



# C20: Energy Conscious Blueprint 2013-2014 Process Evaluation: Program Year April 2013 to March 2014

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REVIEW  
DRAFT  
REPORT



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# EXECUTIVE SUMMARY

This section summarizes the methods and findings from the 2014 Process Evaluation of the Connecticut Energy Conscious Blueprint Program.

## Introduction

The objective of the Energy Conscious Blueprint (ECB) program is “to maximize electric and natural gas energy savings for ‘lost opportunity’ projects, at the time of initial construction/major renovation, or when equipment needs to be replaced or added.”<sup>1</sup> The ECB program seeks to accomplish this by working with new construction trade allies (e.g., contractors, architects, engineering firms) to raise awareness of energy efficient technologies and whole-building design practices and assist these allies in illustrating the benefits of energy efficiency during initial construction to property developers and owners. The program also provides incentives to building owners for incorporating energy efficient equipment into building design or for using energy efficient equipment to replace equipment at the end of its usable life.

The objectives of this evaluation were to assess the program’s effectiveness in reaching its target market, assess participant and vendor satisfaction with the program, and identify barriers that could inhibit the program from achieving its goals.

## Program Activity Summary

During the sample period from April 2013 to April 2014, program participants achieved over 136,000 mmBTU in annual energy savings from 420 projects and 751 individual measures. New construction projects accounted for one quarter of projects and 37% of energy savings in the period. Process, lighting, and heating measures comprised the majority of ECB program savings, while cooling measures comprised the greatest number of measures. Heating, process, and lighting measures had the greatest average per-measure savings.

## Key Study Methods

The process evaluation was based on analysis of program tracking data, surveys of 70 program participants, 13 program dropouts, and 41 vendors working with the program, and interviews with 10 non-participating customers or “rejecters.” The process evaluation also included web usability testing with 18 vendors and participants to assess how the website meets the needs of program stakeholders.

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<sup>1</sup> Energize Connecticut 2012 Electric and Natural Gas Conservation and Load Management Plan

## Summary of Results

Results from the process evaluation indicated that the ECB program is functioning smoothly for participants and vendors. Participants in particular demonstrated high satisfaction with the program. Vendors partnering with the program appear to drive most equipment replacement projects through their marketing efforts, while utility and program staff appear to be the impetus behind many new construction and major renovation projects. Many vendors rely on the ECB program for a quarter or more of their business, and some requested additional support and greater responsiveness from program staff.

Customers rely on utility and program staff to learn how to participate, and vendors rely on utility and program staff to answer questions. Participating customers, dropout customers, and participating vendors all identified financial factors—lack of access to capital and financing—as barriers to completing projects.

Participants consult the utility websites to learn more information about the program but do not use it to figure out next steps to participate in the program. Participating vendors typically use the website to look up incentive information. The findings from web usability sessions indicate that although there is useful information on the Connecticut Light & Power and United Illuminating websites, it is challenging for both vendors and customers to find this information.

## Recommendations

Based on the findings of the process evaluation, the evaluation team proposes the following recommendations:

- Promote awareness of financing sources and consider expanding financing options. Dropout customers, participating customers, and vendors consistently identified financial factors as potential barriers to program participation. While some options are available for project financing these options could be more effectively communicated or expanded.
- Dedicate additional resources and/or develop tools to support vendors. Vendors play a key role in promoting these programs, and while most vendors reported being satisfied they also indicated ways in which they desire more support from the utilities.
- Increase outreach efforts to individuals involved with new construction projects. Awareness of the ECB program is low among some building owners, project managers, architects, and developers involved with new construction, and performing outreach to these parties, though time intensive, could help increase the number of new construction participants in the program.
- Consider providing improved signposting that enables more effective webpage scanning. Both vendors and customers requested a more intuitive organizational structure for the website that used common program description titles so that they can quickly locate the information they need.
- Implement changes to program tracking database to improve program evaluability and project tracking for staff. Based on the work conducting the process evaluation, the evaluation team proposes a number of changes or additions to the program tracking database (found in the Recommendations) to facilitate the tracking of performance indicators and to improve evaluability.





# 1. INTRODUCTION

This report presents the results of the 2014 process evaluation of the ECB Program. Per the 2012 Conservation and Load Management Plan, the objective of the Energy Conscious Blueprint (ECB) program is “to maximize electric and natural gas energy savings for ‘lost opportunity’ projects, at the time of initial construction/major renovation, or when equipment needs to be replaced or added.” The program seeks to accomplish this by working with new construction trade allies (e.g., contractors, architects, engineering firms) to raise awareness of energy efficient technologies and whole-building design practices and assist these allies in illustrating the benefits of energy efficiency during initial construction to property developers and owners. The program also provides incentives to building owners for incorporating energy efficient equipment into building design or for using energy efficient equipment to replace equipment at the end of its usable life.

This report contains four chapters: (1) Introduction, (2) Methodology, (3) Summary Results, and (4) Detailed Findings. The results of our research are presented at two levels—summary and detailed. The Summary Results chapter provides answers to the key research questions based on synthesized findings from different data collection activities. The Detailed Findings chapter provides all of findings from each data collection activity. This includes many of the findings mentioned in the Summary Results plus additional findings at a greater level of detail.

## 1.1 Program Description

The Energy Conscious Blueprint Program serves the new construction and equipment replacement markets to capture “lost opportunity” energy savings. The program targets energy savings opportunities during key moments in the design of a new building or with the failure of equipment. Without program intervention, these situations often lead to installation of standard or “at code” equipment, which represent lost opportunities because retrofitting or replacing this equipment during its functional lifetime may not be cost effective.

The program offers incentives in a whole building performance track and in a measure-based track, including lighting, process improvements, HVAC<sup>22</sup>, motors, and refrigeration. The program works with trade allies, or vendors, in the new construction and equipment replacement market to build awareness of the program.

## 1.2 Project Objectives

The objectives of this evaluation were to assess the effectiveness of the program in reaching its target market, assess participant and vendor satisfaction with the program, and identify barriers that could inhibit the program from achieving its goals. The process evaluation was based on analysis of program tracking data, surveys of program participants, program dropouts, and vendors working with the program, and interviews with non-participating customers or “rejecters.” The process

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<sup>22</sup> HVAC stands for heating, ventilation and air-conditioning.

evaluation also included web usability testing with vendors and participants to assess how the website meets the needs of program stakeholders.

## 1.3 Research Questions

The evaluation team sought to address four main process research questions, which break down into several more detailed questions.

### A. How well is the program reaching the target market?

- A. What targeted markets or market segments has the program been most effective/least effective in reaching and why, in terms of end use, customer size, and industry sector?
- B. How are project types and completions changing over time? Are more Whole Building performance projects, those that are incented based on the building performance rather than individual measures, occurring later in the evaluation period? What explains this shift?
- C. How are participants learning about the ECB program specifically as distinct from a general awareness of energy efficiency offerings from CT utilities? Are there differences between utilities?
- D. Why do customers participate in ECB rather than the retrofit program? Do customers understand the different program requirements?

### B. How satisfied are participants with the program?

- A. How does the timeframe for project completion affect program marketing and the customer decision to participate?
- B. How well does the program website(s) meet the needs of participants and vendors? Is the level of information appropriate? Is the organization intuitive? Is the experience different for participants and vendors? Are incentive calculations clear? Are the case studies helpful?
- C. What keeps customers from participating (program barriers)? What keeps customers from making energy efficiency improvements without the program (improvement barriers)?
- D. How do customers learn about the steps to complete as part of the program? How do they resolve questions while their projects are in progress?
- E. Are customers satisfied with the program overall? With the enrollment process and paperwork? With the incentive, especially when incentive caps are triggered? With the equipment and actual versus expected energy savings? With the vendor?

### C. How satisfied are participating vendors with the program?

- A. Why do vendors refer customers to the program?
- B. From the vendor perspective, what is the most important support or information that they need from the program? How well is that provided?
- C. Where do vendors turn with questions about the programs?

## D. What barriers or issues could inhibit the program from achieving its goals?

- A. How might identified barriers be overcome to improve program performance?

### 1.4 Program Population Summary

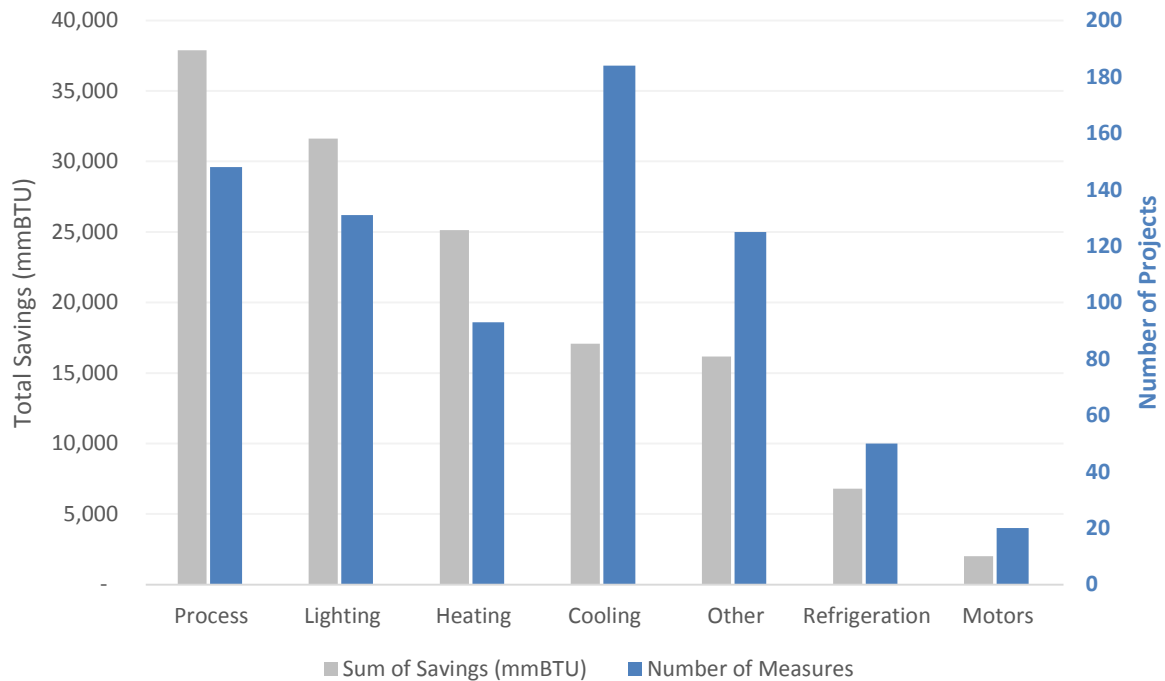
The research team analyzed the program tracking data in order to understand trends in program participation by end use, geography, and time. The tracking data for the process evaluation, or the program population, includes program participants that completed projects between April 2013 and April 2014. Program participants in this time period achieved over 136,000 mmBTU in annual energy savings from 420 projects and 751 individual measures.<sup>3</sup> Figure 1-1 illustrates the total annual energy savings and total number of measures by category.

Unlike retrofit programs where lighting accounts for the majority of savings, the ECB program tracking data show that projects and savings are distributed across measure types. Process, lighting, and heating measures comprised the majority of ECB program savings, while cooling measures comprised the greatest number of measures. Process improvements came almost exclusively from equipment replacement projects, and lighting measures came predominantly from new construction projects.<sup>3</sup> Figure 1-2 illustrates the average energy savings per implemented measure. Heating, process, and lighting measures had the greatest average per-measure savings.

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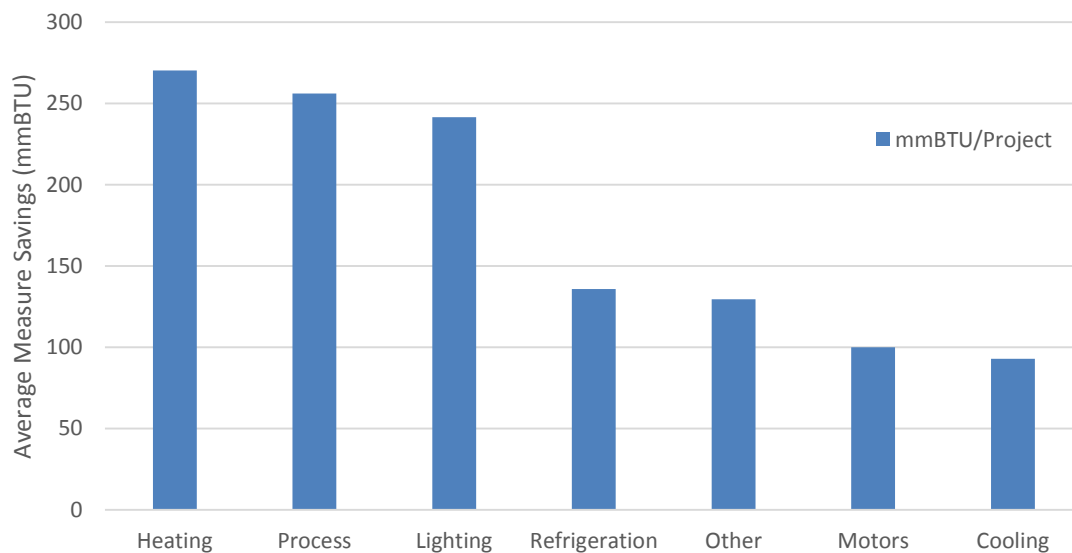
<sup>3</sup> Data reported do not include measures with zero or negative savings values for administrative adjustments and incentive caps

**Figure 1-1: Cooling technologies represent the greatest number of measures, while process measures account for the most energy savings.**



Note: Savings values reported in this figure do not include measures with zero or negative savings values for administrative adjustments and incentive caps.

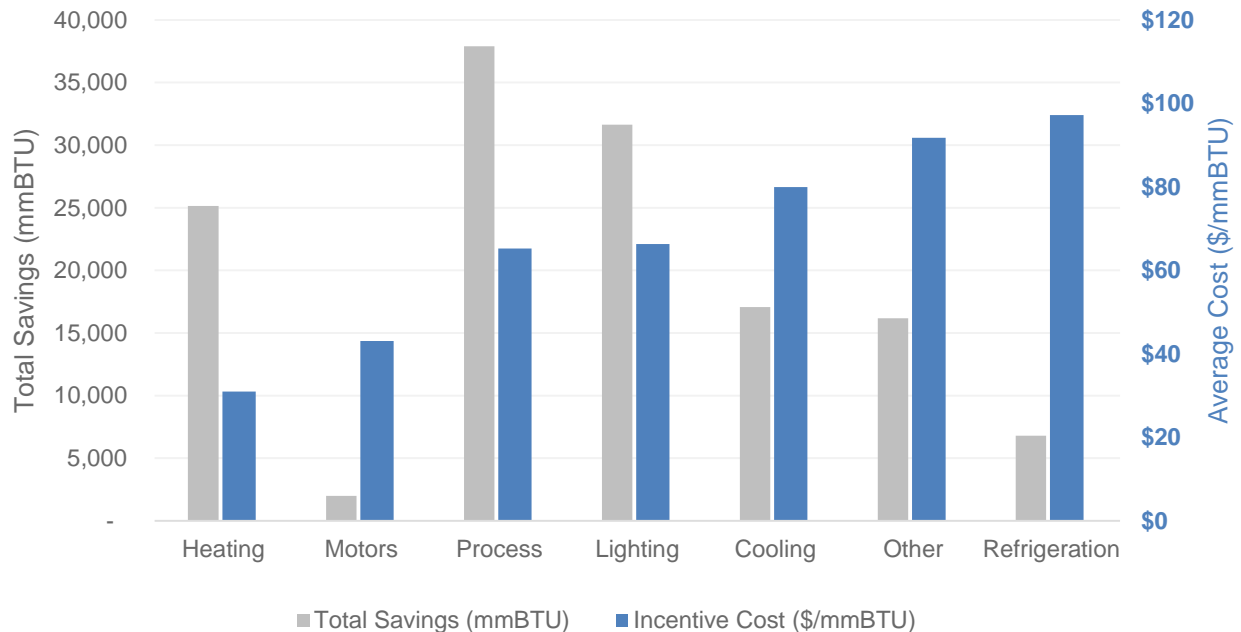
**Figure 1-2. On a per-measure basis, heating measures result in the greatest energy savings, closely followed by process and lighting measures.**



Note: Savings values reported in this figure do not include measures with zero or negative savings values for administrative adjustments and incentive caps.

In the population of projects, relatively few projects accounted for the majority of ECB program savings. The top 10% of measures (75 measures) accounted for over 65% of all tracking (i.e., ex-ante or claimed) savings. Figure 1-3 illustrates the volumetric incentive costs for each measure category. At \$31/mmBTU (11 cents/kWh), heating measures in the tracking data had the lowest incentive cost per mmBTU while also providing substantial energy savings. Motors were also one of the lowest cost measures in the tracking data, but contributed less energy savings to the overall program.

**Figure 1-3: On average, heating measures have the lowest incentive cost while providing substantial energy savings.**



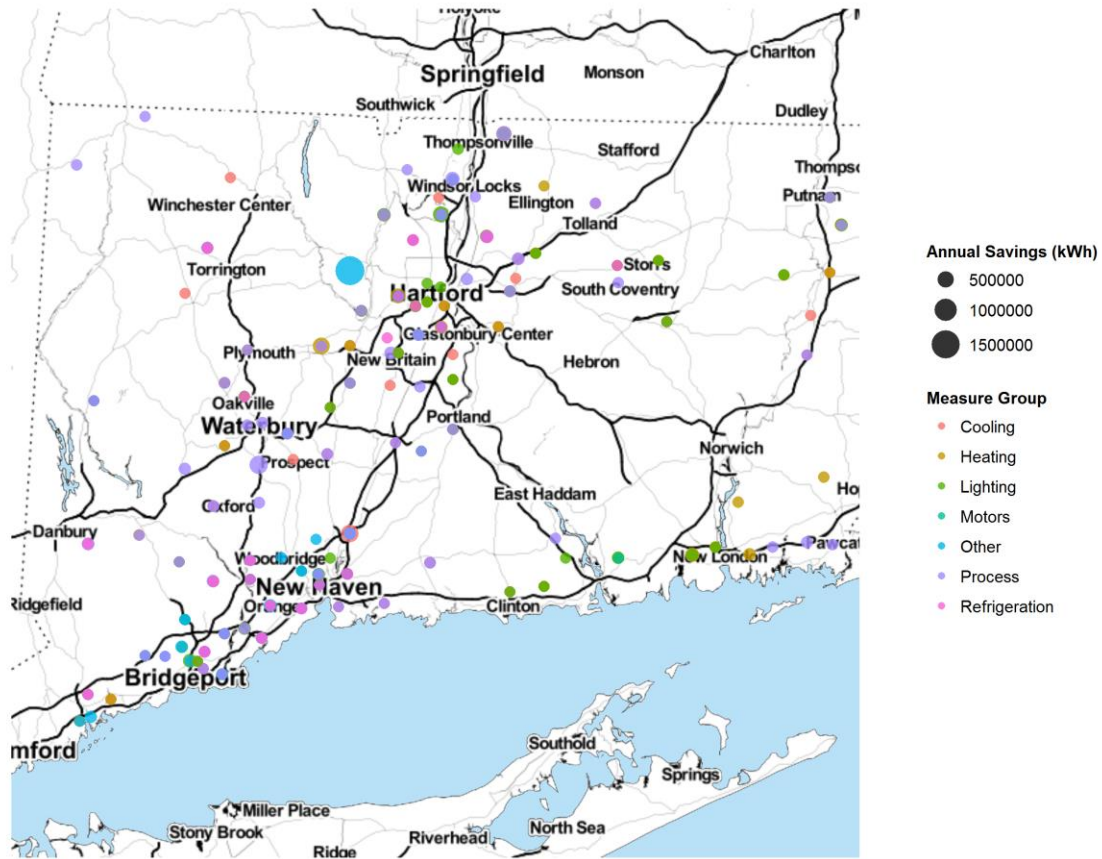
Note: Savings values reported in this figure do not include measures with zero or negative savings values for administrative adjustments and incentive caps.

Overall, new construction measures represented a quarter of all measures and 37% of energy savings.<sup>4</sup> We were unable to assess the distribution of new construction projects between the whole building and prescriptive tracks, as they were not identified in the program tracking data.

Geographically, projects were clustered in the Hartford, New Haven, and Bridgeport metropolitan areas. Figure 1-5 illustrates projects in Connecticut, where the color of the circle corresponds to measure category and size represents annual energy savings.

<sup>4</sup> New construction measures are not identified in UI data.

**Figure 1-4: Map of projects in Connecticut showing measure category (color) and energy savings (size of circle.)**



## 2. METHODOLOGY

The evaluation team identified five separate data collection activities needed to answer the four evaluation questions from Section 1.3 and listed below.

- A. How well is the program reaching the target market?
- B. How satisfied are participants with the program?
- C. How satisfied are vendors with the program?
- D. What barriers or issues could inhibit the program from achieving its goals?

These research questions were addressed through three surveys, one set of interviews, one-on-one web usability studies, and secondary data, as shown in Table 2-1. In addition, the evaluation team interviewed two program staff that lead the ECB program and four program engineers.

**Table 2-1: Process Research Questions and Data Collection/Analysis Activities**

| Research Question | Participant Surveys | Participating Vendor Surveys | Drop Out Surveys | Rejecter Interviews | Web Usability Study |
|-------------------|---------------------|------------------------------|------------------|---------------------|---------------------|
| A                 | +                   | +                            | +                | +                   |                     |
| B                 | +                   | +                            | +                | +                   | +                   |
| C                 |                     | +                            |                  |                     | +                   |
| D                 | +                   | +                            | +                | +                   | +                   |

This section documents the detailed methodology for each data collection activity, including information about the population, research type, and sample.<sup>5</sup> The survey and interview instruments are contained in Appendix A.

### 2.1 Participant Survey

We conducted a telephone survey with 70 program participants from August 5, 2014 to August 8, 2014. The evaluation team identified program participants from the program tracking data for those projects with a check date or a status code of “Paid Phase,” or “CLO.” We sought to reach 70 program participants. This size was determined based on a five-point continuous response satisfaction question ranging from “Very Dissatisfied” to “Very Satisfied.” The evaluation team sought to achieve 80 percent certainty with a 5 percent margin of error across a continuous program satisfaction question with five possible responses. First, the required response sample ( $n_0$ ) is

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<sup>5</sup> The method for determining the appropriate sample size for the data collection activities is based on Cochran (1977). [Cochran, W. G. (1977). Sampling techniques (3rd ed.). New York: John Wiley & Sons]



calculated based on the five responses, the confidence and the margin allowed, as shown in Equation 1.<sup>6</sup>

$$n_0 = \frac{t^2 \times s^2}{d^2} = \frac{1.28^2 \times (5/4)^2}{(5 \times 0.05)^2} = 41 \quad (1)$$

This size exceeds 5% of the size of the program participant population (N) for both utilities. Therefore, we applied a population correction factor to determine sample targets, as shown in Equation 2 and Table 2-2.

$$n_1 = \frac{n_0}{1 + n_0/N} \quad (2)$$

**Table 2-2: Adjusted Sample Size based on 5-Point Satisfaction by Utility**

| Utility <sup>a</sup> | Total unique accounts (N) | Adjusted sample size (n) |
|----------------------|---------------------------|--------------------------|
| NU                   | 308                       | 38                       |
| UI                   | 112                       | 32                       |
| Total                | 420                       | 70                       |

a. NU includes both CL&P and YGS. UI includes UI, CNG, and SCG. Accounts are unique for electric and gas. However, a single customer or site may have both a unique electric and a unique gas account.

We also sought to understand both the new construction/major renovation and the equipment replacement experience. To that end, we split the sample targets to specific quotas for these two groups, resulting in the sample design shown in Table 2-3.

**Table 2-3: Overall Participant Sample Design**

|       | New construction <sup>a</sup> | Equipment replacement | Total sample |
|-------|-------------------------------|-----------------------|--------------|
| NU    | 14                            | 24                    | 38           |
| UI    | 5                             | 27                    | 32           |
| Total | 19                            | 51                    | 70           |

a. New construction projects are flagged “NC” in CL&P electric and gas program tracking data. An estimate of 30 new construction types was made for UI accounts based on proportions in the other tracking data. Screening questions were used for quotas.

The participant survey achieved a response rate of 20% with no incentive provided to respondents. The full dispositions from this research are shown in Table 2-4.

<sup>6</sup> Where t is the z-score for the desired level of confidence (1.28 for 80%); s is the number of points on the scale over the number of deviations (5/4); and d is the number of points on primary scale times the acceptable margin of error (5 X 0.05).

**Table 2-4: Dispositions from Participant Survey**

| Disposition       | Count | Percent |
|-------------------|-------|---------|
| Callback          | 153   | 44%     |
| Answering Machine | 107   | 31%     |
| Complete          | 70    | 20%     |
| Disconnected      | 10    | 3%      |
| Do not call       | 5     | 1%      |
| No Answer         | 2     | 1%      |
| Total             | 347   | 100%    |

## 2.2 Dropout Survey

A senior researcher familiar with the projects conducted telephone surveys with 13 customers with cancelled projects from September 2, 2014 to September 11, 2014. The evaluation team identified a population of 74 dropouts from the program tracking data from January 2013 to March 2014.<sup>7</sup> CL&P dropout customers had a status code of “Cancelled;” UI dropout customers had a status code of “CLS.” The team sought to complete surveys with 27 (38%) of these customers to understand their experience and achieved 13 completes after calling the entire list, resulting in an 18% completion rate, as shown in Table 2-5. The evaluation team offered customers a \$50 gift card in order to complete the survey.

**Table 2-5: Disposition of Dropout Survey**

| Disposition       | Count | Percent |
|-------------------|-------|---------|
| Left Message      | 47    | 64%     |
| Complete          | 13    | 18%     |
| Invalid Number    | 10    | 14%     |
| No Message Left * | 4     | 5%      |
| Total             | 74    | 100%    |

\* In some cases, messages could not be left. We reached a full mailbox or no mailbox at all.

## 2.3 New Construction Rejecter Interviews

A researcher familiar with the program conducted telephone interviews with 7 building owners or representatives of new construction projects from September 11, 2014 to October 7, 2014.

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<sup>7</sup> This time was extended backwards from to January 2013 to identify additional customers to reach about their cancelled projects. There were only 41 cancelled projects identified in the tracking data from April 2013 to March 2014.

The evaluation team identified a population of 571 projects from the Reed Construction data likely completed between 2012 and 2014.<sup>8</sup> This is the same database used by the program since the end of 2012 to identify new construction leads. The team sought to reach 10 of these customers to understand their experience. The evaluation team called 158 customers and completed interviews with 7 for a 5% completion rate, as shown in Table 2-6. One contributing factor to the low completion rate was the fact that 76, almost half, of the listed organizations did not include a contact name, making it difficult to reach decision-makers for these organizations.

**Table 2-6: Dispositions for Rejecter Interviews**

| Disposition    | Count | Percent |
|----------------|-------|---------|
| Left Message   | 145   | 92%     |
| Complete       | 7     | 5%      |
| Invalid Number | 12    | 8%      |
| Total          | 158   | 100%    |

## 2.4 Participating Vendor Survey

We conducted a telephone survey with 41 participating vendors from September 5, 2014 to September 13, 2014. The evaluation team defined participating vendors as those vendors who supported projects completed through the program. They included many different kinds of vendors, such as: architects on new construction projects, lighting contractors, or compressed air manufacturing representatives. Because the program tracking data did not have sufficient information on project vendors, we went through project documentation for each project included in the impact evaluation sample and backup sites and identified vendors and their contact information.<sup>9</sup> From this data, we identified 170 unique participating vendors. As shown in Table 2-7, the research team called 148 vendors and achieved 41 completes for a completion rate of 28%.

The key question for participating vendors is their overall satisfaction with the program. For satisfaction, there is a five point continuous response from “Very Dissatisfied” to “Very Satisfied.” The evaluation team wanted to achieve 80 percent certainty with a 5 percent margin of error across a continuous program satisfaction question with five possible responses. First, the required response sample ( $n_0$ ) was calculated based on the five responses, the confidence and the margin allowed to identify the sample target for an infinite population

$$n_0 = \frac{t^2 \times s^2}{d^2} = \frac{1.28^2 \times (5/4)^2}{(5 \times 0.05)^2} = 41$$

A population correction factor was not applied because the total vendor population is not known.

<sup>8</sup> Filters applied to REED database: Project Location = Connecticut; Stage = Post Bid, Low Bids Announced, General Contractor Award, Construction Underway, or Closed; Work Type = Addition, Addition/Alteration, or New.

<sup>9</sup> Program tracking data included 12 participating vendors; these were all in the UI data, and no vendors were identified in the CL&P data. In conversation with program staff, the evaluation team learned that the program did not track or maintain vendor data for most types of projects.

**Table 2-7: Disposition of Participating Vendor Survey**

| Disposition  | Count | Percent |
|--------------|-------|---------|
| Callback     | 55    | 37%     |
| Left Message | 41    | 28%     |
| Complete     | 41    | 28%     |
| Disconnected | 6     | 4%      |
| Do Not Call  | 3     | 2%      |
| Refused      | 2     | 1%      |
| Total        | 148   | 100%    |

## 2.5 Web Usability Studies

The evaluation team conducted web usability sessions with 18 customers and vendors from September 17, 2014 to October 15, 2014. The objective of conducting usability testing was to understand both C&I customer and vendor experiences using the CL&P and UI websites as well as the *Energy Conscious Blueprint* web pages. On average, each study took 20 to 30 minutes and participants were provided with a \$75 gift card for his or her time and feedback.

We used the list of 171 unique participating vendors from our work with the vendor data as a recruiting tool. The list was then filtered to include only vendors from CL&P and UI, excluding vendors completing projects from other utilities. We called a total of 75 vendors, achieving 9 completes for a completion rate of 12%, with a total of 6 CL&P and 3 UI respondents.

For the customer sample, we used a list of participating customers who took part in the participant survey for this project as a recruiting tool. We called 92 customers, achieving 9 completes for a completion rate of 10%, with a total of 4 CL&P and 5 UI respondents.

In our initial round of calls the evaluation team focused on the vendors and participants who had indicated in the participating vendor survey that they had previously used the website, but due to low levels of interest among this group we expanded our recruiting efforts to the entire lists. All study sessions were conducted remotely by utilizing screen-recording software to capture respondents' audio comments and on-the-screen actions.

## 3. SUMMARY RESULTS

This section provides a summary of the overall results of the process evaluation. An overview is included, followed by detailed results by research question. Following this section, Section 4 provides the detailed findings from the five data collection activities, which were combined to answer the research questions.

### 3.1 Overview of Results

Results from the process evaluation indicated that the ECB program is functioning smoothly for participants and vendors. Participants in particular demonstrated high satisfaction with the program. Vendors partnering with the program appear to drive most equipment replacement projects through their marketing efforts, while utility and program staff appear to be the impetus behind many new construction and major renovation projects. Customers rely on utility and program staff to learn how to participate, and vendors rely on utility and program staff to answer questions.

Participating vendors, participating customers, and dropout customers all identified financial factors as potential barriers to completing projects. Participating vendors cited customers' lack of capital, customers' unwillingness to take on debt, and an absence of acceptable financing option most frequently as barriers to participation. Participating customers also mentioned these three factors as potential factors that would cause them to select the standard efficiency option over the energy efficient option in a hypothetical project. These results suggest some vendors and customers are not aware of available financing options for equipment replacement project or believe they are inadequate.

### 3.2 Results by Research Question

This section provides a summary of results by research question.

#### A. How well is the program reaching the target market?

A lack of complete data for building types and project types made it difficult to assess the penetration of the ECB program, although we noted some trends that may indicate opportunities in the new construction market. Unlike retrofit programs where lighting accounts for the majority of savings, the ECB program tracking data show that projects and savings are distributed across measure types. Process, lighting, and heating measures comprised the majority of ECB program savings, while cooling measures comprised the greatest number of measures. Process improvements came almost exclusively from equipment replacement projects, and lighting measures came predominantly from new construction projects. In the sample period, projects were concentrated around Hartford, New Haven, and Bridgeport.

Overall, new construction measures represented a quarter of all measures and 37% of energy savings. We were unable to assess the distribution of new construction projects between the whole building and prescriptive tracks, as they were not identified in the program tracking data. Program staff

indicated that more new construction projects appeared to come online towards the end of 2013 and in 2014 than in previous years; however, the data that we received on completed projects do not show these projects. New construction projects can take longer than equipment replacement projects to move forward which provides some explanation for why we are not seeing more new construction completions. In addition, new construction projects are not consistently identified in the data, as noted previously.

Based on the random sample of program participants, equipment replacement projects appear to occur most frequently in industrial and manufacturing facilities, explaining the frequency of process improvement measures. New construction projects appear to be well distributed across many facility types. However, calls made to identify program rejecters listed in the REED database suggested that some new building owners are not aware of the ECB program.

Respondents varied in size but many were smaller businesses that owned and occupied their building. Slightly more than half of respondents said they owned and occupied their building, with 21% renting or leasing their space and 21% managing the space and leasing to others—with this holding true for equipment replacement projects as well as new construction. The program's success reaching individuals leasing space to tenants—typically considered a difficult group to access—suggests outreach by vendors and program staff has been effective.

Utility and program staff drive many new construction projects while equipment vendors and contractors drive equipment replacement projects. While equipment replacement and remodel respondents frequently learned about the program from vendors and contractors, new construction respondents mostly learned about the program from utility or program staff. We did not observe any notable differences in sources of program awareness between CL&P and UI respondents.

Participants in the ECB program are not always aware of the Energy Opportunities retrofit program. Findings suggested many participants are only aware of the program they were notified about. Of the 43 equipment replacement respondents, less than half (44%) were aware of the Energy Opportunities Program for early replacement of equipment.

## B. How satisfied are participants with the program?

Participants overall were very satisfied with their experience with the ECB Program, rating their satisfaction a 4.8 out of 5. Only one respondent rated their overall satisfaction a three or less. This respondent described that they received a smaller rebate than they had applied for. Respondents were also satisfied with the energy performance of their new building (4.6) or the energy bill savings from their new equipment (4.4). They were slightly less satisfied with the amount of the rebate (4.2). These scores were consistent across project types. Respondents were also generally satisfied with support received from program staff and the amount of paperwork required to receive an incentive, although six of the 70 respondents rated this area a 3 or less.

Participants were highly satisfied with the performance of the equipment, with an average satisfaction score of 4.8 out of 5. Only one respondent rated their satisfaction less than a 4, explaining that his/her tenants have reported the new system does not heat well.

Program staff and vendors played a key role in participants' experience. After learning about the program, most respondents either talked to a vendor or called or emailed their utility to learn about the steps to take to participate in the ECB program. Participants were more likely to take those actions than to visit the Energize Connecticut or utility website. Participants generally did not find the process of enrolling in the ECB program to be complex. On a five-point scale where one was "not at all complicated" and five was "very complicated," respondents averaged a 1.6.

Although they did not use the website to learn about next steps to take, many participants said they did use the website to find more information about the ECB Program. Slightly more than one-quarter of survey respondents reported visiting the program website before or during the project. The vast majority of these 18 respondents said that they visited the website to research the ECB program.

### C. How satisfied are vendors with the program?

Participating vendors were generally satisfied with their experience with the ECB program, rating their satisfaction a 4.1 out of 5 on average. Vendors most frequently cited increased customer satisfaction as the benefit they received from working with the program, and almost half of vendors relied on the ECB program for a quarter or more of their work. Program staff played a major role in helping vendors learn about the program and were frequently consulted as a resource during projects. Program staff indicated that the vendors are not tracked or endorsed by the program or utilities; no formal vendor program exists. Respondents were generally satisfied with the level of support offered by program staff, but were interested in more information about incentives. Program staff indicated that the vast majority of information about the program is delivered via quarterly training sessions that cover all programs.

### D. What barriers or issues could inhibit the program from achieving its goals?

Participants most frequently cited the lack of corporate capital to cover the additional cost of energy efficient equipment as a barrier that might cause them to select a standard efficiency option over the energy efficient choice—although, being participants, they all chose the efficient option in their recent project. An unwillingness to take on debt was the second most frequent response, followed by an absence of acceptable financing options and a lack of knowledge of what improvements would save energy.

These barriers were mirrored in findings from the dropout and participating vendor surveys. Two out of the eight true dropouts identified (25%) reported that the expense of the equipment was the primary reason they stopped pursuing the project. Nearly all vendors reported that customers' lack of access to capital represented a barrier to participation, and most also thought that customers' unwillingness to take on debt and the absence of acceptable financing options were other factors limiting participation. Program staff indicated that the utilities do not provide financing for new construction projects. Other sources of financing are available for certain projects through other programs, such as the C-PACE program.

The most notable difference between participants of different project types was doubts about energy and cost savings claims. No new construction respondents (out of 12) and only one remodel (out of 15) respondent reported this as a barrier, whereas 18 (42%) equipment replacement respondents reported doubts about energy and cost savings claims. This may be related to funding

structure of equipment replacement projects, which often have payback requirements, as opposed to new construction projects, where the financial benefits of energy efficiency may be experienced by tenants and not necessarily the building owner or developer.

Few participants reported that the one-year project completion deadline was a concern when they decided to participate. Only eight respondents (12%) said it was a concern; the remaining 61 (88%) said it was not a concern.



## 4. DETAILED FINDINGS

This section contains the detailed results from the process data collection activities. These results are first presented in summary—a selection of the findings that stood out—and then in detail for each data collection activity. The data collection activities included: (1) a survey of program participants, (2) a survey of program dropouts, (3) interviews with new construction rejecters, and (4) a survey of participating vendors.

### 4.1 Participant Survey Findings

This section presents results from the 2014 telephone survey of ECB participants that recently completed program projects, between April 2013 and March 2014. This survey was designed to capture participation motivations, experiences, and satisfaction with the ECB program. This section first describes respondent characteristics and then summarizes motivations, avenues of awareness, satisfaction, barriers, and other process results.

This research indicated that while participants with new construction or remodel projects and participants with equipment replacement projects represented different businesses types and learned about the program through different means, they both reported high satisfaction with the program. New construction participants often learned about the program from utility or program representatives, while equipment replacement participants often learned about it from contractors and vendors. After learning about the program, both groups relied heavily on calls and emails with utility or program representatives to learn about next steps to participate. Respondents cited financial considerations, such as a lack of capital (internal corporate capital alongside unwillingness to take on debt) or financing options (third), most frequently as potential barriers to energy efficiency projects.

### Program Participants

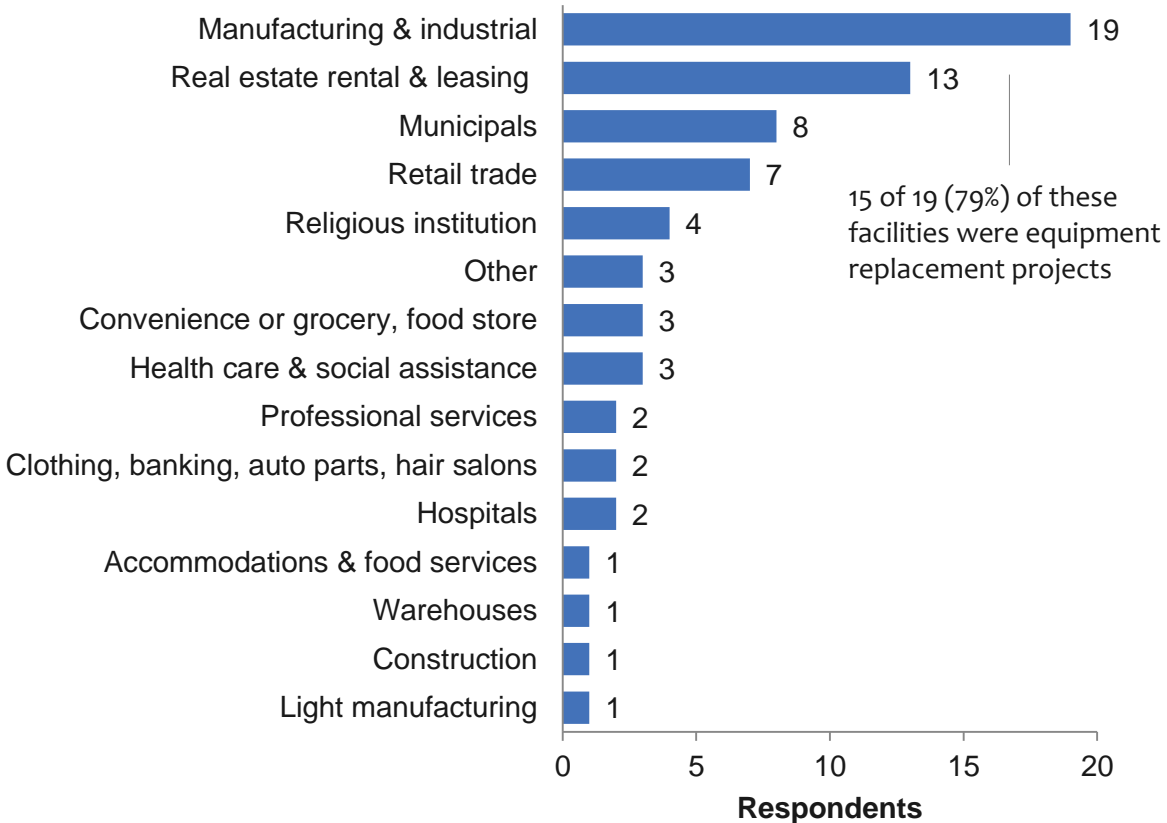
The evaluation team surveyed 70 participating customers about their experiences with the program (Table 4-1). As described in Chapter 2, the sample was drawn from the population of customers participating in the program between April 2013 and March 2014. The sample was stratified by project type and utility as depicted in table. This stratification ensured that different project types were adequately represented in the sample. The evaluation team did not weigh the results, as records of project type in the population were incomplete.

**Table 4-1: Respondents by Project Type and Utility**

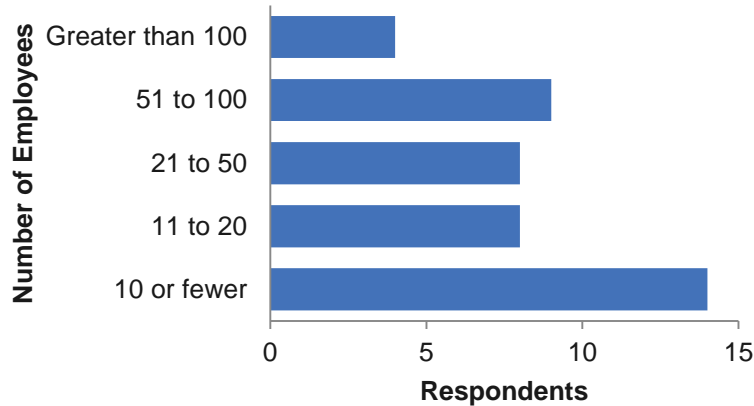
| Project Type                           | CL&P | UI | Total |
|--|------|----|-------|
| Equipment Replacement                  | 23   | 20 | 43    |
| New Construction or Facility Expansion | 6    | 6  | 12    |
| Remodel                                | 9    | 6  | 15    |
| Total                                  | 38   | 32 | 70    |

### Business Characteristics

Participating customers represented a variety of different commercial and industrial facility types (Figure 4-1). Equipment replacement projects have been common in manufacturing and industrial facilities during the evaluated time period, while new construction projects occurred for a diversity of facility types. Overall, the most common facility type was manufacturing and industrial facilities (19, or 27%), followed by real estate rental and leasing properties (13, or 19%) and municipal facilities (8, or 11%). The majority of the manufacturing and industrial facilities were equipment replacement projects (79%), with the remainder being remodel projects (21%). The number of manufacturing and industrial projects likely reflects the large loads and eligible end-uses of these facilities, such as compressed air, HVAC systems, and motors. Among new construction projects, municipals were the most common facility type (4, or 33%), followed by retail trade (2, or 17%).

**Figure 4-1: Participants were most often manufacturing & industrial facilities (n=70)**

As shown in Figure 4-2, respondents varied in size but many were smaller businesses that owned and occupied their building. The size of participant respondents varied from a single employee to 5,000 employees, with a median of 17.5. Distributions were similar across project types. Slightly more than half of respondents said they owned and occupied their building, with 21% renting or leasing their space and 21% managing the space and leasing to others—with this holding true for equipment replacement projects as well as new construction. Two respondents were involved with the construction of the building and neither owned or occupied the space. The program's success reaching individuals leasing space to tenants—typically considered a difficult group to access—suggests outreach by vendors and program staff has been effective.

**Figure 4-2: Participants were most frequently firms with 10 or fewer employees (n=70)**

### Project Partners

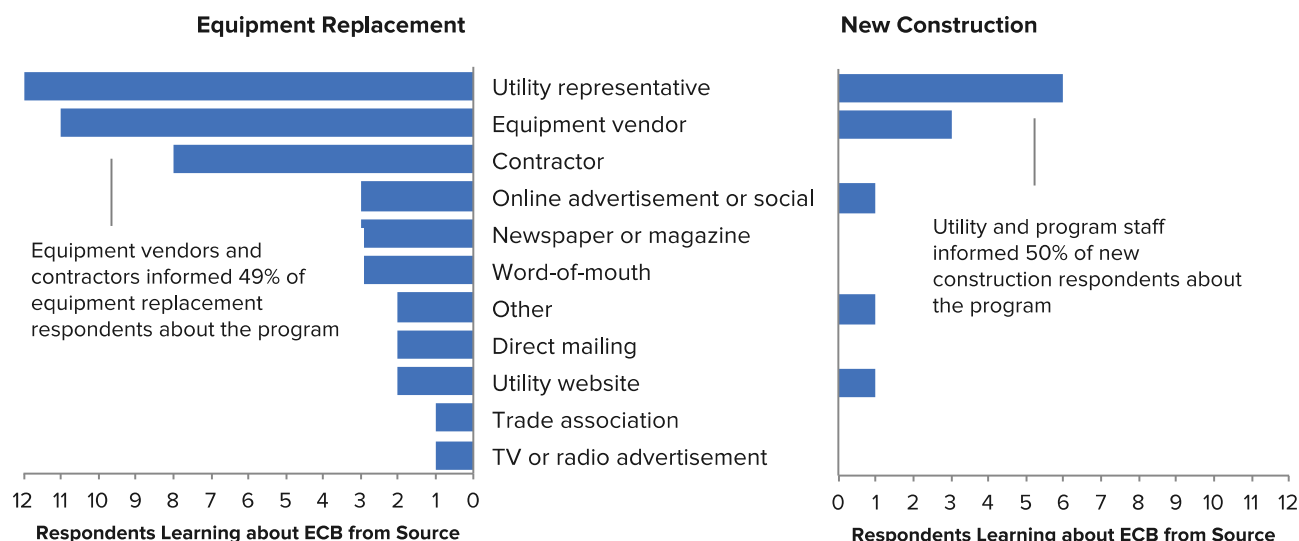
The majority of equipment replacement respondents and remodel respondents and *all* new construction respondents reported working with more than one partner for the ECB project. Most equipment replacement participants reported working with an equipment vendor (84%) and most new construction participants reported working with an engineering consultant (83%) and/or architect or building designer (75%).

In addition to engineering consultants and architects, new construction respondents also frequently reported working with equipment vendors (67%), mechanical or electrical engineers (67%), general contractors (58%), and green building consultants (42%).

### Awareness

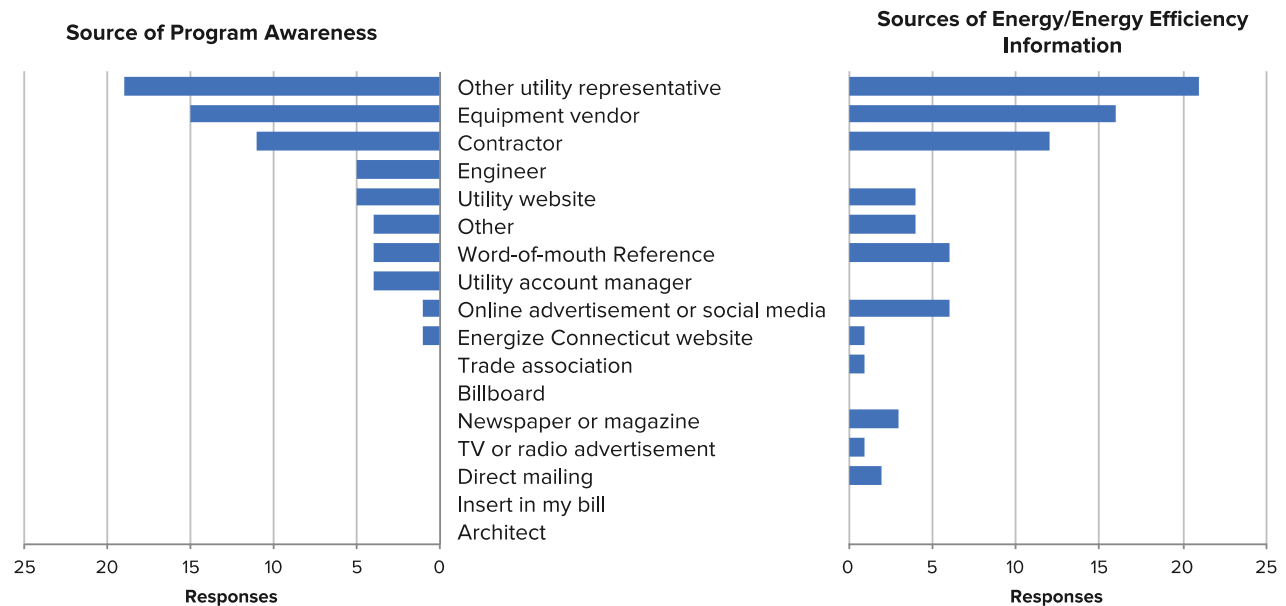
As shown in Figure 4-3, utility and program staff appear to drive program awareness for many new construction participants while equipment vendors and contractors drive awareness for participants with equipment replacement projects. While equipment replacement and remodel respondents frequently learned about program from vendors and contractors (21 out of 43, or 49%, when combined), new construction respondents mostly learned about the program from utility representatives (presumably includes program staff) (6 of 12, 50%). Utility representatives were also a frequent source of awareness for equipment replacement projects (12 of 43, 21%). We did not observe any notable differences in sources of program awareness between CL&P and UI respondents.

**Figure 4-3: Equipment vendors and contractors informed most equipment replacement respondents about the program, while utility and program staff informed half of new construction respondents (n=70)**



While utility representatives, equipment vendors, contractors, utility websites, and word-of-mouth were all sources of program awareness and general information on energy/energy efficiency, media and direct marketing sources were rarely sources of program awareness (Figure 4-4). These direct marketing sources include newspapers, TV or radio advertisements, online advertisements, and direct mailings. Conversely, engineers and utility account managers were sources of program awareness but never general sources of energy/energy efficiency information. Utility representatives were a common source of information across groups. Half of new construction respondents said they typically hear about energy efficiency opportunities from utility representatives. The sources of program awareness are generally consistent with what we heard from program staff. Staff indicated that vendors are driving many projects and that customers also gain information from the website or other broader marketing efforts.

**Figure 4-4: Media and direct marketing sources were occasionally sources of general energy efficiency information, but never a source of program awareness**



While most equipment replacement respondents began working with the program during the project planning process, some (12%) reported that their program involvement began after the equipment had been selected and others (19%) reported that it began after the equipment had been purchased and installed. While this evaluation was not intended to assess free-ridership and respondents' interpretation of when they began working with the program could vary,<sup>10</sup> this result suggests the incentive may not factor into equipment purchasing decisions for some participants. Additional research is needed to determine the degree to which this is an issue.

The vast majority of new construction and remodel respondents (80%) reported that they began working with the ECB program during the planning or design phase. While 20% reported their involvement began during construction, this does not necessarily indicate free-ridership as some equipment may not be specified or selected until construction. In keeping with this, the program staff indicated continuous efforts to get involved in new construction projects earlier in the design phase. From their perspective, this depends on building relationships with architects and remaining diligent on contacting potential new construction building owners.

## Participants and the ECB Program Process

The following section details participants' experiences with the program process and factors affecting their experience with the process, such as motivations, and decision-making.

<sup>10</sup> For example, a respondent may consider filling out the incentive application to mark when they began working with the program, even though the incentive figured into their decision to select the equipment.

## Enrollment

After learning about the program, most respondents either talked to a vendor (including contractors, architects, and engineers - 48%) or called or emailed their utility (42%) to learn about the steps to take to participate in the ECB program. Participants were less likely to visit the Energize Connecticut website (only one respondent – 2%) or utility websites (four – 6%).

Participants generally did not find the process of enrolling in the ECB program to be complex. On a five-point scale where one was “not at all complicated” and five was “very complicated,” respondents averaged a 1.6. Only two respondents (3%) rated the difficulty of enrollment a four or greater.

Participants appeared to use the utility website primarily to find more information about the ECB Program. Slightly more than one-quarter (26%) of survey respondents reported visiting the program website before or during the project. The vast majority of these 18 respondents (88%) said that they visited the website to research the ECB program. Only two respondents (12% of those who visited the website) said they visited the website to learn about new programs, and one said they were looking to find ways to save on their energy bill.

While most participants felt it was easy to find information on the website, others did not. On a scale from one (“not easy”) to five (“very easy”), 4 out of 14 respondents (29%) provided a rating of 3 or less. For more information on customer experiences with the program website, see the separate web usability study presentation.

Slightly less than a third (31%) of the participants visiting the website used the incentive calculation table on the website and all of these respondents felt it was easy to use. All 5 respondents provided a rating of 4 or 5 on a scale from one (“not easy”) to five (“very easy”).

More participants using the website recalled seeing case studies on the website (39%) than used the incentive table. These seven participants were split on the usefulness of the case studies in providing relevant information. On a scale where 5 was “very useful” and 1 was “not useful,” four respondents provided a rating of 4 or 5, indicating they felt the case studies were useful, but two provided a rating of 3 and one provided a rating of 1. These responses averaged to 3.5 out of 5.

## Motivations

When asked to choose from a list of reasons for participating, respondents most frequently mentioned interest in receiving rebates or incentives as a motivation for participating in the program (66% total). More than half of respondents mentioned saving money on energy bills (54% total).

Among equipment replacement and remodel respondents, there was an interest in acquiring new technology (53% and 40% respectively) but no new construction respondents mentioned this. Some new construction respondents mentioned goals around LEED standards (17%) and achieving a “green” building (17%) as additional motivations for participation.

Of the 43 equipment replacement respondents, less than half (44%) were aware of the Energy Opportunities Program for early replacement of equipment.

## Decision-Making & Barriers

Respondents most frequently cited the lack of corporate capital to cover the additional cost of energy efficient equipment as a barrier (44%) that might cause them to select a standard efficiency option over the energy efficient choice. An unwillingness to take on debt was the second most frequent response (33%), followed by an absence of acceptable financing options (31%), and a lack of knowledge of what improvements would save energy (29%).

The most notable difference between respondents of different project types was doubts about energy and cost savings claims. No new construction respondents (out of 12) and only one remodel (out of 15) respondent reported this as a barrier, whereas 18 (42%) equipment replacement respondents reported doubts about energy and costs and savings claims.

Few respondents reported that the one-year project completion deadline was a concern when they decided to participate. Only eight respondents (12%)—four equipment replacement and four new construction—said it was a concern; the remaining 61 (88%) said it was not a concern. According to program staff, the timeline was not expected to be a concern because of the way that projects are developed.

## Satisfaction

Overall participants were very satisfied with their experience with the ECB Program, rating their satisfaction a 4.8 out of 5 (Figure 4-5). Only one respondent rated their overall satisfaction a three or less. This respondent described that they received a smaller rebate than they had applied for.

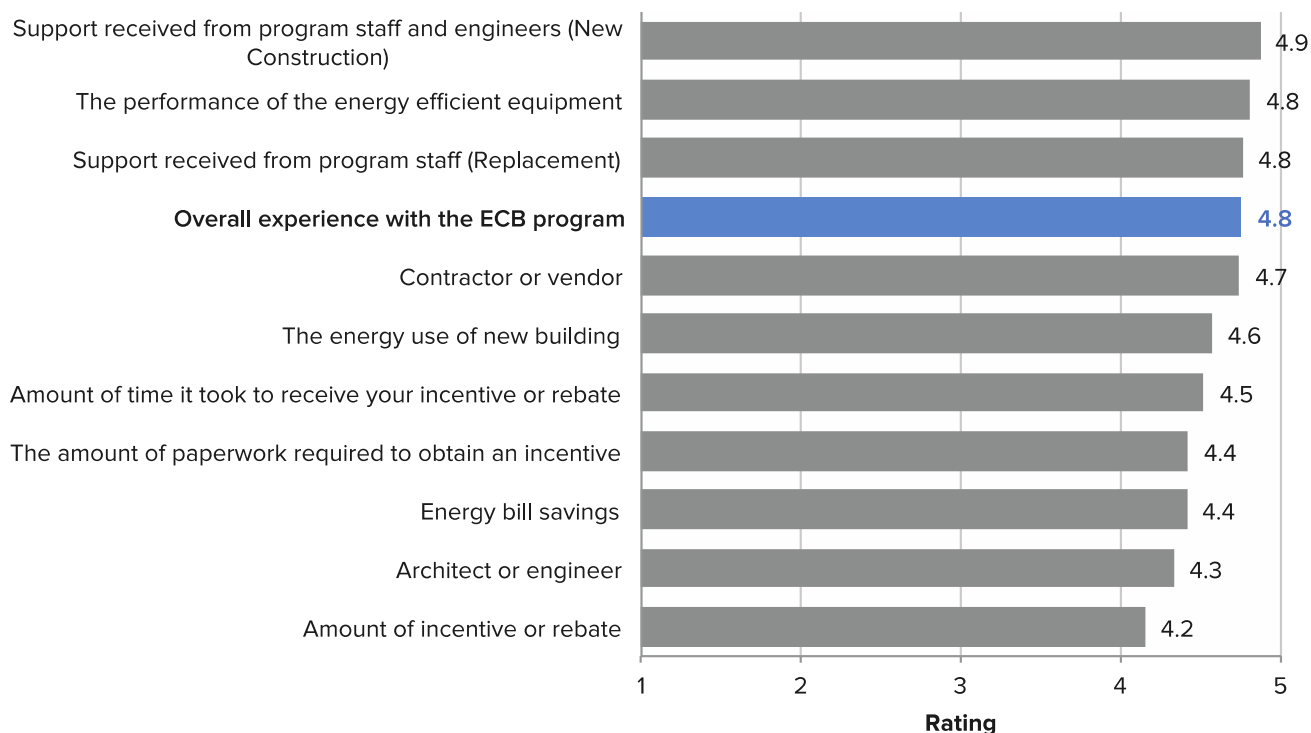
Respondents were also satisfied with the energy performance of their new building (4.6) or the energy bill savings from their new equipment (4.4). They were slightly less satisfied with the amount of the rebate (4.2).<sup>11</sup> These scores were consistent across project types.

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<sup>11</sup> In evaluation research, participating customers frequently suggest higher incentives as a program improvement. However, the purpose of the incentive is to motivate energy efficient choices and not to maximize customer satisfaction by providing the maximum incentive. Thus this suggestion is seldom seen as reflective of the program's performance, particularly when it comes from participants who did participate at the current level of incentive.



**Figure 4-5: Participants were generally satisfied with their overall experience and specific aspects of their experience**



Respondents were also satisfied with support received from program staff and the amount of paperwork required to receive an incentive, although six respondents rated this area a 3 or less. Many provided a comment similar to “too much to fill out.” One respondent mentioned a lot of back and forth on getting the proper data for lighting levels, and another singled out the schematic requirement for a burner and additional information he needed to collect from his HVAC engineers.

Participants were highly satisfied with the performance of the equipment, with an average satisfaction score of 4.8 out of 5. Only one respondent rated their satisfaction less than a 4, explaining that his/her tenants have reported the new system does not heat well.

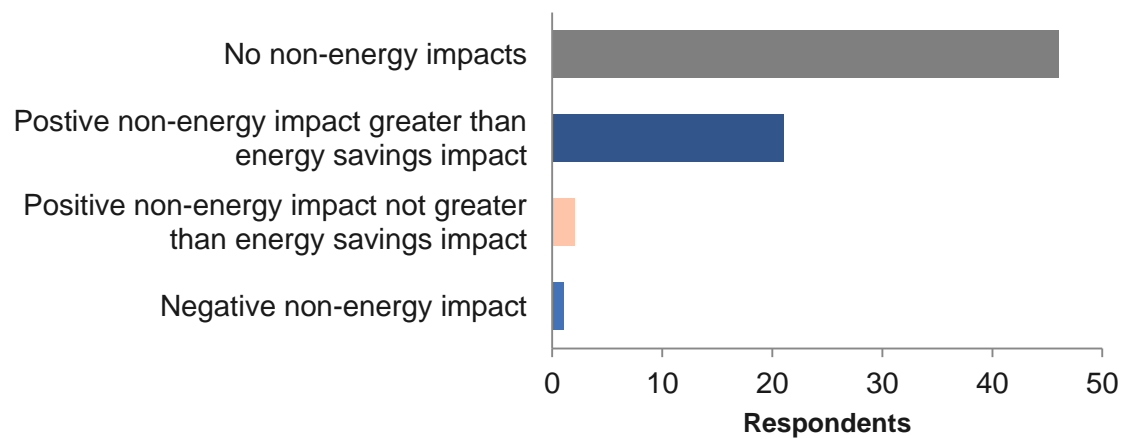
Participants appeared to be satisfied with their experience working with trade allies. Respondents with a new construction or remodel project reported an average satisfaction score of 4.3, with 4 out of 21 providing a rating of 3 or less.

Respondents working with a contractor or vendor on an equipment replacement project reported an average score of 4.7 out of 5. More than 80% of respondents were “very satisfied” with their contractor or vendor.

## Non-Energy Impacts

As shown in Figure 4-6, 24 respondents (34%) mentioned at least one non-energy impact to participating in the program. Almost of these respondents (21 of 24, or 88%) reported that the non-energy impact was positive and had a greater effect on their facility than the energy savings impact of the project.

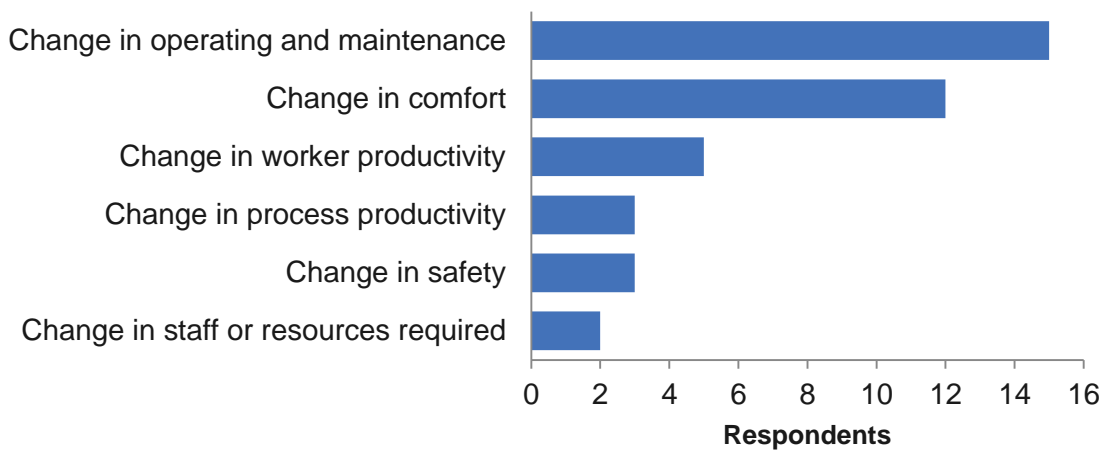
**Figure 4-6: Almost one-third of respondents reported a positive non-energy impact that had a greater effect on their facility than the energy savings impact**



The most frequently reported impact was changes to operations and maintenance practices, followed by changes in comfort (Figure 4-7). Other non-energy impacts included changes in worker productivity, changes in process productivity, changes in safety, and changes in staff or resources required.

All respondents viewed the impacts as positive changes except one respondent, who thought the project consisting of lighting upgrades would entail much larger maintenance and operating costs.

**Figure 4-7: Non-Energy Impacts of ECB Projects**

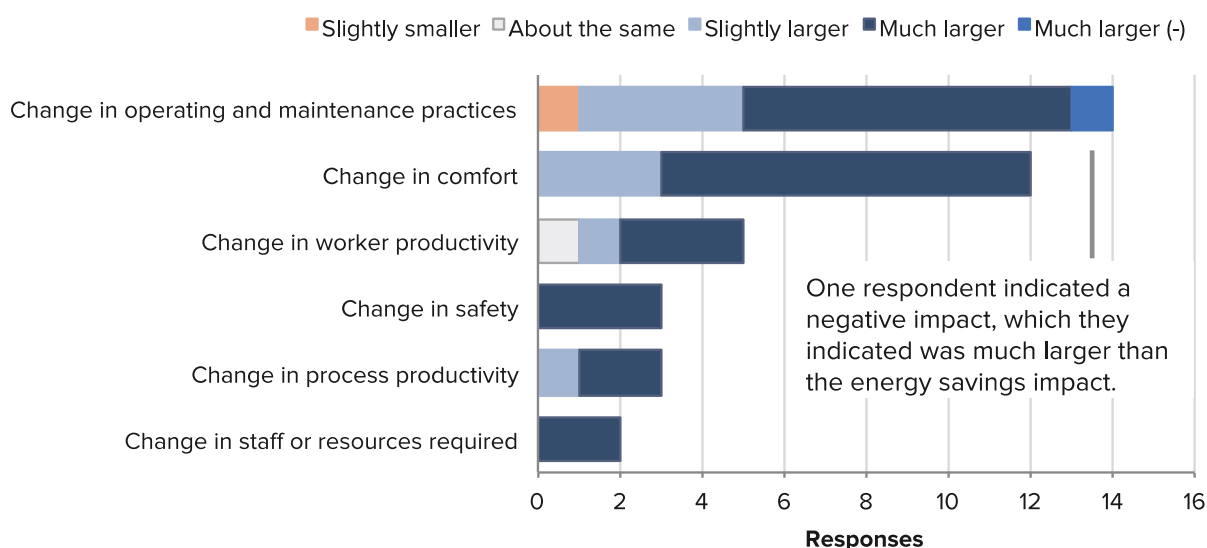


Nine of the 24 respondents (38%) who experienced a non-energy impact had not expected or planned on non-energy impacts. Among the 16 that did expect a non-energy impact, the most common expected impacts were changes in operations and maintenance (75%) and changes in comfort (38%).

Most of these reported the non-energy impact to be positive and of greater impact on their facility than the energy savings. Most respondents experiencing non-energy impact (22 of 24 - 92%) reported the non-energy impacts had a larger effect on their facility than the energy savings.

As shown in Figure 4-8, respondents reported the majority of non-energy impacts (69%) were “much larger” than the impact of energy savings. As previously noted, only one respondent reported a negative impact, and this respondent felt the negative impact on operating and maintenance practices was “much larger” than the energy savings impacts. This response is indicated by the “much larger (-)” caption in the figure.

**Figure 4-8: Magnitude of Non-Energy Impacts Relative to Energy Savings Impacts**



Responses suggested that changes to comfort were often the most important impact. Three out of four reporting a change in comfort and another impact said comfort was the most important change they experienced. Only three out of seven reporting a change in operations and maintenance practices and another impact said that the O&M impact was the most important they experienced.

## 4.2 Participating Vendor Survey Findings

This section presents results from the 2014 telephone survey of Energy Conscious Blueprint participating vendors. The evaluation team designed this survey to better understand participating vendors' experience as a part of the ECB program, and the ways in which their experience could be improved. This section first describes respondent characteristics and then summarizes avenues of awareness, motivations, marketing, satisfaction, sources of support, and other process evaluation results.

The results of our research suggest that participating vendors are generally satisfied with their experience with the program and many rely on the program for a substantial portion of their business. Almost half of participating vendors relied on the ECB program for a quarter or more of their work and customers approached by participating vendors usually chose to participate in the

program. Program staff played a major role in participating vendors learning of the program and were frequently looked to as a resource during projects. Respondents were generally satisfied with the level of support offered by program staff, but were interested in more information about incentives. Participating vendors described financial constraints as the most significant barrier they see to customer participation in the program.

## Program Participating Vendors

The evaluation team surveyed 41 participating vendors about their experiences with the program. The sample was drawn from the population of vendors participating in the program between April 2013 and March 2014. Further details about the sampling process can be found in Chapter 2 of this report.

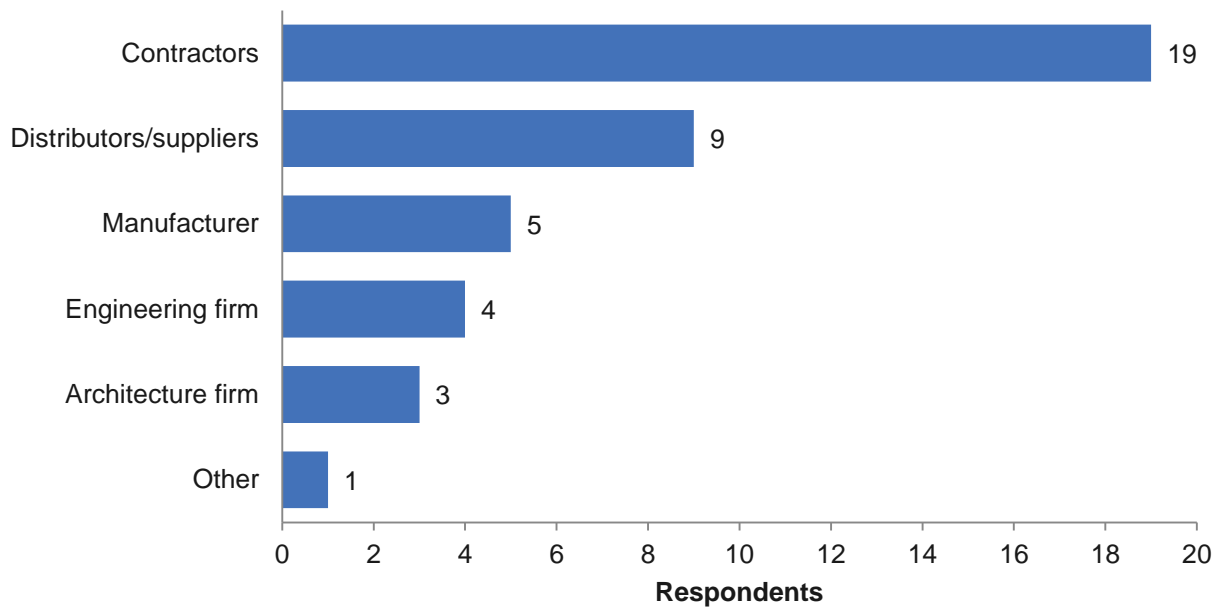
### Business Characteristics

Participating vendors in the sample were most frequently contractors, distributors, or manufacturers rather than architecture or engineering firms.<sup>12</sup> As shown in Figure 4-9, 19 out of 41 respondents (46%) described themselves as contractors, nine respondents described themselves as distributors (22%) and five described themselves as manufacturers (12%). Only 7 total respondents represented architecture or engineering firms, with these businesses together making up 17% of respondents (4 engineering firms and 3 architecture firms). None of the respondents described their business as green building consulting firms.

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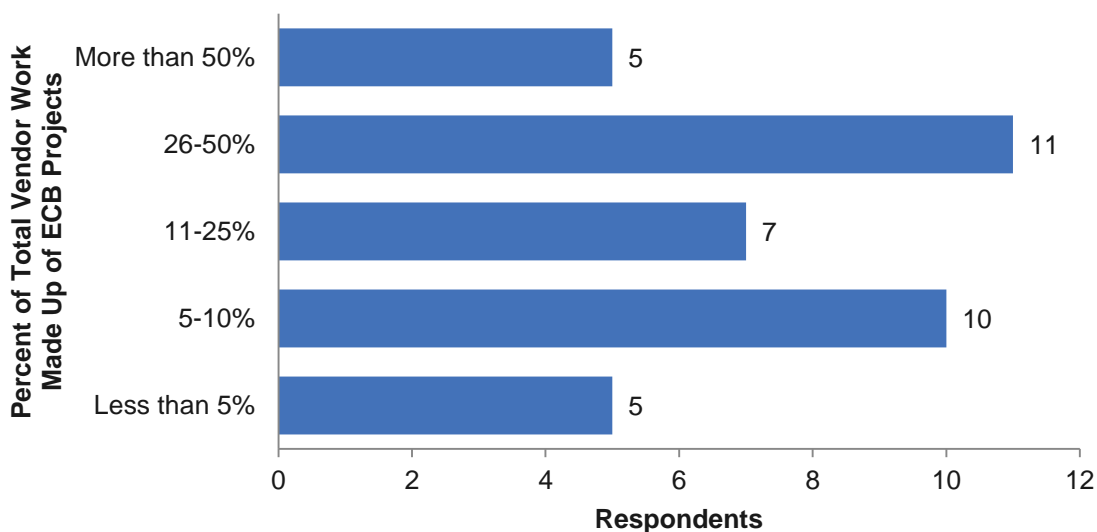
<sup>12</sup> The CL&P program tracking database more clearly identified new construction projects. About one-quarter of measures in the program are new construction measures while one-in-six of the participating vendor interviews were with design firms (architects or engineering firms).

**Figure 4-9: Majority of participating vendors worked as contractors, distributors/suppliers, and manufacturers**



While almost 40% of respondents (15 of 38) reported that 10% or less of their work was accounted for by ECB projects, many respondents reported high rates of involvement in ECB projects. Sixteen out of 38 (42%) participating vendors reported that at least a quarter of their business was accounted for by ECB projects, and 5 out of 38 (13%) respondents reported that more than 50% of their business was accounted for by these types of projects, as shown in Figure 4-10. Program staff anticipated this level of involvement even though they do not track vendors or maintain a formal vendor alliance.

**Figure 4-10: Many respondents reported high rates of involvement in program**



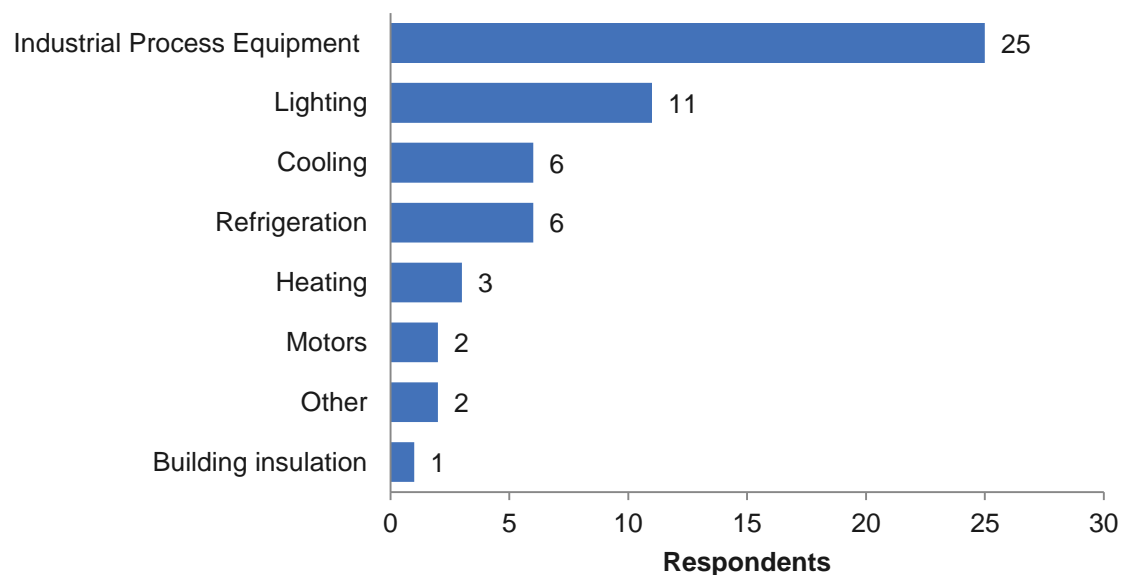
The projects that participating vendors take on as part of the ECB program generally come from a mix of new and existing customers. Almost 80%, 30 out of 38 vendors, reported that ECB projects originated with both new and existing customers. Some vendors reported that projects they took on as part of the ECB program typically originated only with new customers (5 out of 38 respondents) and a smaller number of participating vendors did ECB programs only with existing customers (3 out of 38 respondents).

### Vendor Role and Type of Project

Almost all vendors (90% of respondents) were involved with equipment specification. Other services performed by nearly all respondents included design (88% of respondents) and selling/providing equipment services (81%). Equipment installation was performed less frequently by respondents (71%).

Participating vendors most frequently sold or distributed industrial process equipment (e.g., air compressors) for ECB projects. As shown in Figure 4-11, nearly half (45%) of respondents reported selling/distributing industrial equipment, more than twice as many as the 20% who reported selling/distributing lighting equipment, the second most frequent respondent choice. Other equipment sold/distributed in ECB projects included cooling and refrigeration equipment (reported by 11% of respondents), heating equipment (5%), motors (4%), building insulation (2%), and other equipment (2%, described by respondents as electrical and plumbing equipment, which could indicate HVAC equipment).

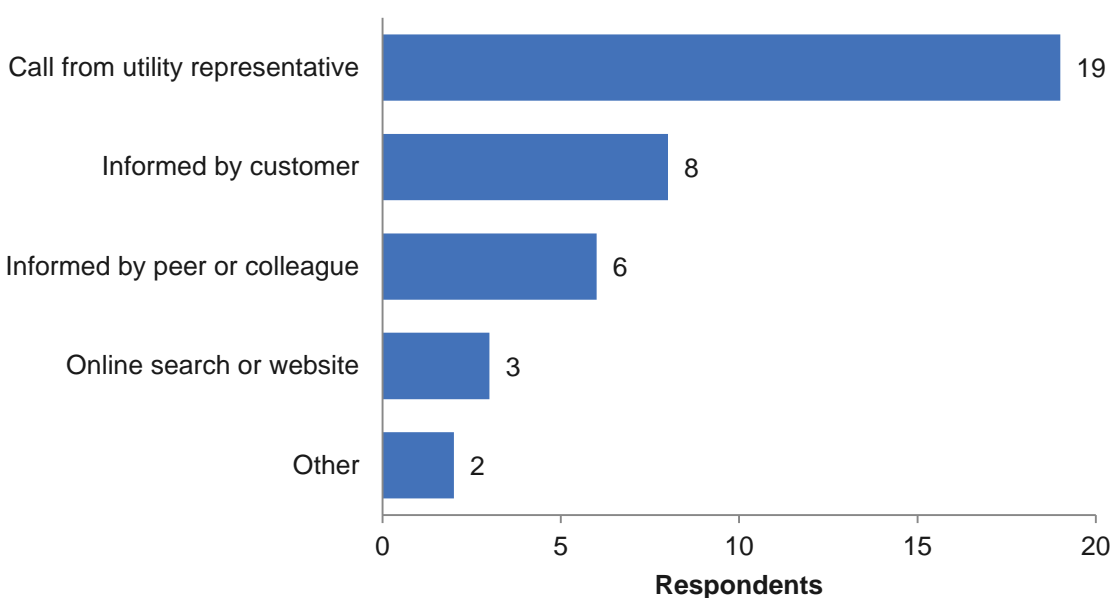
**Figure 4-11: Surveyed participating vendors most frequently offered industrial process equipment**



## Awareness

Participating vendors most frequently learned about the program through a call from their utility representative. As demonstrated in Figure 4-12 below, more participating vendors learn about the program through a utility representative (19 out of 38 respondents) than from any other source. However, many respondents reported learning about the program through word-of-mouth whether through a customer (8 out of 38) or a colleague or peer (6 out of 38). Only three respondents reported learning about the program through an online search. Program staff believe that most vendors learn about programs through quarterly training sessions where information on all projects is delivered, including eligibility requirements and incentives available.

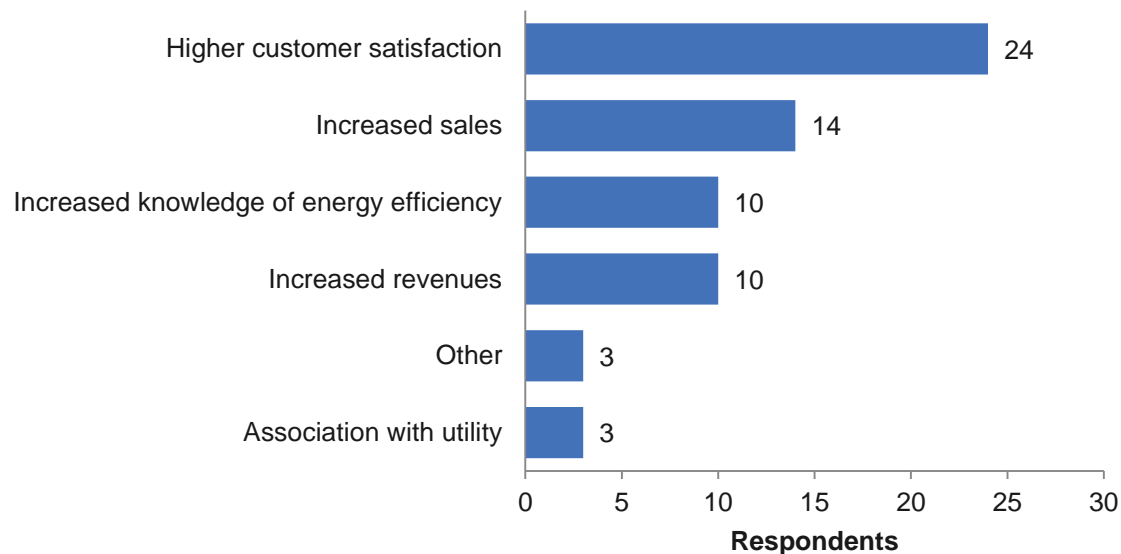
**Figure 4-12: Participating vendors most frequently heard of program from utility representatives**



When asked to select how their business uses the program, most participating vendors said they used the ECB program in order to sell energy efficient equipment to customers who would otherwise choose the standard efficiency option. While 8 out of 41 participating vendors reported that their business uses the program in order to sell their services to prospective customers or provide better pricing for customers already interested in energy efficiency (8 out of 41) the majority of vendors (25 out of 41) use the program to motivate customers to select the energy efficient option.

Participating vendors most frequently reported higher customer satisfaction as a benefit of partnering with the ECB program (Figure 4-13). Almost 60% of respondents (24 out of 41) reported higher customer satisfaction as a benefit of the program, while others identified increased sales (14 out of 41), increased revenues (10 out of 41), and increased knowledge of energy efficient products (10 out of 41) as major program benefits.

**Figure 4-13: Participating vendors most often cited customer satisfaction as a benefit of partnering with the program**



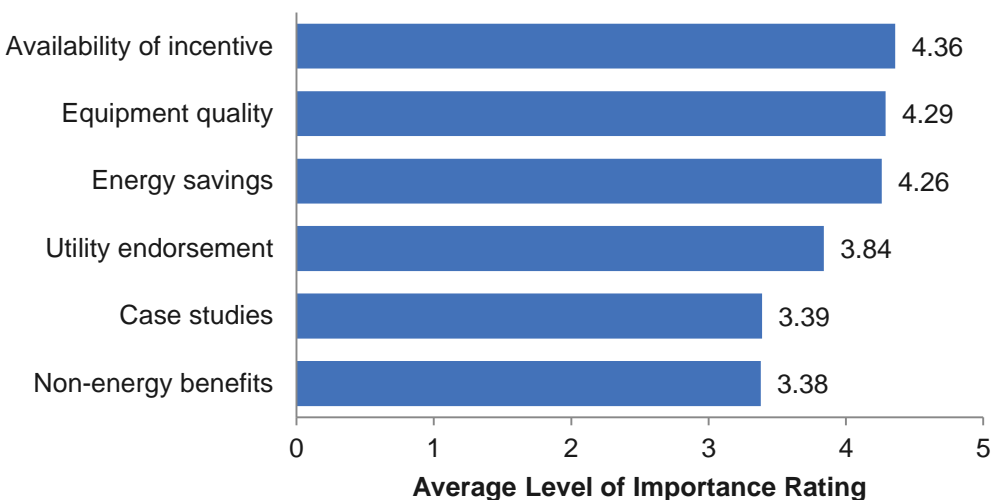
## Marketing

Most participating vendors actively market the program to their customers. The vast majority of participating vendors (36 out of 41 respondents) brought the program to customers' attention, although some vendors (5 out of 41) reported that customers brought the program to their attention. This active marketing may be why program staff indicated that vendors drive participation in this program.

Respondents identified energy savings and availability of incentives as the most important factors in recruiting customers to participate in the ECB program (Figure 4-14). When rating factors that influenced customers' decisions to participate in the ECB program on a scale from 1-5 (1 meaning not at all important, 5 meaning very important) most respondents (63%) reported that incentives were "very important" to their ability to recruit customers. Nearly as many (56%) described energy savings as "very important" to recruiting customers to the ECB program. Respondents also rated utility endorsement as a meaningful element of the program, with 46% describing it as "very important." Meanwhile, on average participating vendors rated non-energy benefits and case studies as "somewhat important."



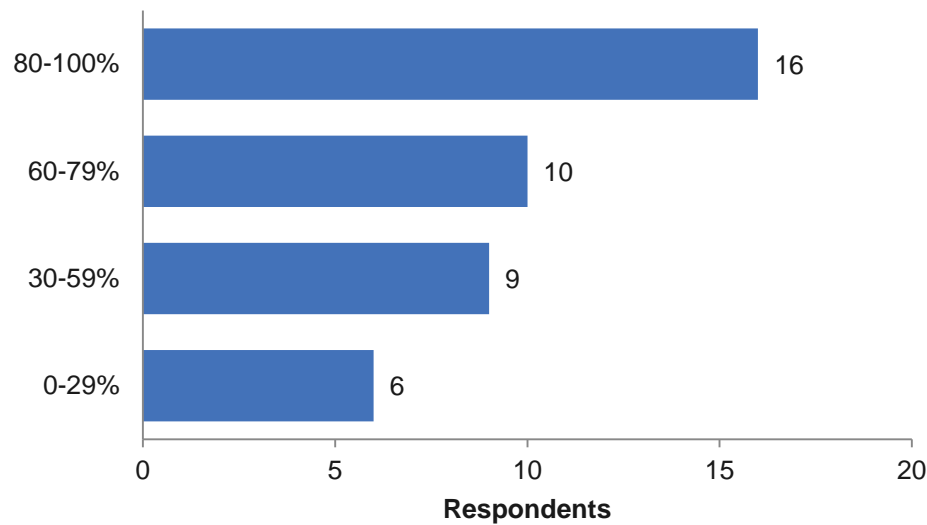
**Figure 4-14: Surveyed participating vendors emphasized importance of incentives, equipment quality, and energy savings**



According to the participating vendors surveyed, customers who were informed about the ECB program frequently chose to participate in the program. For 16 out of the 41 participating vendors surveyed, more than 80% of their customers chose to participate once informed about the ECB program. As shown in Figure 4-15, this was the most frequent response, followed by 10 vendors reporting that 60-79% or more of their customers chose to participate and 9 respondents reported that 30-59% chose to participate. Only 6 out of 41 respondents reported that fewer than 30% of customers chose to participate after being informed about the ECB program.<sup>13</sup>

<sup>13</sup> These findings are for participating vendors who often have a business model that includes using/selling the program, as reported above. So it would be expected for their answers to customer response to program awareness would be significantly higher than that for the general population of customers or among the general population of vendors.

**Figure 4-15: A high percentage of customers chose to participate after being informed about the program<sup>14</sup>**



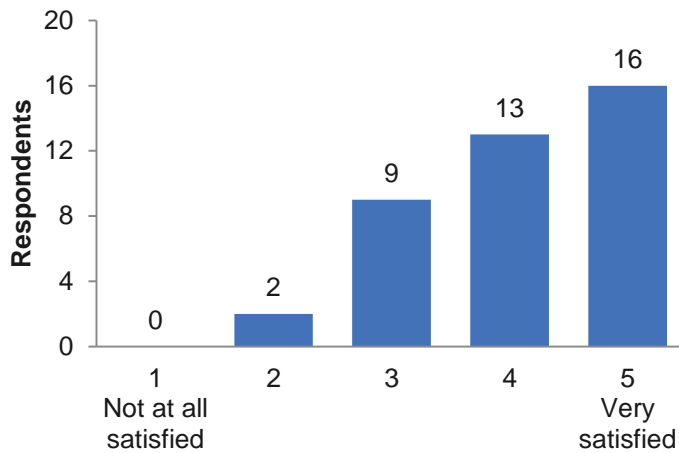
## Satisfaction

Overall, participating vendors were satisfied with the program, rating their satisfaction a 4.1 out of 5 on average (Figure 4-16). Although many respondents rated their satisfaction as a 4 (32%) or a 5 (39%) a number of respondents (27%) rated their satisfaction as a 2 or a 3. The participating vendors who rated their satisfaction as a 4 or 5 frequently mentioned positive customer feedback and the helpfulness of program staff as the reasons they rated the program highly. Participating vendors who rated the program as a 2 or 3 mentioned an overly complex application process and excessive paperwork, offering the following comments to explain why they were not satisfied with the program:

- “It’s too complicated, too hard to understand.”
- “The equipment and paperwork [are] cumbersome to figure out.”
- “It takes a lot of engineering time to deal with paperwork.”
- “Program needs to be quicker and simple[r] with the application process and paperwork.”

<sup>14</sup> Ibid.

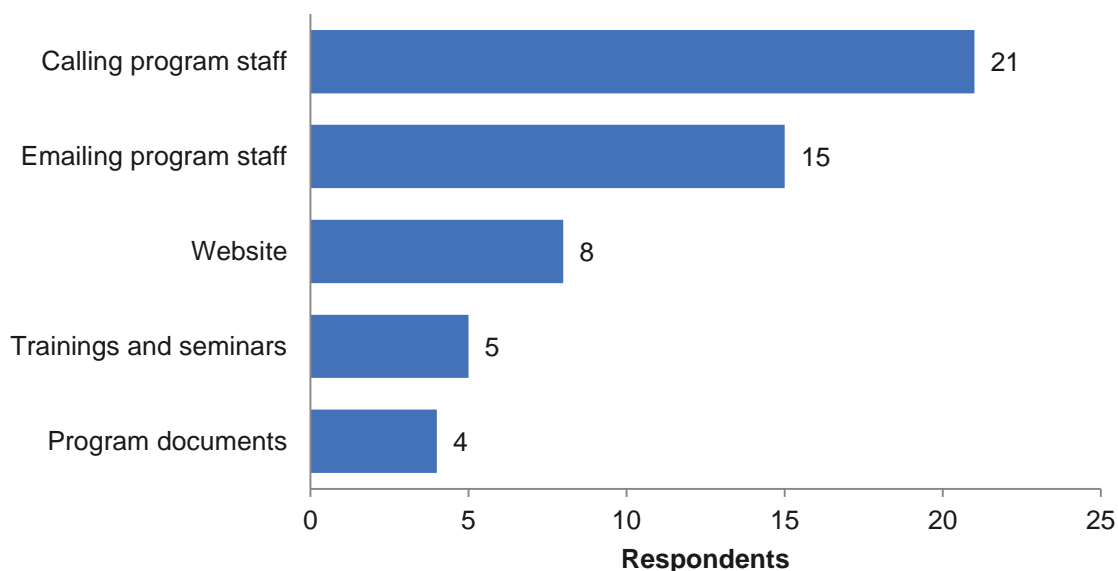
**Figure 4-16: Participating vendors were generally satisfied, but many were less than satisfied**



## Support & Resources

Results suggested program staff were the most useful resource in vendors' work for the ECB program (Figure 4-17). More than half of respondents (21 out of 41) cited calling program staff as the most useful resource, while more than a third of respondents (15 out of 41) reported emailing program staff as a useful resource. Altogether, more than two-thirds of respondents (36 out of 41) reported directly contacting program staff as an important resource, far outweighing the number of respondents citing the utility website (8 out of 41), trainings and seminars (5 out of 41), or program documents (4 out of 41).

**Figure 4-17: Participating vendors overwhelmingly reported contacting program staff as a useful resource**



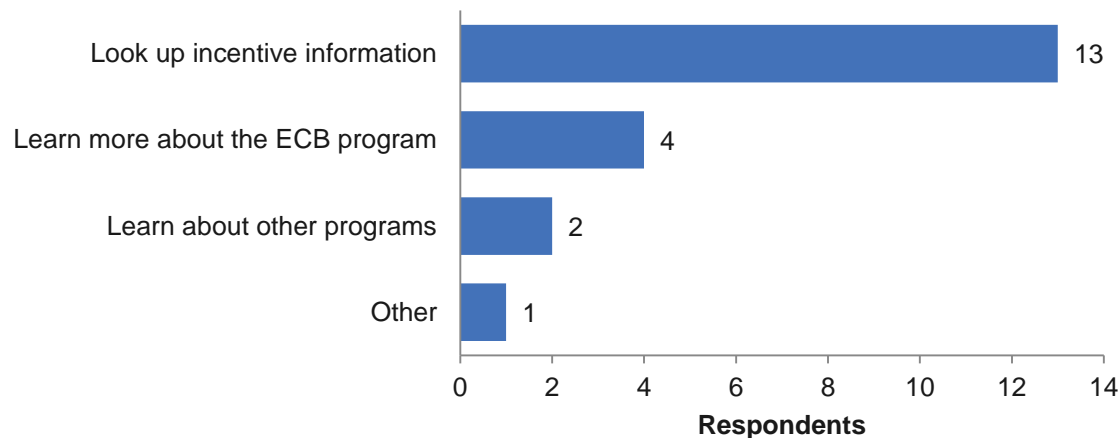
Accordingly, most participating vendors have contacted program staff in the past. More than two-thirds (28 out of 40) of respondents said that they have contacted program staff with questions. Participating vendors were somewhat satisfied with how easy it is to reach program staff, on average rating their satisfaction as 4.1 out of 5.

Respondents expressed interest in several resources the program could provide in order to make participation easier. The most commonly mentioned resources were: more information on incentives (10 respondents) and a way to determine the incentive amounts for customers (4 respondents), as well as increasing program staff's engagement and responsiveness during projects (5 respondents).

The majority (26 out of 41) of respondents said they did not visit the website, while 15 out of 41 said they had visited the website during their ECB project. Of those 15 participating vendors who visited the website, very few were regular users. Most (9 out of 15) of the respondents reported visiting the website a few times per year, while only a few (4 out of 15) visited on a monthly basis and just two respondents reported visiting on a weekly basis.

Respondents rated the usability of the website fairly low, at 3.4 out of 5. Respondents described using the website primarily in order to look up incentive information (13 out of 15) rather than to learn more about the ECB program (4 out of 15) or to learn about other energy efficiency programs (2 out of 15), with one respondent reporting that they used the website to look up their customer's account information (Figure 4-18). A more extensive discussion of web usability is presented in Section 4.5 Web Usability Study Findings.

**Figure 4-18: Participating vendors typically use website to look up incentive information**

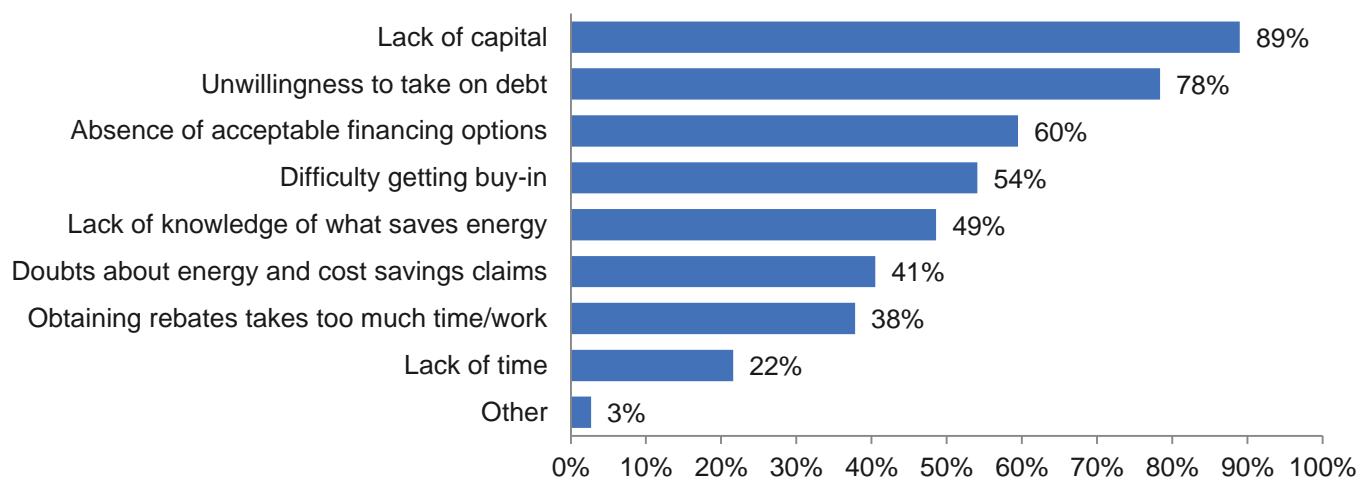


Most participating vendors have not used the tools available on the website. The majority (10 out of 15 respondents who have used the website) have not used the incentive calculation tool on the website, meaning that only about a third (5 out of 15) of participating vendors have used the incentive calculation tool. On average, those who used this tool rated its ease of use as 3.8 out of 5. While over half of respondents (8 out of 15) recalled seeing case studies on the website, their overall rating of usefulness of those case studies was just 2.9 out of 5.

## Barriers to Customer and Vendor Participation

Participating vendors described financial barriers most often as the factor that keeps customers from participating in the ECB program (Figure 4-19). Nearly all vendors (89%) reported that customers' lack of capital to purchase energy efficient equipment represented a barrier to participation, while 78% of participating vendors cited customers' unwillingness to take on debt, and 60% mentioned an absence of acceptable financing option. Factors mentioned with less frequency included the difficulty in getting buy-in from decision makers (54%) and a lack of knowledge about the cost and energy savings that would be generated by the equipment (49%). While financing is typically available through the utility, for some customers, for retrofit projects, financing is not available through the utility for new construction projects. There are alternative sources of financing, such as the C-PACE program, also offered by Energize CT.<sup>15</sup> The C-PACE program guidelines suggest that new construction projects can qualify, but their financing may be more attractive if included in the overall project financing. The C-PACE program is also available for some equipment replacement projects; perhaps customers see the extra program application as a barrier to seeking this financing mechanism. We did not ask customers specifically about their experience with C-PACE.

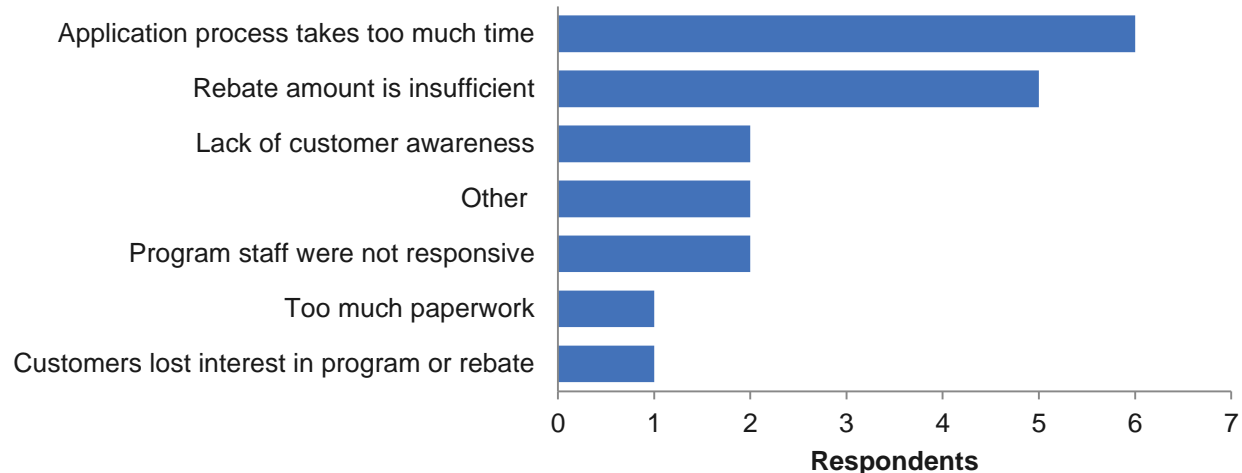
**Figure 4-19: Participating vendors reported largest barriers to customer participation are financial**



When asked about their own barriers to participation, participating vendors cited barriers similar to vendors' explanations of dissatisfaction with the program (Figure 4-20). As shown in the figure below, the most frequently cited barrier to participation was that the application process takes too much time (6 out of 19 respondents) followed by dissatisfaction with the amount of the rebate (5 out of 19). Only two vendors identified program staff's lack of responsiveness as a barrier.

<sup>15</sup> The C-PACE program guidelines can be found here: <http://www.c-pace.com/site/page/view/resources>

**Figure 4-20: Participating vendors perceived lengthy application process and low rebate amount as barriers to working with the program**



### 4.3 Dropout Survey Findings

This section presents results from the 2014 telephone survey of ECB dropouts. Dropouts are customers who enrolled in the ECB program but cancelled or indefinitely suspended their project. This survey was designed to identify barriers to participation for dropouts and their experiences with the ECB program. The dropout survey was a census attempt (i.e., attempts were made to survey all drop-outs for the evaluation time period) but the number of dropouts is relatively small and the final sample is quite small. Results are reported but readers should use caution and not assume general applicability.

Results from the dropout survey suggested that there is a variety of explanations for cancelled projects and no single most prevalent explanation. A few respondents reported difficulty getting information they needed to participate. The research also indicated that many cancelled projects in the utility database are resumed and completed within the ECB program and listed as a separate project. This is consistent with program staff allowing participating to occur whenever project is being done and survey respondents reporting that there was no issue with a program requirement that said that projects had to be completed in one year.

### Program Participants

The evaluation team surveyed 13 dropout customers about their experiences with the program. As described in Chapter 2, the sample was drawn from the database of project applications from January 2013 to March 2014. Dropout customers were identified from cancelled or suspended projects and predominantly came from the Connecticut Light & Power database. All completes were Connecticut Light & Power customers. As shown in Table 4-2, the majority of dropout customers pursued equipment replacement projects. Analysis of characteristics of dropout customers such as facility type and size of business did not reveal any notable differences distinguishing dropouts from participating customers.

**Table 4-2: Dropout Respondents and Population in Tracking Data by Project Type**

| Project Type   | Sample | Population |
|--|--------|------------|
| Equipment Replacement  | 8      | 51         |
| New Construction or Facility Expansion <sup>a</sup>                              | 4      | 20         |
| Remodel <sup>a</sup>   | 1      |            |
| Unknown  | 0      | 2          |
| Total  | 13     | 73         |
| a New construction and remodel not distinguished from each other in program data |        |            |

## Project Outcomes

Overall, five of the thirteen customers said that they completed the project through the ECB program (Figure 4-21). The evaluation team was able to confirm that a different project was completed for three of the five customers,<sup>16</sup> but for the other two projects the evaluation team was unable to identify another project at the given business or address in the tracking data.

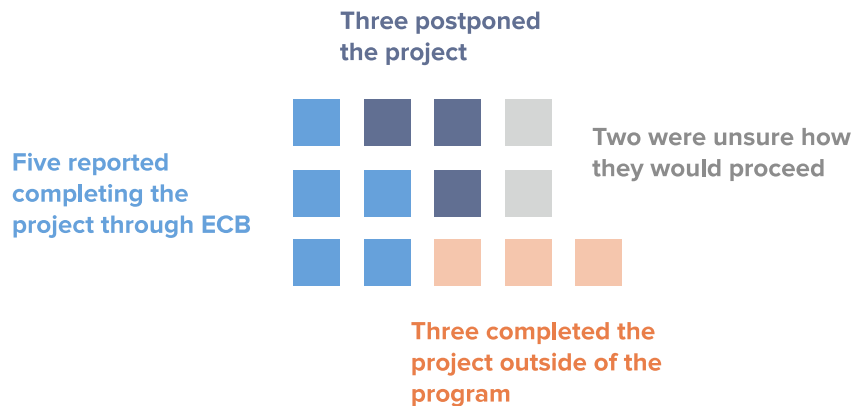
Three of the thirteen customers ended up completing the project without participating in the ECB program. All three said they included high efficiency equipment in the project. One of the three received a rebate from an unknown source, but only for the lighting portion of the project. None of the surveyed dropouts said they received a rebate from the Energy Opportunities program.

Three customers postponed the project until a later date and two respondents did not know how they would proceed with the project. All three who postponed planned to resume the project at a later date. One respondent's project expired because the customer could not finance and afford to purchase the equipment at that time. Another simply noted it was "too expensive," and the third explained their business was downsized, eliminating the need for a large compressor at the time, although they planned to install it at a later date.

Among the customers who were unsure how they would proceed, one noted they chose not to purchase the equipment, but provided little additional information. The other did not recall what happened to the project.

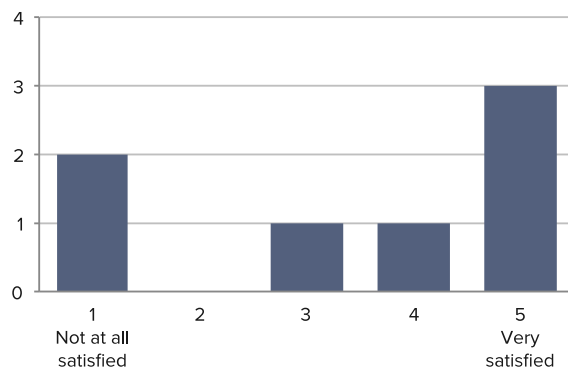
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<sup>16</sup> Due to differences in project names, addresses, and phone numbers, these projects were not screened out during development of the dropout sample.

**Figure 4-21: Outcomes of the Thirteen Dropouts with Cancelled Projects**

## Project Experience

While most dropouts did not have a negative experience with the program, a few customers described difficulties getting the information they needed. Dropout customers were mixed in their satisfaction with support provided by program staff. As shown in (Figure 4-22), two of the seven dropouts providing a rating for their satisfaction with support from program staff were not at all satisfied. As previously noted, one of these dropouts noted difficulties receiving help as their primary reason for dropping their project, stating that he had a “hard time getting the help needed to submit the information at the right time.” Recognize, however, that this small sample size does not allow for generalization to all dropouts or the program as a whole.

**Figure 4-22: Dropout Satisfaction with Support from Program Staff**

Similarly, two of seven respondents to a question about the complexity of the application process rated the process to be “complicated” or “very complicated,” but the other five did not find it to be complicated.

Projects did not appear to consistently be cancelled in a particular phase. Among equipment replacement projects, three projects reached the equipment selection phase. The remaining respondents did not know what phase their project reached. For the new construction and remodel projects, one project ended in the initial planning phase, one reached the bid, application, and



permitting phase, and two reached the construction phase. These latter two projects were completed outside of the program.

## Barriers

All dropout respondents were asked whether there was anything the program could have done to help them complete their project within the program. Three out of seven respondents—all with new construction projects—provided suggestions and the remaining four had no suggestions or did not know. One respondent who postponed their project thought larger incentives and better financing options would have helped them overcome barriers. This respondent identified the ability to finance the full cost of the project as a feature that would have made it more likely that they participated. Another who completed the project outside the program wanted more information on programs and contractors. A third respondent, who also completed the project outside the program, suggested learning about the program sooner and better information would have helped. While the utilities do not provide financing for new construction projects, these measures may be considered part of the overall design. The program staff seek to reach customers early in their projects; if this effort is successful, the customer has more options for including the measures within their other financing as well as seeking additional sources.

## 4.4 New Construction Rejecter Interview Findings

This section presents results from the 2014 interviews of Energy Conscious Blueprint rejecters. Rejecters are defined as organizations and vendors in Connecticut that have recently undertaken or completed new construction and major renovation projects and did not participate in the ECB program. The interview guide was designed in order to determine why these organizations and vendors chose not to participate in the program, and how to increase awareness of the ECB program among this population.

### New Construction Customers

The evaluation team surveyed 7 rejecters about their experiences with considering the program. As described in Chapter 2, the sample was drawn from the REED construction database of new construction projects likely completed between 2012 and 2014. As shown in Table 4-3 below, respondents represented a number of different business types: two schools, two non-profit organizations, one architect, and two developers were interviewed for this study.

**Table 4-3: Respondents by Business Type**

| Business Type | Total |
|---------------|-------|
| Developer     | 2     |
| Architect     | 1     |
| School        | 2     |
| Non-profit    | 2     |
| Total         | 7     |

## Awareness of Opportunities

Of the 7 rejecters interviewed, somewhat less than half expressed awareness of the ECB program. Three respondents reported having previous awareness of the ECB program and two of these three described being informed of the program and making the decision not to take part. One respondent reported, “The required equipment was cost prohibitive”. Four of the seven respondents reported having no previous awareness of the program.

Despite their lack of knowledge regarding the ECB program, respondents generally reported high levels of interest in incorporating energy efficient design and equipment into their projects, with one exception. One of the developers interviewed noted that pursuing energy efficiency beyond current standards is not a priority for his business, and that “energy efficiency is supposedly the current code, whatever the current code is that’s what we build to for new construction.” Otherwise, respondents were enthusiastic about energy efficiency options, and described energy efficiency as a consideration in their projects. Again, recognize that these are very small numbers of interviews and cannot provide a basis for generalization.

Most of the respondents reported learning about energy efficiency options through media sources, online research or a vendor working on their project. The respondents’ self-described levels of motivation in seeking out information on energy efficiency varied widely.

One respondent who works as a director for an environmental charter school described seeking out information via the Clean Energy Investment Finance Authority and Connecticut Energy Efficiency Fund, neither of which were mentioned by any other respondent. Notably, he did not have any awareness of the ECB program. The four respondents who worked for non-profits and schools reported learning about energy efficiency options via independent research as well as through their contractors, architects, and engineers, while the developers and architect reported gaining information through trade publications and “newspapers and other media.”

## Equipment and Design Measures

All of the rejecters reported incorporating energy efficient equipment and design into their final projects, despite not participating in the Energy Conscious Blueprint program. The amount of energy efficient equipment and design they reported to be incorporated into each project varied depending on the respondent. Three of the respondents emphasized how energy efficient measures were incorporated into the building envelope of their projects. But not only was the sample size extremely small but interviewees definitions of energy efficiency can vary and does not imply it is consistent

with the program definition. In fact we know from additional commentary that one rejecter defined energy efficiency as what the Energy Code requires.

There was also, however, clear evidence from some of the small number of interviewees that the energy efficiency being reported would meet program definitions. One respondent reported that her organization “usually purchases equipment that is Energy Star rated,” but that the organization does not take any other energy efficiency measures. Several other respondents mentioned utilizing LED lighting in their projects, while another mentioned purchasing renewable energy sources, such as solar panels.

## Resources

Although over half of the rejecters had not heard of the ECB program, nearly all of them expressed an interest in energy efficient equipment and design. One respondent mentioned that his business would be more likely to participate if the requirements were easier to understand and the levels of incentives made the option more cost effective than currently provided.

Two respondents—one working for a school, the other working for a non-profit low-income housing group—mentioned that construction projects are often required to be energy efficient in order to qualify for certain grants. Both respondents said that it might be useful to position the ECB program as a resource to organizations during the grant application process as these organizations are seeking out energy efficient equipment and design options.

## 4.5 Web Usability Study Findings

The web usability sessions for customers and vendors presented each group with different scenarios and the findings for each group are presented below.

### Customers

The evaluation team conducted 9 usability sessions with commercial and industrial customers across Connecticut. We conducted these sessions with 4 Connecticut Light & Power C&I customers, and 5 United Illuminating customers. These customers represented a wide array of business types and job titles. Two distinct moderator guides were created in order to guide the customers from each utility through potential scenarios in which they would use the CL&P and UI websites as a source of information and guidance.

#### CL&P Customers

Customers encountered challenges early in the web usability sessions, experiencing difficulty in the seemingly simple task of navigating to the Energy Conscious Blueprint page of the Connecticut Light & Power website. The first page of the website was seen as confusing and busy, without clear signposts to where customers should go to learn more about the Energy Conscious Blueprint program. The site is very text-heavy, and the large amounts of text make the process of navigating the website difficult because being able to determine whether or not a page within the site has valuable information takes a great deal of cognitive effort.

However, once the customers were able to navigate the relevant pages within the website they found the Energy Conscious Blueprint pages more useful, and easier to understand than other parts of the site. Respondents reacted positively to the “Retrocommissioning” page, shown in Figure 4-23 below.

**Figure 4-23: Respondents reacted positively to organized text**

**Who's Eligible?**

- Customers with commercial buildings, municipal offices and schools
- Buildings must be:
  - Prescreened
  - Over 100,000 square feet
  - Have building energy management system with trending capability
  - Have a current [ENERGY STAR®](#) benchmark
- CL&P customers on a commercial or industrial rate can participate in electric energy-efficiency measures.
- CNG, SCG or Yankee Gas customers on a firm commercial or industrial rate can participate in natural gas energy-saving measures.

**How Does the Program Work?**

- To deliver results, CL&P's energy engineers will collaborate with you and a prequalified RCx engineering firm who will use targeted functional tests and BMS trend analysis to survey, investigate and provide recommendations for energy-efficiency (electric, gas and oil) improvements at your facility. [Read more about the process.](#) (PDF)
- The program uses a financial incentive strategy. After the investigation is complete, the RCx engineering firm will provide a detailed implementation plan. The CL&P program administrator will then prepare an up-front, contractual commitment to be signed prior to implementing your RCx plan. The Letter of Agreement (LOA) will detail all the energy-efficiency measures, the estimated energy savings, and the estimated incentive amount. The LOA must be signed by both parties prior to

While this page is fairly text-heavy, one important distinction between this page and many of the other pages on the site is that the text is presented in a clear and structured format, which makes this page easier to navigate and comprehend. Another popular resource was the informational PDFs available on the ECB program pages. However, these PDFs are fairly difficult to find with hyperlinks buried in long paragraphs, and nothing to indicate that they contain such important information.

Most of the respondents regarded the information provided on the Energy Conscious Blueprint page as helpful in the decision-making process. But respondents also expressed a desire for more clarity about how to sign up for the program, reporting that they were more likely to call the utility for more information than fill-out and submit the interest form available on the website and wait for someone in the program to contact them.

## UI Customers

The United Illuminating customers we spoke with had difficulty navigating the UI website as well, although they experienced a different set of challenges. One of the most significant issues customers experienced with the CL&P site was that finding useful information involved reading a considerable amount of text. Although the UI website uses less text than the CL&P website, it may unintentionally confuse customers with misleading signposts.

On the first page of the site the Customer and Business tabs confused some customers. The Business tab is red, as are many of the other graphics on the home page, which led customers to believe that the red Business tab was the default selection. Once customers were able to navigate to the Business tab, they were faced with a new set of challenges: the large amount of potentially applicable links within this tab, each of which takes the customer to a different page, which meant that during the sessions customers spent valuable time clicking back and forth, trying to find the correct page for them.

None of the customers simply found and clicked on the Energy Conscious Blueprint link on the Business tab, and most were discouraged by their experiences clicking through other pages on the site. Customers attempting to find the ECB program page frequently clicked the UI Products & Services link. Although this page showed links that could have led customers to their destination, customers could only see these links by scrolling to the bottom half of the page—and rather than scrolling through the entire page the customers frequently clicked on the links at the top of the page to the Connecticut Energy Efficiency Fund page and Energize Connecticut site, which customers found confusing and frustrating.

One important difference between the UI and CL&P customer experiences was that the CL&P customers described the informational PDFs as useful but difficult to find. Meanwhile, the UI customers described the informational PDFs on the UI website as too technically detailed to be useful. The UI customers expressed interest in learning more about the process, rather than being given so much detail into how the incentives worked.

## Vendors

The evaluation team conducted 9 usability sessions with vendors across Connecticut. We conducted these sessions with 6 Connecticut Light & Power vendors, and 3 United Illuminating vendors. About half of the vendors we spoke to worked in sales for the vendor with most of the remainder working in a management capacity, and one engineering consultant. Two distinct moderator guides were created in order to guide the customers from each utility through potential scenarios in which they would use the CL&P and UI websites as a source of information and guidance.

### CL&P Vendors

The customer and vendor experiences of the website were very similar for the most part. The features of the site that were unpopular with customers, such as the text-heavy pages and lack of signposts for important documents, were also unpopular with most of the vendors. However, customers' and vendors' different priorities shaped what they wanted and how they experienced the CL&P website.

Although a number of the customers who used the website expressed frustration with the confusing interface and their inability to find the information they needed, vendors expressed this frustration more frequently. Vendors were also far more likely to discuss the time constraints of their work, and that it was unlikely they would spend more than a few minutes on the website if they were unable to find the information they needed. One participant navigated through the website using his iPad—which is likely how many other busy vendors conduct program research while on a job site—and said, “if I can’t find something within four or five clicks on my iPad or iPhone, I’m done with it.”

Much like the CL&P customers, the vendors we conducted sessions with found the informational PDFs useful, but difficult to locate. Several of the vendors had actually saved or printed out copies of the information PDFs to use as a reference with customers. The detailed information regarding program incentive described on the incentive PDFs were described by vendors as the main reason they would want to go to the website. However, the site’s organization made these pages challenging to find or to help customers find.

## UI Vendors

The UI vendors also found it challenging to navigate the United Illuminating website. Although in general the vendors had slightly more experience with the website than the customers, several of the vendors mistook graphic cues on the site, which led them to pages on the site that they were not interested in. The vendors became frustrated because many of the pages looked very similar, there was a lack of clear guidance through the site, and much of the program-related pages were devoted to basic information about the program they already knew.

The vendors’ goals on the website were different from the customers, which made their experiences slightly different. While most of the customers we spoke with wanted more information about eligibility and the process of applying for an incentive, the vendors were primarily concerned with information about the incentives. Thus, while the UI customers described the informational PDFs on the website as too technically complex the vendors described the same PDFs as useful for their work.

## 5. RECOMMENDATIONS

Based on the findings of the process evaluation, the evaluation team proposes the following recommendations:

Promote awareness of financing sources and consider expanding financing options.

Dropout customers, participating customers, and vendors consistently identified financial factors as potential barriers to program participation. Nearly all vendors (89%) reported that customers' lack of capital to purchase energy efficient equipment represented a barrier to participation, while 78% of participating vendors cited customers' unwillingness to take on debt, and 60% mentioned an absence of acceptable financing options. Participating customers also cited these as potential barriers for future projects, with 31% reporting the absence of acceptable financing options to be a potential barrier.

These results suggest that some vendors and customers are not aware of or knowledgeable about current financing options or believe they are inadequate. Connecticut utilities do offer financing for some replacement projects, but do not provide funding for new construction. Customers may also qualify for other financing, such as through the C-PACE program, but they must apply for that separately from the ECB program. Communicating existing financing options and expanding these options could help reduce barriers to participation for a significant group of customers.

Dedicate additional resources and/or develop tools to support vendors.

Vendors play a key role in marketing the program to customers for both new construction and equipment replacement projects. While most vendors were satisfied with their experience working with the program and many rely heavily on the program, a number requested additional support in the form of more information on incentives, easier ways to determine incentive amounts, and increased engagement and responsiveness of program staff. Program staff indicated that a formal vendor alliance is not in existence, but one may be created by the utilities that could include resources and tools for vendor support.

For example, vendors could be given more information on how to market non-energy benefits. Vendors did not cite non-energy impacts as important to gaining participation. This agrees with the 2/3 of participating customers who did not report a non-energy impact. But one-third (24) did report an important non-energy impact and 22 (92%) of these stated that non-energy impacts created a greater impact for them than energy savings. A larger study with participants claiming non-energy impacts may be able to identify the type of customers where this is the case and could provide useful information to vendors on which market segments and measures generate positive non-energy impacts.

Increase outreach efforts to individuals involved with new construction projects.

Our calls to identify potential program rejecters suggested that some building owners, project managers, architects, and developers involved with new construction projects are not aware of the ECB program. Our analysis of the program tracking data, while limited by incomplete data, indicated



that the majority of projects and energy savings come from the equipment replacement track. Direct outreach appears to be an effective way of engaging building owners, developers, and vendors in the program.

Program staff indicated that they are working to bring in new construction projects early when the program can influence design; however, there has been limited construction in recent years and it is very time intensive to reach out to potential new construction participants. This effort to reach new construction decision makers early in the process will continue to be labor intensive for program staff.

It is possible that engaging with major financiers for new construction in Connecticut may offer another avenue to reach new construction projects earlier in their planning. The program may consider if such partnerships are feasible.

Consider providing improved signposting that enables more effective webpage scanning.

The web usability sessions provided insight into how vendors and participating customers engage with the websites and the type of information they find most valuable. In general, vendors seek out detailed program incentive structure documentation, while customers desire a high-level overview of program processes and eligibility requirements. Both vendors and customers requested a more intuitive organizational structure that used common program description titles.

Implement changes to program tracking database to improve program evaluability and project tracking for staff.

Based on the work conducting the process evaluation, the evaluation team proposes the following **changes or additions to the program tracking database** be considered to facilitate the tracking of performance indicators and to improve evaluability:

- Indicator identifying new construction, major renovation, and equipment replacement projects (UI)
- Indicator identifying if a new construction project followed the whole building or prescriptive track
- Indicator for custom and prescriptive projects
- A note or indicator if a cancelled project was subsequently resumed
- Addition of measure or end-use categories
- Addition of vendor associated with a project<sup>17</sup>

Developing a vendor database would also be very useful for generating meaningful evaluations. It is the understanding of the evaluation team that this is already being undertaken and a recommendation for this is not needed.

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<sup>17</sup> Based on the implementation manual, which is not public, vendor data are to be captured and recorded in the newer program tracking data.