You're Living Life in the Fast Lane, but a Change is Gonna Do You Good

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ABSTRACT

The value of rapid feedback from program participants is well known. The challenges lie in cost-effectively collecting statistically reliable and valid data and in presenting the results that are useful to program staff and implementers.

For several years, Energy Trust of Oregon (Energy Trust)—through evaluation contractors—has surveyed participants of residential and nonresidential programs within one month after project completion. The brief email-and-phone survey targets 90% confidence and 10% precision on a quarterly basis for multiple strata. Quarterly, midyear, and end-of-year results are reported by stratum. ADM staff developed an Excel-based system that efficiently draws monthly random samples, creates recruitment email and call lists, records responses, tracks dispositions, and generates reporting tables and graphics.

Historically, the reports have presented results broken out in great detail, with more than 90 tables and 20 graphs. Energy Trust's evaluation staff found that this level of detail is not optimal for program staff and conducted listening sessions to identify the obstacles to absorbing the important information. These sessions informed a redesign of the reports to focus more on trends and exceptions, allowing program staff to more readily identify particular successes and potential issues. Working with Energy Trust, ADM incorporated the new analyses into the survey tracking and reporting system.

This paper explains the survey and the tracking and reporting system, describes efforts to modify the reporting to increase its usefulness, and provides information on the value of the redesigned reporting.

Introduction

The value of rapid feedback from program participants has been recognized for several years (Saxonis 2007; Bliss, McClaren, Folks, and Kociolek 2015; Forcillo and Steiner 2015; Violette and Agapay-Read 2016), and many program administrators now make efforts to collect feedback through surveys fielded shortly after project completion. In 2009, Energy Trust of Oregon (Energy Trust)[1] initiated one such effort, called the "Fast Feedback" survey, to collect near-real-time feedback from participants in residential, commercial (including multifamily), and industrial energy efficiency programs. Participants may be homeowners, renters, building owners or managers, or commercial tenants – whoever received a financial incentive to purchase energy efficient equipment or make an energy efficient upgrade. This brief (5 minutes) survey is conducted within two months after project completion on a monthly basis. Energy Trust has used a variety of contractors to implement the survey since its inception in 2009. ADM Associates (ADM) has administered the survey since 2020.

The current project entails multiple levels of reporting (quarterly, midyear, and end-of-year), with results reported by sector and by stratum within each sector. To aid in implementing and managing the survey, ADM built an MS Excel-based system that generates monthly random samples, creates recruitment email and call lists, tracks recruitment efforts and dispositions, records survey responses, and generates all reporting tables and graphics

[1] Energy Trust is a nonprofit organization established in 2002 and overseen by the Oregon Public Utility Commission, which provides cash incentives, technical support, education, and strategic partnerships to help utility customers of Portland General Electric, Pacific Power, NW Natural, Cascade Natural Gas and Avista lower energy costs, increase energy savings and generate renewable energy. More information about Energy Trust's background, funding sources, strategic and action plans, policies and programs is available on Energy Trust's website (www.energytrust.org/about).

across the year. The quarterly reporting is provided via an Excel workbook shared with Energy Trust. The midyear and end-of-year reports are written reports with inputs populated from the workbook.

The quarterly, midyear, and end-of-year reporting provide information that is highly detailed and comprehensive. Program staff, however, reported at times that the level of detail presented proved overwhelming and they struggled to identify key insights and action items. In early 2023, Energy Trust's evaluation staff conducted listening sessions with program staff to identify the obstacles to absorbing the important information. These sessions informed a redesign of the reports to focus more on trends and exceptions (e.g., groups reporting unusually high or low satisfaction), to allow program staff to more readily identify particular successes and potential issues. Working with Energy Trust, ADM incorporated the new analyses into the survey tracking and reporting system in time to include the new analyses in the 2023 end-of-year report.

The remainder of this paper will describe the survey methodology, the survey, and the tracking and reporting system, showing how the latter allows the survey sampling, tracking, and reporting to be completed quickly and efficiently. It will then describe how the program administrator's evaluation staff worked with program staff to identify obstacles to report usefulness and to modify the reporting. Finally, it will provide information on the value of the redesigned reporting.

Survey Methodology

The survey collects information on participant satisfaction, program influence, and decision-making as well as suggestions for program improvements. The survey assesses certain core topics (e.g., overall program satisfaction, satisfaction with the incentive application) consistently across all or nearly all subgroups in a program. This provides a consistent basis for assessing success across subgroups – customers that installed different measure types in the residential program or different business types in the commercial and industrial programs – but also allows overarching results to be reported across the subgroups in each program. However, the survey also tailors some questions to specific programs (e.g., satisfaction with equipment performance for appliances or satisfaction with home comfort for shell and sealing measures).

The survey is implemented monthly with a sample of the prior month's program participants. The survey has quarterly completion goals based on achieving 90% confidence and 10% precision for each of multiple mutually exclusive strata as well as for "cross-cutting variables," or project characteristics that cut across strata. Each year, Energy Trust establishes the quarterly completion targets based on the projected number of projects in each stratum for each quarter, incorporating the finite population correction.[2] Monthly completion targets are based on the quarterly goals but are adjusted each month based on the previous number of completions. For any given stratum or cross-cutting variable, the target for the first month of a quarter is one-third the quarterly goal. The target for the second month is one-half the remaining completions needed for that quarter. The target for the third month is all the remaining completions needed. This approach has proven generally successful in attaining the quarterly completion target.

The strata and cross-cutting variables are formed differently in the residential and nonresidential surveys. In the residential survey, the mutually exclusive strata are based on the type of measure that was installed (e.g., appliance, lighting, air conditioner, window).[3] The cross-cutting variables generally relate to participant characteristics. For example, any project in the residential program may have been done in a moderate income household (versus higher income households) or a rental property (versus owner-occupied property); hence, "moderate income households" and "rental properties" are cross-cutting variables in the residential survey. In the nonresidential survey, the mutually exclusive strata are based on the participant business type (e.g., restaurant,

[2]The Finite Population Correction (FPC) factor corrects the standard error of a sample mean or proportion when the sample size is a significant fraction of the total population size. This reduces the estimated standard error of a given estimate, thereby reducing the sample size needed to achieve a given level of precision.

[3] One exception to this is that all Washington residents served by Energy Trust comprise a single stratum, regardless of measure type. This allows Energy Trust to assess the program experience of Washington residents; however, Washington participants are not numerous enough to allow stratification by measure type.

office, retail, warehouse).[4] The nonresidential cross-cutting variables may relate to project characteristics (direct install or no-cost offer), measure characteristics (lighting), or participant characteristics that are not part of the mutually exclusive stratification (small multifamily, small or medium business).

If a given participant installed more than one measure type or had more than one project in a given month, the participant is surveyed on only one of those measure types/projects, as described in the next section.

The survey was conducted completely by phone when it was piloted in 2009. An experimental study testing various survey modes (Peters & Bliss 2010) found that mixed-mode (email-phone) recruitment was superior to phone-only recruitment for residential customers, and so Energy Trust chose to implement the survey using the mixed-mode recruitment in 2011. Based on further experience in the field, ADM has used the mixed-mode approach for both the residential and nonresidential customers since 2022.

The survey makes multiple recruitment attempts for each sampled participant—up to three emails and/or four phone calls (depending on availability of contact information) over a four-week period unless a final disposition (survey completed, refused, or incorrect contact information) is achieved. Email nonresponders are added to the phone sample, together with phone-only participants. Additional sample may be used if the completion targets cannot be met in multiple attempts with the primary sample.

Survey Management, Tracking, and Reporting System

ADM developed the survey management, tracking, and reporting system in MS Excel rather than another platform for several reasons. First, Fast Feedback results had been tracked in an Excel workbook since its inception. ADM was able to expand on the prior system efficiently and inexpensively. Second, Excel is highly accessible for individuals without specialized software development training. Relatedly, Excel's WYSIWYG ("what you see is what you get") environment facilitates QC as well as updating the system to reflect changes to the survey, quota groups, completion targets, or reporting requirements, which may take place each year.

The workbook system tracks monthly completions against quarterly quotas, automatically updating each month's completion target. The system consists of separate workbooks for the residential and nonresidential surveys. Each worksheet consists of multiple interacting worksheets that achieve the above requirements for sample creation and survey implementation.

The workbook system supports rapid implementation of the monthly survey by performing the monthly sample frame and sample creation (including deduplicated participant records and randomization of the sample) without removing or even reordering any of the input records or copying and pasting moving records between worksheets. In addition to allowing the survey to be implemented within minutes after new project data are received, this maintains the integrity of the input data, simplifying error-checking or troubleshooting. Key elements of the sample creation process include the following:

- A Survey ID is assigned to each *uniquely identifiable* participant for a given month.[5] All records in a given month sharing phone number, email address, project address, home/business address, or Energy-Trust-assigned IDs are assigned the same Survey ID. The sample frame consists of each unique Survey ID.
- If a given Survey ID is associated with multiple records, one record is selected for the survey frame. The selection is based on sample selection weights that are calculated for each project type (i.e., measure or business type). The weight is calculated as the ratio of the project type's survey completion target to the count of available projects of that type, multiplied by a random number. Thus, project types that are less common, relative to their completion targets, will have a higher probability of selection, on average, than those that are relatively more common.[6] The random element ensures that less common projects are not

[4] Except, again, that all Washington customers served by Energy Trust form one stratum.

[5] Participants are aware they may be contacted for evaluation purposes as a condition of program participation.

[6] For example, if there were 30 project completions of a given type in a certain month and five survey completions are needed to hit that month's target, the selection weight would be 5/30, or 0.167, multiplied by a random number. If there were 24 project completions of a given type in a certain month and nine survey completions are needed to hit that month's target, the

always selected in preference to more common projects, which could result in having too few of the common projects in the sample frame.

- A random number (separate from the one used for the selection weight) is then assigned to each project in the sample frame. The sample for each project type is created by selecting the *n* records of with the highest random numbers for that project type, where *n* is five times the target completion count for that project type. All remaining records in the sample frame are identified as "reserve" records, to be contacted if the completion target for the project type in question is not achieved after all efforts with the sample have been exhausted.
- The random number assigned to each record in the sample frame also determines the order in which records appear in call lists.

Additional worksheets interact with the sample-creation worksheet to format selected project data generating survey invitations, reminder lists, and call lists, track responses, and update monthly targets. Survey responses are downloaded from Qualtrics to track survey completions by attempt mode and completion mode, which are used to weight data for each reporting period, as well as to track respondent gift card preferences and requests for follow-up from Energy Trust. The workbook reads completion data from the downloads to maintain monthly completion counts by quota group, providing near real-time information on progress toward each month's targets, and update subsequent the completion targets for the second and third month of each quarter.

Finally, the workbooks include multiple worksheets to support reporting by: identifying the reporting period (Q1, Q2, Q3, Q4, midyear, or end-of-year); calculating the survey mode and quota group weights for the selected reporting period; and populating report tables and generating charts in the workbook. The tables predominantly display survey response frequencies for specific quota groups or cross-tabulated by quota group, in the case of summary tables. Results are calculated from the weighted data for the pertinent reporting period. The workbook tables and charts are formatted as those in the report document, allowing the table workbook table data and charts to be copied and pasted directly into the document.

Figure 1 illustrates the key elements of the survey management, tracking, and reporting system.

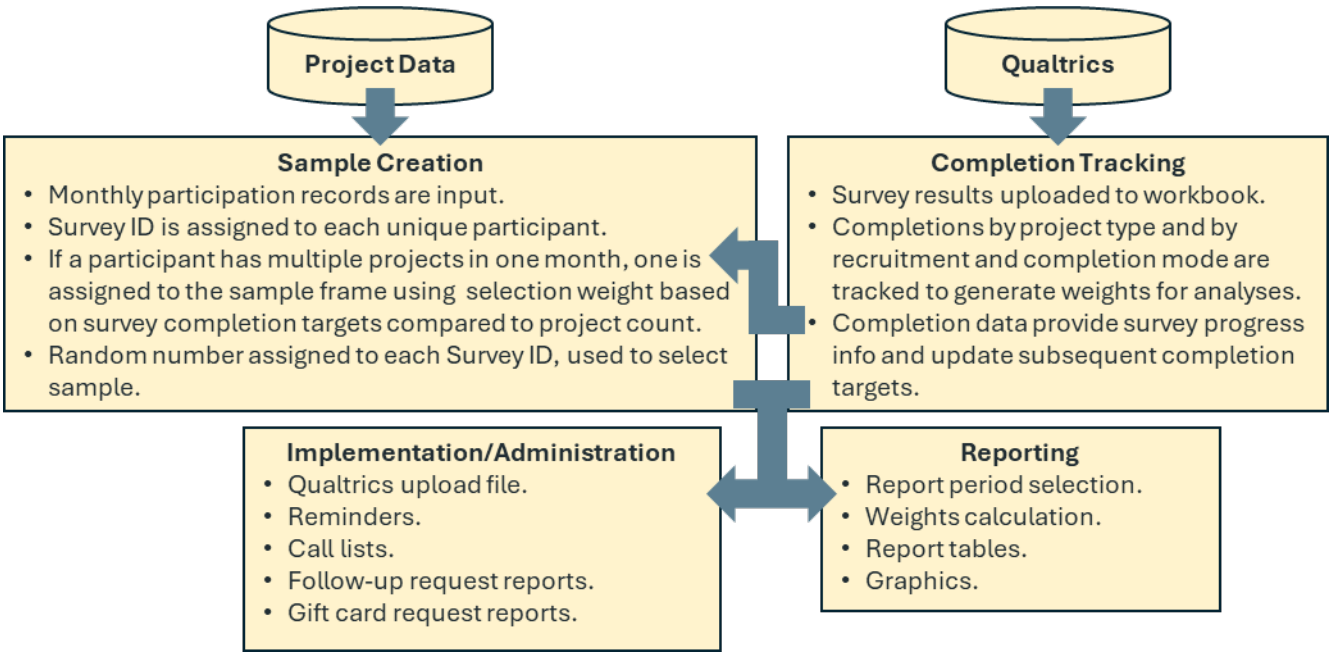

Figure 1. Key elements of survey management, tracking, and reporting system.

selection weight would be 9/24, or 0.225, multiplied by a random number. On average, the selection weight for the second project type would be greater than the weight for the other type, but this would not always be the case.

Figure 2 shows screenshots of key fields in survey management, tracking, and reporting system worksheets.

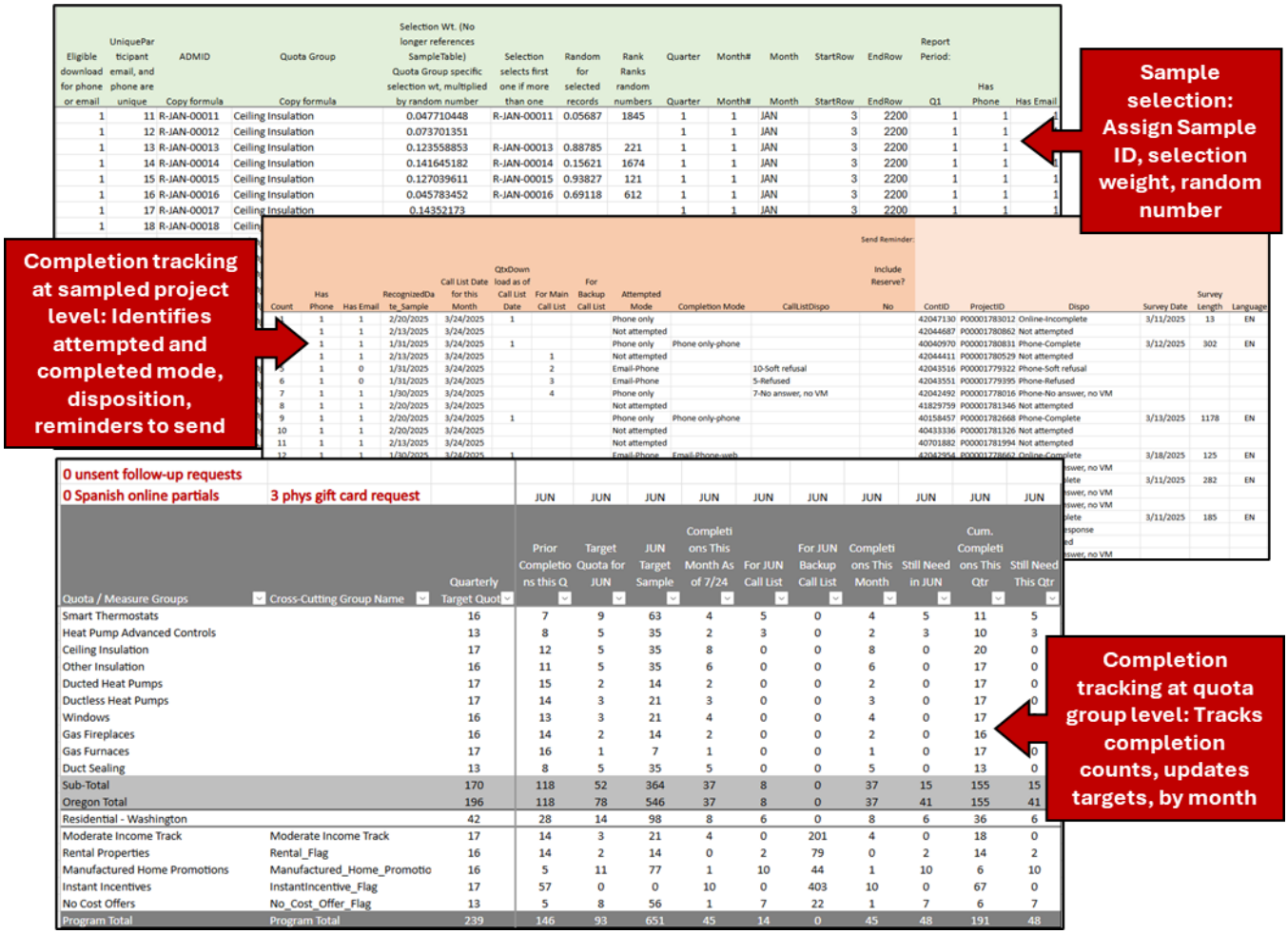

Figure 2. Key worksheets of survey management, tracking, and reporting system.

Identification of Obstacles to Report Usefulness and Suggested Improvements

Over the past several years the midyear and end-of-year reports have presented results broken out in great detail, with more than 90 tables and 20 charts. This is illustrated here for the report section detailing the results for the residential sector. This begins with a subsection showing sector-level summary results, including:

- One table showing program overall satisfaction and overall program influence – for all Oregon projects combined and for each quota group.
- Multiple tables summarizing respondent demographics (occupancy and homeownership, race/ethnicity, income, age, and household size) overall and by quota group.
- One table summarizing information on key influencers (incentive, information, salesperson, etc.), overall and by measure type.
- One table summarizing information on the most common sources for finding contractors, by quota group.

The report then has a subsection showing results for each mutually exclusive and cross-cutting quota group. There were 17 such quota groups in the most recent program year, hence 17 subsections. Each subsection included the following tables and charts:

- One table showing level of overall program satisfaction, several more specific indices of program satisfaction (measure performance, home comfort after measure installation, the incentive application form, the time it took to receive the incentive), and several indices of contractor satisfaction (when applicable).
- One chart showing overall satisfaction over multiple years.
- One table summarizing percentage of respondents reporting high, medium, and low overall program influence and high, medium, and low influence of incentive, information, salesperson, etc.
- One table summarizing information on how respondents identified a contractor (where applicable).

Figure 3 illustrates these tables and charts for one of the 17 quota groups. The report sections detailing the results for the nonresidential sector were similarly detailed.

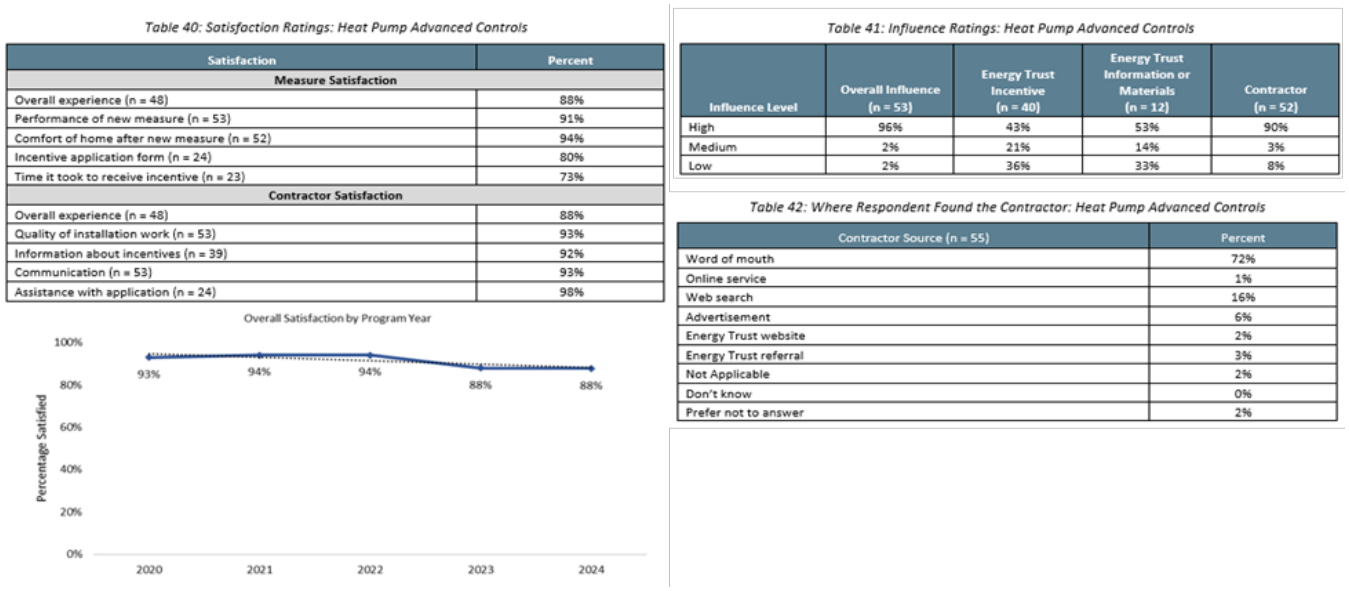

Table 40: Satisfaction Ratings: Heat Pump Advanced Controls

Satisfaction	Percent
Measure Satisfaction	
Overall experience (n = 48)	88%
Performance of new measure (n = 53)	91%
Comfort of home after new measure (n = 52)	94%
Incentive application form (n = 24)	80%
Time it took to receive incentive (n = 23)	73%
Contractor Satisfaction	
Overall experience (n = 48)	88%
Quality of installation work (n = 53)	93%
Information about incentives (n = 39)	92%
Communication (n = 53)	93%
Assistance with application (n = 24)	98%

Table 41: Influence Ratings: Heat Pump Advanced Controls

Influence Level	Overall Influence (n = 53)	Energy Trust Incentive (n = 40)	Energy Trust Information or Materials (n = 12)	Contractor (n = 52)
High	96%	43%	53%	90%
Medium	2%	21%	14%	3%
Low	2%	36%	33%	8%

Table 42: Where Respondent Found the Contractor: Heat Pump Advanced Controls

Contractor Source (n = 55)	Percent
Word of mouth	72%
Online service	1%
Web search	16%
Advertisement	6%
Energy Trust website	2%
Energy Trust referral	3%
Not Applicable	2%
Don't know	0%
Prefer not to answer	2%

Figure 3. Illustration of tables and charts included for each mutually exclusive and cross-cutting quota group (residential survey).

Early in 2023, the Energy Trust Evaluation Project Manager received feedback from Energy Trust program managers that this level of detail was not optimal. These program staff noted that the existing quota-group-specific level of detail could be useful if they wanted to reference the details relating to a particular measure or a small set of measures. However, the sheer number of data points presented made it difficult to get a comprehensive look at the direction and status of the program.

In response to this informal feedback, the Evaluation Project Manager conducted a series of listening sessions to identify the obstacles to absorbing the important information and to identify potential revisions. These sessions indicated that, while program staff found some of the existing content to be valuable (specifically, the demographic/firmographic data and sector-level summaries of satisfaction and program influence), they wished to move the detailed quota-group-specific tables to an appendix for reference as needed. In place of those tables, they requested two additional types of information in the report body:

- Information highlighting the quota groups that have experienced a substantive change (increase or decrease) in satisfaction over the last 3 or so years. Satisfaction was assessed on a 1-5 scale, and

"satisfaction" for any group was defined as the percentage of respondents that provided a rating of 4 or 5. Staff suggested that a change of 5 percentage points in that metric was enough for them to want to be alerted to it.

- Information on all groups that reported especially high or especially low levels of satisfaction. Discussions with staff established thresholds of ≥97% for "high" satisfaction, <90% but ≥85% for "low" (a group that Energy Trust would like to monitor), and <85% as "very low" (a level that would be alarming and of concern).

Implementation of Report Redesign

ADM worked with the Energy Trust Evaluation Project Manager to incorporate the new analyses into the survey tracking and reporting system. In keeping with the project's overall goal of providing program feedback timely manner, the objective was to be able to generate tables and charts from the new analyses quickly and incorporate them into the report easily and accurately.

In the case of the analyses showing substantive satisfaction changes, the first step was to operationalize how a substantive change is identified. In discussion with the Evaluation Project Manager, we defined a substantive *increase* as one representing either of these two cases:

1. The current value represents an increase of 5 percentage points from the corresponding value from the previous year.
2. The current value represents an increase of 5 percentage points from the *minimum value* of the previous four years *and* a trend of either no change or increases in satisfaction over the past three years.

Similarly, we defined a substantive *decrease* in satisfaction as representing either of the following two cases:

1. The current value represents a decrease of 5 percentage points from the corresponding value from the previous year.
2. The current value represents a decrease of 5 percentage points from the *maximum value* of the previous four years *and* a trend of either no change or decreases in satisfaction over the past three years.

There was no similar need to operationalize the analyses of high, low, and very low satisfaction, as the definitions provided by program staff were straightforward.

The second step was to create the ability for the workbook to generate tables that display the results of these new analyses. This required building in a new ability into the tracking and reporting workbook. Recall that the existing tables in the workbook were formatted the same as in the report document, allowing for easy copying of table contents from the workbook to the report. All existing tables had more-or-less fixed formats – that is, a certain number of rows and columns – from year to year. A new row or column could easily be added for a given table to reflect the addition of a new quota group or a change in a survey question, but then that format would remain fixed until a new change occurred.

Reporting the results of the above analyses, however, required the ability to *dynamically generate* a new table each reporting period reflecting the conditions existing in that reporting period. For example, one of the criteria for a substantive change in satisfaction may be satisfied for a certain number and/or set of quota groups in one year's results but for a different number or set of quota groups in the next year's results. For example, the residential survey may find substantive changes for Heat Pump Advanced Controls, Ductless Heat Pumps, and Gas Fireplaces one year but for Windows and Air Conditioners the next year. Similarly, the results seen in the midyear report may not be seen in the end-of-year report. By the same token, one reporting period may see high, low, or very low satisfaction various quota groups but the next reporting period may see different quota groups showing those satisfaction levels.

ADM created additional reporting worksheets for the two new sets of analyses. Each worksheet reads current and historical satisfaction data from other parts of the workbook, enumerating quota groups that meet the above criteria. The workbook table template for the satisfaction change analyses generates a row of data for each of the enumerated quota groups. The number of data rows and the quota groups identified may vary from year to year. Figure 4 (next page) illustrates the above.

The worksheet for the high/low satisfaction levels uses a similar approach. It separately enumerates quota groups that meet the criteria for high, low, and very low satisfaction levels in the current reporting period. The separate reporting table templates for high, low, and very low satisfaction then list only those quota groups so enumerated, together with the mean satisfaction levels for the current reporting period.

The addition of the two worksheets described above allows ADM to dynamically generate the new analyses in seconds, with results in tables and charts that can be pasted immediately into the report document. This, in turn, allows us to produce the still-lengthy report (complete with appendices) in a few days.

Usefulness of Report Redesign to Program Staff

In July of 2025, shortly after ADM finalized and submitted the written end-of-year report for 2024, the Energy Trust Evaluation Project Manager sought feedback from program staff on the usefulness of the report redesign. The redesign had applied to the 2024 midyear reports as well as the end-of-year report, and so program staff had two reports on which to base their feedback. Program staff expressed appreciation for the report's focus on identifying substantial changes and year-over-year comparisons, especially in light of any decreases in satisfaction. Overall, they found the discussions of significant changes valuable and reported that the changes have helped the program quickly identify any areas that have increased in overall program satisfaction as well as understand where there are areas for improvement to overall customer satisfaction.

Staff also suggested providing more breakdown of responses to tell more of a story rather than comparing numbers year-to-year. Specifically:

- Presenting a table that summarizes information on the main sources of program influence in the main section of the report (rather than in the appendix) because it gives more information on the story behind the trends seen in the new sections.
- Incorporating qualitative interpretations, such as quotes from open-ended responses and response breakdowns, to enrich the narrative and better explain not just what occurred, but why.
- Moving firmographic data into the appendix, as they were considered less useful than other information included in the report body.

ADM and Energy Trust are discussing implementing these additional recommendations.

Conclusions

This paper described recent changes to a survey data implementation, tracking, and reporting system—and to the reports that the system is used to generate—to respond to evolving understanding of program staff's information needs. The success of the efforts described here demonstrate the value of open dialog between the program administrator's evaluation team, program staff, and evaluation contractor. In particular, it illustrates the value of not just listening to the program's initial, unsolicited comments about the report, but of then actively responding as an evaluator. Energy Trust's evaluation staff devised and followed a systematic approach, gathering additional details about program staff's information needs, proposing revisions to the report, implementing those revisions (through ADM), and then seeking feedback on the revisions to assess whether they addressed the original concerns.

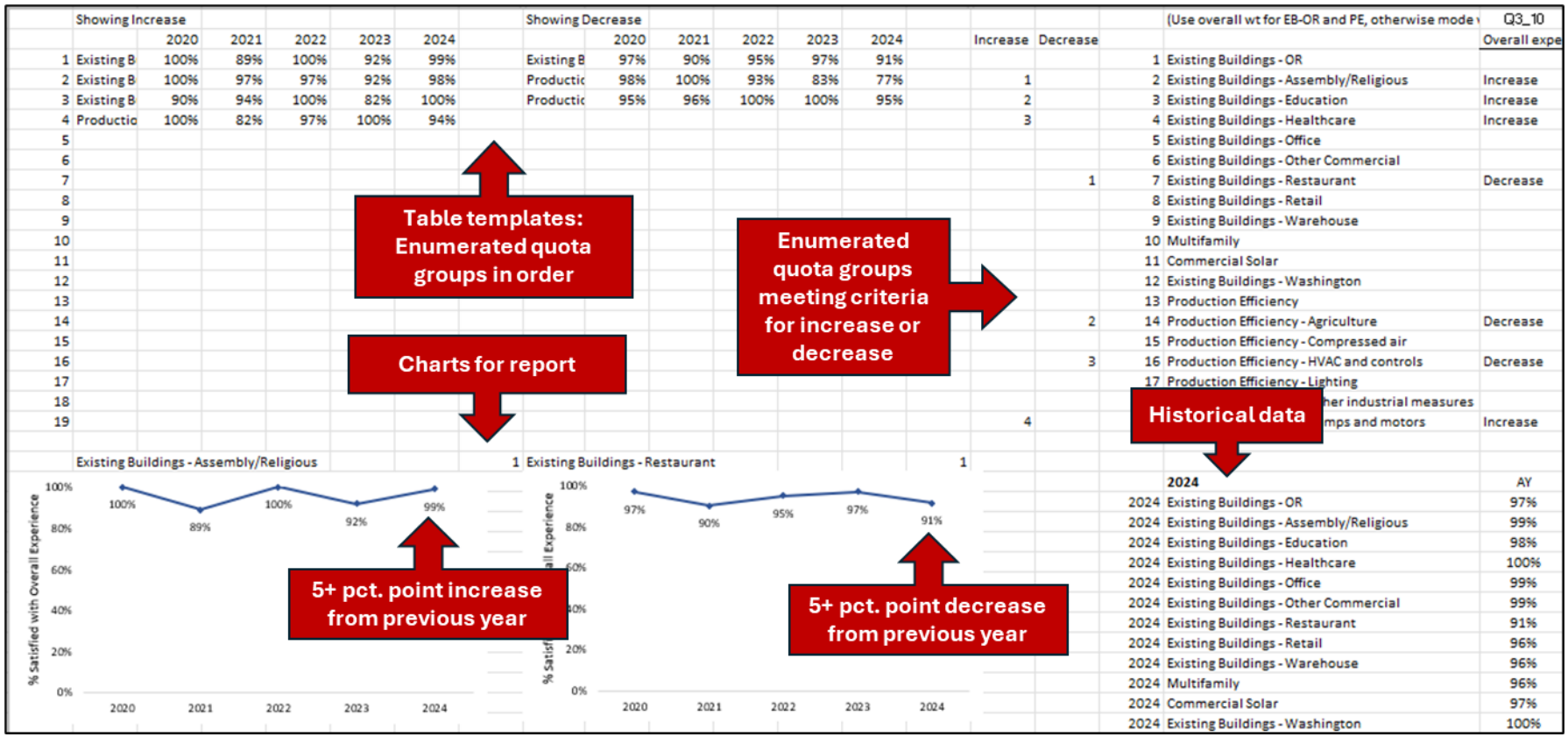

Figure 4. Worksheet generating table contents and charts for groups showing substantive changes in satisfaction (nonresidential survey).

The ability to generate reports rapidly after the end of data collection for a given reporting period is an important part of "fast feedback"—perhaps as important as the rapid survey implementation. As discussed above, the report revisions were integrated into an existing system that supports rapid implementation of monthly program participant surveys and efficient and timely reporting of results several times a year. Making use of the existing data structure in the incorporation of the changes into the workbook was important, as it minimized the amount of project resources that needed to be diverted to making the changes. Since this system already captured the necessary variables, including the additional analyses was easily automated, requiring only the development of a method to identify the specific variables that met the criteria for reporting in a given period and then enumerating and tabulating them in a manner that made it easy to incorporate into the written report.

Energy Trust evaluation staff are continuing the dialog with program staff to understand how the new information is being used, including whether it has driven any program changes or resulted in any customer benefits.

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