an action in one building to have a positive response to the question. Also, these are self-reported actions over a 2-year period, which are not as reliable as other methods of determining actions, such as on-site confirmation.

Figure 5: Percent of group reporting taking selected actions taken since enrolling in the EnergyScoreCards program¹²



★ Indicates a significant difference between Control & Treatment group

Decrease of Utility and Water Costs

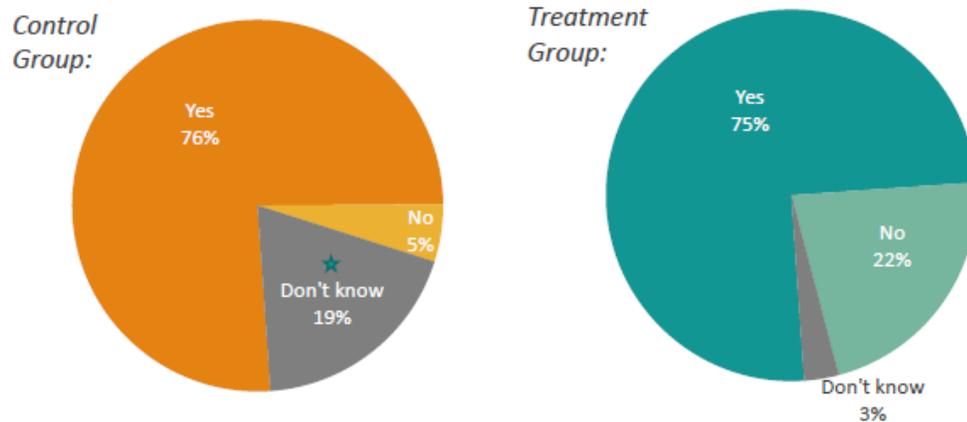
The same proportion (three-fourths) of respondents in both groups reported that utility and water costs decreased as a result of actions taken (Figure 6). Significantly more respondents in

¹¹ A reported 49% and 64% (treatment and control group respectively) of organizations reporting hot water heater replacement within the last 2 years. This is unusually high, especially given that the average lifetime of commercial hot water heaters can be 15 years or more, and they are typically replaced on failure.

¹² Control-Q4/Treatment-Q16: Since the beginning of the program, has your company taken any of the following actions to save energy and water? Control Base: n = 36/Treatment Base: n = 63. Note for control group there is a one-to-one relationship between the company and the survey respondent, while for the treatment group in some cases there were multiple respondents for each company. Responses are for the company, not for the building.

the control group than the treatment group did not know the financial impact of actions taken to decrease utility and water costs in their buildings. This indicates that the EnergyScoreCards service may have helped the treatment group to better understand if there was in fact a decrease in their utility bills as a result of action taken.

Figure 6: Respondents perception of if utility costs decreased as a result of actions taken¹³



Actions Part of a Utility Sponsored Program

The control group and treatment group similarly reported that the majority of actions taken were not part of a utility sponsored program (Figure 7). The highest reported utility sponsored programs are from Xcel Energy and CenterPoint Energy (Figure 8). Note that approximately 1/3 of the actions shown in Figure 5 (depending on which utilities served the particular building) are not associated with any utility program for the affected buildings (e.g., no known water utilities in Minnesota offer conservation programs). Also, the respondent may not have been the one in the company to deal with any utility rebates and may not have known if the action was part of a utility program. Nonetheless, utilities may want to further investigate if opportunities to help their customers save energy are being lost in this sector.

¹³ Q4c: Did utility and water costs decrease as a result of these actions? Control Base: n = 21

Q16c: Did utility and water costs decrease as a result of these actions? Treatment Base: n = 36

Figure 7: Of actions taken, percent of those reported as part of a utility program¹⁴

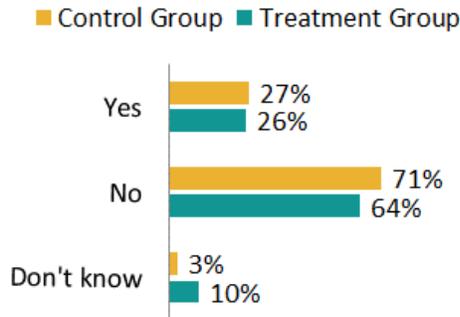


Figure 8: Utility programs participants recalled participating in¹⁵

Control Group	
Rebates/Energy Rebates from the Electric Company	22%
Water Heaters for CenterPoint/Energy Company	22%
Xcel Auditing	22%

Treatment Group	
Xcel Energy Rebates	38%
Franklin Energy	19%
Undefined rebates/Replacements	19%
City/County Incentives	13%
Rochester Public Utilities	6%

Anticipated & Observed Payback Period

Companies in both survey groups were asked how long the required payback period would be for capital improvement projects (Figure 9). Most companies require a payback period of less than five years. Very few companies approved capital improvement projects with a payback period of seven years or more. The control group was asked the anticipated length of time to

¹⁴ Control-Q4e/Treatment-Q16e: Of those actions taken, were any part of a utility sponsored program? Control Base: n = 34/Treatment Base: n = 61

¹⁵ Control-Q4f/Treatment-Q16f: What programs? Asked only of those who indicated actions were a result of utility sponsored program in Control-Q4e/Treatment-Q16e. Control Base: n = 9/Treatment Base: n = 16

complete a capital improvement project and forty-four percent reported less than six months (Figure 10).

Figure 9: Required payback period for capital projects¹⁶

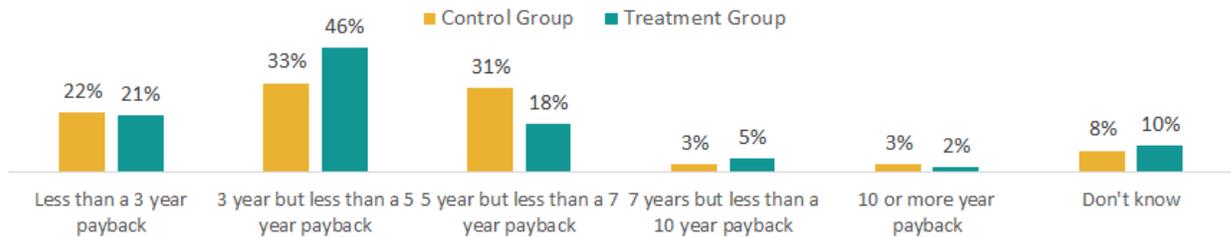
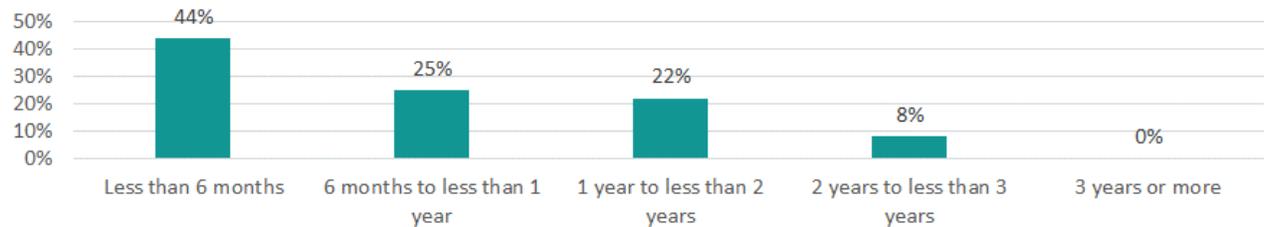


Figure 10: Reported time to complete capital projects after initial identification (control group only)¹⁷



Why Efficiency Projects Have Not Been Implemented

The control group reported lack of funding as the primary factor that impacts why efficiency projects have not been implemented. Other factors reported as a major influence include: don't know what the benefits are, lack of physical resources, and lack of time (Figure 11).

Similar to the control group, the treatment group also reported lack of funding as the primary factor that impacts why efficiency projects have not been implemented. Other factors reported as a major influence were lack of physical resources, unclear financial benefits, and lack of staff to implement projects (Figure 12).

¹⁶ Control-Q11/Treatment-Q20: In terms of the required payback period, what type of financial return does your company typically require in an energy or water efficiency capital improvement project? Control Base: n = 36/Treatment Base: n = 63

¹⁷ Control-Q6: For major projects exceeding \$10,000; how long does it typically take for the project to complete once you identify the opportunity? Control Base: n = 36

Figure 11: Control group: reported reason for not completing projects¹⁸

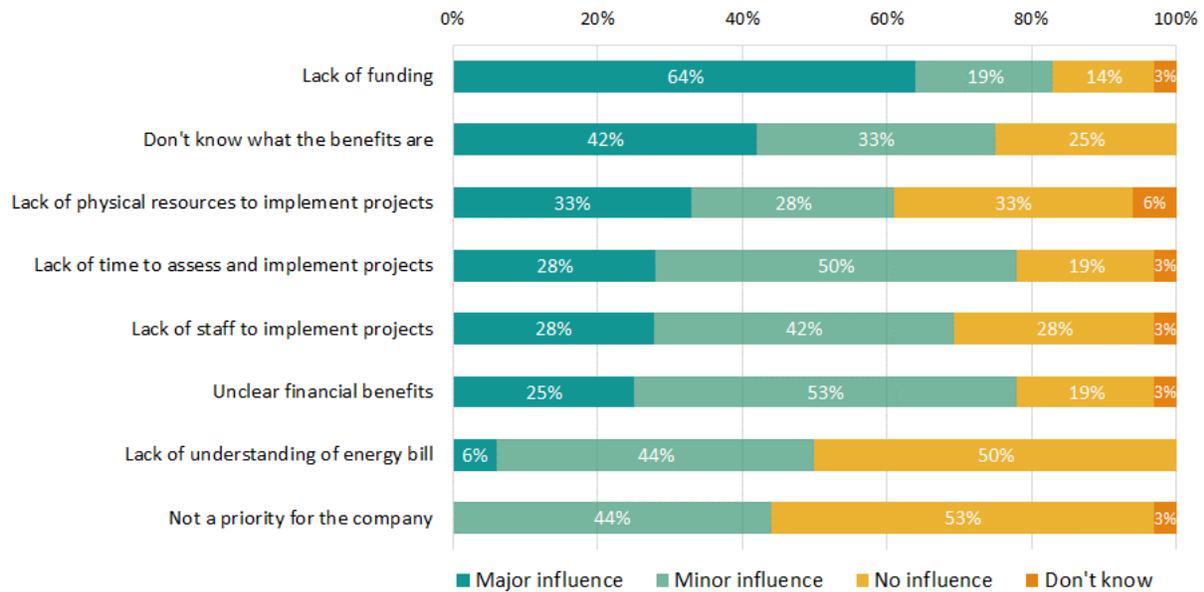
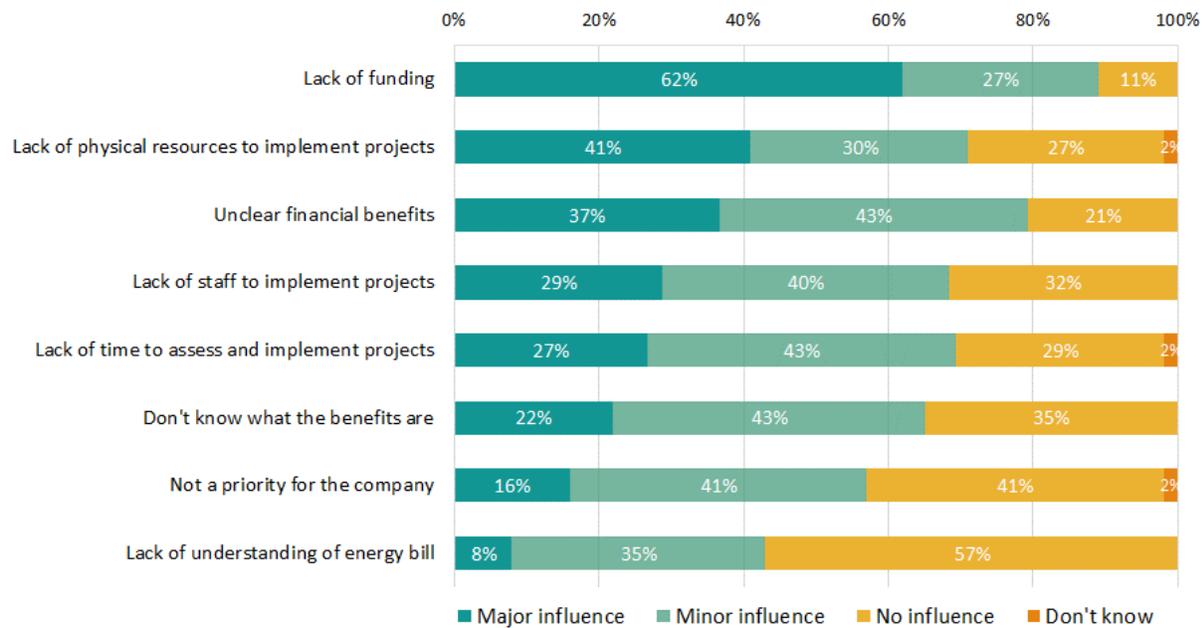


Figure 12: Treatment group: reported reason for not completing projects¹⁹



¹⁸ Control-Q5: Of the following list of factors, please indicate the level of influence as to why some utility efficiency projects have not been implemented? Would it be a major influence, minor influence, or no influence? Control Base: n = 36

¹⁹ Treatment-Q17: Of the following list of factors, please indicate the level of influence as to why some utility efficiency projects have not been implemented? Would it be a major influence, minor influence, or no influence? Treatment Base: n = 63

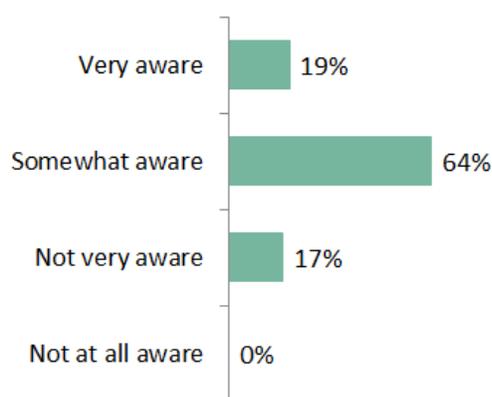
Survey Results: Questions Only Asked of Control Group

This section reports on questions that were only asked of the control group and not the treatment group. Because the survey for the control group did not have to ask specific questions about the usefulness of and experience with the EnergyScoreCards tool and service, there was more time to ask a broader range of questions about energy and water usage in their buildings that were not asked of the treatment group.

Awareness of Opportunities to Reduce Energy Waste

Control group respondents indicated a strong awareness of opportunities to reduce energy in their buildings: 83% reported being either very aware or somewhat aware. Conversely, very few respondents reported they are not very aware and no one reported they are not at all aware of opportunities to reduce energy waste (Figure 13). This question was not asked of the treatment group.

Figure 13: Control group awareness of opportunities to reduce energy²⁰



Perceived Usefulness of Online Tool and Building Score

It is apparent that control group respondents, although they did not have access to the EnergyScoreCards tool, consider an online tool and building score that compares their buildings to similar buildings in Minnesota very useful. Ninety-eight percent of respondents believe an online tool would be very or somewhat useful to track utility and water usage in their buildings (Figure 14). Almost all participants reported that it would be useful to have a comparison of their buildings' performance compared to other buildings in Minnesota (Figure 15).

²⁰ Q12: How aware are you of the opportunities to reduce energy waste in the buildings that are part of the program? Base: n = 36

Figure 14: Perceived usefulness of online tool²¹

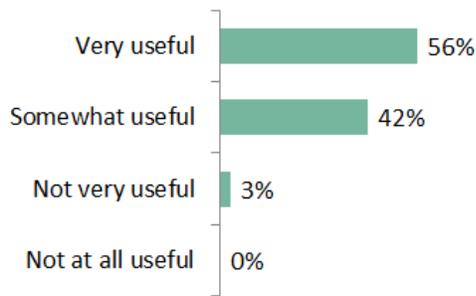
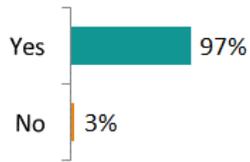


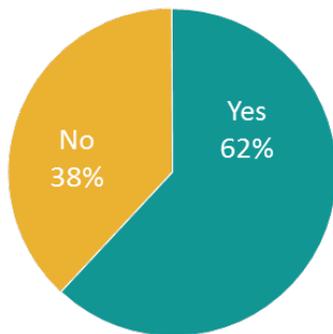
Figure 15: Perceived usefulness of building score comparing similar buildings²²



Reviewing Actions Taken & Purpose

Overall, most of the respondents in the control group stated that they reviewed the effectiveness of actions taken (Figure 16). These results are primarily used for month by month comparison (Figure 17).

Figure 16: Percent that reviewed results of actions taken²³

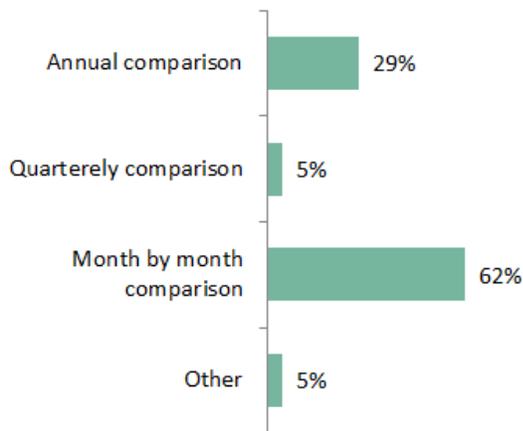


²¹ Q13: How useful would an online tool be in monitoring and tracking the utility and water usage in your buildings? Base: n = 36

²² Q14: Would it be useful to you to have a score of your building compared to others like it in Minnesota? Base: n = 36

²³ Q4a: Have you reviewed results of these actions? Base: n = 34

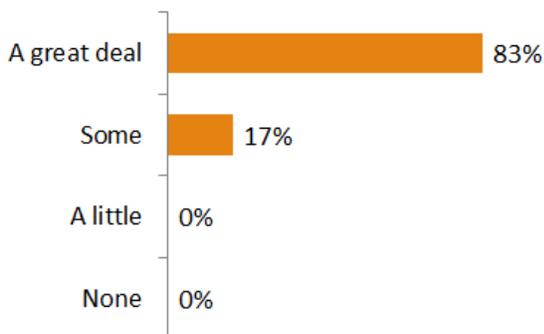
Figure 17: Reported frequency of measuring results of actions taken²⁴



Resident Behavior

Control group respondents believe resident behavior greatly impacts building-paid energy costs. All of control group participants believe that resident behavior is important (Figure 18), with 83 percent reporting residents have “a great deal” of importance in affecting the building-paid energy costs. Sixty-nine percent of companies in the control group are already taking action to educate residents (Figure 19). Sixty-four percent reported that they have a great deal of interest in doing more to educate residents (Figure 20).

Figure 18: How important is resident behavior in affecting the building-paid energy costs²⁵



²⁴ Q4b: How frequently do you measure these results? Base: n = 21. Asked only of those who indicated they reviewed the results in Q4a.

²⁵ Q15: How important do you consider resident behavior to be in affecting the building-paid energy costs? Base: n = 36

Figure 19: Percent that take action to educate residents²⁶

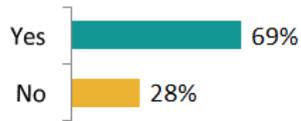
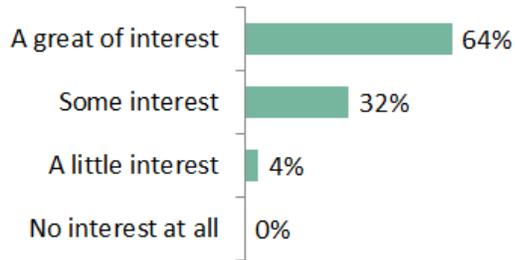


Figure 20: Level of interest for the company to do more to educate and motivate residents to use less energy²⁷



²⁶ Q16: Does your company take any actions to educate or help your residents reduce their energy use?
Base: n = 36

²⁷ Q17: How interested is your company in doing more to educate and motivate your residents to use less energy? Base: n = 25

Survey Results: Questions Only Asked of Treatment Group

This section reports results of questions that were only asked of the treatment group and relate to their experience with the EnergyScoreCards service.

EnergyScoreCards Tool Navigation

The majority of respondents in the treatment group found the EnergyScoreCards tool very or somewhat easy to navigate (Figure 21). Most respondents attended the webinar and ninety-two percent of those who attended the webinar found it very or somewhat helpful (Figure 22 & Figure 23).

Figure 21: Ease of use of EnergyScoreCards tool navigation²⁸

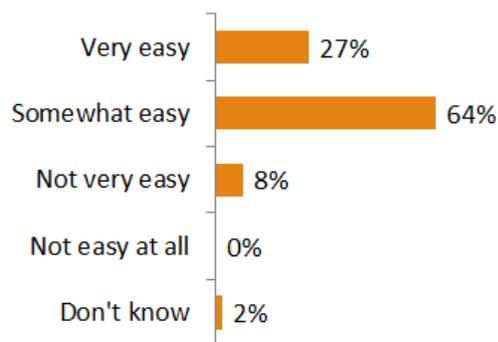
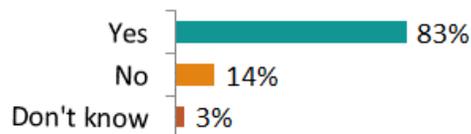


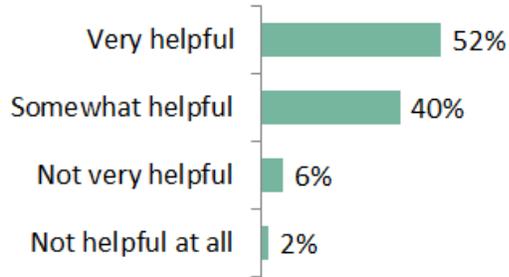
Figure 22: Percent that attended introductory webinar²⁹



²⁸ Q2: In general, how easy was the EnergyScoreCards tool to navigate? Base: n = 63

²⁹ Q3: Do you recall attending a webinar introducing you to the program? Base: n = 63

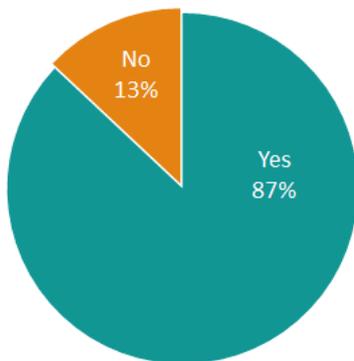
Figure 23: Helpfulness of webinar³⁰



EnergyScoreCards Communication: Periodic Calls & Emails

Periodic calls and emails were very effective for the treatment group. Ninety-three percent of those who recalled receiving periodic calls or emails found it very or somewhat helpful and seventy-three percent took action as a result of the calls and emails (Figure 24 and Figure 25).

Figure 24: Percent of those who recalled receiving periodic calls or emails³¹



³⁰ Q3a: How helpful was the webinar in preparing you for using the tool and monitoring the energy and water usage in your building(s)? Base: n = 52. Asked only of those who said they attended the webinar in Q3.

³¹ Q4: Throughout the past 12 months; do you recall receiving periodic emails or phone calls from representatives from the EnergyScoreCards project? Base: n = 63

Figure 25: Helpfulness of calls or emails³²

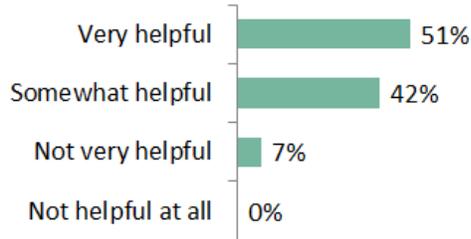
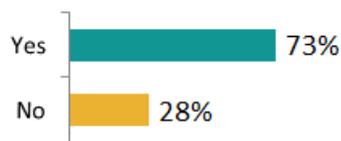


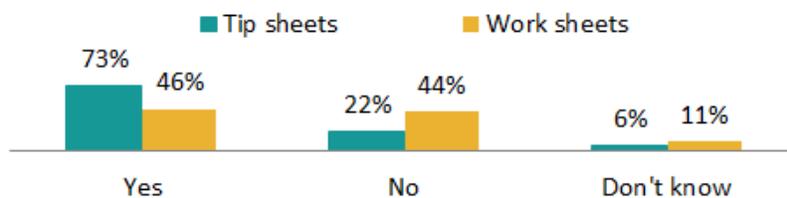
Figure 26: Percent who took action as a result of calls or emails³³



EnergyScoreCards Online Tip Sheets/Work Sheets

Tip sheets and worksheets were both methods used to engage participants, and give them ideas on how to save energy.³⁴ Overall, treatment group respondents recalled receiving tip sheets more than work sheets (Figure 27). Fifty-six percent of the individuals who recalled receiving work sheets completed them (Figure 28). Most respondents found tip sheets and work sheets very or somewhat helpful (Figure 29).

Figure 27: Participants that recall receiving tip sheets or work sheets³⁵



³² Q4a: How helpful were these calls or emails?* Base: n = 55

³³ Q4b: Did you take action as a result of these calls or emails?* Base: n = 51

*Asked only of those who indicated they recall receiving periodic emails or phone calls in Q4.

³⁴ For examples of tip sheets and worksheets, see: <http://energyscorecardsmn.com/tools>.

³⁵ Q5: Do you recall receiving links to online tip sheets from EnergyScoreCards Minnesota Representatives? Base: n = 55. Q6: Do you recall receiving links to work sheets from EnergyScoreCards representatives to help you save on your utility bills? Base: n = 55

Figure 28: Percent of those who completed worksheets³⁶

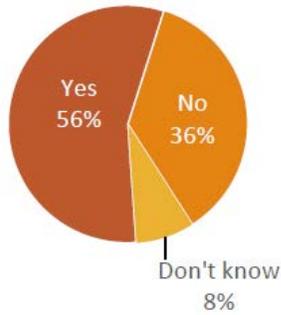
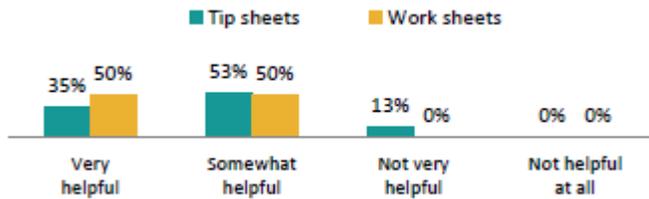


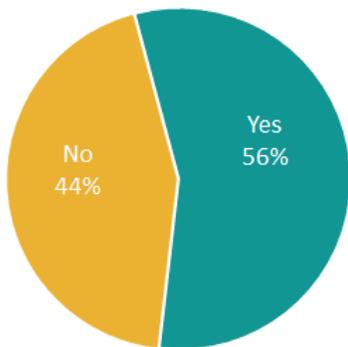
Figure 29: Helpfulness of tip sheets and worksheets³⁷



EnergyScoreCards Help Site

Slightly more than half of the treatment group respondents used the EnergyScoreCards help site (Figure 30). Nearly all, ninety-four percent, of those who rated the help site found it very or somewhat helpful (Figure 31).

Figure 30: Percent of those who used the EnergyScoreCards help site³⁸

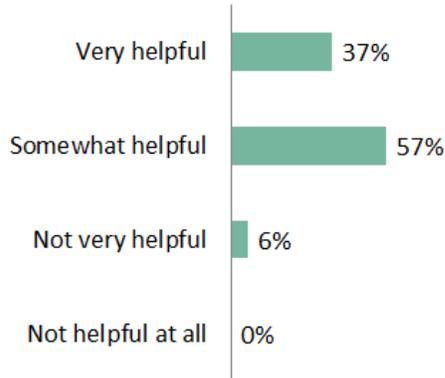


³⁶ Q6a: Did you fill out the work sheets? Base: n = 25. Asked only of those who indicated they recall receiving tip sheets (Q5) or work sheets (Q6).

³⁷ Q5a: How helpful were the tip sheets? Base: n = 40 and Q6b: How helpful were the work sheets? Base: n = 14. Asked only of those the filled out the tip sheets/work sheets.

³⁸ Q7: Did you use the help site to learn more about how to use the EnergyScoreCards tool? Base: n = 63

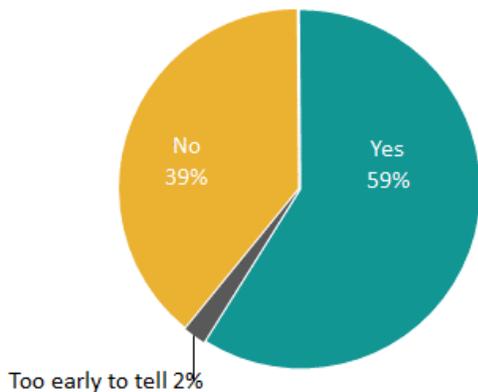
Figure 31: Helpfulness of the EnergyScoreCards help site³⁹



Use of the EnergyScoreCards Tool & Reviewing Actions Taken

About six in ten treatment group participants indicated they used the EnergyScoreCards tool to compare building utility and water costs before and after project completion (Figure 32). The reported usefulness of the EnergyScoreCards tool in evaluating the results is very strong with ninety-five percent of respondents stating the tool was very or somewhat useful (Figure 33).

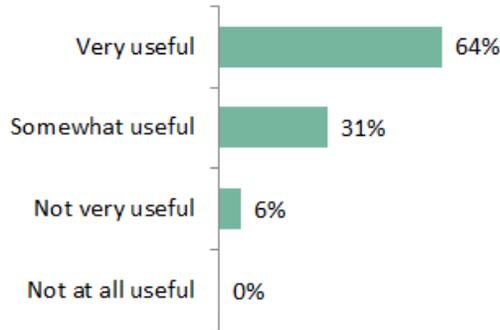
Figure 32: Percent that reviewed results of actions using the EnergyScoreCards tool⁴⁰



³⁹ Q7a: How helpful was the help site in answering your questions? Base: n = 35. Asked only of those who indicated they used the help site in Q7.

⁴⁰ Q16a: Did you use the energy events tool to compare building utility and water costs before and after project completion? Base: n = 61

Figure 33: Usefulness of EnergyScoreCards tool in effectively reviewing results



EnergyScoreCards Building Scores

Seven out of ten treatment group respondents stated their building’s score somewhat matched their performance ideas (Figure 34). More respondents recalled having buildings score C or D (Figure 35). Participants were slightly more likely to take action to improve the efficiency of these buildings, although perhaps not as much as might be expected as the difference is not statistically significant (Figure 36).

Figure 34: Degree to which the rating matched previous ideas of building performance⁴¹

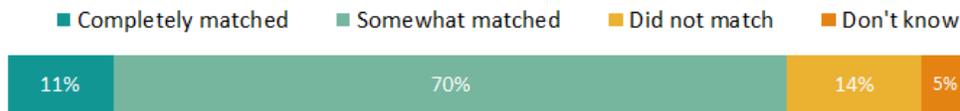
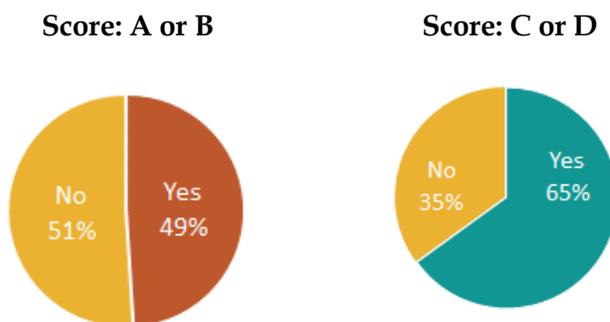


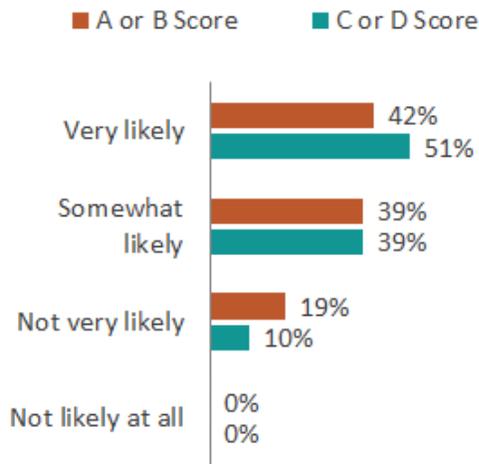
Figure 35: Participants’ recollection of having buildings scoring an A/B, or a C/D⁴²



⁴¹ Q8: After seeing how the building(s) scored, to what degree did the rating of the buildings match with your previous ideas of their performance? Base: n = 63

⁴² Q9: Do you recall having any buildings that scored an “A” or “B”? Base: n = 63. Q10: Do you recall having any buildings that scored a “C” or “D”? Base: n = 63

Figure 36: Likelihood to take action based on score⁴³



EnergyScoreCards Online Peer Comparison Tool Features

The energy index was reported as being used the most, as well as being the most useful, out of the peer comparison tools (Figure 37). The fossil fuel index was the least used, and reported the highest percent for being not at all useful (Figure 38).

Figure 37: Percent of features used in the last 12 months⁴⁴

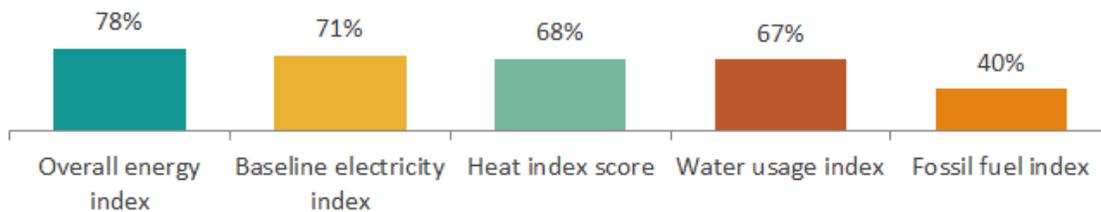
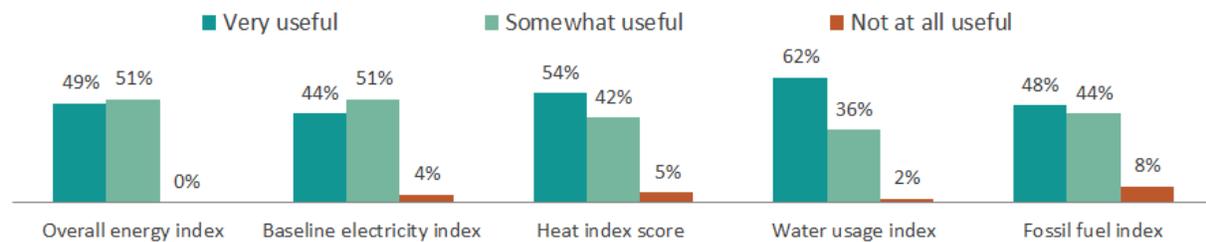


Figure 38: Usefulness of online features⁴⁴



⁴³ Q9a/10a: How likely was your company to take action to improve the efficiency of these buildings? Q9a Base: n = 31 / Q10a Base: n = 41. Asked only of those who responded yes to Q9 or Q10.

⁴⁴ Q11: Did you use this feature in the past 12 months? Base: n = 63. If so, how useful was this feature to you?

EnergyScoreCards Other Online Tool Features

Year-to-year comparison was the most used and most useful online feature (Figure 39 and Figure 40). Other online tool features that were reported as very useful are automatic bill retrieval and the portfolio dashboard.

Figure 39: Percent using selected EnergyScoreCards tool features in the last 12 months⁴⁵

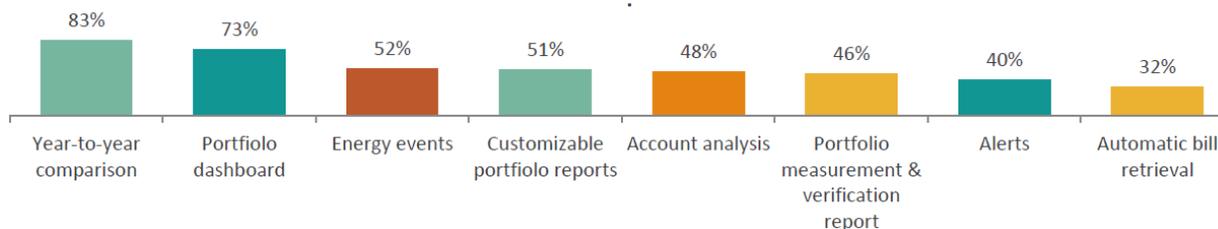
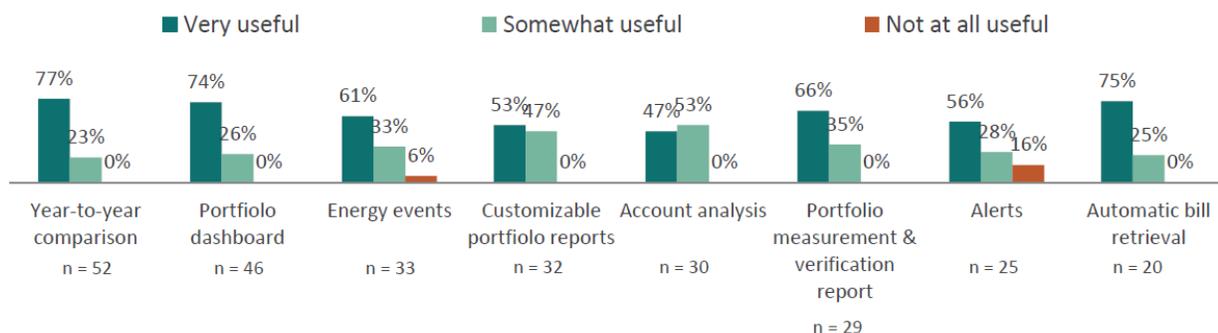


Figure 40: Perceived usefulness of selected features of EnergyScoreCards tool⁴⁵

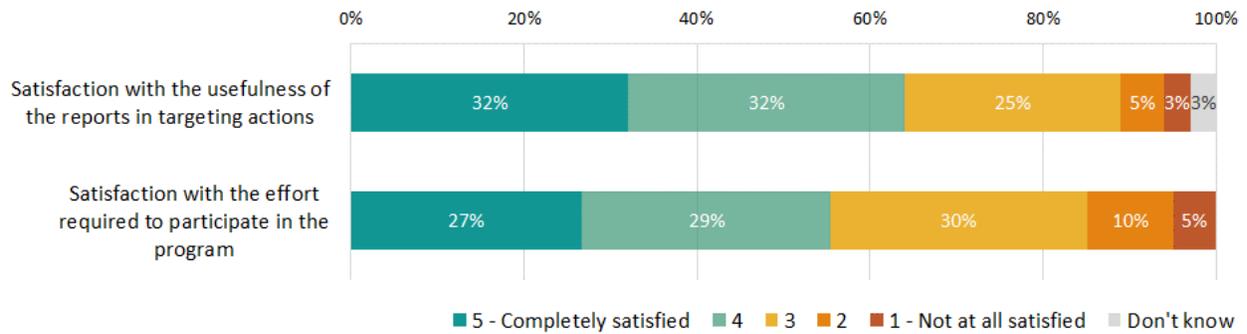


Overall Satisfaction

Overall, treatment group participants reported being satisfied with the usefulness of the reports in targeting actions and the effort required to participate in the program (Figure 41). There is a slight decrease in satisfaction with the effort required to participate in the program.

⁴⁵ Q12: Did you use this feature in the past 12 months? Base: n = 63. If so, how useful was this feature to you?

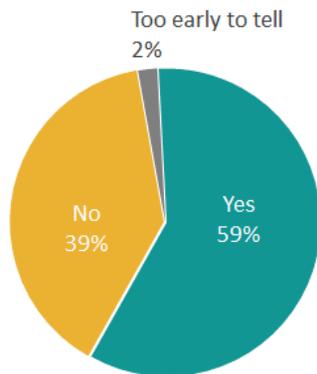
Figure 41: Overall satisfaction with EnergyScoreCards program⁴⁶



Use of EnergyScoreCards Tool for Cost Comparison

Slightly more than half of treatment group respondents indicated they used the EnergyScoreCards tool for cost comparison before and after completing a project (Figure 42). The majority of those who used the EnergyScoreCards tool for cost comparison found the tool to be very or somewhat useful with sixty-four percent of those who reviewed the project results using the tool reporting that it was very useful (Figure 43).

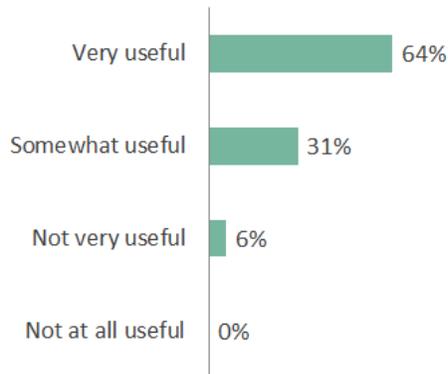
Figure 42: Participants using the tool for cost comparison among buildings⁴⁷



⁴⁶ Q13a: Using a scale from 1 to 5, how would you rate your satisfaction of the usefulness of the reports in targeting actions? Base: n = 63. Q13b: Using a scale from 1 to 5, how would you rate your satisfaction of the effort required to participate in the program. Base: n = 63

⁴⁷ Q16a: Did you use the energy events tool to compare building utility and water costs before and after project completion? Base: n = 61. Asked only of those who indicated they took any of the actions in Q16.

Figure 43: Usefulness of tool to effectively review results⁴⁸



Overall Satisfaction & Likelihood to Recommend

Results on overall satisfaction and likelihood to recommend were very positive. Ninety-five percent of participants reported being very or somewhat satisfied with their overall experience with the EnergyScoreCards tool and service (Figure 44). Additionally, ninety-one percent stated they were very or somewhat likely to recommend this service to others (Figure 45).

Figure 44: Overall satisfaction with EnergyScoreCards⁴⁹

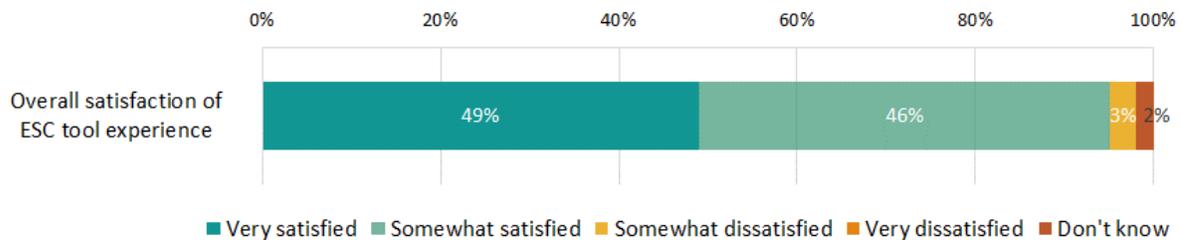
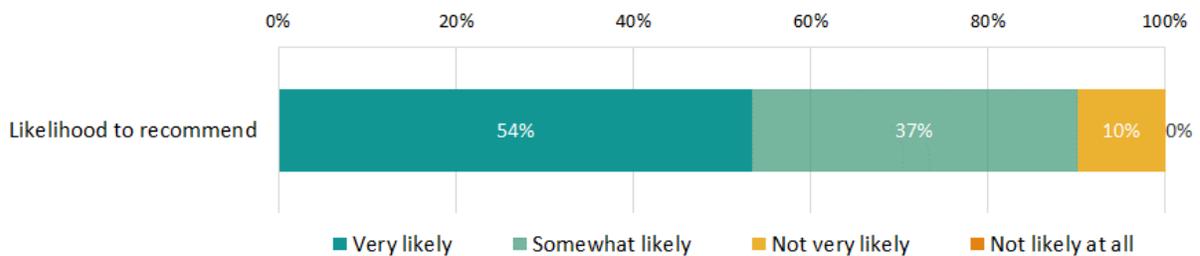


Figure 45: Likelihood of recommending EnergyScoreCards Service

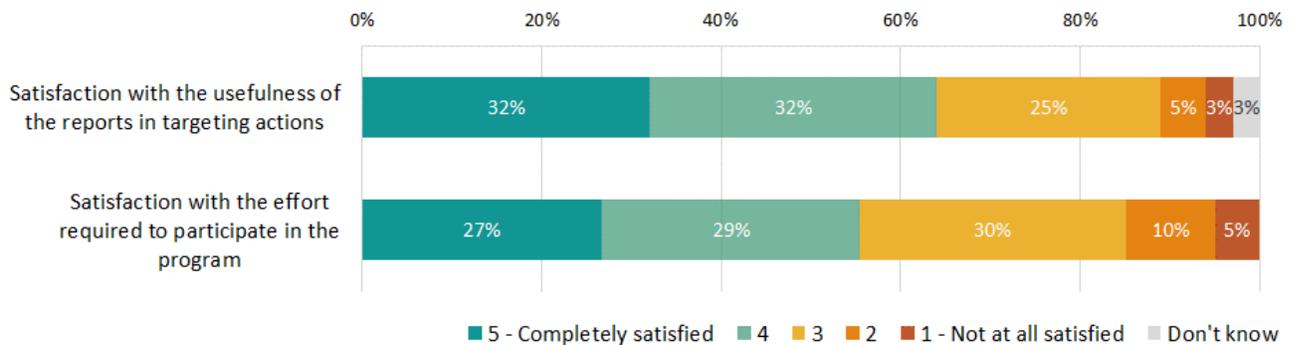


⁴⁸ Q16b: How useful was the tool to effectively review results? Base: n = 36. Asked only of those who indicated they used the tool to compare costs before and after project completion.

⁴⁹ Q23: How satisfied were you with your overall experience with the EnergyScoreCards tool and service? Base: n = 63. Q25: How likely are you to recommend the service to others? Base: n = 63

Overall, treatment group participants reported being satisfied with the usefulness of the reports in targeting actions and the effort required to participate in the program (Figure 46). There is a slight increase in dissatisfaction with the effort required to participate in the program. We also note that participants were more satisfied with their overall experience with the tool than with either the usefulness of the reports in targeting actions, or the overall effort required to participate in the program. This points to a limitation in the program design, in that the EnergyScoreCards service was not intended to identify the types of specific actions that might have been identified through an energy audit.

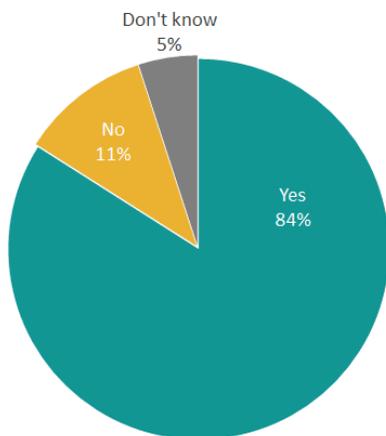
Figure 46: Overall satisfaction with EnergyScoreCards program⁵⁰



Continued Participation

At eighty-four percent, treatment group respondents show strong willingness to participate in the EnergyScoreCards program again (Figure 47).

Figure 47: Willingness to participate in EnergyScoreCards program again⁵¹



⁵⁰ Q13a: Using a scale from 1 to 5, how would you rate your satisfaction of the usefulness of the reports in targeting actions? Base: n = 63. Q13b: Using a scale from 1 to 5, how would you rate your satisfaction of the effort required to participate in the program. Base: n = 63

⁵¹ Q24: Would you participate in this program again? Base: n = 63

Willingness to Pay & Amount

Forty-six percent of the treatment group participants responded that they are willing to pay to continue use of the EnergyScoreCards service (Figure 48). The amount that participants are will to pay per building per year varies. However, the majority would be willing to pay \$100 to less than \$200 per building per year, which is less than the standard price of the service offered outside of the pilot program (Figure 49).

Figure 48: Willingness to pay to participate in program again⁵²

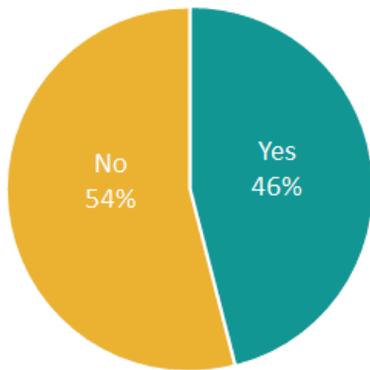
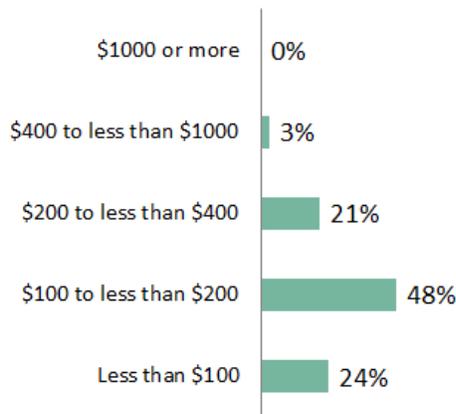


Figure 49: Amount participants are willing to pay per building per year⁵³



Position titles of treatment group respondents

Treatment group respondents were also asked their titles, in order to get a sense of the variety of roles of the pilot program participants. As shown in Figure 50, nearly 1/3 of the participants

⁵² Q26: Would you participate in this program again? Base: n = 63

⁵³ Q26a: How much would you pay to continue using the EnergyScoreCards tool? Base: n = 29. Asked only of those who indicated they would participate in the program again in Q26.

had the title of “Property Manager,” although there were 17 unique titles that were reported among the 63 respondents.

Figure 50: Position titles of respondents (treatment group only)⁵⁴

Title Provided	(n = 63)
Property Manager	29%
Other*	19%
Asset Manager	18%
Executive Property Manager	16%
Site Manager	10%
Owner	5%
Maintenance Manager	5%

⁵⁴ Q28: What position best describes your role within your company? Base: n = 63. Reported titles in the “other” category were: Accounting Manager, Department Director, Controller, Program Director, Executive Assistant, IT Manager and Executive Assistant, Assistant Community Manager, Vice President, Operations, Regional Manager (2), and Property Supervisor.

Interviews with Program Implementers and Utilities

The following is a summary of the in-depth interviews conducted with EnergyScoreCards Minnesota program implementers and utility partners. For readability, as well as to help preserve the anonymity of the small number of respondents, these two groups are presented together. These insights and quotes offer another perspective in addition to the participant survey responses presented above. The surveys used for these interviews can be found in the appendix.

Overall level of success

Of the respondents who were more familiar with the EnergyScoreCards program, most indicated that they believe the pilot program was somewhat successful. When asked the reason for this response, a common theme was the variation among building owners as far as level of engagement. Some of the implementation staff reported that many signed up but didn't engage further. This behavior made it difficult to gauge the effectiveness and usefulness of ongoing support and use of the online tool. For building owners and managers who were engaged and motivated by the program there seemed to be a very positive response to management of utility and water costs. Some EnergyScoreCards staff also felt that they were not able to meet a demand from participants for specific recommendations for their buildings, and therefore felt there was a lack of "having good actions for people to take."

Most successful part of the project

There were a few items noted that should be considered successes of the project:

- "Engaging of building owners to be more active in working toward energy savings in properties."
- "Understanding how projects view energy and water and the impacts these have on budget."
- "All of the collaboration between organizations; interacting for a common goal."
- "Providing useful information to customers."

Greatest challenge of the program

Many reported the data collection and data privacy issues as a challenge for the program. The original plan was to collect tenant energy data as well as building owner energy data. However, this plan was dropped due to data collection restrictions and did not become part of the final pilot program implementation. This limited the analytics to owner-paid bills, which meant that for non-master-metered buildings, EnergyScoreCards did not provide feedback on full building energy consumption.

Another challenge was that it was reported to be hard to reach out to building owners and managers to get them to engage. Without active participation, EnergyScoreCards staff found it

challenging to aid some participants in making knowledgeable decisions about their buildings' energy consumption.

In other states, Bright Power has been able to integrate technical services into the EnergyScoreCards tool. For example, when a building owner has a building with high energy usage, Bright Power can send a technician to audit the building and provide technical assistance in implementing any recommendations. This was not part of the program design in Minnesota and may have contributed to limiting the implementation of energy savings recommendations.

Importance of benchmarking tool for a successful utility energy efficiency program in the multifamily sector

The responses for this question ranged between somewhat important and very important. Some of the reasons why include:

- "It's a baseline to determine where you're coming from and what you've achieved."
- "The ability to track and determine energy savings - for building owners to use easily."
- "Helps people understand where they have opportunities and what kind of progress they're making. Benchmarking is a critical component for people who are serious about making change in their portfolio."
- "Allows resources to be better allocated."

Challenges to incorporating a multifamily benchmarking tool into a utility energy efficiency program

Some of the reported challenges were:

- "Keeping customers engaged with the topic of energy."
- "Lack of clarity regarding energy consumption data practices on how data can be used - which limits what you can do."

Other responses spoke to the challenge of being able to show the effectiveness of the EnergyScoreCards program, or any program.

Perceived value of the EnergyScoreCards online tool

All of the account managers with the most direct usage of the tool stated that they believed the tool was "somewhat valuable" for program participants. This was mainly due to concerns with the level of engagement with the tool by building owners and staff. For those who interacted with the tool regularly and worked closely with EnergyScoreCards staff there seemed to be great value. However, time restraints, motivation, and level of interest were big challenges for a portion of the building owners and managers enrolled in the program. The tool provides more accurate budgeting, long-term capital planning data, and other operational insights for decision making across the organization.

Ideas based on feedback from EnergyScoreCards users

Noteworthy ideas for improvement in the EnergyScoreCards tool were:

- Provide email updates or alerts on tool activity without making them overly sensitive. This way users are continually reminded of their buildings' performance.
- Account trend analysis would be helpful.

Other feedback on the EnergyScoreCards online tool

The more important aspect of the tool was the ability to compare building performance to other similar buildings. One respondent commented that the work sheets did not seem to be used to a large extent.

Perceived value of EnergyScoreCards online tool

All of the interviewees other than Bright Power staff (they were not asked) said that they would be willing to pay less than the current cost of the service for access to the EnergyScoreCards tool if they owned multifamily buildings. The range per building was less than \$100 or \$200 to less than \$400. One respondent stated a per-unit cost would provide better value; this respondent would pay \$25 per unit, as price would vary depending on building size.

Conclusions and Lessons Learned

The conclusions and lessons learned reported here focus on energy rather than water use and on insights that may be applicable to utility-run energy savings programs, as that is the focus of the funding source for this project. However, many of these insights may be applicable to water and water savings programs as well.

- 1. Treatment group participants reported strong satisfaction with the EnergyScoreCards service, and found the tool easy to navigate and the supporting services helpful. Control group members perceived the service as highly useful, even though they had not yet used the tool. It is clear that a benchmarking service like EnergyScoreCards could aid building owners and managers in evaluating and managing energy and water use their buildings.**

Among the treatment group, the EnergyScoreCards tool was clearly found to be useful. Ninety-one percent found it very easy to navigate. The tool was also useful for tracking the results of projects; more than half of the treatment group used the tool to review the effectiveness of actions taken and of these, ninety-five percent reported that the EnergyScoreCards online tool was helpful in interpreting the results of actions taken. While it should be noted that the program was opt-in and that only participants that were interested in the service in the first place signed up for it, these are nonetheless very strong satisfaction rates and are a good indication that this would be favorably accepted by other multifamily building owners and managers.

It is also clear that the multifamily building owners and managers in the pilot are highly interested in saving energy and tracking their energy usage, which is a promising finding for utility programs looking to initiate programs in this market segment.⁵⁵ While building owners for the most part already track their utility bills, they see the automated processing of the data and access to tool features available through EnergyScoreCards to be more useful than manually tracking the data. It should also be noted that recruiting 500 buildings to the program in a relatively short timeframe is a noteworthy achievement, and is another indication of the interest by multifamily owners and managers in the service.

- 2. The engagement of the account managers appears to have been an essential part of the program design, with seventy-three percent of treatment group participants reporting that they took action because of a call or email from an account manager.**

Similar programs have also reported that simply providing information is not sufficient and that an engagement strategy must be in place to help participants interpret the data

⁵⁵ This finding is consistent with a previous focus group conducted with Minnesota multifamily building owners and managers by CEE in 2013 (see Appendix: Nelson, "[Direct Install Plus Multifamily Pilot: Final Report](#)" Prepared for CenterPoint Energy by Center for Energy and Environment, October 2013. (mncee.org/Innovation-Exchange/Resource-Center/Technical-Reports/Direct-Install-Plus-Multifamily-Pilot-Program---Fi/))

and “nudge” them to take action.⁵⁶ The implication for future programs is that they will likely not be very effective if they simply provide access to a benchmarking tool. Similarly, if there is already an existing utility program focusing on the multifamily sector, benchmarking can provide an excellent way to engage multifamily building owners and managers in taking energy savings actions. This is consistent with findings from a previous multifamily energy efficiency pilot in Minnesota.⁵⁷

- 3. Although the program did not target resident behavior, eighty-three percent of the control group regarded resident behavior as having a great deal of impact on owner-paid utility bills, with sixty-nine percent reporting conducting tenant education to help reduce this impact. This high level of interest suggests that utility programs that help building owners and managers target resident behavior may be an area for future work.***

Nearly two-thirds of respondents reported that they are interested in doing more to educate residents to reduce utility bills. A large majority of the buildings in the program (as is true generally of multifamily buildings in Minnesota) were centrally heated with heat paid for by the owner and electricity in the unit paid for by the tenant. Thus heating bills suffer from the split incentive problem (with property owners paying for the heating fuel, there is no incentive for the tenant to save energy), while electric bills do not. For this reason there is a sense by building owners that a large amount of energy is being wasted, about which little can be done on their ends.

This indicates a potential area for a utility program to focus on, although it was not addressed in this program. If a utility program could help building owners reduce energy through actions taken by tenants, the benchmarking tool could potentially measure these savings and provide a mechanism for the utilities to claim savings. Originally, the pilot program design conceived of benchmarking the tenant's bills as well as the owner's bills, but ultimately logistical and privacy concerns led to this part of the program being dropped. This may be an area for future program development.

- 4. Although the program was successful in engaging building owners in their energy and water usage data, it was less successful in identifying specific actions for them to take. This was a limitation by design – the service was not intended to identify specific energy and water savings actions. However, coupling the benchmarking service with this type of assistance could have increased the impact of program.***

The program design was not intended to directly identify specific savings opportunities, and it was not part of the training or the expectation of the account managers to be able

⁵⁶ This is certainly CEE's experience, and one example of this, through CEE's Energy Intelligence for Industry Program, will be discussed at length in a forthcoming ACEEE Summer Study in Industry paper "The Cyborg Approach to Energy Intelligence: Combining Software Visualization of Interval Data with a Human Touch to Maximize Savings." There is also clear consensus in the behavior change literature that information alone is not enough to induce action.

⁵⁷ Participants in the CenterPoint Energy-funded multifamily pilot that CEE ran also noted interest in a benchmarking score, and responded positively to the audit report that included such a benchmark (see footnote 55 for report reference).

to provide this as part of their service to the participants. Nonetheless, it created some frustration that while the EnergyScoreCards tool created a heightened awareness of energy usage (and particularly high-usage buildings), neither the tool nor that account managers could clearly and directly point participants to specific actions they could take to reduce their energy usage. Multifamily owners and managers are busy people, managing energy is not their primary job and they have limited time and resources to deal with the issue. Therefore, having specific actions to recommend, or pairing the service with more hands-on technical support, could have made the program more successful. It make sense that these services would be combined, as the account managers were able to successfully use the EnergyScoreCards tool to engage multifamily owners and managers in taking energy savings actions.

- 5. This evaluation suggests that an energy benchmarking service could be a valuable part of a utility-funded program targeting the multifamily sector and would be most effective when integrated with other technical services that would help building owners identify and implement upgrades.*

There are several potential advantages to adding a benchmarking service as part of a utility energy efficiency program addressing the multifamily sector. Due to the high interest of multifamily building owners and managers in bill tracking and benchmarking, it could attract additional participants to utility programs and help to drive additional participation in other utility programs. And finally, it could offer additional savings opportunities.

If a benchmarking service were to be added to a full service multifamily program, a question that utilities would likely have is whether the incremental savings achieved through benchmarking could be claimed. That is, if a utility were providing a full-service program, including technical support to identify and implement improvements and rebates for capital improvements, what additional savings could be achieved by adding a benchmarking service? While this process evaluation did not answer that question, the survey results suggest that interest in taking energy actions could be higher and that additional savings through improved operations and maintenance may be possible by adding a benchmarking program to a full-service utility program. In addition, a benchmarking program has the potential to provide relatively easy access to actual data which could be used to measure the savings.

Another consideration is how much of the cost of a benchmarking service a utility program could or should pay for. As a practical matter, utilities would need to see quite a bit of savings to justify paying for the \$500/building/year or so that the EnergyScoreCards service costs outside of this pilot program, and this would be an extraordinary expense compared to the cost of utility programs with comparable savings opportunities.⁵⁸ Thus, if incorporated into a utility program, either building

⁵⁸ Just as a “back of the envelope” calculation, a typical Minnesota natural gas utility program cost is \$10/dekatherm of annual average savings for measures that typically have a greater than 10-year lifetime (review of MN gas utility Triennial Plans). To achieve equivalent performance (i.e., savings persisting over 10 years at a similar cost), at a utility-born cost of \$500/year for 10 years, a typical 50-unit building

owners would likely need to pay a substantial portion of this cost or the cost would have to be much less. The survey indicated that many building owners may be willing to pay for some or all of the cost of the service. Although a majority of treatment group participants would elect to continue participating in the EnergyScoreCards program, only half would be willing to pay for the EnergyScoreCards tool and service. Forty-eight percent would pay \$100 to less than \$200 per building per year. Given that this price is about 20% to 50% of the current asking price for the service, many more participants would sign up for it if utilities paid a portion of the asking price.

While there are many possible program designs for incorporating benchmarking into an existing or new utility program it is beyond the scope of this evaluation to offer a comprehensive analysis of options. However, this pilot suggests that integrating it into a full-service program may be the most effective design and that many customers would be willing to bear at least a portion of the cost of benchmarking.⁵⁹

would need to see natural gas savings of about 20% to meet this benchmark, assuming the savings were not due to other utility programs, and that the benchmarking service would be needed in each of the 10 years in order to cause the savings. (Based on average per-unit gas usage of about 47 Dth for a 50-unit building, per Energy Center of Wisconsin 2013, "Minnesota Multifamily Characterization Study"; calculation is thus as follows: $[\$500 * 10] / [47\text{Dth} * 50 \text{ units} * 0.2] = \$10.6/\text{Dth}$).

⁵⁹ If the utility wanted to share the cost of the benchmarking with the customer, and the customer would have to pay a substantial part of this cost, they may want to give the customer choice among qualified benchmarking options. This would be a similar model to the recently-filed Xcel Energy pilot for Energy Management Systems. See Xcel Energy Docket No. E, G002/CIP-12-447, February 20, 2015, Program Modification Request, "Energy Information Systems Pilot," 2013-2015 Conservation Improvement Program.

Appendix A: Verbatim Comments

Verbatim Comments – Control Group (December 2014)

NOTE: Each bullet point represents a comment from a different respondent (not all respondents had a comment).

Q1: What was the MAIN reason you decided to participate in the EnergyScoreCards program? Other (specify):

- Owner requested that we participate in EnergyScoreCards Minnesota.

Q2a: How do you track this information? Other (specify):

- In our budget, we work with it in our budgeting. We get a monthly summary on what we have spent and then compare that.
- I just look at the bills from before.
- I just track it by the bills.
- When the bills come I look at the bills, I look at the consumption, compare that to the prior month and prior year, it isn't on a formalized spread sheet. Then I yell at maintenance people to tell what toilet is running.
- Basically, when we pay the bills then we compare the charges with a comparable building.
- Through financial reporting.
- Read the meter each day.

Q2b: What do you use this information for most? Other (specify):

- We are required to submit the utility consumption and cost to HUD every year because of public housing and renter based income the government provides an operating subsidy to cover the cost that the rent doesn't cover.

Q2d: Why were you dissatisfied?

- I think there might be other aspects where you're not sure why it's causing that but I think if we know what the consumption is or the cost that has gone up as far as the kilowatts. I think it's cumbersome to go through our data the way we have it now because you are pulling out many months to try and find that.
- Because it's only tracking cost, it's not tracking consumption. That's really it. And there is no ability for me to look at it broad based and understand what is an acceptable goal or benchmark. It doesn't tell me what it should be, and I don't have any way to compare such things as how much energy does my parking lot lights use compared to elevators, how much do these specific functional groups cost me. If my elevator is sucking up 40% of my electricity and I'm focusing on lighting, how can this help me?
- Well, I guess we try to track it during the meter usage, but we don't have the time to analyze the findings because it varies too much. It's not like the weather, where you can

gage how the electricity will go up when it gets hot and the ACs are on all day. Gas is too tough to predict.

- It's very time intensive, staff time intensive the way we do it. Well basically we have to request copies of the utilities and then we input both consumption and cost data into the spread sheets.
- Very labor intensive. Manually inputting each property's monthly cost into a spread sheet and then having to manually interpret why there are differences such as sprinkler systems things like that. It is only as good as the person putting it in and evaluated.
- It's just not very efficient and it's time consuming and you get behind and it's a manual process.
- We are using out of date records. We would like to update our tracking system.
- Because we don't know about it until it's past. We aren't able to be proactive we are being reactive. Essentially, I get the bill and say "oh my god what happened". I guess the other reason is that I don't think that maintenance people take it seriously enough.
- We don't have a formal process; we don't have a sophisticated tracking.
- Well I think I would like to know what the tenants are using and I have no way of breaking that down.

Q4: Has your company taken any other actions to save energy & water?

- With the irrigation; the sprinkler system.
- Upgraded appliances and air conditioners.
- Washers and dryers they are E-star so they use less energy less water less everything.
- Weather stripping around doors and anything that was drafty we put up plastic to help with efficiency. Appliances getting energy star appliances as they are needed to replace.
- We sided the buildings and then wrapped it. Its material where you tape the joints and it gives you a more air tight.
- Some controls for the boilers have been installed in all 7 buildings.
- We are doing the excel audits right now; we participated in a lot of the buildings.
- We are billing the residence for the water.
- We have ceased automated irrigation, we don't do it anymore. We don't cool common areas we keep them at 78-80 degrees, we do not heat garage areas we keep them just above freezing, we put precipitation sensors in every slab we have, and we have checked the calibration on all of our garage ventilation.

Q4b: How frequently do you measure these results?

- We go in and measure after install and then three times a year after that.

Q4d: What other results were there?

- Just increased convertibility. Specifically the water. People were running the water to much so we got the water to circulate in the system so they had adequate water temperature quicker.

- Where we replaced water heaters we have hot water, were we replaced boiler heaters we have heat.
- Water dropped by forty percent, and gas when we did the boilers dropped by twenty-five percent.
- Gas costs went down with the new water heaters.
- Actually the electric cost went up and the gas and the water went down. The overall mental health and happiness improved.
- Happier tenants. The windows aren't drafty and they like the good flow of water and good water pressure and faucets are maintained. When there is a water line break there is a spike in usage so we track that and running toilets.
- I would say that the customer satisfaction of the person living there is more comfortable.
- We insulated our boiler and pipes, and received a 25% reduction in costs also installed storm windows and found results of 10% cost reductions. That's it.
- The only thing I noticed on lighting we were hoping for more savings than it turned out to be. I don't recall because it was about two years ago. It was kind of like we were expecting a 15 to 20 percent savings and we saw 5 to 10.
- Saving the owner money since we are the management company- we look for ways to lower cost. Sometimes the residents complain that there isn't enough water pressure.
- Better educated staff. When you're working on project to reduce major consumption and a lot of staff are involved and they became energy conscious. They then become astounded at the results and they realize that their creativity and the changes made do have value.

Q4f: What programs?

- Energy rebates from the electric company.
- Upgrade rebates for installing high efficiency systems. Rebate for domestic hot water and boiler upgrades.
- I know the water savings was the shower heads and the water conservation were energy company sponsored.
- Water Heaters for CenterPoint.
- It was part of an Energy Audit through Xcel.
- Xcel auditing that was mentioned before.
- The appliances were.
- I don't know but rebate programs through the utility companies.

Q4g: What additional assistance from your utility companies, if any, would have been helpful to you in identifying and implementing energy efficiency opportunities?

- We do get some credits on the boilers. I think they have done a good job on getting that information to us. They are at least once a year sending out information about possible credits for upgrading hot water heaters or boilers that thing.

- I guess I would be more proactive communication because some of the stuff I had to call and ask about. I don't know sometimes that stuff gets lumped into junk mail so maybe phone calls and emails.
- I'm not sure. Reaching out to us and letting us know what they have available and that's like any programs or suggestions that they have.
- The only thing I can say is I wish the utility companies were more organized and provided easier rebates on updating utilities, because by the time you figure out what the rebates are we've wasted so much time trying to find it, so be more organized on pushing conservation, there would be more progress with it.
- More than just Xcel, I wish the other companies would do it. Like Dakota Electric, or CenterPoint I wish they also offered audits.
- We have had some offers in the past but nothing lately, like things regarding more efficient lighting. It would be nice to have more detailed information compared to others. Xcel, they basically provide us a notice, they compare us to health care facilities which we are not- we are a senior housing apartment building. It would be nice to be compared to something similar.
- Additional help with writing specification. Knowing exactly what to bid so we are bidding apples to apples with contractors.
- If they had an account representative explain programs we would have been able to take advantage of them. If they would have offered rebates and financial incentives.
- Probably more so on the water side. Just learning more about water conservation.
- It is hard to get a hold of anybody at the utility company most of the time. If we could get flyers about energy efficiency materials that would help. It's not hard, but it would be nice to have one person I could deal with at Xcel or CenterPoint. When we have an issue or need something corrected or when we are doing a boiler replacement with the rebates.
- On site consultation, like walking through the building with myself or the staff person and pointing out energy upgrades and giving the rebate forms out.
- Maybe a personal visit to each building. Someone like an energy type auditor to walk in and say I noticed this and did you think about doing that, just a walk through.
- It would be helpful if someone could come in and evaluate the lighting in garages; we have drive-in garages. Evaluate each building for the hall lighting.
- I am not sure just have my insulation in my attic checked, measure the depth and windows if I could have them checked for efficiency.
- Financial incentives in the form of rebates.
- Good question. I guess I can't really answer that. If there is any type of incentive to upgrade multi-unit boilers to natural gas boilers.
- Rebates.
- We don't like to rely on them for things like that so we do it ourselves. If they had some kind of notification when there are spikes to draw our attention to it. When there are

spikes in usage put something on the bill so we notice it. As it is now everything is up to the owner and it is like they don't even notice.

- They can alert us to changes in water and heat usage.
- After we submitted all that information I wish we would have received suggestions or a report regarding our month to month usage, and where we could improve upon and have someone walk through the buildings to see what we could do.
- In Minneapolis, it would be very nice for the utility company to actually tell you how much consumption has been this month/last month/prior year which St. Paul does.
- I think better tracking from them and being able to break things out easier on the bills. So, if there bills were easier to read.
- In a multi-family ownership a lot of the rebates want the resident to own rather than the developer, just restructure their program so they are friendlier to a developer or owner.
- I don't know. No, because I had a planning charrette with people and architects, staff from the University of Minnesota, Institute for Sustainable Building Research that planned the Green Improvement.

Q5i: Are there any other influences that impact why some utility efficiency projects have not been implemented? Specify:

- Sometimes it's not feasible with the infrastructure of the building. How the building was plumbed or wired before we came.
- The cost of implementation projects for old multi-unit buildings, we have one building that was built in the late 1800's.
- We already have boilers that are efficient. We will keep them until they have to be replaced.
- Some were done before the start of the program such as fluorescent light bulbs in all the common areas, and also low flow shower heads, and low flow aerators in the sinks.
- Payback of the investment of the project being done.
- Because the return on investment is too long, or it's undefinable.
- Finding contractors to do the work.

9a: What specific actions does your company plan to take?

Continuing to replace hallway lighting with more efficient lighting. We started with the parking lot and then are now doing the hallways. We have started with more efficient water softeners.

- Lighting. Hallways and common space lighting like laundry rooms.
- Lights. Like for the hallways.
- Upgrades in lighting.
- New lighting in the common areas and implement a rube system for water and gas.
- Overseeing shower head changes by tenant, overseeing aerators removal by tenants. Catching leaks at the beginning and moved towards LED lighting.
- We are going to replace showerheads, toilets, common area light fixtures and replace security lamps.

- They look at it and it is important but I don't know if we have any direct plans but maybe simple things, like putting in new toilets and the low flow showerheads. I think as we replace equipment, like the washer or dryer, looking for the efficiency models.
- We are re-doing all the toilets; they are very old and consume large quantities of water.
- Low flow showerheads and possibly toilets.
- Some capital project improvement but predict a cultural and behavior shift. It could be like an energy efficiency upgrade like a for example a boiler or low flow water devices. For example turn lights off when you leave.
- Usually in the water cost is where we are looking. Low flow toilets, low flow shower heads, those types of things. Nope, but we are constantly looking at lighting and electrical savings for the long term.
- Inspect each department and do inventory, to see what needs to be replaced like faucets and toilets.
- We do capital needs assessments which identify areas of improvement for energy efficiency and then those are incorporated into the year's budget. It varies per property but one thing we are doing across the board is resident engagement and education.
- Monitoring usage for leaks and replacement of toilets and faucets that are leaking. So it's all maintenance issues.
- We just replaced a boiler we put in a high efficiency boiler. Major equipment is being replaced as needed. Boiler, furnaces, large water heaters that do a whole building.
- One building is getting a new boiler. Just continuing on with replacing the toilets and aerators and shower heads as needed.
- We plan to install boiler controls, more storm windows and fluorescents bulbs replaced in the common areas.
- Like I said some of the ones that are older a lot of the equipment, the water heaters and toilets will be on the budget to be replaced with high efficiency products.
- Adding high efficiency water heaters and boilers.
- Utility cost we will reduce with replacement of boilers and more efficient lighting. With water we will just continue with the low flow shower heads.
- To put more insulation in. In the attic and I would like to put in new windows. They are the old aluminum ones and I want to get better efficiency out of them but it is expensive.
- For at least 75% of the properties we are working with HUD to implement a utility allowance program to take ownership of their utility usage where they will be billed for part of their utilities where now they are fully paid by the company with no incentive to save resources.
- Continue billing the residents and doing building audits for leaks.
- Anything we can do as far as staff training, sharing information on programs and we identify different projects that need to be addressed. We have a couple programs to sub-meter water into each building; by starting to charge people for water usage they become more interested in conservation, also rehab of an entire boiler system in a

historic building. Just generally speaking when we take management over the 1st thing we do is make sure boilers and lighting are running efficiently, we have a list of things that we go over.

- Identify the program. We need to know what it is so know what we are getting into. Identify the payback period. There is going to have to be funds to pay for it.

10c: Why?

- To reduce our consumption and cost.
- To save energy and reduce cost.
- Because it didn't cost us anything. The utility came in and put in new shower heads at no cost.
- To decrease consumption. If we would put in the low flow power heads it would decrease consumption.
- We are reducing our electrical by putting up new light fixtures. We also replaced all the refrigerators in all of our other buildings to reduce energy consumption.
- We had funding to do some improvements so we needed the energy audit in order to do the improvements we had funding for.
- Because the work had a payback period of less than two years for water heaters. Age of the equipment influenced our decision. I mean we are at a logical point in time to replace equipment and took that opportunity to put in higher efficiency equipment.
- Because it was logical to do so.

10d: Why not?

- It was all financial.
- General consensus from all parties involved. I think there are owners and property managers and we need to make sure everyone is on board. I think acquire funding too. We have a replacement account and it needs approval to utilize those funds.
- We haven't seen the report yet.
- We haven't had enough time to do it. I told the people that did the audit that I would do this work in 2015 because we did not have money in 2014.

16a: What actions do they take?

We send information in our newsletter about conserving energy and water usage.

- One of the sites has the newsletter.
- We have a newsletter we send to our residents with tips on conserving energy. Our company is called Live Green Apartments so it is concerning water and heat. We have information on our website that residents can access as far as conserving energy.
- We do brochures.
- There is information in the resident handbook when they move in and then reminders when seasons change like maintaining temperatures things like that. Things like if it's summertime help us keep utility cost low when you are gone for the day don't keep you apartment too cool and vice versa for the winter.

- Information, providing them with information and recommendations on how to use their heaters and furnace and air conditioners and unplugging things that they do not use very often. Usually in writing or in meetings. Visual observance, if we notice that something is going on like maybe highly wasteful we would educate on the spot.
- Just printed material. By sending out resident newsletters and things like that. Also enclosures with their lease when they sign up. We also train our staff with the maintenance on ways that they can help.
- Usually publication of a newsletter or stuff on the bulletin board or if we see they have the window open and the heat on we will contact them.
- We ask them to read updates in our newsletters that we send out.
- They have a yearly meeting. Simple little things as far as making sure your toilet isn't running and using bulbs that are more cost efficient and basically helping the tenants because they pay for their electricity.
- We try to do presentations at resident meetings to educate them.
- Resident meetings, we distribute propaganda about water usage, we do recycle programs in our buildings, and we train residents at where their thermostats should be set.
- Education, providing flyers, pamphlets anything they can. Preventative Maintenance. When we do work orders if we go in to fix a toilet and see that a faucet is leaking, when you see something is wrong in the home fixing all broken things.
- Educational. We have a hand book and we have meetings on different topics.
- Our maintenance guy will do a sit in with them to teach them how to use their equipment and then we also send out notices or in the quarterly newsletter. The maintenance guy, on move in day will walk them through how to operate their things like how to get the boiler to turn on and appliances. Many of them are educational and will tell them how to shut off their toilets if dislodged but most are about reminders of water and energy usage.
- We do resident engagement programs. We do a move in orientation which explains the features within the unit whether there is a programmable thermostat and then walk through each unit and tell them what to do to reduce their bills.
- We have energy assistance help coming in, they come every year. They assist the residents with filling out the forms for the energy assistance programs. We have the forms here and a resident service Coordinator.
- People are instructed on how to keep drapes off of the heat vents, keep furniture off of heat vents, close windows, report leaky faucets, report running toilets.
- When they move in the manager goes through a list and explains to the tenant to call and let us know about a running toilet or leaky faucet and how important it is to us to fix that, a running toilet could cost about 10 bucks a day. And to let them know that their rent will not go up if they call us several times, we want to fix it.

- Closing the windows, not letting the water run for extended periods of time, reporting drips, water leaks.
- Reporting leaks early. Shutting windows in heating season.
- Feedback to top three users of energy. Your energy usage is above the norm. Is there a way we can decrease this amount of consumption?
- If somebody has a spike we find out what is going on either electric or water. A lot of times you might have a leaky toilet or they are leaving the window open.
- We do a rationed utility billing. They are shared meters for the building and we split that up amongst the tenants. We have notices that they are required to report water leakage to us. It is on the monthly utility bill as well.
- We bill the residents for the usage of water that they use so it makes them aware that there is a real cost. We educate them about leaks and that's to calling otherwise the bill will go up.

18: Do you have any thoughts or comments you would like to provide to the EnergyScoreCards team?

- Nope. No, I think they are great. I appreciate their patience. They see obvious things we could do and they were patient in our recommendations. We see these obvious opportunities and it takes a while for us to implement the suggestions and the group was very patient with us.
- No. I think it is something we try to work on every day but that we should probably do a better job at with more education.
- No, just that I am very excited to have this ability to compare our properties to other similar properties.
- Not that comes to mind. Just that if it provides us an opportunity to look at it in another way where we are not catching expenditures, it would be of benefit to us.
- The biggest inhibitor of saving energy is the resident. Leaving windows open, running hot water shower for steam, not reporting leaks. Those are the major ones.
- No. You asked about resident behavior, most of our residents they pay their own utilities so if they want to keep their light on it's up to them.
- I think it's crucial to the research that they share the results of the findings with participants of this study. So we can keep track of what's working.
- Nothing that I can think of. I guess I would be interested in talking to someone what there understand is and what others have done to save energy for their buildings, we have done things in the past that were not fruitful and that was with various things.
- I would like to see some results soon.
- No. I know originally it was difficult to get it up and running they have to make it easy. I think the process they said it would be up and running and then they said they were having problems and I think they didn't work everything out.

- Having companies like us do all this information gathering and seeing no results is very discouraging, it's been 2 years and I'm not going to throw more staff time at something we don't see anything from, we'd like to see the software available in November.
- No, not at this time. Maybe some communication when we started this and today. I didn't even know this was still going on because it was two years since I had correspondence from the EnergyScoreCards people.
- Not at this time. I think it will be very interested to track water usage online if we can really do that. It is probably the one thing that we have the most control over in utilities.
- Yes, while we say we are a great deal interested in the education of our residents we have very high number where half of our properties have limited to no English speaking residents. It's not just one language they speak, its half a dozen, so it's easy to give up and say how can we possibly translate and have six interpreters here.

Verbatim Comments – Treatment Group (December 2014)

NOTE: Each bullet point represents a comment from a different respondent (not all respondents had a comment).

Q1: What was the MAIN reason you decided to participate in the EnergyScoreCards program? Other (specify):

- The request was made by the ownership group and they asked us to participate.

Q14a: How did you track this information? Other (specify):

- Bills. We would look at the monthly usage based on the bills; for example electricity, a lot was based on estimation.
- We just checked bills.
- We deal with Xcel and we give them our information about our usage for our electricity and water and all that stuff. And we talk to the water company. Our maintenance checks; we check our meters on a weekly base.
- Running Quicken reports, a bookkeeping software, so I can see if a water bill spikes.
- We looked at our invoices. We were monitoring how the bills were increasing.
- My own notes that I was taking.
- Rent Manager. It is a software system.
- Our facilities program tracks it. I don't know you would have to contact my facilities department I turned everything over to them.

Q16: (Last Action Option) Has your company taken any other actions to save energy & water?

- An energy saving competition.
- To save water, we've replaced meters and worked with Utilities Company for lower rates.
- Replace low flow showerheads and low flow aerators. Added 1.6 and 1.2 gallon flush toilets. Two buildings that had high efficiency boilers which are ninety seven percent efficient with water makers.

- Showerheads. Tracking and make sure toilets are running and make sure there is no dripping or leaking anywhere.
- We replaced all the faucets and I replaced a fire pump.
- We did install electric and water meters. The individual meters inside the apartments. We put plastic up in the windows, high efficiency lighting and also replaced our washers and dryers to high efficiency washers. Notices to residents to conserve energy.
- Doing property inspections, checking every unit and checking toilets, faucets and all that stuff. Meeting with utility companies, walking through buildings, doing assessments with utility companies and getting in contact with energy saving companies. Also getting bids for whatever work we need done.
- To maintain and check to see if we have any water leaks in any of our units. The water control for showers and stuff.
- Discovered a leak somewhere. It was with the underground sprinkler system.
- Regarding our lawn care and water usage in terms of that.
- We have put a stock cap on the water pressure that come into the building. We changed the pressure going into the building. We watch every unit that we there isn't a drop of water. We check all the irrigation so we aren't losing any water. We are in the process of putting up some solar panels and we replaced our roof with the white energy membrane.
- To save water would be to adjust water sprinklers and to look for leaks and we have done some of the shower heads but I'm not sure what buildings you are referring to.
- We installed attic insulation in 6 of the buildings.
- The biggest thing is education. Just making people aware that energy costs affects rent so we can keep rents lower by cutting energy costs.
- We put in a rain barrel system. We have changed the types of bulbs we use, they are not more energy efficient but last longer and we have changed out our timers. The occupancy sensors and dawn to dusk timer in building wide exterior system.
- We are in the process of taking out the stair wall lights and putting motion lights in them because they are on all the time.

Q16d: What other result were there?

- We found out the window replacement makes no difference in energy usage, despite what the manufacturer told us.
- Other than cost reduction, I would say the results had to do more with residents' satisfaction and retention, so they don't move out.
- Everything was pretty much the same.
- We gained another perspective on energy consumption. It was nice to see the impact of the seasonal changes on our consumption verses standard use.
- Much more efficient heating. We don't have zones that are too hot or too cold. General happiness of the residents is much improved. Money savings. Heating bills cut in half. Water bills cut by a third.

- Well, I guess no one complained at the buildings.
- Just more consciousness about other energy costs or green ideas. More into recycling programs.
- Tenant education was part of it for us. Teaching folks the benefit of reducing their water usage and conservation.
- Cost savings. The bills aren't as high. We just started it so we have to wait. Winter is coming so we will let you know.
- Mostly a decrease but there was some increase that was good to the competition. Like work construction around that area in the building. There is more usage due to the construction.
- After getting the results, making repairs on these things; we are talking about new valves, new water meters and classes for the residents and how to conserve water and electric. We also stopped usage of cleaning up swimming pools. We don't do any of the outside pools. Our sprinkler systems are on timers and when we didn't need them, we didn't use them. Anytime we had a water leak in someone's pipes, we acted on that right away. One of our first priorities here is gas and water leaks.
- Some improvement on the water usage.
- There was no energy reduction. We had the window replacements and we thought we would have more energy savings. If anything, we have a better awareness. I think we did start going to light fixtures with LED.
- 10% energy savings as a result.
- Lower maintenance cost in general. Just by doing some of the upgrades and stuff we were able to reduce the number of calls.
- I am seeing a decrease in the amount we are paying so it is going down. The amount that we are paying is going down every month. At one point it was spiking higher. I imagine the water consumption must be going down. Nothing more than just doing our inspections and checking for leaks and stuff and monitoring.
- We just saw the electricity go lower.
- Our lower monthly bill. I noticed we are saving water and we tend to see a lower monthly water bill and the same for the electric bill.
- We had the lights replaced and have seen the change. The cost change.
- We used the results to project a seven year capital expenditure plan.
- Increased resident complaints. Residents were not happy because the low flow gave them the impression that the water was not working and they lost water pressure.
- Just better or increased awareness from residents. The electric monitors showed folks in real time how much they were using and how much it costs so it helped them get a better understanding of the cost so it helped them to make better choices and to remember to turn things off when they are not home.
- Decrease in the usage, like energy usage.

Q16f: What programs?

- Xcel Energy program.
- Rebates from Xcel Energy.
- Mostly just rebates from Xcel and Center Point Energy.
- The LED light change with Xcel Energy helped give us rebates.
- Energy rebates. Xcel Energy rebates and boiler efficiency controls.
- Working with the city with the water. Not at the moment until we get more results, I can't tell you.
- City and County incentive. If we installed it the city and county would offset some of the labor costs.
- Franklin Energy helped replaced refrigerators and CFL bulbs for all the residents' lighting.
- Franklin Energy through Xcel refrigerators and new CFL light bulbs.
- The CFL lighting program through Franklin Energy. All interior lights were replaced with CFL lights in all 6 buildings. Through the Franklin Energy audit we also received refrigerator audits.
- We worked with Rochester Public Utilities helped with solar panels.
- There was a rebate for efficient light bulbs.
- The replacements of aerators and low flows.
- It was for the heating and for the boiler. We got a large rebate.

16g: What additional assistance from your utility companies, if any, would have been helpful to you in identifying and implementing energy efficiency opportunities?

- Well, our lighting company came up with some LED lighting solution for us.
- They have all been pretty helpful, like changing meters and working with us how we can save energy in other areas.
- I suppose the same that the energy savings program was providing, the EnergyScoreCard program.
- They come out to see if one of the building meters is running high and they want to see if I have a problem somewhere.
- We already met with a consultant from Xcel Energy for the lighting.
- There is really not. We are dealing with such old buildings so there was none.
- Actually for us to receive an email flyer or an email blast because it gets lost in the mail. Sometimes they will send us flyers from the utility company and they kind of get lost. We assume they are junk mail and people throw them away.
- Any rebates for windows or boilers would be helpful.
- Financial help, like supplement to the capital improvement in major building systems.
- There will be rebates when we do some replacements. Those will help.
- The ability to go to two meters instead of two hundred and sixty. That would save me a whole lot of money. It would save me thirty one thousand dollars a year. Xcel Energy won't let me do rebates for lighting improvements. Both are Xcel blockers. They won't let me do meters and won't allow me to do rebates for my lighting improvements. Also,

your system wasn't compatible with the City of St. Cloud's water meters. You weren't allowed to piggy back or look at my bills for some reason.

- The biggest thing they could offer is more rebates on water saving device or electrical rebates for lighting and stuff. Our town does not offer them here.
- No, the only other thing I can think of would be irrigation systems with the lawns.
- We got an Xcel Energy rebate.
- I think very similar to these lighting programs and rebate programs; so if the programs are communicated and if the finances are explained... We need to know what the numbers are and how much the rebate will be.
- More rebates or grant programs would be nice. Maybe more actual energy audits in partnership with Xcel, etc.
- I really can't think of anything other than we have in the past worked we've with Xcel and CenterPoint for possible grants.
- It would have been nice if the energy companies offered more rebates for updated lighting, such as CFL lights.
- Maybe, a means to identify current rebates in a convenient area of our usage. Many of these rebates are custom rebates; they should be more detailed as to when and how we can use them. Having more clarity on those actual rebates would be very helpful.
- Bigger rebates would be nice and some less red tape on some of those rebates that are offered. More overall rebates I guess.
- I guess Xcel has some but I have not used them. Electrical for lighting. It is pretty costly to change light fixtures.
- We like rebate programs. That is a good incentive for us as it reduces payback. Sometimes they offer energy audits too.
- Boiler rebates, rebates, analysis, monthly consumption alerts from trends.
- I don't know what they could do for opportunities but it's the funding of the projects. Just that, the funding.
- It usually comes down to money if we have any extra to do the upgrades.
- An analysis of hallway lighting, sizing of boilers and sizing of hot water heaters for apartment buildings.
- If they did the scorecard analysis it would be great. If they compare usage and price from one year to the next, month by month and showed the comparison that would be helpful. If they had rebates that entice us to use less energy. If they had rebates for less energy usage that would be a good incentive for people like me, operators.
- I think more outreach from them would have been good. Like some of the data that I got from the Energy Scorecard, like a year to year comparison, if they were to put that on a summary sheet for billing it would have been good. Rebate programs for any building upgrades.

- I guess the site visit more one on one education. If somebody comes out and visits the site and does a sit down meeting with us and talks about specific improvements that we could make.
- Maybe assist in outdoor lighting; finding the best, most efficient lighting overall. And maybe some rebates in the future.
- If they can stop by during one of our energy audits that might be helpful.
- Probably an energy audit. Just an inspection of the buildings to see where we can save the most money.
- We had this fellow come in and do the energy audit and it was helpful. They identified where we were wasting most of our energy and that was in the garage. I believe CenterPoint offered something but I haven't looked into it.
- Alerts from my utility companies. If they see a sudden decrease or increase from one month to the next.
- Real time data. Monitor energy usage over any given time.
- With their bills, letting us know more opportunities. If there is opportunities for savings and if they offer anything special.
- Better advertising for opportunities. If there is something for multi-family buildings I don't know about- how would I know about them?
- I guess if they were to let us know what kind of rebates they offered.
- To compare with other similar buildings in the area. Of the same age and types of systems, and it just didn't seem like we were comparing apples to apples.

17i: Are there any other influences that impact why some utility efficiency projects have not been implemented? If yes, specify:

- Timing. It is budget season and I took this on from another management. We need to look at all our initiatives and decide what our priority is.
- I just mentioned some are slated for our 2015 operating budget. Some of the improvements that we are going to do next year, we didn't have it in our budget this year.
- The lack of funds and resources.
- The funding and age of the buildings. It all relates to the funding. We do things but we do it as needed. We are a low income supportive housing. We work on grants. But, if things go wrong, like if a boiler goes down, we have to fix it or replace it.
- Lack of awareness of programs. Well I have an example, we have a project at Oxbowl Bend, that is the name of a property that is part of our portfolio and we became aware of the grants program with Xcel Energy by accident and this program actually funded the replacement of our refrigerators.
- Maybe that the payback is long. Payback should be in 5 years not 7 years or longer.
- Logistics of some of the equipment like furnaces and then too long of pay back.
- Yes, my building is only four years old and a lot of is fairly efficient. They are not going to invest money to upgrade immediately.

- We have been replacing all of our kitchen cabinets now and we had to update all of our elevators and that was a massive expense as we had five elevators to put in. That was close to a million dollars so that was very major.

21a: What specific actions does your company plan to take?

- New windows next year.
- Roofing replacement and window replacement.
- Replacing more boilers.
- More lighting upgrades for energy efficiency. We are going to be revamping some areas so putting more energy efficient fixtures in.
- Working with more organizations. We got some bids so we just have to get owner approval to spend the money. The electric company for lighting, the heating companies for the heating system, and working with the water. We are in the process of getting some funding for the water and sewer.
- Just conservation. We have new boilers but we are hoping to use less.
- We're a part of Better Building through HUD Program and that will help to reduce our air conditioners energy consumption over the next 10 years. Also, we plan to reduce our energy set target, by monthly implementing a plan to reduce energy costs by 10% over next 3 years.
- We might trade out our controls, like upgrade the hot water control lines and boiler controls for our heating systems. Plus, change out some sensors and potential some valve changes on those pieces of equipment.
- Making sure windows are sealed up and there is weather stripping and insulation. Also make sure everything is running efficiently.
- Checking bulbs. We tried going to the energy fluorescent bulbs.
- Just monitoring. Monitoring the usage and any issues that may come up. For our site we have a utility allowance that is through HUD and every year I am asked to take a look and analyze the annual usage for each apartment.
- Aerators, toilets, and shower heads.
- Water savings devices. Low flow showerheads. We are also going to look at the low flow toilets.
- Efficient lighting. Changing out to more high efficiency bulbs.
- I am currently taking out a huge water heater and putting in two 100 gallon water heaters, we didn't need the size that we had.
- I would say that we plan to do plumbing and toilet upgrades. We plan to install more efficient light bulbs, plan do to more window replacement and possibly more insulation as well.
- We'll continue replacing the rest of our toilets. Expanding LED lighting as well in all of our buildings.

- If we can get a grant or some funding, we plan to replace some of the toilets and light timers in the common areas. Also, replace the outdated boiler and water heaters in that one building.
- Hoping we will install the building management system. Reduce the lighting costs but our biggest focus for the summer will be to reduce our energy cost on air conditioners used.
- Replace more attic insulation and looking for more rebates for light replacements for LED lighting in our common areas.
- We will replace all components to the toilets, which has been our number 1 issue of water usage. The inconsistency of water flow and usage in all of our existing toilets. We are researching manufacturers that would have life range 3X more than are on the market right now. Consistency of water usage will be huge. We are also planning on changing all of appliances to Energy Star approved appliances.
- Becoming a certified green building and general upgrades for more energy efficiency. Also, timers on our gas grills in the common areas.
- Routinely verifying if there are water leaks. Putting in all low flow showerheads, aerators, lower consumption toilets and we replace everything with energy star appliances when replacement is warranted. We put pressure regulated valves on city water supplies and controls on thermostats. We also install cut back thermostat in all residential units.
- We are going to be doing some remodeling. We are going to be doing new roofing, insulation and some plumbing for bathrooms.
- Just more educational for staff and removing outdoor water feature.
- We would replace some toilets and lighting that we have to do.
- I think we are going to be replacing hot water heaters the shower aerators and the toilets.
- We will continue to work with companies regarding water energy consumption. We will continue to monitor doing our maintenance inspections and annual inspections.
- All the actions we have taken. We continue to put low flush in the aerators and toilets, check the leaks and tune the boilers, make sure all entries to the outside are sealed up and tight, close all windows and storm windows, continue to test in the insulation in the roof and add where needed. We purchase all energy star appliances and we are working to change all lighting to LED. We run recycling programs. We train the residents to use low energy.
- New windows, new boilers in some of the other buildings and continue with low flow water showerheads, aerators and low flush toilets.
- Rehabbing and looking into low flow toilet/shower heads and aerators. Also possibly looking into replacing the boiler.
- Window replacements, boiler replacement, and appliance replacement.

- Some is windows and heating systems. Some of the boilers will need to be replaced and some of the buildings will get window upgrades.
- We are going to send little dye tablets to put in their toilet tanks to see if they have leaks. Put plastic in windows and replace inefficient with efficient lighting.
- We are doing lighting projects. We putting motion sensors in the stairways because the lights stay on twenty four hours. We did remove eleven light fixtures per building and that is a total of forty four.
- We are looking at energy efficient lighting retrofits. When we rehab there will be a lot of improvements. In other buildings we put in new windows, new roofing, we use a white colored EPDM system. It is rubber roofing membrane system.
- Right now most of what we spend our time on is heat efficiency so we are replacing thermostats and boiler controls and moving thermostats to more efficient locations. In addition, inspecting units to find sources for water waste like runny toilets and leaky faucets. We will probably be replacing one or two boilers in the next year. There is one or two properties that we are adding insulation to this fall.
- Boiler replacements and window replacements.
- We plan on water consumption reduction from usage, by 10% by installing low-flow. Also, additional training for staff to help maintain this and to continue to monitor through the year.

22c: Why?

- To save the property money and to make sure there is a future for our children.
- Because it would save money and help the building.
- Because we want to save money and to be more efficient with the building.
- Cost savings. I guess it would be overall utility cost.
- To save money. Reducing energy and saving money. Just because we are conscientious of the environment.
- Because it was an obvious payback; less than a two year payback.
- Because it would lower our energy consumption. Also, we saved money.
- We will budget for those improvements from the audit.
- Because there was rebate for our LED lighting we installed.
- We did the ones we could do economically from the start but will need more funding to fix the rest in the future. We set new points on the heaters and cleaned them. Also, replaced all the aerators and the shower heads to low-flow.
- LED lighting and soft start insulations.
- We plan to make lighting more efficient. So, replacing some of the lighting and adding lighting timers. Also, check for running water in toilets every quarter.
- We changed the outdoor thermostat on one of our buildings. Now, the boiler system fires based on temperature outside.
- Because it was helpful. Pretty much in comparison to our ideas, it pretty much matched with what we should do.

22d: Why not?

- The audit didn't provide any information on what I could do. The audit was useless besides telling me what I already knew. Basically, it told me to do the Xcel things that Xcel is not already letting me do. They said you should go for the rebates. I contacted Xcel and they won't let me use the rebates.
- I think they are still reviewing the reports from the audit.

23a: Why were you dissatisfied?

- I didn't understand it and the lack of time I didn't have the time to really get involved in it. I would say the demographics, I don't have the facilities. I am a Program Manager; I didn't have the training in that. I think it was more for a Facilities Manager than a Program Manager. It was something that I didn't understand at all and I felt it wasn't my job to do this it was more of a facilities program.
- With the usefulness of it. When I first went to the web site I saw a bunch of data but didn't find a use for it. It wasn't useful in determining if there were any problems.

27: What other comments or feedback would you like to provide about the EnergyScoreCards program?

- If they are going to start charging, do it on a per unit basis. Charge them per unit. Otherwise it will be cost prohibited to the little property. It is new. I am still learning more about it. It is a very nice program.
- I just thought they were pretty good overall. The only drawback was, the tool reporting capabilities are limiting. They told us that we were to export the data and then run our own analysis from the exported data.
- Seemed to work well and was fairly simple to use.
- I would like to say it was very useful and it showed where we were losing money. I found the help feature needed some work, some more polish. The help feature would only pull up basic help, not detailed. I am glad I was part of it and it did help our company.
- It was a fun program to work with. I hope to use it in our future. It was fun and easy to understand. The staff stayed in great contact either via email or showing up in person.
- It was very informational and brought out things that we may not have thought about. Once we went through the score card it brought out things we may not have thought about.
- It was extremely helpful information. Just the data that was able to show on the dashboard. I am more of a visual person so seeing the graphs helped me more than seeing the numbers.
- It worked pretty well.
- I would like this tool to be useful that is why I would recommend it. If we continue in the program I want to make sure for all the effort we spend that we get something out of it.

- I think it's a good program overall but was certainly not user friendly at first but then you guys made some changes to the program making it much more user friendly then it was.
- Well, we appreciated to have been a part of it and really enjoyed all the aspects of explaining our energy consumptions.
- I just think they did a really nice job putting the website together. It was very clear and easy to understand and very helpful. Everybody that I worked with was very professional. Anytime I had a question they responded very quickly.
- I think it was a great program. The properties that we have are a Coop so it is hard to get consensus for taking action. Excellent program and the people we worked with were great. They came out and did presentation for the Coop.
- I think it works well, so keep plugging away at it.
- I really liked it and it showed that all our work has really paid off; the electric usage, the heating. We got an A score and I was very pleased and we would have never scored ourselves an A.
- Very beneficial and thank you very much. Provides good information.
- It is a good program. The question is always the cost that we have to incur.
- It was a very satisfying experience. Jan, who was our rep, was very helpful.
- Just that the person that helped us get going was great. But then as we used it wasn't as detailed as we'd like it to be. I really don't know how to tell you other than I remember when we got the tool we just forgot about the tool and didn't utilize it to its capabilities.
- I was impressed with our representative/the person that occasionally called or stopped by seemed extremely knowledgeable. She knew the program well and was able to decipher the information and put it into layman terms. The only other thing I would say is the website was extremely comprehensive and a little too complicated for me to use.
- Our rep that would email and call us did a fantastic job in pointing out problem units and interpreting data for us since we did not have the time to do it ourselves and that was probably the most helpful, the human part of it.
- Everyone I dealt with there was very helpful and professional.
- The person who was assigned to our building was very helpful. She was like hands on and looking for ways or suggestions for us to monitor the energy score cards. She would give us ideas to look for during inspections.
- It was working with Janna. She was very helpful. She was very nice and helpful.
- Just that the people we worked with were wonderful.
- My problems that I had with the EnergyScoreCard were not the EnergyScoreCard's fault. For example, they would recommend light bulb improvements and Xcel wouldn't do other rebates. The way my system is metered I am unable to affect change.
- Well, I understand trying to become more energy efficient, but when you have a very limited budget and the upfront costs to upgrade some equipment are so astronomical.

Our funds to upgrade the overall cost just becomes too much for us to move forward. We need more money to do these things.

- I think the bench marking comparison of 2 properties is difficult because no two buildings are the same in Minnesota. And then in the writings of non-heating fossil fuel or non-cooling electric items, for their low grade usage, I kind of questioned your outcomes. And there has to be an easier way to have water accounted for, like to have someone else pull the info because these small municipalities just don't have that to offer. And you were trying to get that answered through Xcel and PowerPoint and it will be inaccurate.
- It would be helpful for us if it could monitor individual apartment units as well as our common areas.
- That the advantages over just reviewing bills are not clear enough to warrant a significant subscription fee. Energy events when entered in the system did not seem to generate any change in results.
- It wasn't necessarily a good fit for what we have and what we do. Using our spreadsheets gives us the tracking information we need. What I was hoping was that the program would offer would be a better indicator of the reason for the spikes and the location. For example, if a pipe broke.
- I guess the feedback is not wanting to pay we can track all these things ourselves we were tracking these things ourselves but it doesn't make sense to me to pay to track something that I can already track myself.
- We have a lot of immigrants that do not know how to save energy so the clients that we have do not know or understand what the energy assistance or energy savings is all about. We need to teach the clients and residents how to save the energy like the lights and how to use it and the water and turning lights off and why we have to do it and how important it is.
- Maybe to make the terms more friendly useable, in terms for people to better understand. Some of the graphs. For someone who doesn't have some background in it might not understand what it means. It was very useful.
- Make the reports a little more user friendly. When you put in your information it would be great if you could put more factors that go into your reports; is it a nuclear power service or a standard service? Just getting as much information in there to help you down the line.
- Overall, it was a very interesting experience to have access to, but it was a lot of information and an overwhelming amount of information to figure out what it means.
- The EnergyScoreCards program was presented to us under a grant. We were excited to join. The failure was under the data, there weren't expert users that were using the program and unfortunately the website was difficult for the end user to use. The best thing would be for monthly reports to be sent to high level executives to see how consumption was doing. The site was hard to navigate, an improvement was made within the 2 years but it was still having problems. From an owner stand point I would

not find them to having any ease of access by accessing the data online. During our time the intent to have monthly calls didn't work, peoples schedules were too busy. Quarterly calls could have worked but the success would have been if automatic emails were sent out highlighting monthly increases or decreases.

- I guess that this program was made available at a time when we were all too busy to really utilize it. But also, the start of the program, there was no purpose laid out to us as to what the program really was or anything. And the webinar didn't really help anyway. I think they need to lay out their objectives for the program better, so people can utilize it more efficiently. I just never really used it much I guess.
- The only thing that I found about it was the dashboard was handy. It's one of the things that's easiest to forget about though in a busy day. It has to be very easy for me to want to go to it and really monitor. When it's an apartment building like we have we can't always control water usage at all other than the shower heads or that. People are still going to run the water they want to. Heat just helps us justify replacing boilers to make up for the money over time. It has to be either in front of me all of the time to monitor it or I am not going to. It has to be so easy that it is just obvious for me.
- It was just hard to implement some of the items for review. The tools are all there it just takes time to utilize all of them I guess.
- Well I don't know what the outcome is for other sights. I wasn't with it long enough to see if it panned out. I am sorry I wasn't able to put more time into it.
- I don't think it is about the program, it is on our end- using the system. Never enough time and very limited on staff and funds which makes it harder to get much benefit out of it.

28: What position best describes your role within your company- Other (specify):

- Accounting Manager
- Department Director; I oversee the management and the maintenance.
- Controller
- Program Director
- Execute Assistant To Vice President Of Energy Development
- IT Manager and Executive Assistant
- Assistant Community Manager
- Vice President
- Operations
- Regional Manager
- Regional Manager
- Property Supervisor

Appendix B: Control Group Questionnaire

[Intro, remind which buildings are in program, etc.]

Hello, my name is [your name] and I'm calling from ANA Research, a partner with the EnergyScoreCards Minnesota team.

Am I speaking with (name of participant)?

[If not participant] **Is (name) available?** [If not available, confirm that the person is still with the company/building. If not, ask who is currently responsible for utility tracking and management. Schedule a good time to call back or leave a message if not available.]

[Speaking to participant] **Is this a good time for you?** [If not a good time, please schedule a time to call back.]

[Participant on phone]: **As you may recall, in the spring of 2012 your building or organization opted to be part of a project monitoring and tracking utility and water usage in (number) of your buildings. You were chosen to be part of the second access group, which will get access to the EnergyScoreCards software in November.**

Before that, we wanted to collect some information from you about how you currently manage this information.

All of your responses will be kept confidential.

As an appreciation for your time, you will be mailed a \$100 Visa gift card after completing the survey.

1) What was the MAIN reason you decided to participate in the EnergyScoreCards program?

(Read a-g)

- a. Find ways to reduce costs
- b. Find ways to reduce consumption
- c. Assistance with implementing efficiency upgrades
- d. Track results from efficiency upgrades
- e. Compare building performance
- f. Discover new ways to manage bills
- g. Other (specify)
- h. Was not involved or employed by the company (*Do not read*)
- i. Don't know (*Do not read*)

2) Does your company currently track utility and water costs in your buildings?

- a. Yes
- b. No [skip to text above Q3]

2a: How do you track this information? [Read if necessary]

- a. Spreadsheets
- b. Portfolio Manager

- c. Custom software
- d. Other (specify)

2b: What do you use this information for most? (Read list)

- a. General tracking with little to no additional review
- b. Budgeting review as needed
- c. Monthly comparison or review
- d. Yearly comparison or review
- e. Looking for spikes in utility usage
- f. Other (specify)

2c: How satisfied are you with your current process of monitoring and tracking utility and water costs?

- a. Very satisfied
- b. Somewhat satisfied
- c. Somewhat dissatisfied
- d. Very dissatisfied
- e. Don't know (Do not read)

2d: [If response c or d] Why were you dissatisfied?

As mentioned, (number) of your buildings are part of the EnergyScoreCards program and those buildings will receive access to the online tool in November. [READ IF NECESSARY- the populated list of building addresses that are part of the program.]

3) To your knowledge, is this accurate?

- a. Yes
- b. No How many buildings are part of the EnergyScoreCards program? _____
- c. Don't know (Do not read)

4) In the last 2 years, has your company taken any of the following actions at those buildings to save energy and water? [If all answer no, skip to Q4g]

Action	Response	[If yes] How many buildings that are part of the programs have had this done?
More efficient lighting	Yes/No	_____ Don't know/ Not sure
Low-flow showerheads	Yes/No	_____ Don't know/ Not sure
Low-flow aerators	Yes/No	_____ Don't know/ Not sure
New toilets	Yes/No	_____ Don't know/ Not sure
Other water conservation actions	Yes/No	_____ Don't know/ Not sure
Hot water heater replacement	Yes/No	_____ Don't know/ Not sure
Boiler replacement	Yes/No	_____ Don't know/ Not sure
Other hot water actions	Yes/No	_____ Don't know/ Not sure
Window replacement	Yes/No	_____ Don't know/ Not sure

Action	Response	[If yes] How many buildings that are part of the programs have had this done?	
Cooling / Air conditioner upgrades	Yes/No	_____	Don't know/ Not sure
Building enclosure upgrades	Yes/No	_____	Don't know/ Not sure
Pumps / motors replacement	Yes/No	_____	Don't know/ Not sure
Ventilation upgrades	Yes/No	_____	Don't know/ Not sure
Other energy efficiency actions (specify)	Yes/No	_____	Don't know/ Not sure
Operations and maintenance (for energy efficiency)	Yes/No	_____	Don't know/ Not sure
Has your company taken any other actions to save energy & water?	Yes/No	_____	Don't know/ Not sure

4a: Have you reviewed results of these actions?

- Yes
- No [Skip to Q4e]

4b: How frequently do you measure these results? (Read a-d)

- Annual comparison
- Quarterly comparison
- Month by month comparison
- Other (specify)
- Don't know (*Do not read*)

4c: Did utility and water costs decrease as a result of these actions?

- Yes
- No
- Don't know (*Do not read*)

4d: What other results were there? (open end)

4e: Of those actions taken, were any part of a utility sponsored program?

- Yes
- No [Skip to Q4g]

4f: [If yes] What programs?

4g: What additional assistance from your utility companies, if any, would have been helpful to you in identifying and implementing energy efficiency opportunities?
(open end)

5) Of the following list of factors, please indicate the level of influence as to why some utility efficiency projects have not been implemented? Would it be a major influence, minor influence or no influence?

	<i>Major Influence</i>	<i>Minor Influence</i>	<i>No Influence</i>	<i>Don't know</i>
a. Not a priority for the company				
b. Lack of funding				
c. Lack of time to assess and implement projects				
d. Lack of understanding of energy bill				
e. Lack of staff to implement project				
f. Lack of physical resources to implement projects				
g. Unclear financial benefits				
h. Don't know what the opportunities are				
i. Are there any other influences that impact why some utility efficiency projects have not been implemented? [Yes/No] If yes, specify & ask What level of influence?				

5a: [Show list of Major Influence] **What is the MAIN influence for not implementing utility efficiency projects?**

6) For projects exceeding \$10,000; how long does it typically take for the project to complete once you identify the opportunity? (Read a-e)

- a. Less than 6 months
- b. 6 months to less than 1 year
- c. 1 year to less than 2 years
- d. 2 years to less than 3 years
- e. 3 years or more

7) Using a scale from 1 to 5, where 1 means not at all important and 5 means extremely important, how important is it to your company to: (1-5 scale)

- a. Better understand your energy and water consumption
- b. Find low cost opportunities to cut waste
- c. Identify capital improvements that would reduce waste

- d. Access local programs and incentives
- e. Take action to save energy and/or water costs
- f. Document impacts of past work
- g. Convince others within your organization that energy and water efficiency is worth pursuing

8) How important is it for your company to identify and implement energy and water efficiency projects?

- a. Very important
- b. Somewhat important
- c. Not very important
- d. Not at all important

9) Does your company have plans to reduce utility and water costs for your buildings over the next year?

- a. Yes
- b. No [Skip to Q10]

9a: [If yes] What specific actions does your company plan to take? Have you done an energy audit in any of the buildings that were submitted to the EnergyScoreCards Minnesota program?

- c. Yes
- d. No [If no skip to Q11]

10a: [If yes] Did the audit give you useful information on how to reduce your energy usage?

- a. Yes
- b. No

10b: [If yes on Q10] Did you take any actions as a result of the audit?

- a. Yes
- b. No

10c: [Based on 10b response = a.] Why?

10d: [Based on 10b response = b.] Why not?

10) In terms of the required payback period, what type of financial return does your company typically require in an energy or water efficiency capital improvement project? (Read if necessary) The payback period is the number of years that an investment takes to pay back the initial capital improvement in energy savings. (Read a-e)

- a) Less than a 3 year payback
- b) 3 years but less than a 5 year payback
- c) 5 years but less than a 7 year payback
- d) 7 years but less than a 10 year payback
- e) 10 or more year payback

11) How aware are you of the opportunities to reduce energy waste in the buildings that are part of the program?

- a) Very aware
- b) Somewhat aware
- c) Not very aware
- d) Not at all aware

12) How useful would an online tool be in monitoring and tracking the utility and water usage in your buildings? (Read a-d)

- a. Very useful
- b. Somewhat useful
- c. Not very useful
- d. Not at all useful
- e. Don't know (Do not read)

13) Would it be useful to you to have a score of your building compared to others like it in Minnesota?

- a. Yes
- b. No
- c. Don't know (Do not read)

14) How important do you consider resident behavior to be in affecting the building-paid energy costs? (Read a-d)

- a. A great deal
- b. Some
- c. A little
- d. None
- e. Don't know (Do not read)

15) Does your company take any actions to educate or help your residents reduce their energy use?

- a. Yes
- b. No [skip to 18]
- c. Don't know (Do not read)

16a: [If yes] What actions do they take?

16) How interested is your company in doing more to educate and motivate your residents to use less energy? (Read a-d)

- a. A great deal
- b. Some
- c. A little
- d. Not at all
- e. Don't know (Do not read)

17) Do you have any thoughts or comments you would like to provide to the EnergyScoreCards team?

Thank you. That completes the survey. Now let me verify your address to send you the \$100 Visa Gift card.

[INTERVIEWER TO CONFIRM ADDRESS ON FILE] You can expect the give card at the conclusion of this research

Appendix C: Treatment Group Questionnaire

[Intro, remind which buildings are in program, etc.]

Hello, my name is [your name] and I'm calling from ANA Research, a research partner with the EnergyScoreCards Minnesota team.

Am I speaking with (name of participant)?

[If not participant] **Is (name) available?** [If not available, confirm that the person is still with the company/building.]

[Speaking to participant] **Is this a good time for you?** [If not a good time, please schedule a time to call back or leave a message if not available.]

[Participant on phone]: As you may recall, you are part of a program that utilizes the EnergyScoreCards tool to monitor and track the utility usage in [number] of your buildings.

Today, we would like to talk with you about your experience and opinion with the EnergyScoreCards program. This will help us make improvements to the service and prioritize new features. All of your responses will be kept confidential.

As an appreciation for your time, you will be mailed a \$100 Visa gift card after completing the survey.

1) What was the MAIN reason you decided to participate in the EnergyScoreCards program?

(Read a-g)

- a. Find ways to reduce costs
- b. Find ways to reduce consumption
- c. Assistance with implementing efficiency upgrades
- d. Track results from efficiency upgrades
- e. Compare building performance
- f. Discover new ways to manage bills
- g. Other (specify)
- h. Was not involved or employed by the company (*Do not read*)
- i. Don't know (*Do not read*)

2) In general, how easy was the EnergyScoreCards tool to navigate? (Read a-d)

- a. Very easy
- b. Somewhat easy
- c. Not very easy
- d. Not easy at all
- e. Don't know (*Do not read*)

3) Do you recall attending a webinar introducing you to the program?

1. Yes
2. No [If no, skip to Q4]
3. Don't know (*Do not read*)

3a: [If yes] How helpful was the webinar in preparing you for using the tool and monitoring the energy and water usage in your building(s)?

- a. Very helpful
- b. Somewhat helpful
- c. Not very helpful
- d. Not helpful at all

4) Throughout the past 12 months; do you recall receiving periodic emails or phone calls from representatives of the EnergyScoreCards project?

- a. Yes
- b. No [Skip to 7]

4a: [If yes] How helpful were these calls or emails?

- a. Very helpful
- b. Somewhat helpful
- c. Not very helpful
- d. Not helpful at all

4b: [If a or b] Did you take action as a result of these calls or emails?

- a. Yes
- b. No

5) Do you recall receiving links to online tip sheets from EnergyScoreCards Minnesota representatives?

- a. Yes
- b. No [skip to 6]
- c. Don't know (*Do not read*)

5a: [If yes] How helpful were the tip sheets?

- a. Very helpful
- b. Somewhat helpful
- c. Not very helpful
- d. Not helpful at all

6) Do you recall receiving worksheets from EnergyScoreCards representatives to help you save on your utility bills?

- a. Yes
- b. No [skip to 7]
- c. Don't know (*Do not read*)

6a: [If response to 6 = a] Did you fill out the worksheets?

- a. Yes
- b. No [Skip to 7]

6b: [If 6a=yes] How helpful were the worksheets?

- a. Very helpful
- b. Somewhat helpful
- c. Not very helpful
- d. Not helpful at all

7) Did you use the help site to learn more about how to use the EnergyScoreCards tool?

- a. Yes
- b. No [Skip to 8]

7a: [If yes] How helpful was the help site in answering your questions?

- a. Very helpful
- b. Somewhat helpful
- c. Not very helpful
- d. Not helpful at all

8) After seeing how the buildings scored, to what degree did the rating of the buildings match with your previous ideas of their performance?

- a. Completely matched my performance ideas
- b. Somewhat matched my performance ideas
- c. Did not match my performance ideas
- d. Don't know (*Do not read*)

9) Do you recall having any buildings that scored an "A" or "B"?

- a. Yes
- b. No [Skip to 10]

9a: [If yes] How likely was your company to take action to improve the efficiency of these buildings?

- a. Very likely
- b. Somewhat likely
- c. Not very likely
- d. Not likely at all

10) Do you recall having any buildings that scored a "C" or "D"?

- a. Yes
- b. No [Skip to 11]

10a: [If yes] How likely was your company to take action to improve the efficiency of these buildings?

- a. Very likely
- b. Somewhat likely
- c. Not very likely

11) Not likely at all I'm going to walk you through a list of features related specifically to the peer comparison grade part of the tool. First, please tell me if you used that feature in the past 12 months, and if so, how useful that feature was to you. The first is: ROTATE LIST

		Yes	No	Very Useful	Somewhat Useful	Not at all Useful
a.	Overall Energy Index	Y	N	VU	SU	NU
b.	Heat Index Score	Y	N	VU	SU	NU
c.	Baseline electricity index	Y	N	VU	SU	NU
d.	Fossil fuel index	Y	N	VU	SU	NU
e.	Water usage index	Y	N	VU	SU	NU

12) Now, I'm going to walk you through a list of other features of the tool. First, please tell me if you used that feature in the past 12 months, and if so, how useful that feature was to you. The first is: ROTATE LIST

		Yes	No	Very Useful	Somewhat Useful	Not at all Useful
a.	Portfolio dashboard	Y	N	VU	SU	NU
b.	Customizable Portfolio Reports	Y	N	VU	SU	NU
c.	Portfolio Measurement & Verification Report	Y	N	VU	SU	NU
d.	Account analysis	Y	N	VU	SU	NU
e.	Energy events	Y	N	VU	SU	NU
f.	Alerts	Y	N	VU	SU	NU
g.	Year-to-year comparison	Y	N	VU	SU	NU
h.	Automatic bill retrieval	Y	N	VU	SU	NU

12a: [Show Used items in Q12] Out of the features you used, which was the most important?

13) Using a scale from 1 to 5, where 1 means not at all satisfied and 5 means completely satisfied, how would you rate the following : 1-5 scale

- The usefulness of the reports in targeting actions.
- The effort required to participate in the program.

14) Prior to enrolling in the program, did your company track utility and water costs in your buildings?

- Yes
- No [skip to Q15]

14a: How did you track this information? [Read if necessary]

- Spreadsheet
- Portfolio Manager

- c. Custom software
- d. Other (specify)

14b: What did you use this information for most?

- a. General tracking with little to no additional review
- b. Budgeting review as needed
- c. Monthly comparison or review
- d. Yearly comparison or review
- e. Looking for spikes in utility usage
- f. Other (specify)

14c: Compared to the previous tracking methods, how satisfied are you with the EnergyScoreCards tool?

- a. Very satisfied
- b. Somewhat satisfied
- c. Somewhat dissatisfied
- d. Very dissatisfied
- e. Don't know (*Do not read*)

As mentioned, (number) of your buildings are part of the EnergyScoreCards program.

15) To your knowledge, is this accurate?

- a. Yes
- b. No How many buildings are part of the EnergyScoreCards program? _____
- c. Don't know (*Do not read*)

16) Since beginning of the program, has your company taken any of the following actions to save energy and water? [If all answer no, skip to Q16g]

Action	Response	[If yes] How many buildings that are part of the programs have had this done
More efficient lighting	Yes/No	_____ Don't know / Not sure
Low-flow showerheads	Yes/No	_____ Don't know / Not sure
Low-flow aerators	Yes/No	_____ Don't know / Not sure
New toilets	Yes/No	_____ Don't know / Not sure
Other water conservation actions	Yes/No	_____ Don't know / Not sure
Hot water heater replacement	Yes/No	_____ Don't know / Not sure
Boiler replacement	Yes/No	_____ Don't know / Not sure
Other hot water actions	Yes/No	_____ Don't know / Not sure
Window replacement	Yes/No	_____ Don't know / Not sure
Cooling / Air conditioner upgrades	Yes/No	_____ Don't know / Not sure
Building enclosure upgrades	Yes/No	_____ Don't know / Not sure

Action	Response	[If yes] How many buildings that are part of the programs have had this done	
Pumps / motors replacement	Yes/No	_____	Don't know / Not sure
Ventilation upgrades	Yes/No	_____	Don't know / Not sure
Operations and maintenance (for energy efficiency)	Yes/No	_____	Don't know / Not sure
Has your company taken any other actions to save energy & water?	Yes/No	_____	Don't know / Not sure

16a: Did you use the energy events tool to compare building utility and water costs before and after project completion?

- Yes
- No [Skip to Q16e]
- Too early to tell (*Do not read*) [Skip to 16e]
- Don't know (*Do not read*)

16b: How useful was the tool to effectively review results?

- Very useful
- Somewhat useful
- Not very useful
- Not at all useful
- Don't know (*Do not read*)

16c: Did utility and water costs decrease as a result of these actions?

- Yes
- No
- Don't know (*Do not read*)

16d: What other results were there? (open end)

16e: Of those actions taken, were any part of a utility sponsored program?

- Yes
- No [Skip to Q16g]

16f: [If yes] What programs?

16g: What additional assistance from your utility companies, if any, would have been helpful to you in identifying and implementing energy efficiency opportunities? (open end)

17) Of the following list of factors, please indicate the level of influence as to why some utility efficiency projects have not been implemented? Would it be a major influence, minor influence or no influence?

	<i>Major Influence</i>	<i>Minor Influence</i>	<i>No Influence</i>	<i>Don't Know</i>
a. Not a priority for the company				
b. Lack of funding				
c. Lack of time to assess and implement projects				
d. Lack of understanding of energy bill				
e. Lack of staff to implement projects				
f. Lack of physical resources to implement projects				
g. Unclear financial benefits				
h. Don't know what the opportunities are				
i. Are there any other influences that impact why some utility efficiency projects have not been implemented? [Yes/No] If yes, specify & ask What level of influence?				

17a: [Show list of Major Influence] What is the MAIN influence for not implementing utility efficiency projects?

18) Using a scale from 1 to 5, where 1 means not helpful at all and 5 means extremely helpful, to what extent did the EnergyScoreCards Minnesota experience help you: (1-5 scale)

- a. Better understand your energy and water consumption
- b. Find low-cost opportunities to cut waste
- c. Identify capital improvements that would reduce waste
- d. Access local programs and incentives
- e. Take action to save energy and/or water costs
- f. Document impacts of past work
- g. Convince others within your organization that energy and water efficiency is worth pursuing

19) How important is it for your company to identify and implement energy and water efficiency projects?

- a. Very important
- b. Somewhat important
- c. Not very important
- d. Not at all important

20) In terms of the required payback period, what type of financial return does your company typically require in an energy or water efficiency capital improvement project? (Read if necessary) The payback period is the number of years that an investment takes to pay back the initial capital improvement in energy savings. (Read a-e)

- a. Less than a 3 year payback
- b. 3 years but less than a 5 year payback
- c. 5 years but less than a 7 year payback
- d. 7 years but less than a 10 year payback
- e. 10 or more year payback

21) Does your company have plans to reduce utility and water costs for your buildings over the next year?

- a. Yes
- b. No [Skip to Q22]

21a: [If yes] What specific actions does your company plan to take?

22) Since the beginning of the program, have you done an energy audit in any of the buildings in the program?

- a. Yes
- b. No [If no skip to Q23]

22a: [If yes] Did the audit give you useful information on how to reduce your energy usage?

- a. Yes
- b. No

22b: [If yes to Q22] Did you take any of the recommended actions from the audit?

- a. Yes
- b. No

22c: [Based on 22b response = a.] Why? (open end)

22d: [Based on 22b response = b.] Why not? (open end)

23) How satisfied were you with your overall experience with the EnergyScoreCards tool and service?

- a. Very satisfied [skip to 24]
- b. Somewhat satisfied [skip to 24]
- c. Somewhat dissatisfied
- d. Very dissatisfied
- e. Don't know (*Do not read*)

23a: [If response c or d] **Why were you dissatisfied?**

24) Would you participate in this program again?

- a. Yes
- b. No
- c. Don't know (*Do not read*)

25) How likely are you to recommend the service to others?

- a. Very likely
- b. Somewhat likely
- c. Not very likely
- d. Not likely at all

26) Based on your experience over the past 12 months, would you pay to continue using the EnergyScoreCards tool?

- a. Yes
- b. No [Skip to Q27]

26a: How much would you pay, per building per year?

- a. Less than \$100
- b. \$100 to less than \$200
- c. \$200 to less than \$400
- d. \$400 to less than \$1000
- e. \$1000 or more

27) What other comments or feedback would you like to provide about the EnergyScoreCards program?

28) What position best describes your role within your company:

- a. Site manager
- b. Property manager
- c. Executive property manager
- d. Asset manager
- e. Maintenance manager
- f. Owner
- g. Other (specify)

Thank you. That completes the survey. Now let me verify your address to send you the \$100 Visa Gift card.

[INTERVIEWER TO CONFIRM ADDRESS ON FILE] **You can expect the gift card at the conclusion of this research.**

Appendix D: EnergyScoreCards Staff Questionnaire

GROUP: EnergyScoreCards Minnesota Team – FINAL

Hello, my name is [your name] and I'm calling from ANA Research. Am I speaking with (name of participant)? [If not participant] Is (name) available?

[Speaking to participant] **Is this a good time for you?** [If not a good time, please schedule a time to call back or leave a message if not available.]

[Participant on phone]: **I'm calling today to discuss the EnergyScoreCards Minnesota Program and gather your opinion and feedback on the service as well as the online tool.**

All of your responses will be kept confidential.

- 1. Briefly describe your role or involvement in the ESC Minnesota program.**
- 2. Overall, what level of success would you say the EnergyScoreCards MN program has achieved?**
 - a. Very successful
 - b. Somewhat successful
 - c. Not very successful
 - d. Not at all successful
 - e. Don't know/Not sure (*Do not read*)

2-a: Why do you say that?
- 3. What level of success would you say the EnergyScoreCards MN program has achieved in terms of engaging and motivating building owners and managers to reduce their energy usage?**
 - a. Very successful
 - b. Somewhat successful
 - c. Not very successful
 - d. Not at all successful

2-a: Why do you say that?
- 4. What has been the most successful part of the project?** [Probe for respondent's internal (in your own mind) and external (in the mind of others) views]
- 5. What has been the greatest challenge for you?** (*Interviewer; probe current and future*)
- 6. How well do you see benchmarking fitting in with a larger utility program that targets the multifamily sector?**
- 7. I'm going to read four main goals of the project. After each goal, please tell me the level to which you agree that the ESC MN achieved that goal. Would you completely agree, somewhat agree, somewhat disagree, completely disagree? Please feel free to expand on**

why you agree or disagree as well.

The first goal is:

- Design a scalable program to engage multifamily property owners in benchmarking the energy and water consumption of their properties
- Improve access to utility information for property owners and managers.
- Provide owners and managers with feedback on building performance to engage their staff and help make decisions on energy and water conservation.
- Drive participation in energy savings and energy conservation programs in multifamily buildings.

Think about the online tool and its current capabilities,

8. How valuable do you think the online tool has been for the pilot companies who have had access? [IE- Treatment Group]

- a. Very valuable
- b. Somewhat valuable
- c. Not that valuable
- d. Not at all valuable

9. Do you have any ideas about how to enhance the user's experience with the tool?

Yes/No

9a: [If yes] Please explain.

10. Do you think the primary users of the tool at each organization have a good understanding of the features of the tool?

Yes/No

11. Have you gotten any direct feedback from the ESC participants?

[Yes/No]

11a: [If yes Q11] Please elaborate.

12. What would you say the most important feature of the online tool is?

13. How useful to the building owners do you think your engagement efforts were to them? That is, the ongoing phone calls, emails, and worksheets that were provided to them.

- a. Very useful
- b. Somewhat useful
- c. Not very useful
- d. Not at all useful

13a: What was the most useful engagement strategy?

13b: What was the least useful engagement strategy?

14. What were the top barriers that you heard from EnergyScoreCards participants in moving forward with energy or water saving projects? Hypothetically, if you owned a multifamily building or multiple buildings, would you pay for this service with access to the online tool

[Yes/No]

15a: [If yes] Approximately how much would you pay per building per year?

- a. Less than \$100
- b. \$100 to less than \$200
- c. \$200 to less than \$400
- d. \$400 to less than \$1000
- e. \$1000 or more

15. Lastly, do you have any suggestions or specific ideas for the ESC program? (*Interviewer; probe current and future*)

Appendix E: Utility Partners Questionnaire

GROUP: Partnering Utility Groups –FINAL

Hello, my name is [your name] and I'm calling from ANA Research, a partner with the EnergyScoreCards Minnesota team.

Am I speaking with (name of participant)? [If not participant] Is (name) available?

[Speaking to participant] **Is this a good time for you?** [If not a good time, please schedule a time to call back or leave a message if not available.]

[Participant on phone]: **I'm calling today to discuss the EnergyScoreCards Minnesota Program and gather your opinion and feedback on the service. The EnergyScoreCards Minnesota Program is a pilot program to test the effectiveness of benchmarking multifamily buildings to achieve energy savings in the multifamily sector. It is funded by Xcel Energy and the Minnesota Division of Energy Resources, through a Conservation Applied Research and Development, or CARD, grant. Our conversation should take about 20 minutes. Your answers will help us make improvements to the service and prioritize new features.**

All of your responses will be kept confidential.

- 1. Briefly describe your role or involvement in the ESC Minnesota program.**
- 2. How familiar are you with the EnergyScoreCards program?**
 - a. Very familiar
 - b. Somewhat familiar
 - c. Not very familiar
 - d. Not at all familiar [Thank and terminate]
- 3. In your opinion, what level of success would you say the EnergyScoreCards MN program has achieved?**
 - a. Very successful
 - b. Somewhat successful
 - c. Not very successful
 - d. Not at all successful
 - e. Don't know/Not sure (*Do not read*)

3-a: Why do you say that?
- 4. What has been the most successful part of the project?** [Probe for respondent's internal (in your mind) and external (in the mind of others) views]
- 5. What has been the greatest challenge for the program?** (*Interviewer; probe current and future*)

6. How important is a benchmarking tool for a successful utility CIP program in the multifamily sector?

- a. Very important
- b. Somewhat important
- c. Not very important
- d. Not at all important

6a: Why do you say that?

6b: [Ask only if respondent does not identify what is most useful about a benchmarking tool in 6a] **Specifically, what about a multifamily benchmarking tool would be most useful in a utility CIP program?**

7. What are the challenges to incorporating a multifamily benchmarking tool like EnergyScoreCards into a utility CIP program?

8. Think about your existing utility programs, would a multifamily benchmarking program fit into these programs? Yes/No

8a: [If Q8=yes] **What programs specifically?**

9. Do you have any experience in using the ESC tool?

Yes/No [If Q9=No, skip to Q15]

10. Do you find the ESC online tool to be an effective method for building owners to monitor and manage their utility and water use?

Yes/No

11. What do you think is the most useful aspect of the EnergyScoreCards tool?

12. What do you think could be improved with the EnergyScoreCards tool?

13. I'm going to read four main goals of the project. After each goal, please tell me the level to which you agree that the ESC MN achieved that goal. Would you completely agree, somewhat agree, somewhat disagree, completely disagree? The first goal is:

- Design a scalable program to engage multifamily property owners in benchmarking the energy and water consumption of their properties
- Improve access to utility information for property owners and managers.
- Provide owners and managers with feedback on building performance to engage their staff and help make decisions on energy and water conservation.
- Drive participation in energy savings and energy conservation programs in multifamily buildings.

14. Hypothetically, if you owned a multifamily building or multiple buildings, would you pay for this service with access to the online tool?

Yes/No

[If No, skip to Q15]

14a: [If yes] **Approximately how much would you pay per building per year?**

- a. Less than \$100
- b. \$100 to less than \$200
- c. \$200 to less than \$400
- d. \$400 to less than \$1000
- e. \$1000 or more

15. Lastly, do you have any suggestions or specific ideas for the ESC program? (*Interviewer; probe current and future*)