2021-2024 CDM Framework Small Business Program PY2023 Evaluation Results

Submitted to IESO
in partnership with NMR Group

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Finally, the evaluation team would like to thank the hundreds of participants that supported the team's impact telephone and web-based surveys and site visits. Their cooperation with the team's efforts produced high-quality data that will serve Ontario conservation efforts for years to come.

Acronyms and Abbreviations

CF	Coincidence factor (CF) is the summer peak demand (kW) divided by energy (kWh)
EM&V	Evaluation, measurement, and verification
EUL	Effective useful life
FR	Free-ridership
HVAC	Heating, ventilation, and air conditioning
IDI	In depth interview
IESO	Independent Electricity System Operator
kW or kWh	kilowatt or kilowatt-hour
LED	Light emitting diode
MW or MWh	Megawatt or Megawatt-hour
NTG	Net-to-gross
PY	Program year
SO	Spillover

Executive Summary

The Independent Electric System Operator (IESO) retained Resource Innovations, Inc., and its subcontractor, NMR Group, Inc., (referenced throughout this report as 'the evaluation team'), for the evaluation of the 2021-2024 Conservation and Demand Management (CDM) Framework business programs. This report presents the results of the impact and process evaluations, cost-effectiveness assessment, and non-energy benefits (NEBs) analysis for the Program Year (PY) 2023 Small Business Program (SBP).

Program Description

The SBP provides owners and tenants of small businesses (with 50 or fewer employees) an opportunity to receive up to $3,000[1] in free lighting equipment upgrades and up to $2,500 in free non-lighting equipment upgrades, at no cost. Participants who wish to have qualified equipment installed above incentive limits become eligible for partial cost coverage incentives intended to further the program's impact and reach. The program defines eligible measures, which include a wide variety of lighting fixtures and lamps, refrigeration measures, and HVAC measures. All participants must own or lease the facility where the installation will be carried out, and rental units require the owner/operators' approval before upgrades can be made.

Evaluation Objectives

The IESO has outlined the following objectives for the PY2023 SBP evaluation:

- Conduct audits of completed projects to evaluate, measure, and verify completion and operating parameters through desk reviews, site visits, and on-site metering.
- Verify gross energy and summer peak demand savings for SBP at a 90% confidence level at 10% precision.
- Assess free-ridership and participant spillover to determine an appropriate net-to-gross (NTG) ratio.
- Research specific areas of interest to help the IESO improve the SBP and prepare for future program designs and evaluations.

[1] On November 6, 2023, the lighting measures incentive cap increased from $2,000 to $3,000. Past SBP participants can apply for an additional top-up incentive to the total of $3,000.

- Perform a cost-effectiveness assessment, greenhouse gas (GHG) reduction estimate, non-energy benefits (NEBs) analysis, and job impact quantification for the SBP.
- Conduct a process evaluation by addressing research questions identified with the IESO.
- Deliver annual reports, memos, and impact results templates, along with a final report that meets the requirements and deadlines set by the IESO.
- Provide thoughtful recommendations on program improvements based on feedback obtained through the evaluations.

Summary of Results

Impact Evaluation

The evaluation team conducted an impact evaluation to analyze program impacts and to quantify savings generated due to implementation of SBP projects in Ontario during PY2023. Over the evaluation period, 1,919 projects were completed.

The Northern region serves as the largest contributor to the SBP projects, accounting for 32% of all completed projects, followed by the Eastern region with 26%, the Central region with 19%, the Toronto region with 18%, and the Southwestern region with 5%. The PY2023 SBP program achieved an effective energy and summer peak demand realization rates of 99.5% and 98.6%, respectively. These realization rates included interactive effects observed on HVAC equipment due to high-efficiency lighting.

The energy and summer peak demand NTG ratios were 97.2% and 96.4%, respectively. A total of 99.5% of first year net verified energy savings are projected to persist to 2026. Table 1-1 presents gross and net verified impact results for the PY2023 SBP program. Section 4 presents detailed impact results for the PY2023 SBP.

Table 1-1: 2023 SBP Impact Results

Savings	Reported Savings	Realization Rate	Gross Verified Savings	NTG Ratio	Net Verified Savings	Net Verified Savings in 2026
Energy (MWh)	7,223	99.5%	7,185	97.2%	6,986	6,953
Summer Peak Demand (kW)	1,927	98.6%	1,900	96.4%	1,832	1,827

Table 1-2 presents energy and summer peak demand realization rates for the PY2023 sample, split into lighting and non-lighting measure tracks. Overall, the sample energy realization rate achieved a 9.7% precision at the 90% confidence level. The effective program realization rates of 99.5% for energy and 98.6% for summer peak demand were weighted by the contribution percentage to total program savings by lighting and non-lighting measures.

Table 1-2: 2023 SBP Sample Realization Rates

Measure Type	Energy Realization Rate	Energy Realization Rate Relative Precision	Summer Peak Demand Realization Rate	Peak Demand Realization Rate Relative Precision
Lighting*	101.7%	9.1%	99.5%	11.6%
Non-Lighting**	51.8%	12.7%	57.6%	18.5%

* Reported precision is at 90% confidence interval.
** Reported precision is at 85% confidence interval.

Key Findings and Recommendations

This section summarizes the top PY2023 evaluation key findings and recommendations. Section 7 presents findings and recommendations in greater detail.

Finding 1. Awareness of and interest in SBP's non-lighting equipment offerings continued to be relatively low among participants. Non-Lighting measures contributed only 2% of PY2023 net-verified energy savings. Only one-fourth (25%) of participants who installed lighting-only equipment knew that the program offered other non-lighting equipment upgrades. When asked why they decided not to install non-lighting upgrades, nearly one-half (49%) stated they did not need to install additional equipment, and one-tenth (10%) said the program did not offer equipment of interest to them. Such equipment of interest included heat pumps, solar, thermostats, and cinema equipment (one respondent each). Close to one-half of assessors and installers (five respondents) indicated that their customers were not very interested in the program's non-lighting equipment. Two assessors and installers shared their perspective on why they thought this occurred, with one indicating it was due to a lack of information from assessors and the other indicating it was because the non-lighting equipment was not compatible with equipment at customers' businesses. Additional non-lighting measures currently not offered in SBP (e.g., faucet aerators [bathroom and kitchen], vending misers, low-flow pre-rinse spray valves, pipe insulation, duct sealing/insulation, weatherstripping, and advanced

power strips) are popular direct-install measures offered in other utility energy-efficiency programs in North America. Increasing the number of non-lighting measure options available to SBP participants could raise interest in non-lighting measures and increase program savings. Many of these recommended measures were identified in the top 75 measures ranked by achievable potential energy savings in the 2022 Achievable Potential Study refresh in Ontario[2]. Further inhibiting the uptake of non-lighting measures, multiple participants who implemented non-lighting measures and received site visits (three) or desk reviews (two) during the PY2023 impact evaluation reported issues or concerns with the installation and performance of their non-lighting measure retrofits. Assessor and installer suggestions for increasing uptake of non-lighting equipment included more marketing (three respondents) and covering all thermostat costs (two respondents).

- **Recommendation 1a.** Expand marketing efforts to generate additional awareness around non-lighting offerings. For example, feature more participating businesses that received non-lighting measures in case studies and testimonials.
- **Recommendation 1b.** Identify ways to further assist customers in installing non-lighting equipment (e.g., covering all thermostat costs including ancillary costs such as new C-wires, presenting the customer with co-pay options).
- **Recommendation 1c.** Provide additional training opportunities for SBP assessors and installers to ensure they have up-to-date program documentation and the knowledge to effectively market and sell non-lighting measures. Ensure implementers are adequately trained on measure installation to avoid improperly installed measures and dissatisfied participants.

Finding 3. Assessor workforce shortages likely served as a participation impediment, especially in more remote areas of the province. Delivery vendors and IESO staff all considered the lack of field staff (particularly assessors) to pose a challenge in PY2023. This workforce shortage was most pronounced in the northern part of the province as some assessors could not or did not want to drive to these locations, though the issue occurred in other parts of the province as well. IESO staff mentioned that offering virtual assessments when assessors are unavailable might be worth considering. Delivery vendors suggested covering the cost of driving school as licenses are required for the job. Delivery vendors indicated that uncertainty about assessors' contract lengths may also contribute to fewer individuals being willing to take these jobs.

[2] IESO Energy-Efficiency Resources and Reports: https://www.ieso.ca/Sector-Participants/Energy-Efficiency/Energy-Efficiency-Resources-and-Reports

- **Recommendation 2.** Identify opportunities to address workforce shortages to ensure the availability of a robust pool of assessors to support SBP. This may include incentivizing assessors willing to travel to Northern areas of the province, allowing installers to perform assessments *and* installations in the North to minimize workforce needs, allowing for virtual assessments, depending on the customer's location, or partnering with colleges/universities.

Finding 3. Sector-specific outreach may be instrumental in converting more SBP opportunities into projects. Delivery vendors and IESO staff believed opportunities still exist for lighting measures under SBP, though they noted that savings per project were diminishing. Surveyed assessors and installers believed similarly, providing an average rating of 4.6 on a scale of one to five, where five indicates "a great amount of opportunity still exists," when asked to rate the remaining opportunities for SBP to generate new participants interested in installing energy-efficient lighting upgrades. One IESO staff member recommended reviewing the remaining program potential for small businesses at the sector level. Assessors and installers identified business sectors that they recommend the program more directly target, while providing insights on equipment that may be of most interest to those sectors. Warehousing (nine respondents), grocery and industrial (eight respondents each), and restaurant and retail (six respondents each) were most frequently mentioned by assessors and installers, with various types of lighting frequently recommended for most sectors. By comparing the count of small businesses by sector in Canada[3] to the PY2023 SBP participation by facility type, the evaluators determined that some business types (e.g., Commercial [Retail] and Commercial [Office]) are overrepresented in PY2023 SBP participation. Though these two business types make up 56% of all PY2023 SBP projects, they represent only 34% of small businesses in Canada. Underrepresented business types include Agricultural, Commercial [Restaurant], Commercial [Warehouse/Wholesale], Industrial/Manufacturing, and Government/Public Institution which combine to represent 48% of Canadian small businesses but only 25% of PY2023 SBP projects.

- **Recommendation 3a.** Analyze sector-level program saturation and the related remaining program potential. Review program participation by measure and sector to identify trends.
- **Recommendation 3b.** Target program outreach efforts towards key business sectors, highlighting eligible equipment and services that may be of most interest to them. For example, this may involve expanding the catalogue of case studies and testimonials to feature sector-specific projects or

[3] Key Small Business Statistics – 2021*:* *https://ised-isde.canada.ca/site/sme-research-statistics/en/key-small-business-statistics/key-small-business-statistics-2021#how-SME*

collaborating with organizations representing the business interests of these sectors.

Introduction

The Independent Electric System Operator (IESO) retained Resource Innovations and its partner, NMR Group, Inc. (referred to throughout this report as 'the evaluation team'), to evaluate the 2021-2024 Conservation and Demand Management (CDM) Framework business programs. This report provides impact and process evaluations, a cost-effectiveness (CE) assessment, non-energy benefits (NEBs), and job impact results for the PY2023 Small Business Program (SBP).

Program Description

The SBP provides owners and tenants of small business commercial, institutional, agricultural, and multifamily facilities that have 50 or fewer employees with an opportunity to receive up to $3,000 in free lighting upgrades and up to $2,500 in free non-lighting upgrades.

Participants seeking to install qualified equipment above incentive limits become eligible for additional incentives, intended to further the program's impact and reach. The program defines eligible measures, which include a wide variety of lighting fixtures, lamps, and refrigeration measures. All participants must own or lease the facility where installations will be carried out, and rental units require an owner/operators' approval before upgrades can be made.

During the PY2023 program year, the SBP increased the lighting measures incentive cap from $2,000 to $3,000 on November 6, 2023. Past SBP participants can apply for an additional top up incentive to the total of $3,000, which includes receiving a new assessment to identify additional lighting opportunities.

Evaluation Objectives

The IESO outlined the following objectives for the PY2023 SBP evaluation:

- Conduct audits of completed projects to evaluate, measure, and verify completion and to determine operating parameters through desk reviews, site visits, and on-site inspections.
- Verify gross energy and summer peak demand savings at a 90% confidence level at 10% precision.
- Assess free-ridership and participant spillover (SO) to determine an appropriate net-to-gross (NTG) ratio.

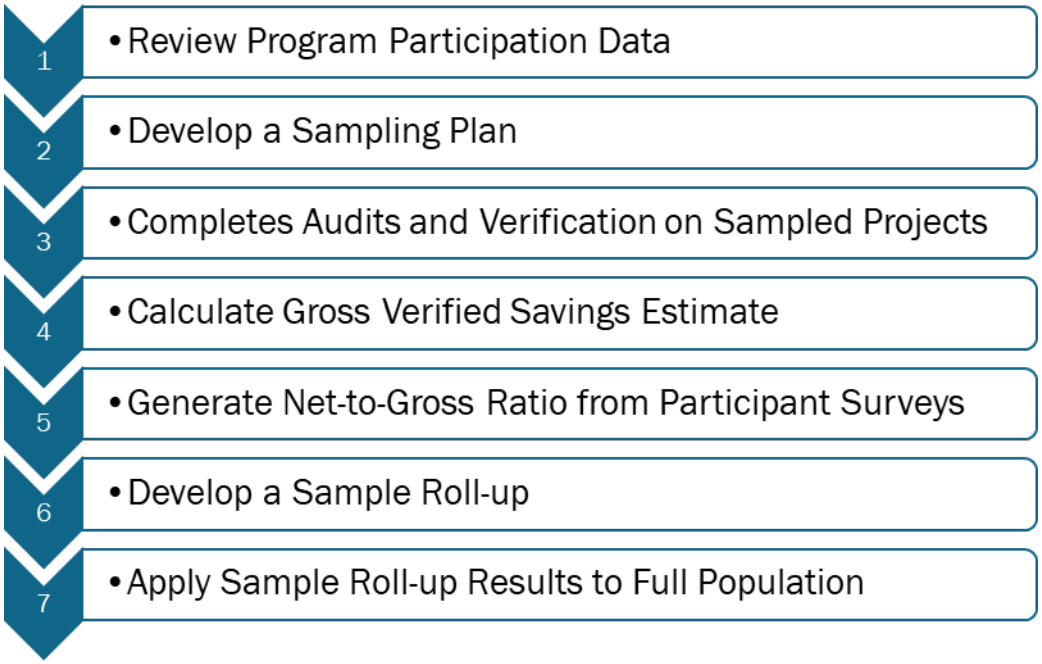
- Research specific areas of interest to help the IESO improve the SBP and prepare for future program designs and evaluations.
- Perform a CE assessment, a greenhouse gas (GHG) savings estimate, a NEB analysis, and a job-impact quantification.
- Conduct a process evaluation by addressing research questions identified with the IESO.
- Deliver annual reports, memos, and impact-result templates along with a final report that meets the IESO's requirements and deadlines.
- Provide thoughtful recommendations on program improvements based on feedback obtained through the evaluations.

Evaluation Methodology

Impact Evaluation Methodology

Figure 3-1 portrays the impact evaluation methodology's distinct components.

Figure 3-1: Impact Evaluation Methodology



Project Participation and Sampling

The evaluation team drew an impact evaluation sample from PY2023 SBP projects completed and paid for between January 1 and December 31, 2023. Though the PY2023 SBP population includes lighting and non-lighting measures, the number of non-lighting projects is limited, with non-lighting measures representing only 4% of the SBP reported energy savings in PY2023 and only 8% of projects including any non-lighting measures.

Given the limited number of completed non-lighting projects, it did not prove feasible to target 90/10 at measure-level stratums. The team collected additional samples to ensure representation of these non-lighting measures as best as possible. Project samples selected from the population targeted results achieving a 90% confidence level at a 10% precision level, assuming 0.5 as a coefficient of variation at the program level. As such, for this evaluation, all projects were to be evaluated

together as a group without additional sample stratification. As shown in Table 3-1, the team oversampled additional non-lighting projects, exceeding the evaluation's 68-project target sample size and resulting in the selection of 83 random sample projects.

Table 3-1: Impact Evaluation Sample

Program	Target Sample	Achieved Sample
SPB	68	83

The team reviewed each sample project to verify gross and net savings, using these individual sample project results to calculate realization rates and NTG ratio adjustment factors applied to savings for all projects in the PY2023 population. Appendix A and Appendix B provide additional details.

Net-to-Gross Evaluation Methodology

The evaluation team utilized the participant self-report survey results to estimate the NTG ratio. The survey used the same sample design for the NTG and process evaluations as the participant self-report survey included both evaluation areas. The evaluation team developed the sample at a province-wide level. The survey sought and achieved a NTG at 90% confidence and 10% precision in the results.

The evaluation team calculated net energy and summer peak demand savings attributable to the SBP by multiplying the gross verified energy and summer peak demand savings by the NTG. The team used this equation and the general methodology to estimate net energy and summer peak demand savings. The team based the NTG ratio on measurement of free-ridership and SO, as defined in Equation 3-1.

Equation 3-1: NTG Ratio

$$NTG = 1 - Free\ Ridership + Spillover$$

Appendix B provides additional detail on the NTG methodology.

Process Evaluation Methodology

The process evaluation focused on program design and delivery, assessing program processes through interviews and surveys with relevant program actors. These included IESO program staff, program delivery vendor staff, assessors and installers,

and participants. For each respondent type, the evaluation team developed a customized interview guide or survey instrument to ensure the responses produced comparable data and allowed for the inference of meaningful conclusions.

Table 3-2 presents the survey methodology, the total population invited to participate in surveys or interviews, the total number of completed surveys or in-depth interviews (IDIs), and the sampling error at the 90% confidence level for each respondent type. Appendix C provides additional detail regarding the process evaluation methodology.

Table 3-2: Process Evaluation Primary Data Sources

Respondent Type	Methodology	Population	Completes (Web)	Completes (Phone)	Completes (Total)	Response Rate	90% CI Error Margin
IESO Program Staff	Phone IDI	3	-	3	3	100%	0%
Program Delivery Vendor Staff	Phone IDI	2	-	2	2	100%	0%
SBP Assessors and Installers	Web Survey	37	12	-	12	32%	N/A*
SBP Participants	Web and Phone Survey	1,441	230	50	280[4]	19%	4.4%

*Error margin not displayed if the respondent count falls below 30 unless a census is achieved.

Non-Energy Benefits Methodology

For PY2023, the SBP evaluation utilized the same NEBs methodology used from the three previous studies (the *PY2022 and PY2021 SBP Evaluation Reports* and the *Non-Energy Benefits Study: Phase II*). These studies assessed NEBs from energy-efficiency projects funded by the IESO over the 2017-2022 period.[5]

[4] The NTG evaluation included more respondents (n=297) than the process evaluation (n=280), as 27 respondents did not fully answer the process evaluation survey questions.
[5] Dunsky. (July 2021). *Non-Energy Benefits: Phase II; Quantified Benefits and Qualitative Insights*. https://www.ieso.ca/-/media/Files/IESO/Document-Library/conservation-reports/Non-Energy-Benefits-Study-Phase-II.ashx

For this evaluation, the team calculated NEBs using two different techniques: the relative scaling approach and the willingness-to-pay approach. These determined the value of NEBs, as realized by program participants that installed program measures. All survey respondents were asked to value all NEBs using both techniques. The team used data collected from these questions to quantify the NEBs. Appendix G provides additional detail regarding the NEB methodology.

Impact Evaluation Results

Participation

During PY2023, 1,919 SBP projects were completed in the province. Compared to the 2021-2024 CDM Framework for SBP's PY2022, this amounts to nearly double the 1,094 projects implemented in PY2022.

The SBP program is delivered in five distinct Delivery Regions: Central, Eastern, Northern, Southwestern, and Toronto. In PY2023, the Northern region contributed the most to the SBP project count, accounting for 32% of all completed projects, followed by the Eastern region at 26%, the Central region at 19%, the Toronto region at 18%, and the Southwestern region at 5%. Figure 4-1 presents the full breakout of projects completed in each geographical region.

Figure 4-1: PY2023 SBP Projects Count by Region

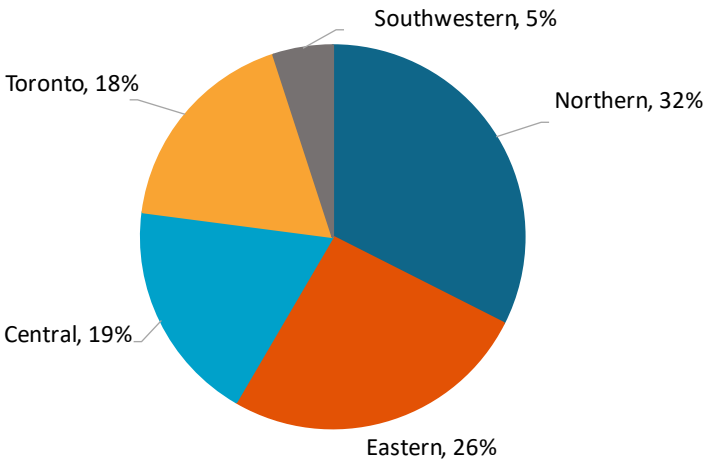


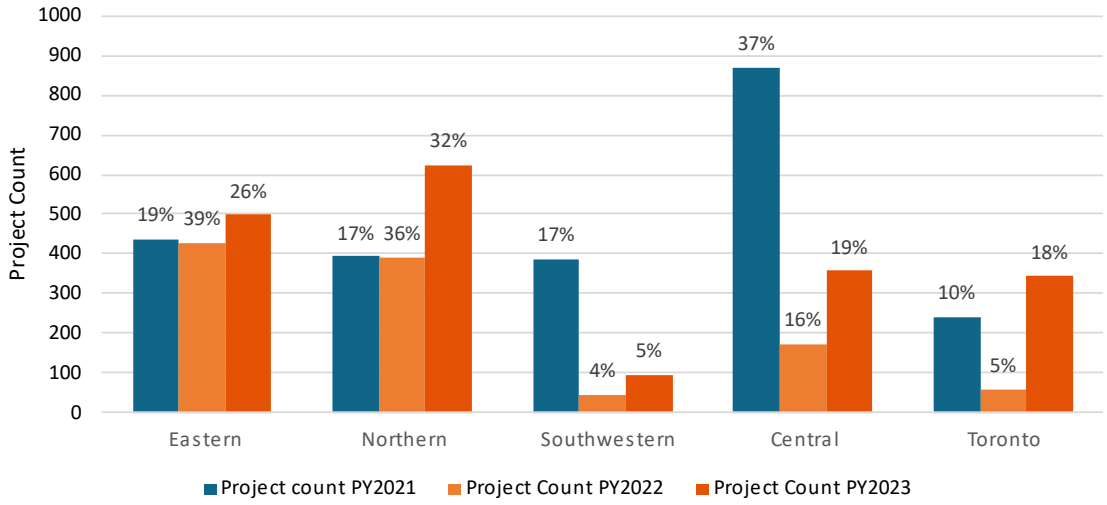
Table 4-1 compares the PY2023 SBP project count to the PY2022 and PY2021 numbers, indicating that PY2023 participation mostly recovered from the large decrease in delivered projects experienced during PY2022.

Table 4-1: PY2023 SBP Delivered Project Counts Compared to Previous Years

Program Year	Project Count
2021	2,325
2022	1,094
2023	1,919

Figure 4-2 compares the PY2023, PY2022, and PY2021 SBP project counts by region and includes each region's percentage contribution to total SBP projects for that program year. The Southwestern, Central, and Toronto regions served as a primary driver in the reduced project count experienced during PY2022 and PY2023. Notably, those regions experienced an unplanned mid-cycle transition to a new implementer during PY2022, which significantly affected program delivery and affected PY2023 project delivery, given delivery to these three regions did not resume until June 2023.

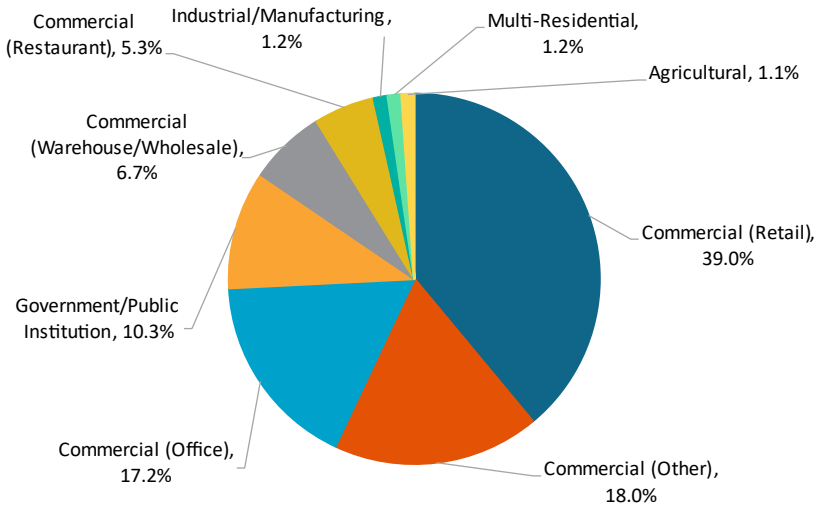
Figure 4-2: PY2023 SBP Projects Compared to PY2021 and PY2022 by Region



The SBP database contained information regarding each completed project's facility type, reporting a total of 41 unique facility types. The team re-categorized each unique entry into one of nine possible facility types. Appendix H provides a full list of facility types reported in the PY2023 SBP program database and their respective re-categorized designation. The retail sector, followed by commercial (other) and commercial (office), contributed the most to the PY2023 SBP program, accounting for

74% of completed projects. For the PY2023 SBP program, Figure 4-3 presents the full project-count distribution by identified facility type.

Figure 4-3: Project Count Percentage by Facility Type



Energy and Demand Savings

Table 4-2 provides the PY2023 SBP program's overall impact savings results. The net verified energy and summer peak demand savings persisting to 2026 were 6,953 MWh and 1,827 kW, respectively. Gross verified savings included interactive effects for applicable lighting measures.

Table 4-2: PY2023 SBP Energy and Summer Peak Demand Savings

Savings Type	Gross Reported Savings	Gross Verified Savings	Net Verified Savings	Net Verified Savings Persisting at 2026
Energy (MWh)	7,223	7,185	6,986	6,953
Summer Peak Demand (kW)	1,927	1,900	1,832	1,827

Table 4-3 provides energy and summer peak demand sample realization rates for lighting measures and non-lighting measures in the PY2023 SBP sample. The program achieved a weighted-average 99.5% energy realization rate and a 98.6% summer peak demand realization rate due to lighting measures contributing 98% of the program's total net-verified savings.

Program realization rates presented in Table 4-3 include interactive effects that occurred for HVAC operation due to lighting retrofits. Appendix A describes the methodology used for calculating interactive effects.

Table 4-3: PY2023 SBP Sample Realization Rates

Measure Type	Energy Realization Rate	Energy RR Relative Precision	Summer Peak Demand Realization Rate	Peak Demand RR Relative Precision
Lighting*	101.7%	9.1%	99.5%	11.6%
Non-Lighting**	51.8%	12.7%	57.6%	18.5%

* Reported precision is at 90% confidence interval.
** Reported precision is at 85% confidence interval.

Figure 4-4 presents the PY2023 SBP's first year net-verified energy savings contribution and completed project count by region. The Northern and Eastern regions accounted for 68% of the program's net-verified energy savings.

Figure 4-4: 2023 SBP First Year Net Verified Energy Saving and Completed Projects by Regions

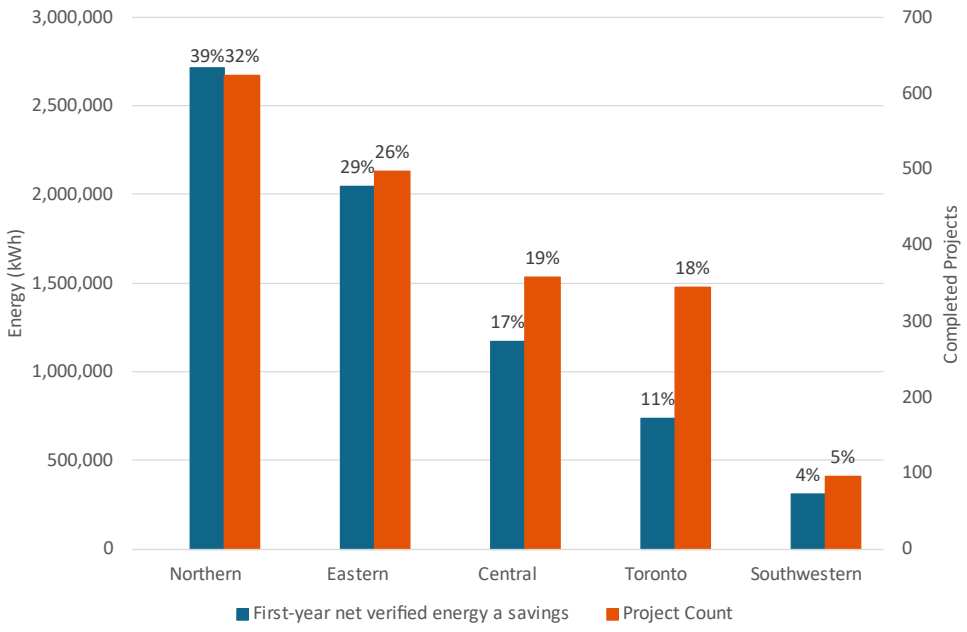


Table 4-4 shows the average achieved first year net verified energy savings per project for each of the five SBP delivery regions. The Northern region achieved the

highest average project size at 4,361 kWh per project, over double the Toronto region average project size of 2,145 kWh, which was the lowest of the regions. Only 5% of Toronto projects exceeded the project cost cap compared to 21% for the overall program (see section 4.3.3). Additionally, the smaller project size in Toronto compared to the overall program was consistent across all facility types with the average project size in Toronto smaller than the program average for all facility types[6] in PY2023.

Table 4-4: Average Project Energy Savings by Regions

Region	Project Count	First Year Net Verified Energy (MWh)	Average Project Size (kWh)
Northern	623	2,717	4,361
Eastern	498	2,047	4,111
Central	358	1,173	3,277
Toronto	344	738	2,145
Southwestern	96	310	3,233
Total	**1,919**	**6,985**	**3,640**

Impact Evaluation Findings

The following sections provide details on impact findings for installed measures, first year net savings, contributions by measure, upgraded facility types, incentives, and program RRs.

SBP Measure Types

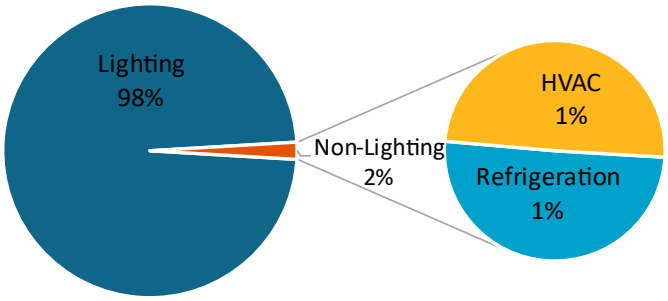
In PY2023, lighting measures produced the majority of the SBP program's net-verified savings persisting to 2026 (98%). Refrigeration and HVAC measures each contributed only 1% of persisting net energy savings. Table 4-5 shows the breakdown of verified energy and summer peak demand savings persisting to 2026 by end-use. Figure 4-5 provides the distribution of net energy savings by technology.

[6] Except for the multi-residential facility type, which only had 1 project completed in Toronto region in PY2023.

Table 4-5: Net Verified Savings by End-Use

End-Use	Net Verified Energy Savings in 2026 (MWh)	Net Verified Summer Peak Demand Savings in 2026 (kW)
Lighting	6,822	1,809
Refrigeration	66	5
HVAC	65	14
Total	**6,953**	**1,827**

Figure 4-5: 2023 SBP Net Energy Savings Contributions by Technology



T8 Linear LEDs and Screw-in LEDs produced primary lighting savings, making up 66% and 11% of total first year net-verified energy savings in 2023, respectively. This trend remains consistent with the PY2022 SBP program, where T8 linear LEDs (60%) and screw-in LED lamps (16%) contributed the most to the PY2022 SBP net-verified energy savings. Non-lighting measures contributed only 2% of the program's net energy savings.

Figure 4-6 shows the full distribution of energy savings by measure type for the 2023 SBP program. Similarly, Figure 4-7 shows T8 Linear LEDs and Screw-in LEDs served as the two main contributors to 2023 SBP's summer peak demand savings, accounting for 67% and 11% of total program net-verified summer peak demand savings, respectively.

Figure 4-6: 2023 SBP Net Energy Savings Contributions by Measure Type

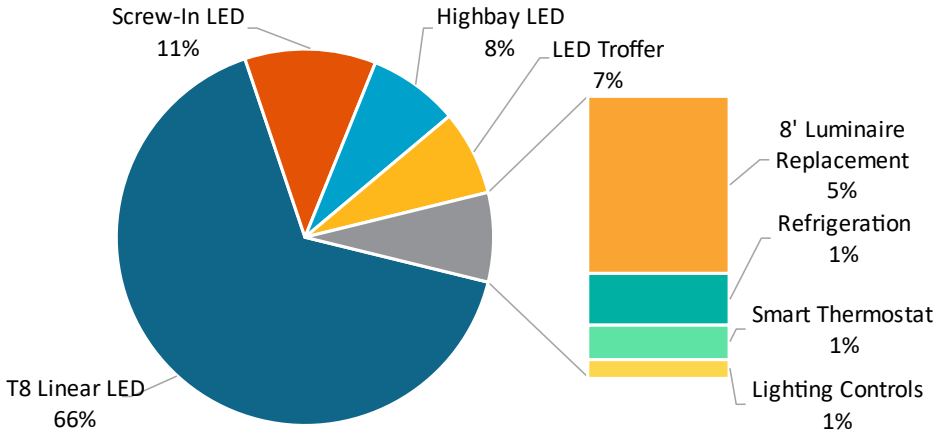
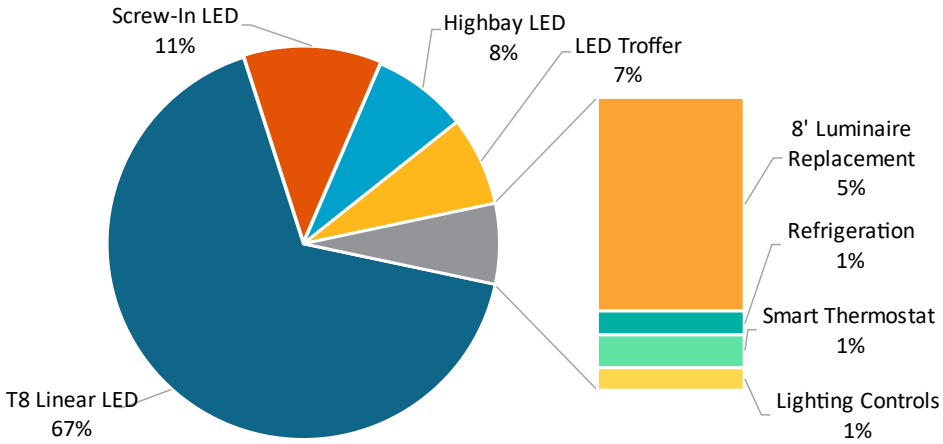


Figure 4-7: 2023 SBP Net Summer Peak Demand Savings by Measure Type*

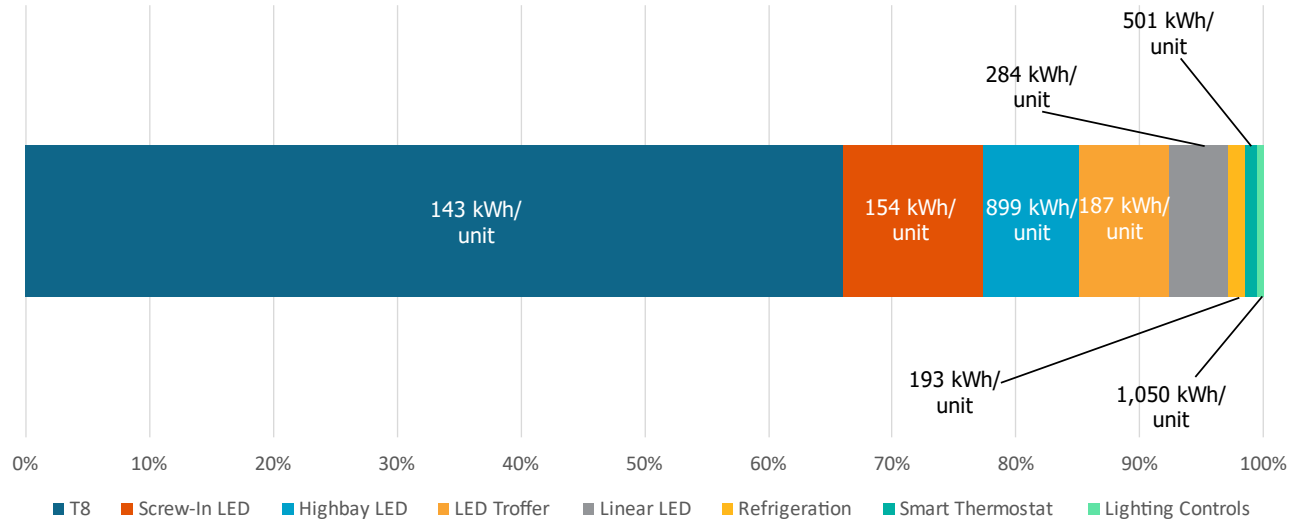


*Does not sum to 100% due to rounding.

Figure 4-8 breaks down program savings per unit measure installed for the 2023 SBP program. T8 installations accounted for 66% of the program's net-verified energy savings, with average savings of 143 kWh per measure; 99% of the net-verified energy savings from T8 installations were from Type B lamps, with the remaining 1% from Type A lamps. The second largest contributor to the program's net-verified energy savings, Screw-in LED installations accounted for 11% of total program net-verified energy savings and achieved 154 kWh per measure installed. Lighting controls achieved the highest energy savings per unit among lighting measures, with net-verified kWh savings of 1,050 per measure.

Refrigeration measures included Coil Cleaning, ECM motors, Night Covers, and Strip Curtains, averaging 193 kWh per measure installed. HVAC measures consisted of a single measure—Smart Thermostats; this averaged 501 kWh per measure installed.

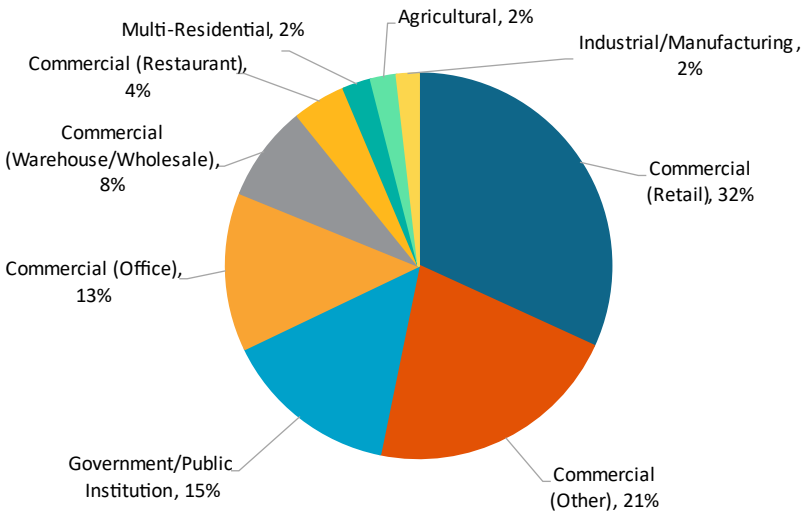
Figure 4-8: 2023 SBP Measure Energy Savings Contribution per Unit



SBP Facility Types

The PY2023 SBP database contained facility types for reported projects, with the commercial-retail sector accounting for 39% of identified projects in 2023, followed by commercial-other (18%), commercial-office (17%), and government/public institutions (10%). Consistent with project count contributions, top contributors to the 2023 SBP program's net verified energy savings included commercial-retail facilities (32%), commercial-other (21%), government/public institutions (15%), and commercial-office (13%), as shown in Figure 4-9. The commercial-other facility category refers to a mix of facility types, such as entertainment/sport, hotel, motel, and other.

Figure 4-9: 2023 SBP Program Net Energy Savings by Facility Type Composition



Incentive Cap

The SBP program's current design provides participants with an opportunity to receive up to $3,000 in free lighting upgrades, plus up to $2,500 in free non-lighting upgrades. The lighting cost cap was increased from $2,000 on November 6, 2023. Participants wishing to install additional qualified equipment above the project cost cap became eligible for additional incentives intended to expand the program's impact and reach.

The evaluation analysis determined that 79% of 2023 SBP participants did not exceed the maximum incentive or implement any measures beyond the cap. This means that 21% of SBP participants paid out-of-pocket to install additional energy-saving measures, a rate lower than the 25% of SBP participants that implemented measures beyond the cap in PY2022. For projects completed during PY2023 that were subject to the $2,000 lighting cost cap, 23% of projects implemented measures beyond the cap. After the cost cap increased to $3,000 in PY2023, 385 projects were implemented; only 12% of those projects implemented measures beyond the increased lighting cap, showing that the increased lighting cap helped participants implement their desired lighting measures without needing to pay additional out-of-pocket funds. The average project size (net-verified, first year energy savings) increased by 21% after the lighting cost cap increased to 4,227 kWh per project, compared to 3,493 kWh prior to the cost cap increase in PY2023. The evaluators considered any project costs exceeding the participant incentive as an out-of-pocket payment. The most popular measures that participants paid for out-of-pocket included T8 installations, pin or screw-base LEDs, LED Troffers, and Linear LEDs.

Realization Rates

Lighting Measures

The standard equations for calculating energy and peak demand savings produced by lighting upgrades depend on three main inputs: hours of use (HOU), fixture wattages, and fixture counts. A difference between verified and reported values across these three main inputs lead to an adjustment in savings through the realization rate. As discussed, lighting measures achieved 98% of program net-verified energy and demand savings. Table 4-6 shows reported and verified savings for lighting measures in PY2023 SBP.

Table 4-6: PY2023 SBP Lighting Savings

Measurement	Gross Reported Savings	Realization Rate	Gross Verified Savings
Energy (MWh)	6,898	101.73%	7,017
Demand (kW)	1,886	99.48%	1,876

Hours of Use

The SBP assessment tool only accepted one schedule for an entire facility. The PY2023 lighting sample (n=71) included 14 instances (nearly 20% of sampled projects) where lighting equipment was installed in multiple spaces with varying schedules or seasonal operational variations. With only one input schedule available for reported energy savings, assessors tended to input the schedule corresponding to the greatest number of hours among the various schedules. This is observed in the lower realization rates of the 14 projects with multiple verified operating schedules (95.0% energy realization rate, 81.2% summer peak demand realization rate) compared to the sampled projects with a single verified operating schedule (103.7% energy realization rate, 104.9% summer peak demand realization rate).

Fixture Wattage

The SBP Eligible Measures List required retrofit wattages to equal or be less than the stated required measure wattage. In PY2023, the reported retrofit wattage was always the maximum wattage allowed for that eligible measure. For example, over 55% of reported PY2023 SBP energy savings derived from Type B LED Tube Retrofits, which require LED lamps of 14W or less. Reported lamp wattages were always 14W, but post-retrofit photos collected by delivery vendors usually verified these as 12W to 13W lamps. If the SBP assessment tool would allow actual lamp wattages instead of maximum allowable lamp wattages to calculate measure savings, more accurate

savings would result. Table 4-7 details the influence of using actual verified fixture/lamp wattages versus deemed values in the PY2023 SBP sample.

Table 4-7: Significance of Wattage Variance on 2023 SBP Sample

Retrofit Wattage Type	Verified Energy Savings (MWh)	Energy Realization Rate	Verified Demand Savings (kW)	Demand Realization Rate
Actual Verified	206	101.7%	55.08	99.5%
Deemed	196	96.8%	52.63	95.0%

Interactive Effects

Reported savings achieved through the SBP did not include interactive effects observed for HVAC equipment operations through the installation of more-efficient lighting fixtures. Verified savings were calculated with and without these interactive effects. Table 4-8 details the results of differing calculation methodologies. Verified energy savings presented elsewhere in this report include interactive effects.

Table 4-8: Significance of Interactive Effects on 2023 SBP Energy Savings

Interactive Effects	Reported Energy Savings (MWh)	Energy Realization Rate	Gross Verified Energy Savings (MWh)	Additional Interactive Savings (MWh)	Gas Heating Penalty (MMBtu)
Not Included	7,223	96.6%	6,980	-	-
Included	7,223	99.5%	7,185	205	-10,304

Summer Peak Demand

The PY2023 SBP achieved an overall summer peak demand realization rate of 98.6% across all lighting and non-lighting measures. The summer peak demand realization rate was very close to 100%, indicating that measure assumptions are accurately estimating project demand impacts. The decrease in the summer peak demand realization rate compared to the PY2021 (195.6%) and PY2022 (175.8%) evaluations mainly resulted from IESO updating the deemed Coincidence Factor (CF), used in conjunction with reported energy savings to calculate reported peak demand savings.

During the PY2021 and PY2022 SBP the deemed CF was 0.0001425 for all lighting measures (except LED exit signs, which used a factor of 0.0001142), which the evaluation team determined to be conservative and underestimated summer peak demand savings. In PY2023, SBP's reported demand savings used an updated0.0002734 CF, based on recommendations from the PY2022 evaluation.

In PY2023, the updated 0.0002734 CF resulted in more accurately reported summer peak demand savings. Additionally, reported demand savings did not include interactive effects, while verified summer peak demand savings did. The implemented 0.0002734 CF was calculated to include the summer peak demand impacts of interactive effects. Table 4-9 presents verified summer peak demand savings for lighting measures with and without these interactive effects.

Table 4-9: Significance of Interactive Effects on 2023 SBP Summer Peak Demand Savings

Interactive Effects	Reported Demand Savings (kW)	Summer Peak Demand Realization Rate	Gross Verified Summer Peak Demand Savings (kW)	Additional Interactive Savings (kW)
Not Included	1,886	89.6%	1,704	-
Included	1,886	98.6%	1,876	172

Non-Lighting Measures

Of 1,919 projects implemented in PY2023, 87 included lighting and non-lighting measures, and an additional 63 consisted only of non-lighting measures. Five non-lighting measure categories were implemented in PY2023: ECM motors, strip curtains, coil cleaning, night covers, and smart thermostats.

Table 4-10 presents energy and summer peak demand realization rates for sampled non-lighting measures in PY2023. Due to the limited sample size of non-lighting projects, the PY2023 evaluation did not target achieving realization rates specific to the non-lighting track at 90% confidence and 10% precision. Instead, all projects were evaluated together as a group without additional sample stratification based on the measure track. However, the evaluators exceeded the target sample of non-lighting projects by evaluating 23 non-lighting projects, achieving non-lighting realization rates at 85% confidence, as presented in Table 4-10.

Table 4-10: Non-Lighting Energy and Summer Peak Demand Realization Rates for 2023 SBP

Measurement	Reported Savings	Realization Rate	Gross Verified First Year Savings
Energy (kWh)	324,795	51.8%	168,082
Summer Peak Demand (kW)	41.4	57.6%	23.9

A breakdown follows of key inputs for calculating energy and summer peak demand savings produced by each measure category. The difference between verified and reported values across these inputs lead to adjustments in savings through the RR. While the non-lighting projects sample from PY2023 was limited, the evaluation team provides observations of factors influencing RRs.

Assessed savings for ECM motors depended on five main inputs: ECM input power, baseline motor types, cooler or freezer installations, walk-in or reach-in unit installations, and condenser fan or evaporator fan installation. For an ECM motor installed on a condenser fan, an additional consideration arises from the facility's geographic location, due to the weather-dependence of equipment operation.

Main factors influencing the ECM motors' RR included the baseline motor type (shaded pole [SP] or permanent split capacitor [PSC]) and installations in walk-in or reach-in units. Baseline motor types could not be verified with information collected by delivery vendors, and typically could not be verified by participants during site visits and desk reviews, resulting in an unknown baseline motor type.

When the baseline motor type remained unknown, the evaluation team assumed an average input wattage for SP and PSC motor types. Installation in walk-in or reach-in units could be verified by participants during site visits and desk reviews. In PY2023, a significant portion of these installations were on reach-in units or even small countertop units, which typically have lower energy and demand impacts than walk-in units. In PY2023, multiple evaluated projects reported improperly installed ECM retrofits, resulting in broken coolers/freezers that were no longer used.

Assessed savings for strip curtains depended on four main inputs: building type, installation in a cooler or freezer, the curtain area, and whether curtains previously existed. In fact, the curtain area proved to be the main factor influencing RRs for strip curtains. Though delivery vendors did not capture the curtain area, participants could verify this during site visits and desk reviews. Assessed savings for the night cover measure relied on HOU per day, case temperature, and length of covers installed.

Evaluated savings were lower than reported mainly due to quantity discrepancies between reported units installed versus those verified as well as high case temperatures (coolers instead of freezers), resulting in lower verified savings. Assessed savings for coil cleaning depended on four main inputs: the geographic location of the facility, whether it applied to a display case or a walk-in unit, capacity of the condensing unit, and the cooling efficiency of the system. Installation in walk-in or reach-in units proved a main factor influencing RRs for coil cleaning. In PY2023, it was observed that a significant portion of this measure was implemented on reach-in units, which typically have lower energy and demand impacts than walk-in units.

Assessed savings for smart thermostats depended on five main inputs: facility type, facility geographic location, baseline thermostat type, cooling capacity controlled, cooling efficiency, and heating type. For an electric heating type, additional inputs included the heating capacity and the heating system efficiency. The main factors influencing the RR for smart thermostats included the baseline thermostat type and the cooling capacity controlled. While delivery vendors collected baseline thermostat types, reported savings for smart thermostat measure were the same as those for traditional programmable thermostat baselines and non-programmable thermostat baselines. Of 129 smart thermostats implemented in PY2023, the reported baseline thermostat type was 26 non-programmable thermostats, 54 programmable thermostats, and 49 smart thermostats.

Verified smart thermostat savings, however, were higher per unit for non-programmable thermostat baselines compared to traditional programmable thermostat baselines. The reported baseline thermostat type of smart thermostats may have been an error as none of the 15 evaluated projects with smart thermostat measures were smart thermostat baseline types. The verified baseline of these 15 smart thermostat projects were 14 traditional programmable and one manual thermostat. Though the delivery vendor did not collect the cooling capacity controlled, the evaluation team estimated this based on information available from participants and on-site verification activities.

Other variables that resulted in reduced verified savings included two thermostats installed even though controlling the same conditioned space, but full savings were reported for both units. Additionally, evaluators found programmable thermostats installed in a facility without Wi-Fi (i.e., no savings compared to traditional programmable thermostat), programmable thermostats installed but not used, and programmable thermostats installed in a facility with gas heating and no cooling.

Net-to-Gross

Table 4-11 presents results for the PY2023 SBP NTG evaluation. The evaluation targeted and achieved 90% confidence and 10% precision levels when calculating the NTG ratio for the program. Appendix D.2 provides additional analyses performed to assist in the interpretation of these values.

Table 4-11: SBP Program NTG Results

Unique Participants	NTG Responses	Savings Weighted Free-Ridership	SO: Energy	SO: Summer Demand	Weighted NTG: Energy	Weighted NTG: Summer Demand	Energy NTG Precision at 90% Confidence
1,441	297	7.6%	4.8%	4.0%	97.2%	96.4%	±2.7%

Participant feedback indicates low free-ridership levels at 7.6%, indicating the program mostly reached participants who would not have implemented energy-efficiency upgrades without the program. Two-thirds of participants (66%) were not planning on upgrading their equipment before learning about the program.

Of the nearly one-third of participants (32%) already planning on upgrading their equipment, nearly one-tenth (9%) would have cancelled the installation altogether, two-fifths (40%) would have waited at least one year without the program, and nearly one-third (31%) would have installed less expensive or less efficient equipment. Over one-tenth (11%) would have installed the same equipment and paid the full cost themselves, which is indicative of a high free-ridership level for these respondents. Program participation resulted in moderate SO at 4.8%, with over one-tenth (11%) of respondents installing equipment with attributable SO savings.

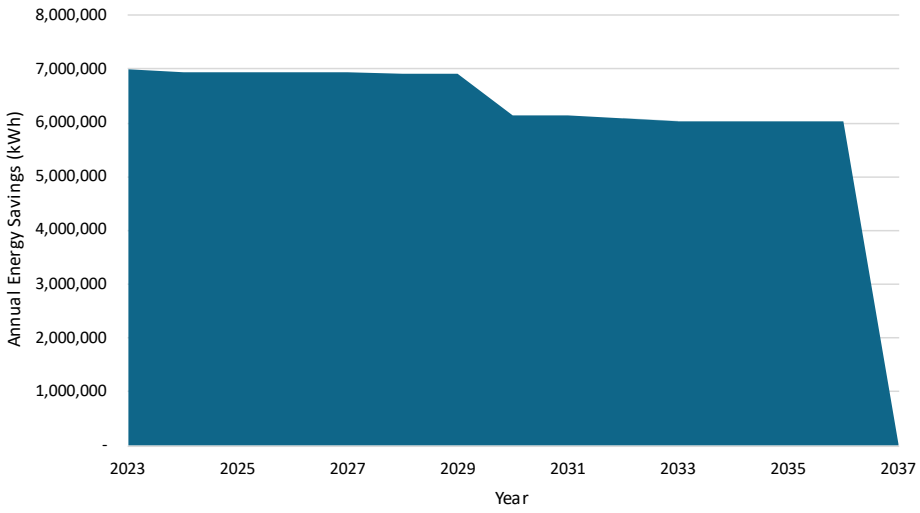
Savings Persistence

The PY2023 SBP program is expected to achieve 91,119 MWh of lifetime net-verified energy savings, based on installed measures and their respective effective useful lives (EULs). Nearly all (99.5%) of net savings will persist until 2026. SBP's lifetime savings depend mainly on EULs of the program's measures, which describe how long savings associated with the measure will persist. Persisting annual savings begin to reduce after the first program year due to the Condenser Coil Cleaning measures reaching the end of their one-year EUL. The Condenser Coil Cleaning measure is the only measure with savings that do not persist until 2026.

The IESO's list of eligible SBP lighting measures provides an estimated rated lifespan in hours for each measure, with each measure's EUL calculated using rated life and assumed HOUs. For example, the average rated life of a Linear LED Tube is 50,000 hours. Its assumed average HOU is 3,700 hours annually, leading to a calculated EUL of 13.5 years (50,000 hours/3,700 hours). The IESO's list of eligible refrigeration and HVAC measures provides an estimated EUL in years for each measure.

Figure 4-11 illustrates annual, net-verified energy savings for the 2023 SBP program over time. Coil cleaning offered the shortest EUL among the PY2023 SBP measures at one year, and over 86% of first year net-verified savings had a EUL of 14 years, persisting until 2036.

Figure 4-10: Net Verified Energy Savings Over Time



Cost-Effectiveness

Cost Effectiveness (CE) for the SBP was conducted using IESO's CE Tool V9.2. Table 4-12 presents the CE results. The SBP achieved a Program Administrator Cost (PAC) ratio of 1.27, exceeding the 1.00 target threshold (designed to determine if a program proves cost-effective).

Table 4-12: SBP Cost-Effectiveness Results

PAC Test	Result
PAC Costs ($)	$3,477,723
PAC Benefits ($)	$4,418,013
PAC Net Benefits ($)	$940,290
PAC Net Benefit (Ratio)	1.22
Levelized Unit Energy Cost (LUEC)	**Result**
$/kWh	$0.05
$/kW	$205.77

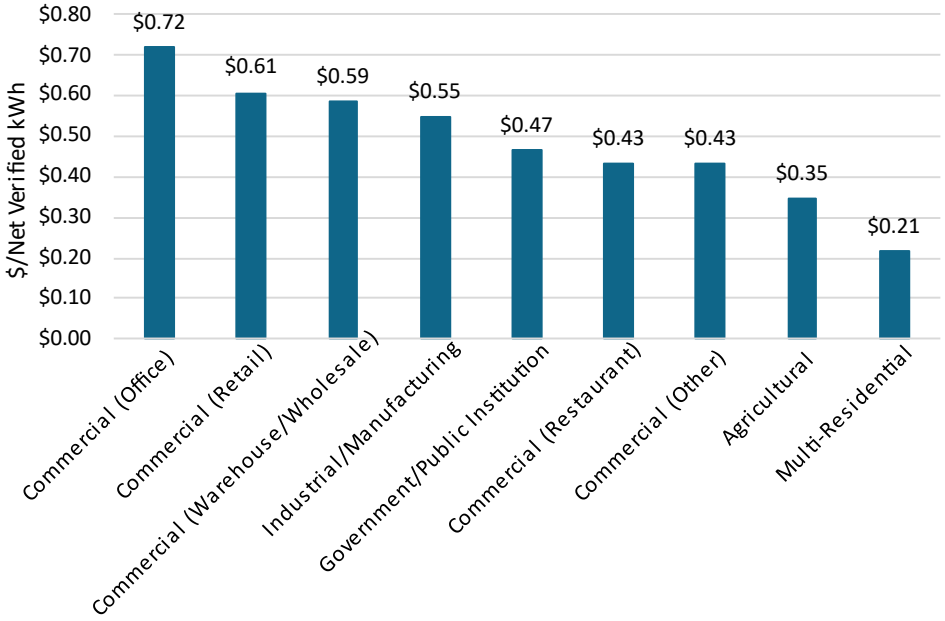
The PY2023 SBP CE results were similar to those from the PY2021 and PY2022 evaluation, when the SBP achieved PAC ratios of 1.19 and 1.17, respectively. The levelized unit energy cost in PY2021 and PY2022 were $0.04 and $0.05 per kWh, respectively, and $139.75 and $208.54 per kW, respectively. The levelized unit energy cost for lighting measures was $0.05 per kWh and $201.38 per kW compared to the levelized unit energy cost of non-lighting measures which was much higher at $0.11 per kWh and $686.38 per kW.

In PY2023, Type B LEDs (2 lamp) 14W nominal wattage and Type B LEDs (4 lamp) 14W nominal wattage contributed the greatest PAC net benefits to SBP, at $500,332 and $374,158, respectively. These two measures produced high PAC ratios of 1.33 and 1.65, respectively, and contributed 61% of total SBP net verified energy and demand savings.

Inversely, the two measures that negatively impacted the SBP's net benefits the most in PY2023—the 8' Linear Ambient Luminaire <=4,500 lumens, and the 2' x 2' Integral LED Troffer—produced PAC net benefits of -$86,062 and -$48,539, respectively. These two measures also produced low PAC ratios of 0.68 and 0.50, respectively. The measures contributed only 5.1% of total SBP net-verified energy and demand savings, but they accounted for 11% of total project costs.

The program's average implementation cost per kWh of first year net verified energy savings was $0.54 and as shown in Figure 4-11 ranged from $0.21 to $0.72, depending on facility type. This cost, which accounted for total project costs charged by the delivery agent, including the IESO-paid incentive and customer contribution (if any), proved 26% higher than the average of $0.43 cost per kWh of net-verified energy savings for SBP in PY2022.

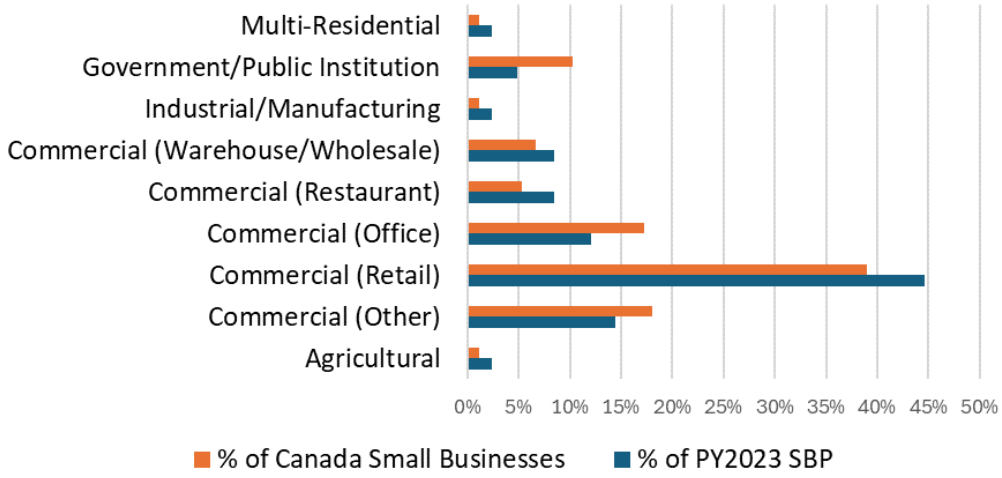
Figure 4-11: 2023 SBP Facilities Implementation Cost per kWh



This wide cost variation mainly arose from different measure types typically suitable and implemented at each facility. Higher costs resulted from installing more Linear LED Tubes, while lower costs were attributed to installing a higher quantity of screw-in fixtures. For example, commercial (office), with an average cost of $0.72/kWh, had 77% of their energy savings produced by Linear T8 LED Tubes retrofits and LED Troffers. In contrast, multi-residential, with an average cost of $0.21/kWh, had 40% of energy savings achieved from screw-in lamp replacements, such as decorative bulb replacements and reflector flood/spot lamp replacements.

To maintain a program PAC above 1.0, facility types with average $/kWh saved below the program average of $0.54 per kWh should be targeted for increased participation. This includes Government/Public Institutions, Commercial (Restaurant), Commercial (Other), Agricultural, and Multi-Residential. Figure 4-12 compares the PY2023 SBP participation by Facility type to the count of small businesses by sector in Canda to highlight which facility types were over or underrepresented in SBP during PY2023 compared to the Canadian small business demographics.

Figure 4-12: 2023 SBP Participation by Facility Type Compared to Canadian Small Business Demographics



As highlighted in **Finding 3,** Agricultural, Commercial (Restaurant), and Government/Public Institution are three facility types that are both underrepresented business types in PY2023 SBP participation and achieved lower than average cost per kWh saved.

Process Evaluation Results

The evaluation team performed a process evaluation to better understand SBP's design and delivery. The effort included interviews with the IESO program and delivery vendor staff as well as surveys with assessors, installers, and participants to gather primary data to support the evaluation. The following discussion shows counts rather than percentages if a question received fewer than 20 respondents. In such cases, results should be considered directional, given the small number of respondents.

IESO Program Staff and Delivery Vendor Perspectives

Key Findings

Key findings from IESO staff and delivery vendor staff IDIs include the following:

- SBP experienced a substantial amount of change in PY2023 and was still recovering from one of its delivery vendors, responsible for over 50% of the program's volume, going into receivership in November 2022.
- While SBP's project volumes were lower than expected in PY2023, IESO staff members and remaining program delivery vendors agreed that they quickly pivoted to address delivery service challenges, eventually seeing project volumes increase in the latter portion of the year.
- SBP raised its lighting project cost incentive cap from $2,000 to $3,000 in November 2023, while the non-lighting project cost cap stayed at $2,500. Inflation, rising equipment costs, and the fact that many lighting projects were reaching the $2,000 cap contributed to raising the lighting cap.
- Neither delivery vendor believed there is a need to increase the eligibility limitation requiring businesses have an operating capacity of 50 or fewer employees. IESO staff showed more interest in exploring this possibility.[7]
- Lack of field staff, particularly assessors, posed a challenge for SBP in PY2023. Delivery vendors suggested that issues such as uncertainty about the assessors' contract lengths and an unwillingness or inability to perform assessments in the more remote areas of the province may have contributed to fewer individuals willing to take these jobs.

[7] The wording that the team used to ask about this eligibility requirement incorrectly specified that businesses are limited to 50 or fewer employees. SBP requires businesses have an operating capacity of 50 or fewer employees. The team believes that IESO staff and delivery vendors understood the intention of the question.

- Program opportunities exist in addressing barriers identified by interviewees, especially those related to workforce shortages and performing additional marketing by IESO to raise awareness and affirm the program's legitimacy.
- The interviewees also suggested several lighting and non-lighting measures to consider for inclusion in the program, including a wider variety of tubular LED lamp lengths, A-19 LEDs, exterior lighting, demand control kitchen ventilation (DCKV) systems, and improving assessor and installer expertise related to the existing lighting control offering.

Design and Delivery

The overall goal of SBP in PY2023 was to meet the targets set in the CDM plan. The main challenge to this goal was that one of the SBP delivery vendors, responsible for over 50% of the program volume, went into receivership early in November 2022. This company also operated the province-wide call centre which served as the main contact for interested customers.

In the short term, SBP focused on restoring the affected delivery services. According to IESO staff and delivery vendors, the program achieved these objectives by the middle of the year, with other existing delivery vendors taking on responsibility for program delivery in regions previously served by the vendor in receivership. Additionally, a province-wide communication center was established to engage customers, administered by one of the remaining delivery vendors. Following restoration of delivery services, project volumes began to increase from month to month.

SBP raised its lighting project cost cap from $2,000 to $3,000 in November 2023. IESO staff members noted that the cap was raised in response to inflation as well as to feedback from delivery vendors that measure costs were often financially infeasible. IESO staff also estimated that approximately three-fourths of lighting projects reached or exceeded the previous cap of $2,000, which had led to reductions in scope for some customers. Raising the lighting cap sought to help address these challenges, though delivery vendors noted that numerous customers have already reached the new $3,000 lighting cap. Delivery vendors reported that projects were more likely to reach or exceed the cap in the northern part of the province where facilities are larger.

One delivery vendor reported that once the cap was raised in PY2023, they completed additional lighting work for customers who had participated in previous years and had been subject to the $2,000 cap at the time. This interviewee also noted that they encouraged numerous other customers to complete additional work

beyond the cap after discussing the positive return on investment. The non-lighting project cost cap stayed at $2,500 as there were no significant signs of missed savings opportunities due to this cap. One delivery vendor noted that night covers and thermostats were the only non-lighting equipment that sometimes hit the cap.

IESO staff reported that considering all the factors affecting SBP in PY2023—inflation, remaining pandemic issues (e.g., supply shortages), and a delivery vendor going into receivership and the related impacts on participation—the program generally met expectations and that IESO staff worked with delivery vendors to address issues as they arose. Delivery vendors generally concurred and appreciated the support provided by IESO in helping them ramp up delivery in new regions.

Customer Engagement

Delivery vendors were responsible for lead generation; both found that canvassing was the most effective method to accomplish this. One delivery vendor reached out to local chambers of commerce to promote the program to small businesses in their area. Later in 2023, IESO more frequently included SBP in active promotions and campaigns on social media platforms and through its newsletters. Both delivery vendors appreciated the materials IESO created (e.g., brochures which were quickly updated when the incentive cap increased). One delivery vendor considered case studies and testimonials that the IESO posted on its website to be effective marketing tools.

A barrier to customer engagement, noted by both IESO staff and one delivery vendor, involved customer concerns regarding the program not being legitimate or that SBP "sounds too good to be true." IESO staff and delivery vendors noted that it was critical to provide customers with a clear description of what SBP provides. There may be overlap among different programs provided by the IESO, and customers may expect that they have greater freedom on ways to use program funding.

Both delivery vendors did not believe a need existed to change the eligibility limitation that requires businesses to have an operating capacity of 50 or fewer employees, though IESO staff expressed more interest in considering this. One IESO staff member noted that the limit originally meant to serve as a proxy for energy consumption due to unavailability of utility data. IESO staff members noted that, with pandemic-related changes (e.g., more staff working from home, businesses operating on tighter schedules), companies with more than 50 employees still could have comparatively low energy consumption.

Assessor and Installer Engagement

The delivery vendors and IESO staff considered the lack of field staff to be a major challenge in PY2023. One delivery vendor said they had little difficulty identifying installers to work with, but not enough assessors were available to go into the field. The lack of assessors produced greater impacts in the more remote areas of the northern province as some could not or did not want to drive that far (though this issue occurred in other areas of the province as well). Some staffing issues in PY2023 resulted from delivery vendors needing to quickly hire assessors to work in areas covered by the delivery vendor that had passed into receivership. The delivery vendors pointed out that uncertainty existed regarding the assessors' contract lengths, given the program framework's relatively short time period, making some potential hires reluctant to sign on for the jobs.

Barriers and Opportunities

As noted, SBP's project volume was lower than expected in PY2023 due to the delivery vendor going into receivership, smaller per project savings, and staffing issues. Another barrier noted by a delivery vendor involved continued supply shortages of equipment required for SBP projects. Some fraudulent calls occurred during PY2023, making some customers wary of Save on Energy programs. A delivery vendor noted that the IESO promptly addressed this situation, but it created some mistrust in SBP.

Program opportunities lie in addressing barriers identified by interviewees, especially those related to workforce shortages. This may include offering longer-term contracts, allowing virtual audits for some customers when assessors are unavailable, or partnering with colleges/universities. Both delivery vendors recommended increasing the frequency and amount of IESO's marketing as they believed this is important for raising awareness about the program, clarifying how it differs from other Save On Energy offerings, and increasing trust in the program's legitimacy. Delivery vendors also would appreciate faster turnaround times from IESO on marketing requests.

IESO staff members said they anticipated providing more case studies in the future and noted that, by featuring more participating businesses that received non-lighting measures, they may be able to generate additional awareness around non-lighting offerings. One delivery vendor recommended more directly targeting outreach towards small grocery stores to ensure they are aware of the existing non-lighting offerings.

An IESO staff member said it may be beneficial to consider collaboration opportunities between SBP and gas utilities. Additionally, IESO staff and delivery vendors suggested further leveraging relationships with other organizations, such as chambers of commerce or trade groups associated with key small business sectors as areas for future opportunities. IESO staff members stressed the importance of continuing to improve consistency in the customer journey (e.g., ensuring that delivery vendors follow up with all customers as quickly as possible once customers indicate interest, ensuring that assessors or installers contact customers if they need to reschedule or are delayed).

Both delivery vendors and IESO staff believed opportunities still exist for lighting measures under SBP, though the savings per project were diminishing. Developing a better understanding of small business sector-level saturation and related remaining program potential were mentioned by an IESO staff member as an opportunity of interest.

IESO staff members and delivery vendors suggested several lighting and non-lighting measures that SBP could consider. Additional lighting measures mentioned include a wider variety of lengths of tubular LED lamps, A-19 LED bulbs (since assessors frequently came across fluorescent A19s, per one delivery vendor), and exterior lighting. Offering DCKV systems through SBP may present opportunities for restaurants if introduced. To make DCKVs cost-effective through SBP, one IESO staff member suggested considering a co-pay model. Finally, an IESO staff member said they heard feedback from stakeholders that opportunities may exist to improve assessor and installer expertise related to the existing lighting control offering (e.g., ensuring proper installation, accurate savings calculations).

Assessor and Installer Perspectives

The following subsections highlight responses from the assessor and installer survey. Appendix D.1 provides additional results.

Key Findings

Key findings from assessors' and installers' responses included the following:

- Respondents indicated that customers most commonly enrolled in the program through program delivery vendor staff generating leads (cited by five respondents) or respondents marketing the program during audits or other in-person customer contacts (five respondents).

- Respondents most often reported customers' lack of awareness regarding the program as preventing participation (cited by eight out of twelve respondents).
- The eligibility limitation that requires businesses to have an operating capacity of 50 or fewer employees to qualify was not a commonly cited barrier (mentioned by two respondents).[8]
- Over one-half (seven respondents) indicated their customers were very interested in non-lighting upgrades offered by SBP, while under one-half (five respondents) indicated their customers were not very interested in these.
- On average, respondents assigned an overall rating of 4.6 on a scale from one to five, where one indicates "no further opportunity exists" and five indicates "a great amount of opportunity still exists" for SBP to generate new participants interested in installing lighting upgrades.
- On average, respondents assigned an overall program satisfaction rating of 4.5 on a scale from one to five, where one indicated "not satisfied at all" and five indicates "extremely satisfied." Respondents were most satisfied with their interactions with program representatives from the delivery vendor (4.6 rating) and least satisfied with program marketing and outreach (3.1 rating).
- The top program improvement recommendation (and the only one mentioned more than once) was to increase program advertising (six respondents).
- Recommendations for additional equipment to consider most commonly included exterior lighting and T5 replacements (three respondents each).
- Recommendations for business sectors to target included warehousing (nine respondents), grocery (eight respondents), and industrial (eight respondents).

Training and Education

When asked what form of training or education respondents received in 2023 related to the program, over one-half (seven respondents) reported receiving training and education through one-on-one, in-person instruction from the program delivery vendor. Other training sources included receiving training through inquiry responses from the program delivery vendor or the IESO (four respondents), through a webinar or other online instruction (four respondents), or through one-on-one, in-person instruction from IESO staff (two respondents). Table D-5 in Appendix D.1 provides a full list of training and education types.

The ten respondents who indicated that they received program training were asked which topics the training addressed. Eight respondents received information on

[8] The wording that the team used to ask about this eligibility requirement incorrectly specified that businesses are limited to 50 or fewer employees. SBP requires businesses have an operating capacity of 50 or fewer employees. The team believes that assessors and installers understood the intention of the question.

program rules, and seven respondents received information on program offerings, installation procedures and practices, and/or the application process. Table D-6 in Appendix D.1 provides a full list of training and education topics covered. When asked which additional training or education topics would be helpful in supporting their future work, respondents most often suggested marketing and outreach techniques to better promote the program to customers (five respondents). Table D-7 in Appendix D.1 provides a full list of recommended training and education topics. Finally, all twelve respondents indicated that they had proper materials and tools to perform assessments and/or installations for SBP.

Customer Participation

Respondents most commonly reported that their customers participated in SBP due to program delivery vendors generating leads for respondents (five respondents) or respondents marketing the program during audits or other in-person customer contacts (five respondents). Table D-8 in Appendix D.1 summarizes typical ways that customers came to participate in the program.

When respondents were asked which barriers prevented customers from program participation, eight out of twelve respondents reported that customers were unaware of the program. The second most common barrier was that some customers are concerned that the program is not legitimate (three respondents). One respondent reported, "The program is good, but the level of awareness amongst businesses owners is relatively low." The most common suggestion for overcoming these barriers was increased program advertising (eight respondents). Table D-9 and Table D-10 in Appendix 1 provide full lists of participation barriers and suggestions for overcoming these.

Only two respondents indicated that they turned away prospective participants because of the eligibility limitation that requires businesses to have an operating capacity of 50 or fewer employees to qualify. Table D-11 in Appendix 1 shows the number of customers these respondents reported turning away.

Respondents were asked to rate how interested their customers were in learning that SBP offered energy-efficient equipment upgrades other than lighting. Answering on a scale of one to five, where one indicates "not at all interested" and five indicates "extremely interested," produced an average rating of 3.5, indicating moderate interest. Notably, the distribution of respondents' ratings (which can be found in Figure D-1 in Appendix D.1) has two peaks, meaning one group of (seven) respondents had a very interested customer base (rating of 4 or 5) and the other group of (four) respondents had a rather uninterested customer base (rating of 2).

Two respondents shared their perspective on why customers were not as interested in the non-lighting energy-efficient equipment upgrades. One respondent suggested it was due to a lack of information from assessors. The other respondent indicated it was because the non-lighting equipment was not compatible with equipment at customers' businesses. Respondents' suggestions for increasing uptake of non-lighting equipment included more marketing (three respondents) and covering all thermostat costs (two respondents). Specifically, it was mentioned that sometimes the smart thermostat upgrades require new wiring and changes to HVAC systems that are not covered by the program, such as thermostat C-wires. Table D-12 in Appendix D.1 contains a full list of suggestions to increase uptake of non-lighting upgrades.

Respondents were asked to rate how much opportunity they believe exists for SBP to generate new participants interested in installing energy-efficient lighting upgrades. Answering on a scale of one to five, where one indicates "no further opportunity exists" and five indicates "a great amount of opportunity still exists," produced an average rating of 4.6, indicating a substantial amount of opportunity still exists. The distribution of respondents' ratings can be found in Table D-13 in Appendix D.1.

Program Satisfaction

Respondents provided feedback on their satisfaction levels with various program aspects, rating each aspect on a scale from one to five, where one indicates "not satisfied at all satisfied" and five indicates "completely satisfied." As shown in Table 8-15 in Appendix D.1, respondents were very satisfied with the program, assigning it an average satisfaction rating of 4.5. When rating specific program aspects, respondents assigned the highest average satisfaction ratings to interactions with program representatives from the delivery vendor (4.6), values that program-covered equipment provided to customers (4.5), and program application process and forms (4.5). On average, respondents assigned the lowest satisfaction rating to program marketing and outreach (3.1).

Program Improvement Recommendations

Respondents were asked to recommend areas for program improvements. The top recommendation (and the only one mentioned by more than one respondent) was to increase marketing (six respondents). Respondents were asked to recommend additional equipment or models for future inclusion in the program. The most frequently recommended equipment types (mentioned by three respondents each) were exterior lighting and T5 replacements. The recommended upgrades that participants frequently did not agree to install included fan motors (two respondents) and thermostats (two respondents). Table D-17 and Table D-18 in Appendix D.1 provide full lists of recommended program improvements and equipment, and Table

D-18 provides a full list of recommended upgrades that customers frequently did not agree to install.

Respondents were asked which small business sectors SBP should consider targeting more directly. Nine out of twelve respondents recommended warehousing, and eight respondents each recommended the grocery and industrial sectors. Table D-19 in Appendix D.1 provides a full list of sectors respondents recommended targeting. Figure D-2 in Appendix D.1 displays the equipment types that respondents thought would be of the most interest to each sector they identified.

Participant Perspectives

The following subsections highlight feedback received from the participant survey, with additional results provided in Appendix D.3.

Key Findings

Key findings from participants' responses included the following:

- Only one-fourth (25%) of participants who installed lighting-only equipment knew that the program offered other non-lighting equipment upgrades. This presents an opportunity to expand marketing and awareness efforts to promote non-lighting program offerings.
- The majority of survey respondents offered no suggestions for improving the initial site assessment (70%) or installer visits (75%), suggesting the program largely met these customers' needs.
- Those offering suggestions for improving site assessments or installer visits most commonly cited providing more flexibility and communication in scheduling visits, reducing the time required to complete the visits, improving assessors' data collection accuracy, and improving Save On Energy representatives' professionalism.
- Nearly four-fifths (79%) of respondents reported installing all energy-efficient equipment upgrades recommended during the initial site assessment.
- HVAC and water heating (34%), a larger variety of lighting options (22%), and windows and doors (9%) were mentioned most frequently as additional equipment to consider for inclusion in future program years.
- Participants suggested improving marketing and promotion (33%), improving communications with participants at every stage of the project (26%), and including more equipment through the program beyond lighting (13%).

- Nearly one-fourth (22%) of respondents reported having to cut back on the size, scope, or efficiency of their equipment upgrades due to reaching the incentive cap.
- Over two-thirds of respondents (69%) said they would have installed additional lighting when asked which energy-efficient equipment upgrades they would have been interested in had there not been an incentive cap.

Program Awareness

Participants learned about the program primarily through the Save On Energy representative who spoke with them at their business (30%), through a colleague or competitor (13%), or previous Save On Energy program participation (13%). Participants also frequently learned of the program through a contractor or equipment vendor (10%), a Save on Energy representative who left informational material at their business (10%), and the IESO program website (9%). Figure D-14 in Appendix D.3 provides a full list of the ways that participants heard about the program.

Participants who only installed lighting equipment (86% of all survey respondents) indicated whether they knew the program offered other energy-efficiency equipment upgrades in addition to lighting. Over two-thirds (69%) were not aware of non-lighting options, while one-fourth (25%) were aware, and the remainder did not know if they were aware or declined to respond (5%). This suggests an opportunity exists to expand the program's marketing and awareness efforts to customers regarding equipment upgrades beyond lighting.

Respondents who only installed lighting equipment and were aware that the program offered non-lighting equipment upgrades (25% or 61 respondents) primarily learned about these additional upgrades through a Save On Energy representative who spoke with them at their business (36%), the IESO website for the program (33%), or a Save On Energy representative who left informational material at their business (13%). Figure D-15 in Appendix D.3 provides a full list of ways participants heard about the non-lighting upgrades.

These same respondents, who were aware of non-lighting offerings but did not install any (25% or 61 respondents), were asked why they decided not to install other upgrades in addition to lighting. Nearly one-half (49%) stated they did not need to install additional equipment, and one-tenth (10%) said the program did not offer equipment of interest to them. Such equipment of interest included heat pumps, solar, thermostats, and cinema equipment (one respondent each). Figure D-16 in Appendix D.3 provides a full list of reasons for not installing non-lighting upgrades.

Site Visit Improvement Suggestions

Over two-thirds of respondents (70%) had no suggestions for improving initial site assessment visits, indicating that Save On Energy representatives who performed the initial site assessment visits met the majority of customer needs. Nearly one-fourth of respondents (24%) offered suggestions to improve the initial site assessments. Most commonly, respondents cited reducing the time required to complete the assessment (28%), providing greater flexibility in scheduling the assessment (16%), and improving the professionalism of the Save On Energy representative (12%). Figure D-21 in Appendix D.3 provides a full list of the suggested improvements.

Three-fourths of respondents (75%) did not offer suggestions for improving installation site visits, indicating that Save On Energy representatives performing installation site visits met the majority of customers' needs. The one-fifth of respondents (20%) offering suggestions for improving installation visits most commonly cited providing greater flexibility when scheduling visits (34%), reducing the time required to complete visits (24%), and improving the professionalism of Save on Energy representatives performing the installation visit (11%). Figure D-22 in Appendix D.3 provides a full list of these improvement suggestions.

Installation Decision-Making

Nearly four-fifths (79%) of respondents reported installing all energy-efficient equipment upgrades recommended during the initial site assessment, suggesting the program met many customers' needs. Of those not installing all upgrades recommended (11%, or 30 respondents), over one-half (57%) decided not to do the installation due to reaching the cost cap, while almost one-fifth (17%) reported not needing to install the equipment. Figure D-19 in Appendix D.3 provides a full list of reasons for not installing recommended upgrades.

Participants who did not install the equipment upgrades recommended largely reported not installing additional lighting (63%). Other equipment not installed included insulation, other large cost items, smart thermostats, heat pumps, and freezers (one respondent each). Figure D-20 in Appendix D.3 provides a full list of reasons for not installing recommended upgrades.

Program Partner Trustworthiness

Participants were asked to rate the trustworthiness of the program partners on a scale of one to five, where one indicates "not trustworthy at all" and five indicates "extremely trustworthy." Over four-fifths of participants (85% and 84%, respectively) stated that the representative who performed the initial site assessment and the

representative who performed the installation site visit were very or extremely trustworthy.

Of those providing a rating for the program delivery vendor, over two-thirds (69%) said they were very or extremely trustworthy. Nearly one-fourth (24%) indicated "Don't know" when asked to rate the trustworthiness of the program delivery vendor, suggesting that these participants likely had lower awareness of the program delivery vendors' role. Figure D-23 in Appendix D.3 shows a scale of trustworthiness of program partners as well as suggestions on how program partner trustworthiness could be improved.

Recommended Equipment and Services

Over one-third (34%) of surveyed participants provided additional equipment or service recommendations to consider for inclusion in the program in future years. HVAC and water heating (34%), a larger variety of lighting options (22%), and windows and doors (9%) were mentioned most frequently. Figure D-24 in Appendix D.3 provides a full list of these additional equipment recommendations.

Program Improvement Recommendations

Close to one-fifth (16%) of respondents provided suggestions about how to improve SBP. The most frequently cited suggestions included marketing and promotion (33%), improving communications with participants at every stage of the project (26%), and including more equipment through the program besides lighting (13%). Figure D-25 in Appendix D.3 provides a full list of overall program recommendations.

Project Cost Cap

Nearly one-fourth (22%) of respondents reported having to reduce the size, scope, or equipment efficiency of their project due to reaching the incentive caps.[9] These respondents were asked which energy-efficient equipment upgrades would have interested them if there had not been a cap. Over two-thirds (69%) said they would have installed additional lighting. Other commonly mentioned upgrades included smart thermostats (8%) and exterior lighting and signage (6%). Figure D-26 in Appendix D.3 provides a full list of these upgrades.

[9] SBP raised its lighting project cost cap from $2,000 to $3,000 in November 2023.

Other Energy-Efficiency Benefits

Avoided Greenhouse Gas Emissions

Using the IESO CE Tool V9.2, the evaluation team calculated avoided first year GHG emissions, along with the measures' lifetime savings for PY2023. Table 6-1 shows the results of these avoided GHG emissions calculations. Avoided GHG emissions from lighting measure electricity savings were reduced by the increase in GHG consumption resulting from the gas-heating penalty, reducing 958.6 Tonnes of CO_2 in the first year. PY2023 SBP projects are expected to achieve a total of 9,535.4 Tonnes of avoided GHG throughout the EUL of installed measures. Unless otherwise noted, all GHG emissions shown are in Tonnes of CO_2 equivalent.

Table 6-1: PY2023 SBP Avoided GHG Emissions

Electric First Year GHG Avoided	Gas* First Year GHG Avoided	Total First Year GHG Avoided	Electric Lifetime GHG Avoided	Gas* Lifetime GHG Avoided	Total Lifetime GHG Avoided
1,536.5	(577.9)	958.6	17,241.4	(7,706.0)	9,535.4

*Interactive gas heating penalty and gas heating savings from HVAC measures

Non-Energy Benefits

This subsection discusses the SBP's NEBs in PY2023. Appendix G provides additional detail regarding the NEB methodology and results. (Note: PY2023 NEB results presented in this section should be considered only for informational purposes.) The evaluation team used Phase II study NEBs values within the PY2023 Cost-Effectiveness calculator rather than the PY2023 NEBs participant evaluation survey values, per the IESO's request. In future evaluation years, this will allow the team to collect additional NEB data.

Key Findings

Key NEB analysis findings include the following:

- Using the *hybrid minimum approach*, PY2023 NEBs values were $0.13/kWh for reduced building and equipment operations and maintenance (O&M), $0.01/kWh for thermal comfort, $0.0005/kWh for reduced spoilage, and $0.00/kWh for improved indoor air quality.

Quantified NEBs Values

The PY2023 SBP participant survey included 95 participants who experienced at least one non-energy benefit from measures installed through the program. While Phase II and PY2021 SBP participant evaluation surveys only asked about one NEB (reduced building equipment O&M), the PY2022 and PY2023 participant evaluation surveys asked about participants' experiences with four NEBs, given the expansion of equipment offered through the program:

- **Reduced building and equipment O&M:** Reduced labour or other costs associated with reduced O&M to maintain building systems.
- **Thermal comfort:** Improvements in a building's ability to maintain a comfortable temperature.
- **Improved indoor air quality:** Reduction in air pollutants within the indoor environment.
- **Reduced spoilage:** Reduced spoilage time for perishable products due to improved refrigeration or ventilation.

The majority of PY2023 participants (80%) experienced NEBs from reduced building and equipment O&M, with 20% experiencing NEBs from improved thermal comfort, 1% experiencing NEBs from improved indoor air quality, and 2% experiencing NEBs from reduced spoilage, as shown in Figure 6-1.

Figure 6-1: Participant Observation of NEBs, Phase II, PY2021, PY2022, & PY2023

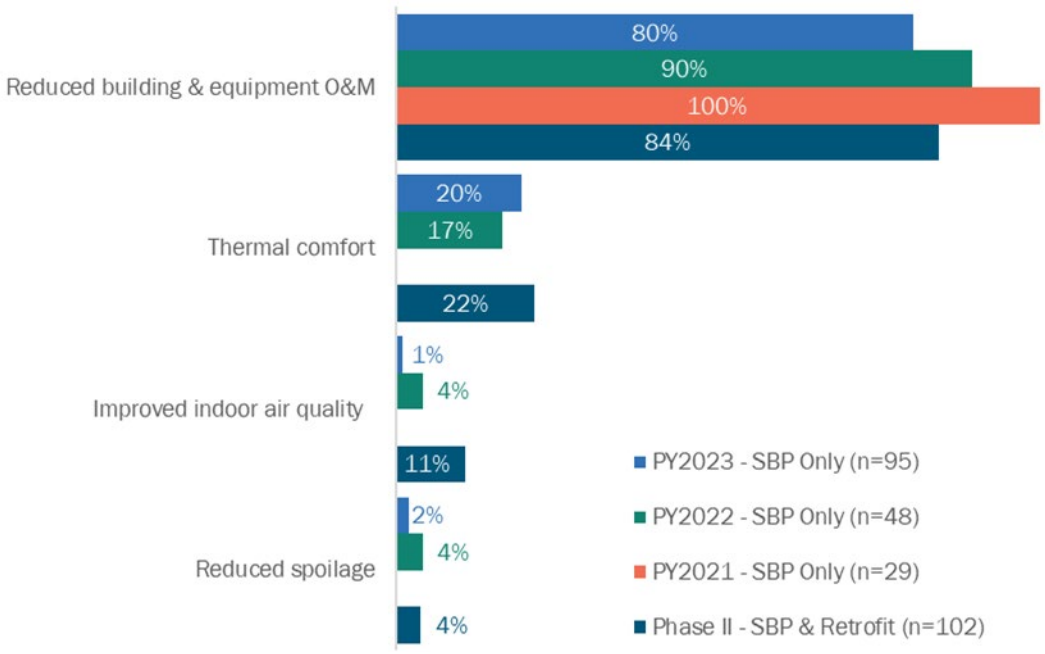


Table 6-2 presents quantified NEB values for Phase II, PY2021, PY2022, and PY2023, based on the hybrid, minimum ($/kWh) valuation, an approach recommended in the Phase II study.[10] Notably, quantified NEBs from the Phase II study combined participants from the small business lighting and retrofit programs, yet PY2021, PY2022, and PY2023 results only included SBP participants.

Table 6-2: Quantified NEBs ($/kWh), Phase II, PY2021-P1, PY2022 & PY2023

NEB	PY2023 (SBP Only)	PY2022 (SBP Only)	PY2021 (SBP Only)	Phase II (Retrofit & SBP)
Reduced building and equipment O&M	$0.13	$0.08	$0.13	$0.08
Thermal comfort	$0.01	$0.04	-	$0.05
Improved indoor air quality	$0.00	$0.02	-	$0.007
Reduced spoilage	$0.0005	$0.0004	-	$0.0002

PY2023 SBP respondents primarily valued reduced building and equipment O&M NEB ($0.13/kWh), followed by thermal comfort ($0.01/kWh), reduced spoilage ($0.0005/kWh), and improved indoor air quality ($0.00/kWh).

These data corresponded to NEBs that SBP assessors and installers reported that their customers might have experienced due to their SBP participation. Ten of twelve respondents indicated that their customers experienced reduced building and equipment O&M, eight suspected benefits from reduced food spoilage, and six suspected customers experienced improved thermal comfort. Installers and assessors perceived improved visibility and reduced O&M to be the most important NEBs to their customers. Table G-2 in Appendix G provides a comprehensive list of NEBs suspected by SBP assessors and installers, and Figure G-1 ranks them by importance.

Previous studies found that program participants placed significant value on NEBs. In many cases, the NEBs' value exceeded the value of participants' energy savings. This also occurred in PY2023, with most respondents reporting NEBs having an equal or higher value on an annual basis than savings on electricity bills.

Furthermore, when asked if they would be willing to pay for a certain benefit independently from energy savings, approximately three-fourths (74%) were prepared to pay an equal or higher value per year than their electricity bill or savings.

[10] Dunsky. (July 2021). *Non-Energy Benefits: Phase II; Quantified Benefits and Qualitative Insights*. https://www.ieso.ca/-/media/Files/IESO/Document-Library/conservation-reports/Non-Energy-Benefits-Study-Phase-II.ashx

This highlights that factors beyond energy savings may motivate energy-efficiency participation or contribute to customers' positive experiences with the programs.

Job Impacts

This section outlines the jobs impact analysis results. Appendix E provides details regarding the jobs impact analysis methodology, and additional results can be found in Appendix F.

Key Findings

Key findings from the PY2023 Jobs Impacts approach include the following:

- The analysis used an input-output model which estimates that SBP will create 74 total jobs in Canada, 66 of which will be in Ontario.
- $1M of program investment resulted in the creation of 21 jobs, compared to 27 jobs per $1M in PY2022 SBP.
- Six out of 74 (8%) of jobs impacts were realized in the first year; three of the six first year jobs impacts resulted from first year savings.

Input Values

The model was used to estimate the impacts of three economic shocks:

- Demand shock, representing demand for energy-efficient products and services from the program.
- Business reinvestment shock, representing increased business reinvestment due to bill savings (net of project funding).
- Household expenditure shock, representing decreases in household spending on goods and services due to increases in residential electric bills required to fund the SBP.

Table 6-3 displays input values for demand shock, representing products and services related to SBP. Each measure installed through program was categorized according to the StatCan IO Supply and Use Product Classifications (SUPCs).

Table 6-3: Summary of Input Values for Demand Shock

Category Description	Non-Labour	Labour	Total Demand Shock
	($ Thousands)		
Lighting Fixtures	1,864	1,653	3,516
Electric Light Bulbs and Tubes	67	59	126
Switchgear, switchboards, relays and industrial control apparatus	37	22	59
Heating and cooling equipment (except household refrigerators and freezers)	36	19	55
Subtotal	**2,004**	**1,753**	**3,757**
Office Administrative Services	-	-	142
Total			**3,899**

Using the IO Model, the team modelled business reinvestment shock, which represented the amount that businesses would reinvest and thus inject back into the economy. This amount was split over various industries to properly model demand shock. Business reinvestment shock totaled $8.3 million over 26 different industries. Appendix F provides more detail on business reinvestment shock, along with reinvestment values by industry.

The third model input is the household expenditure shock,[11] which represents the incremental increase in residential sector electricity bills from funding the program. This assumed that the IESO programs are funded by all customers in proportion to overall electricity consumption, resulting in a 35% residential funding portion of the $3.5M program budget or approximately $1.2M.

Model Results

StatCan I-O model impacts were generated separately for each shock and added together to calculate overall program job impacts. For SBP, this meant that three different sets of job impacts were combined into overall job impacts. Table 6-4 shows total estimated job impacts by type, combining impacts from the demand, business reinvestment, and household expenditure shocks.

[11] The model was run with a normalized value of $1 million in extra household expenditures, and job results can be scaled by the actual demand shock.

The majority of total job impacts (66 out of 74 estimated total jobs) occurred in Ontario, with 38 of 40 direct jobs across Canada created in Ontario. A slightly smaller proportion of indirect and induced jobs also occurred in Ontario, with 14 out of 17 indirect jobs and 14 of 17 induced jobs estimated to be created within the province. Full-time employee (FTE) estimates were slightly lower than the total jobs, with a total of 57 FTEs (of all types) created in Ontario and 64 FTEs added nationwide. Almost all direct FTEs (35 of 36) were added in Ontario, with this number representing approximately 61% of total FTEs added in Ontario and 54% of all FTEs created across Canada. In 2023, each $1M of program spending resulted in the creation of 21.2 total jobs.

Table 6-4: Total Job Impacts by Type

Job Impact Type	Ontario FTE *(in person-years)*	Canada FTE *(in person-years)*	Ontario Total Jobs *(in person-years)*	Canada Total Jobs *(in person-years)*	Total Jobs per $1M Investment (in person-years)
Direct	35	36	38	40	11.4
Indirect	12	15	14	17	4.9
Induced	11	13	14	17	5.0
Total[1]	**57**	**64**	**66**	**74**	**21.2**

1 Columns may not add to totals due to rounding. Real values have been rounded to the nearest whole number, and the whole numbers do not sum exactly to the whole number total in every column.

Appendix F provides a more detailed write up of the model impacts, including a breakout of impacts by industry, impacts from first year savings, and verbatim comments from program contractors.

Key Findings and Recommendations

Finding 1. Awareness of and interest in SBP's non-lighting equipment offerings continued to be relatively low among participants. Non-Lighting measures contributed only 2% of PY2023 net-verified energy savings. Only one-fourth (25%) of participants who installed lighting-only equipment knew that the program offered other non-lighting equipment upgrades. When asked why they decided not to install non-lighting upgrades, nearly one-half (49%) stated they did not need to install additional equipment, and one-tenth (10%) said the program did not offer equipment of interest to them. Such equipment of interest included heat pumps, solar, thermostats, and cinema equipment (one respondent each). Close to one-half of assessors and installers (five respondents) indicated that their customers were not very interested in the program's non-lighting equipment. Two assessors and installers shared their perspective on why they thought this occurred, with one indicating it was due to a lack of information from assessors and the other indicating it was because the non-lighting equipment was not compatible with equipment at customers' businesses. Additional non-lighting measures currently not offered in SBP (e.g., faucet aerators [bathroom and kitchen], vending misers, low-flow pre-rinse spray valves, pipe insulation, duct sealing/insulation, weatherstripping, and advanced power strips) are popular direct-install measures offered in other utility energy-efficiency programs in North America. Increasing the number of non-lighting measure options available to SBP participants could raise interest in non-lighting measures and increase program savings. Many of these recommended measures were identified in the top 75 measures ranked by achievable potential energy savings in the 2022 Achievable Potential Study refresh in Ontario[12]. Further inhibiting the uptake of non-lighting measures, multiple participants who implemented non-lighting measures and received site visits (three) or desk reviews (two) during the PY2023 impact evaluation reported issues or concerns with the installation and performance of their non-lighting measure retrofits. Assessor and installer suggestions for increasing uptake of non-lighting equipment included more marketing (three respondents) and covering all thermostat costs (two respondents).

- **Recommendation 1a.** Expand marketing efforts to generate additional awareness around non-lighting offerings. For example, feature more participating businesses that received non-lighting measures in case studies and testimonials.
- **Recommendation 1b.** Identify ways to further assist customers in installing non-lighting equipment (e.g., covering all thermostat costs including ancillary costs such as new C-wires, presenting the customer with co-pay options).

[12] IESO Energy-Efficiency Resources and Reports: https://www.ieso.ca/Sector-Participants/Energy-Efficiency/Energy-Efficiency-Resources-and-Reports

- **Recommendation 1c.** Provide additional training opportunities for SBP assessors and installers to ensure they have up-to-date program documentation and the knowledge to effectively market and sell non-lighting measures. Ensure implementers are adequately trained on measure installation to avoid improperly installed measures and dissatisfied participants.

Finding 2. Assessor workforce shortages likely served as a participation impediment, especially in more remote areas of the province. Delivery vendors and IESO staff all considered the lack of field staff (particularly assessors) to pose a challenge in PY2023. This workforce shortage was most pronounced in the northern part of the province as some assessors could not or did not want to drive to these locations, though the issue occurred in other parts of the province as well. IESO staff mentioned that offering virtual assessments when assessors are unavailable might be worth considering. Delivery vendors suggested covering the cost of driving school as licenses are required for the job. Delivery vendors indicated that uncertainty about assessors' contract lengths may also contribute to fewer individuals being willing to take these jobs.

- **Recommendation 2.** Identify opportunities to address workforce shortages to ensure the availability of a robust pool of assessors to support SBP. This may include incentivizing assessors willing to travel to Northern areas of the province, allowing installers to perform assessments *and* installations in the North to minimize workforce needs, allowing for virtual assessments, depending on the customer's location, or partnering with colleges/universities.

Finding 3. Sector-specific outreach may be instrumental in converting more SBP opportunities into projects. Delivery vendors and IESO staff believed opportunities still exist for lighting measures under SBP, though they noted that savings per project were diminishing. Surveyed assessors and installers believed similarly, providing an average rating of 4.6 on a scale of one to five, where five indicates "a great amount of opportunity still exists," when asked to rate the remaining opportunities for SBP to generate new participants interested in installing energy-efficient lighting upgrades. One IESO staff member recommended reviewing the remaining program potential for small businesses at the sector level. Assessors and installers identified business sectors that they recommend the program more directly target, while providing insights on equipment that may be of most interest to those sectors. Warehousing (nine respondents), grocery and industrial (eight respondents each), and restaurant and retail (six respondents each) were most frequently mentioned by assessors and installers, with various types of lighting frequently recommended for most sectors. By

comparing the count of small businesses by sector in Canada[13] to the PY2023 SBP participation by facility type, the evaluators determined that some business types (e.g., Commercial [Retail] and Commercial [office]) are overrepresented in PY2023 SBP participation. Though these two business types make up 56% of all PY2023 SBP projects, they represent only 34% of small businesses in Canada. Underrepresented business types include Agricultural, Commercial [Restaurant], Commercial [Warehouse/Wholesale], Industrial/Manufacturing, and Government/Public Institution which combine to represent 48% of Canadian small businesses but only 25% of PY2023 SBP projects.

- **Recommendation 3a.** Analyze sector-level program saturation and the related remaining program potential. Review program participation by measure and sector to identify trends.
- **Recommendation 3b.** Target program outreach efforts towards key business sectors, highlighting eligible equipment and services that may be of most interest to them. For example, this may involve expanding the catalogue of case studies and testimonials to feature sector-specific projects or collaborating with organizations representing the business interests of these sectors.

Finding 4. Participants not installing all equipment recommended during the initial assessment did so for a variety of reasons. Nearly four-fifths (79%) of participants reported installing all equipment recommended during the initial site assessment. Of those not installing all upgrades recommended (11%, or 30 respondents), over one-half (57%) chose not to do so due to reaching the cost cap. Another one-fifth (17%) reported not needing to install the equipment. Fewer participants (3% each) mentioned complexities in changing their applications, a lack of follow-through from the program regarding equipment installations, or they did not want to undertake additional work. Participants not installing recommended equipment upgrades largely reported not installing additional lighting (63%). Other equipment not installed included insulation, smart thermostats, heat pumps, and freezers (mentioned by 3% each).

- **Recommendation 4.** Further explore what opportunities may exist to encourage participants to install all equipment recommended in the assessment. This may involve empowering assessors to ask follow-up questions about why the customer is not interested or addressing concerns customers may have regarding the equipment. This could be paired with follow-up calls or e-mails from program delivery vendors' call centers,

[13] Key Small Business Statistics – 2021: *https://ised-isde.canada.ca/site/sme-research-statistics/en/key-small-business-statistics/key-small-business-statistics-2021#how-SME*

conducted immediately after the assessment, to gauge why customers did not install all recommended equipment and to encourage them to do so, if feasible at that time.
- Refer also to **Recommendation 9b** related to ensuring customers remained informed of all their options, regardless of whether project cost caps are reached.

Finding 5. Changing participant eligibility criteria interested some. According to assessors and installers, the program eligibility requirement for businesses to have an operating capacity of 50 or fewer employees generally did not affect their customers—only two indicated turning away prospective participants due to this limitation. One of these assessors reported turning away 100 customers, while the other reported turning away five. Neither delivery vendor thought a need existed to increase this limit. IESO staff were more inclined to express interest in exploring this eligibility criteria given that the limit was originally meant to serve as a proxy for energy consumption due to the unavailability of utility data.

- **Recommendation 5.** Consider aligning the program's eligibility criteria related to the number of employees a business must have for SBP participation with small business criteria set by other informed entities (e.g., Statistics Canada defines a small business as 1-99 employees).

Finding 6. Most participants find program partners trustworthy, though improvement opportunities exist. Participants were asked to rate the trustworthiness of various program partners on a scale of one to five, where one indicates "not trustworthy at all" and five indicates "extremely trustworthy." Over four-fifths of participants (85% and 84%, respectively) stated that the representative who performed the initial site assessment and the representative who performed the installation site visit were either very or extremely trustworthy. Suggestions for improving program partner trustworthiness included improving follow-up times with customers (three respondents), reassurance that the program is legitimate (three respondents), providing shorter timelines to complete the work (two respondents), and ensuring that representatives follow through with all job aspects (two respondents).

- **Recommendation 6.** Coordinate with program delivery vendors to ensure program assessors and installers have the training and support needed to minimize issues related to promptness, timeliness, and follow-through. This may involve instituting longer periods under which new assessor hires are required to "shadow" more experienced staff on site visits or conducting closer

oversight and guidance related to assessor and installer communications with customers.
- Refer to **Process Progress Update 2** regarding recommended activities to support the program's legitimacy as well as **Process Progress Update 3** regarding site-visit improvement opportunities.

Finding 7. Lighting measures achieved a 99.48% realization rate for summer peak demand savings for 71 lighting projects sampled during the PY2023 Impact Evaluation. This demonstrates that the updated 0.0002734 CF applied to SBP lighting measures in PY2023 results in much more accurate estimated peak demand impacts compared to PY2021 and PY2022 results with a 0.0001425 CF. However, the evaluated summer peak demand realization rate did not achieve the targeted 10% precision at 90% confidence, with PY2023 evaluated results achieving 11.62% precision at 90% confidence. This indicates that while the updated CF results in accurate summer peak demand savings at the program level, project-level variance or error is expected.

- **Recommendation 7**. Continue monitoring the lighting measure summer peak demand savings realization rate to determine if future CF updates are warranted due to changing market conditions or participation trends.

Finding 8. Updating Smart Thermostat measure eligibility criteria could improve energy and demand savings per install. During the PY2023 evaluation, 14/15 sampled smart thermostat projects had a programmable thermostat baseline and 11/15 projects had gas heating. Additionally, there were two instances of multiple smart thermostat measures installed at the same facility even though they were controlling the same conditioned space, and one smart thermostat was installed in a facility without Wi-Fi leading to reduced verified savings per thermostat.

- **Recommendation 8a.** Consider utilizing unique measure savings for each smart thermostats baseline thermostat type (traditional programmable vs. manual).
- **Recommendation 8b.** Limit measure eligibility to one smart thermostat per HVAC system/conditioned space.

Recommendation 8c. Include qualified install of smart thermostats to require Wi-Fi connection and implementation of energy saving control sequences during installation.

Finding 9. Increases in the lighting project cost cap helped customers complete more of the work of interest to them. SBP raised its lighting project cost cap from

$2,000 to $3,000 in November 2023. Raising the lighting cap sought to help address challenges related to inflation, measure cost increases, and customers reaching the cap without completing all the desired work (though delivery vendors noted that numerous customers are reaching the new $3,000 lighting cap already). After the increase to $3,000, only 12% of projects exceeded the cost cap compared to 23% of projects prior to the cost cap increase in PY2023, based on the results of the impact evaluation. Nearly one-fourth (22%) of participants reported cutting back on the size, scope, or efficiency of their equipment upgrades due to reaching the project cost cap. Additionally, the evaluators determined that the increased lighting cost cap led to a 21% increase in average project size (kWh saved per project). When asked which upgrades would interest them in the absence of project cost caps, participants most frequently mentioned additional lighting (69%).

- **Recommendation 9a.** Continue monitoring the lighting project cost cap to ensure it meets the needs of most participants. For example, given the new lighting project cost cap was not introduced until late in 2023, additional evaluation research is recommended in future years to gauge the impact of this cap on customer projects.
- **Recommendation 9b.** Regardless of whether project cost caps are reached, ensure the program informs customers of all options and relevant information (e.g., co-pay opportunities, payback period calculations associated with additional equipment purchases).

Progress Updates on Process Topics

This section provides progress updates on common process evaluation research topics. These topics have typically been included as Key Findings and Recommendations in previous years' evaluation reports. Because these topics may be of continued interest to monitor, they are included here for additional consideration.

Process Progress Update 1. Expanding the scope of equipment offerings remained a common improvement suggestion. Assessors and installers reported somewhat lower satisfaction levels with the number and types of equipment incentivized (a rating of 4.2 on a scale of one to five, where, where one indicates "not satisfied at all" and five indicates "extremely satisfied"). Assessors and installers frequently recommended exterior lighting and T5 replacements (three respondents each), followed by A-lamps, cooling equipment, dimmer switches, and signs (two respondents each) as additional equipment to consider for program inclusion in future years. Participants frequently recommended HVAC and water heating (34%), a larger variety of lighting options (22%), and windows and doors (9%). IESO staff and delivery vendors suggested considering a wider variety of lengths of tubular LED lamps, A-19 LEDs, exterior lighting, DCKV systems, and improving assessor and installer expertise related to the existing lighting control offering.

- **Improvement Opportunity 1.** Explore the feasibility of including more lighting and non-lighting products that align with program goals and cost-effectiveness targets.

Process Progress Update 2. Continued opportunities exist to expand program marketing and outreach. Program marketing and outreach was relatively minimal in early 2023, given the IESO focused on restoring the delivery services affected by one of the delivery vendors going into receivership early in November 2022. Later in 2023, the IESO more frequently included SBP in active promotions and campaigns on social media platforms and through its newsletters. According to assessors and installers, the most common barriers preventing more customers from participating include lack of customer awareness (eight respondents) and some customers' concerns that the program was not legitimate (three respondents). Assessors and installers recommended overcoming these barriers through increased program advertising (eight respondents). Increasing the frequency and amount of IESO's marketing was also recommended by delivery vendors as they believed this was important in raising awareness about the program, clarifying how it differs from other offerings, and increasing trust in the program's legitimacy. When asked for suggestions on how to improve the program, participants most frequently suggested improving marketing and promotion (33%).

- **Improvement Opportunity 2.** Consider further increasing the variety and frequency of marketing efforts across different mediums (such as through newsletters, social media, paid digital advertisements, or, when possible, mass media tactics [e.g., radio, TV, billboards]). Additionally, further leverage relationships with other relevant organizations, such as chambers of commerce or trade groups associated with small businesses.

Process Progress Update 3. Participant perspectives on the site visit process were generally positive, but opportunities for improvements remain. Most participants offered no suggestions for improving the initial site assessment (70%) or installer visits (75%), suggesting the program largely met customers' needs. Those offering suggestions for improving site assessments or installer visits most commonly cited reducing the time required to complete the visits, providing more flexibility and communication in scheduling visits, improving assessors' accuracy of data collection, and improving Save On Energy representatives' professionalism. When asked for other program improvement recommendations, over one-fourth (26%) of participants suggested improving communications at every stage of the project.

- **Improvement Opportunity 3a.** Reduce the time required to complete the assessment and installation visits. Identify areas where additional program support or resources could allow assessors and installers to complete the task more promptly (e.g., provide assessors and installers with expected timeframes in which to complete visits, and/or provide small incentives if visits are completed within the recommended timeframe).
- **Improvement Opportunity 3b.** Improve communications regarding visit scheduling (e.g., sending reminder e-mails and/or text messages confirming appointments and providing accurate arrival windows).
- **Improvement Opportunity 3c.** Provide additional training to assessors and installers to ensure their professionalism during assessment and installation visits (e.g., ensure they share their contact information or business cards and they remain responsive to questions or concerns raised during the visit).
- **Improvement Opportunity 3d.** Improve communication at every project stage (e.g., during the initial assessment, clearly communicate equipment for which customers will qualify and explain why, clearly identify work completed before leaving the installation site visit, and follow up with customers after visits if questions arise).

Appendix A Impact Evaluation Methodology

This section describes in greater detail the specific tasks necessary and methodologies that will be used for the SBP impact evaluation, which will include the following tasks:

- Program database assessment
- Population sampling
- Data collection and analysis
- Establish gross and net verified savings

A.1 Program Database Assessment

The SBP database assigns a unique number to each project. These unique project numbers and the project completion date will be used to determine new projects that need to be included in the PY2023 evaluation.

A.2 Population Sampling

An important part of the evaluation planning process is the sample design for net-to-gross (NTG) and impact evaluation activities. Statistical sampling serves as the basis of the evaluation's ability to say something meaningful within a specified level of certainty and precision about a population of interest. Resource Innovations will use statistical sampling of the program population to estimate impacts and collect data about customer perceptions, attitudes, and characteristics. Sampling will consider predefined levels of confidence (90%) and precision (10%), population size, effect size, analysis methods, and any stratification that may be of interest. The ideal magnitude of sample sizes varies as a function of the following:

- **The Population of Interest:** This could differ between the impact and process evaluations. For example, the population of interest for impact evaluations of verified and net impacts generally includes savings and/or measures, whereas the population of interest for process evaluations tends to be the participant or trade ally. Therefore, samples are typically drawn to fulfill the greatest rigour requirement—generally impact evaluation.
- **The Objective of Sampling:** Sampling is designed to ensure the sample will be representative of the population, but producing a sample that measures overall energy use with 90%/10% confidence/precision is very different than measuring a change in energy use with 90%/10% confidence/precision. Properly detecting changes in energy use often requires larger sample sizes, especially if the changes that must be detected are relatively small. The

evaluation team's approach exceeded the industry-accepted target 90% confidence level ± 10% precision (90% ± 10%) for program level energy savings.

- **Inherent Variability in the Data:** The more volatility in the population, the larger the sample size must be to meet precision requirements. The coefficient of variance (CV) was initially set at 0.5 to establish a target sample size of 68 projects.

Resource Innovations sampled 83 SBP projects for the PY2023 evaluation. Of these sampled projects, 11 consisted of lighting and non-lighting measures, resulting in a sample of 71 lighting projects and 23 non-lighting projects. The sample CV was greater than 0.5 for the energy and demand realization rates. At the 90% confidence level, this sample achieved better than 10% precision at the program level across the province of Ontario for energy savings and 10.9% precision for demand savings.

Table A-1: Impact Evaluation Sample

Program	Target Sample Size	Evaluated Applications	Lighting Sample Size	Non-Lighting Sample Size
SBP	68	83	71	23

A.3 Data Collection and Analysis

The Level 1 audit of the SBP projects began with a review of the measure codes, quantities, and reported savings from the SBP database and all available project documentation, including applications, invoices, work orders, and site photos. Level 2 audits included an on-site review and verification of installed equipment for a limited number of sampled projects. Reviewing the project data and documentation in advance of on-site visits and desk reviews ensured time spent on-site or during the phone interview focused on collecting and/or verifying the most important project specifications. Key parameters to be investigated included baseline and retrofitted equipment information, operating hours, lighting controls, and HVAC equipment information.

Discrepancies between reported fixture wattages and operating hours remained the main cause for energy realization rate deviation away from 100% for lighting projects. To verify actual energy and summer peak demand savings, analysis staff recorded lamp wattages and ballast factors of retrofitted equipment. Normal, seasonal, and holiday operating hours were also confirmed with the participant.

Following completion of data collection and project analyses, a program-level verified energy and summer peak demand savings was calculated by applying sample level adjustment factors (energy and demand realization rates and NTG ratios) to the overall program population.

A.4 Establish the Verified Savings

Data collected due to Level 1 and Level 2 audit activities allowed energy and summer peak demand savings to be calculated for each sampled project–termed gross verified savings. The ratio of gross verified savings to the reported savings provided the project realization rate, and the ratio of the summation of all project gross verified and reported savings provided the program-level realization rate. Equation A-1 presents the basic formula for calculating the realization rate.

Equation A-1: Realization Rate

$$Program\ Realization\ Rate = \frac{\sum_1^n Gross\ Verified\ savings}{\sum_1^n Reported\ Savings}$$

Where:

n	= Total number of projects evaluated
Gross Verified Savings	= Sample savings (kWh or kW) verified through evaluation
Reported Savings	= Sample savings (kWh or kW) reported by the IESO

For calculation of verified summer peak demand savings, the Resource Innovations team used the methodology and peak definitions outlined in the EM&V Protocols to calculate verified demand savings (winter and summer) by reviewing average demand reduction across all peak hours. Specifically for lighting measures, the Resource Innovations team verified actual lighting operating hours with the participant, including the impact of daily, weekly, seasonal, and holiday schedule variations. Verified summer peak demand savings were then calculated as the average demand savings that occurring during the pre-defined summer peak demand period.

For example, if the verified lighting schedule did not overlap with the pre-defined peak period, the verified summer peak demand savings for all lighting measures on that schedule would be zero. If the verified lighting schedule overlapped with 50% of the pre-defined peak period, the verified summer peak demand savings for the lighting measures on that schedule would equal 50% of verified demand savings for those measures.

The SBP incentivizes implementation of equipment with an efficiency level that exceeds local building and energy requirements. However, the energy consumption of equipment in an enclosed space cannot be viewed in isolation. Building systems interact with one another, and a change in one system can affect the energy consumption of another. This interaction was important to consider when calculating the benefits of the SBP program as it adopted a comprehensive view of grid-level energy changes rather than limiting the analysis to the energy change directly related to the modified equipment. The EM&V Protocols state that interactive energy changes should be quantified and accounted for whenever possible. Based on this guidance, interactive effects were calculated for all energy-efficient lighting measures installed through the program to capture changes in operations of HVAC equipment due to lower heat loss from energy-efficient lighting equipment.

A.5 Lifetime Savings

When performing the impact evaluation, it was important to consider the total amount of savings over the lifetime of retrofitted equipment. This consideration was necessary given that energy savings, demand savings, avoided energy costs, and other benefits continued to accrue each year the equipment was in service. The method of calculating lifetime energy savings of a measure level is presented in Equation A-2.

Equation A-2: Lifetime Energy Savings

$$Lifetime\ Energy\ Savings = EUL \times Annual\ Energy\ Savings$$

Where:

EUL = Estimated useful life of the retrofitted equipment

A.6 Net Savings Methodology

To calculate net verified savings, the evaluation team calculated the portion of gross verified savings attributable to the program. The team determined net verified savings by multiplying gross verified savings by the NTG ratio, as shown in Equation A-3.

Equation A-3: Net Verified Savings

$$Savings_{net} = Savings_{\text{verified}} \times NTG$$

Where:

$Savings_{net}$ = Net verified savings impact (kW or kWh)
$Savings_{verified}$ = Gross verified savings (kW or kWh)
NTG = Net-to-gross

To estimate the program's direct influence in generating net verified energy savings, the evaluation team implemented attribution surveys to calculate free-ridership (FR) and spillover (SO) rates. FR and SO were represented as percentages of the total reported savings for the program. FR and SO were also estimated for each survey respondent, and those results were aggregated to develop total FR and SO estimates. Results were weighted by the percentage of savings associated with each respondent's completed energy-efficiency project. This indicated that respondents with comparatively larger projects influenced the total estimates more than smaller projects, allowing for results that reflect the responding participants and their associated impacts on the program.

FR refers to program savings attributable to free-riders (program participants who would have implemented a program measure or practice in the program's absence). SO refers to additional reductions in energy consumption and demand due to program influences beyond those directly associated with program participation, hence SO represents installations of energy-efficient equipment influenced by the participant's experience with the program and completed without receiving program incentives or other financial support.

Equation A-4 defines the NTG ratio, where FR is the participant free-ridership percentage, and SO is the participant spillover percentage.

Equation A-4: Net-to-gross

$$NTG = 100\% - FR + SO$$

The evaluation team calculated FR and SO for a single incented project for each sampled participant, and then combined these results to develop overall FR, SO, and NTG values.

Appendix B Detailed Net-to-Gross Methodology

This appendix provides detail on the sampling plans for collecting NTG data, the instruments used to assess FR and SO, the implementation of the data collection, and the analysis methods.

An effective questionnaire was developed to assess FR and SO. The approach has been used successfully in many previous evaluations. The NTG ratio presented in Equation B-1 is defined as follows:

Equation B-5: NTG Ratio

$$NTG = 100\% - FR + SO$$

Where FR is free-ridership and SO is spillover.

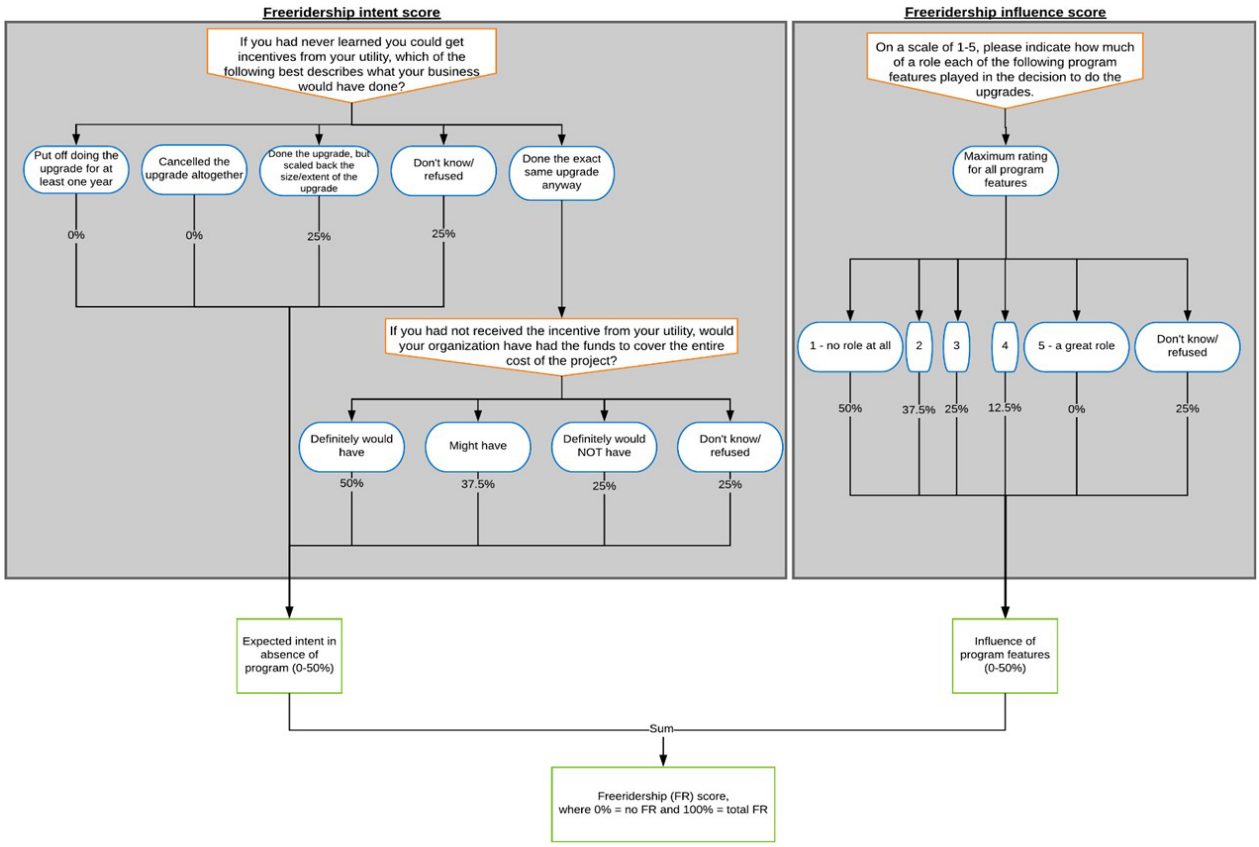
B.1 Free-Ridership Methodology

The survey addressed the attribution of savings for each sampled project or type of equipment through two main components:

- Intention of the expected behaviour in the program's absence.
- Influence of various program features, such as the incentive, program marketing, and outreach, and any technical assistance received.

Each component produced scores ranging from 0 to 50. The two components were summed to produce a total FR score ranging from 0 (not a free-rider) to 100 (complete free-rider). The total score was interpreted as a percentage (0% to 100%) to calculate the mean FR level for a given program. Figure B-1 illustrates the FR methodology.

Figure B-1: Free-Ridership Methodology



Intention Component

The FR score's intention component asked participants how the evaluated project would have differed in the program's absence. The two key questions determined the intention score as follows:

Question 1: If you had never learned you could get incentives/upgrades at no cost through the program, which of the following best describes what your business would have done? Your business would have...

1 - Put off doing the upgrade for at least one year.
2 - Cancelled the upgrade altogether.
3 - Done the upgrade but scaled back the size or extent of the upgrade.
4 - Done the exact same upgrade anyway → Ask Question 2
98 - Don't know
99 - Refused

[ASK ONLY IF RESPONSE TO QUESTION 1=4: Done the exact same upgrade anyway]

Question 2: If you had not received the incentive/upgrades at no cost from the program, would you say your organization definitely would have, might have, or definitely would not have had the funds to cover the entire cost of the project?

1 - Definitely would have
2 - Might have
3 - Definitely would NOT have
98 - Don't know
99 – Refused

Table B-1 indicates the possible intention scores a respondent could have received, depending on their responses to these two questions.

Table B-2: Key to Free-Ridership Intention Score

Question 1 Response	Question 2 Response	Intention Score (%)
1 or 2	Not asked	0 (no FR for intention score)
3, 98 (Don't Know), or 99 (Refused)	Not asked	25
4	3, 98 (Don't Know), or 99 (Refused)	25
4	2	37.5
4	1	50 (high FR for intention score)

If a respondent provided an answer of one or two (would postpone or cancel the upgrade), the respondent would receive an FR intention score of 0% (on a scale from 0% to 50%, where 0% is associated with no FR and 50% is associated with high FR). If a respondent answered three (would have done the project but scaled back the size or extent) or stated they did not know or refused the question, the respondent would receive an FR intention score of 25% (associated with moderate FR). If the respondent answered four (would have done the exact same project anyway), they were asked the second question before an FR intention score could be assigned.

The second question asked participants who stated they would have done the exact same project, regardless of whether their organization would have had the funds available to cover the entire project cost. If the respondent answered one (definitely would have had the funds), the respondent received a score of 50% (associated with high FR). If the respondent answered two (might have had the funds), they received a slightly lower FR score of 37.5%. If the respondent answered three (definitely would not have had the funds) or did not know or refused the question, the respondent received an FR intention score of 25% (associated with moderate FR).

The bullet points below display the same FR intention scoring approach in list form. As mentioned above, the evaluation team calculated an intention score for each

respondent, ranging from 0% to 50%, based on the respondent's report of how the project would have changed had there been no program:

- Project postponement or cancellation = 0%
- Reduction in size or scope or use of less energy-efficient equipment = 25%
- Respondent does not know what they would have done in the absence of the program = 25%
- No change and respondent states the firm would not have made funds available = 25%
- No change, but respondent is not sure whether firm would have made funds available = 37.5%
- No change and respondent confirms firm would have made funds available = 50%

Influence Component

The influence component of the FR score asks each respondent to rate how much of a role various potential program-related influence factors had on their decision to do the upgrade(s) in question. Influence was reported using a scale from one to five, where one indicated it "played no role at all" and five indicated "it played a great role." The potential influence includes the following:

- Availability of the incentives or the no-cost upgrades
- The information or recommendations provided by the IESO staff (if applicable)
- The results of any audits or technical studies that were done (if applicable)
- The information or recommendations provided by contractors, vendors, or suppliers associated with the program
- Marketing materials or information provided by the program
- Previous experience with any energy-saving program
- Others (identified by the respondent)

Table B-2 indicates the possible influence scores a respondent could receive, depending on how they rated the influence factors above. For each respondent, the program influence was equal to the maximum influence rating a respondent reported across the various influence factors. For example, suppose the respondent provided a score of 5 (great role) to at least one of the influence factors. The program is considered to have had a great role in their decision to do the upgrade, and the influence component of FR is set to 0% (not a free rider).

Table B-3: Key to Free-Ridership Influence Score

Maximum Influence Rating	Influence Score (%)
5 - program factor(s) highly influential	0
4	12.5
3	25
2	37.5
1 - program factor(s) not influential	50
98 – Don't know	25
99 - Refused	25

The following bullet points display the same FR Influence scoring approach in a list form. As mentioned above, a program influence score was calculated for each project, also ranging from 0% to 50%, based on the highest influence rating given among the potential influence factors:

- Maximum rating of 1 (no influencing factor had a role in the decision to do the project) = 50%
- Maximum rating of 2 = 37.5%
- Maximum rating of 3 = 25%
- Maximum rating of 4 = 12.5%
- Maximum rating of 5 (at least one influence factor had a great role) = 0%
- Respondent does not know how much influence any factor had = 25%

The intention and program influence scores were summed for each respondent to generate an FR score ranging from 0 to 100. The scores were interpreted as a percentage of FR: a score of 0 indicated 0% FR (i.e., the participant was not at all a free rider), a score of 100 indicated 100% FR (i.e., the participant was a complete free rider), and a score between 0 and 100 indicates the participant was a partial free rider.

B.2 Spillover Methodology

To assess SO, respondents were asked about installing energy-efficient equipment or services that were done without a program incentive following their participation in the program. The equipment-specific details assessed were as follows:

- ENERGY STAR Appliance: type and quantity
- Fan: type, size, quantity

- HVAC: air conditioner replacement, above code minimum: tonnage and quantity
- Lighting: type, quantity, wattage, hours of operation, location, and fixture length
- Lighting–controls: type of control, type and quantity of lights connected to control, hours of operation, and percentage of time that the timer turns off lights
- Motor/Pump Upgrade: type, end-use, horsepower, and efficiency quantity
- Motor/Pump Drive Improvement (VSD and Sync Belt): type, end-use, horsepower, and quantity
- Others (identified by the respondent): description of the upgrade, size, quantity, hours of operation

For each equipment type, the respondent reported installing without a program incentive.

The survey instrument asked about the extent of influence that earlier involvement in the program had on the decision to carry out the upgrades. Influence was reported using a scale from one to five, where one indicated "it played no role at all" and five indicated "it played a great role." Suppose the influence score is between 3 and 5 for a particular equipment type. In that case, the survey instrument solicits details about the upgrades to estimate the quantity of energy savings that the upgrade produced.

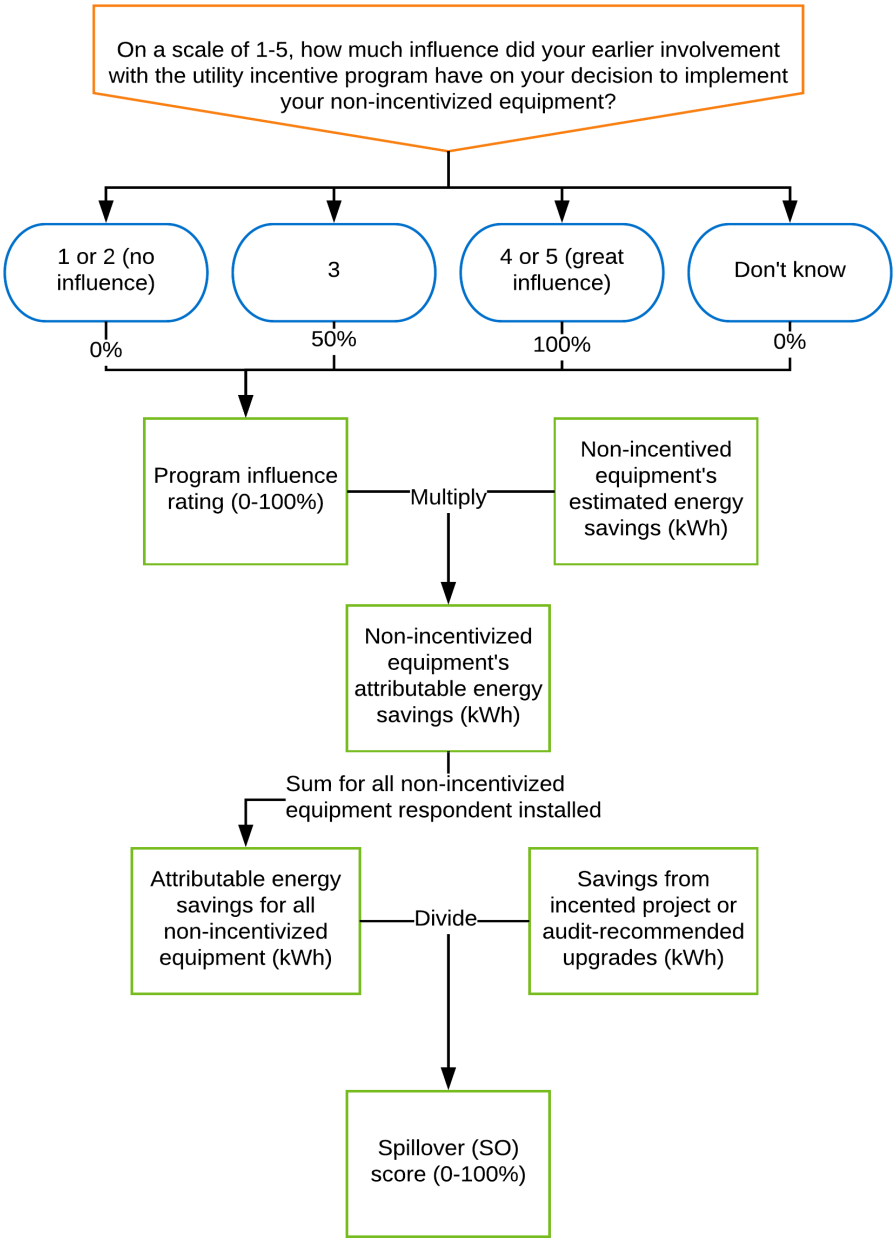
For each upgrade, the program influence rating was converted to an influence score ranging from 0% to 100%, as follows:

- Maximum rating of 1 or 2 (no influence) = 0%
- Maximum rating of 3 = 50%
- Maximum rating of 4 or 5 (great influence) = 100%
- Respondent does not know how much influence any factor had = 0%

The following procedure was used to calculate an SO percentage for each respondent:

- Multiplying the estimated energy savings for each upgrade by the influence percentage to calculate the upgrade's program-attributable energy savings.
- Summing program-attributable energy savings from all identified upgrades for each respondent to calculate the respondent's total SO savings.
- Dividing each respondent's total SO savings by the savings from the incented project.

Figure B-2 Spillover Methodology



B.3 Identification of Project or Upgrade for NTG Assessment

Participants were asked to consider all their completed projects in 2023 through the particular program in question. This approach allowed for the respondent's NTG value across all the projects they completed in 2023 to be applied rather than just one.

B.4 Other Survey Questions

In addition to the questions addressing FR and SO, the survey included the following topics to provide additional context:

- Whether the respondent was the person primarily involved in decisions about upgrading equipment at their company. Suppose the respondent was not the appropriate contact. In that case, the interviewer asked that they be transferred to or be provided contact information for the appropriate person (in the case of a phone survey). In the case of a web survey, the weblink would be forwarded to the appropriate contact.
- Whether the respondent had primary or shared responsibility for the budget or expenditure decisions for the program-incentivized work completed at their company.
- The respondent's work title.
- When the respondent first learned about the program incentives relative to the upgrade in question (e.g., before planning, after planning but before implementation, after implementation began but before project completion, or after project completion).
- When the respondent submitted their application to the program, and their reasons for submitting it after the work was started or completed, if applicable.
- How the respondent learned about the program.

Responses to these questions were not included in the algorithms for calculating FR or SO, but they provided additional context. The first question ensured that the appropriate person responded to the survey. The other questions provided feedback about responsibility for budget and expenditure decisions, the respondent's job title, application submission process details, and how and when program influence occurred.

B.5 Net-to-Gross Survey Implementation

The survey was implemented over the web and by phone. The survey lab was instructed to avoid collecting duplicate responses by no longer calling on respondents if they responded to the web survey or deactivating the respondent's survey weblink if they responded to the phone survey.

For each phone survey, the survey lab called participants in a randomized order. After reaching the identified contact for a given participant, the interviewer explained the survey's purpose and identified the IESO as the sponsor. The interviewer asked if the contact was involved in decisions about upgrading equipment at that organization. If

the contact was not involved in decisions about upgrading equipment, the interviewer asked to be transferred to or to receive the contact information for the appropriate decision-maker. The interviewer then attempted to reach the identified decision-maker to complete the survey.

It was assumed that all contacts who responded to the web version of the survey were the appropriate contacts to answer the questions. The introductory text in the survey asked the respondent to forward the survey web link to the appropriate contact to complete the survey if they were not the appropriate contact to do so.

Appendix C Detailed Process Evaluation Methodology

This appendix provides additional detail about the process evaluation methodology. A summary of the methodology was provided in Section 3.2.

C.1 Research Question Development

Table C-1 provides a list of key research questions and data sources used to investigate each research question. Research questions were developed at the beginning of the PY2023 evaluation period, between November 2023 and February 2024. They were written in consultation with IESO program staff and IESO EM&V staff, and were finalized after reviewing the timing of related survey instruments to ensure respondent fatigue would be minimized. After the research questions were finalized, they were adapted for inclusion in the interview guides and survey instruments, which were, in turn, reviewed and approved by the IESO EM&V and program staff (refer to Appendix C.2 for more information on the interview and survey methodology).

Table C-4: SBP Process Evaluation Research Objectives and Data Sources

Research Questions	Document & Program Records Review	IESO & Delivery Vendor Staff Interviews	Participant Surveys	Assessor & Installer Surveys
Is sufficient data being captured to effectively verify recommendations and savings?	✓	✓		
What are the goals and objectives of the program, and how well is the program doing in terms of meeting them?		✓		
What program processes are followed by the IESO and program vendors?		✓		
What strategies implemented by IESO were effective in terms of driving participation, increasing program awareness, and avoiding free ridership?		✓		
What program marketing and outreach occurred in support of the program? How did participants become aware of the program? What specific marketing or outreach activities show the most opportunity? What marketing and outreach techniques would be most helpful for increasing uptake of non-lighting measures? How could awareness of non-lighting measures be improved?		✓	✓	✓

Research Questions	Document & Program Records Review	IESO & Delivery Vendor Staff Interviews	Participant Surveys	Assessor & Installer Surveys
What were the experiences of assessors and installers in participating in the program?				✓
What are the program's strengths, barriers, and areas of improvement?		✓	✓	✓
Do the current range of program equipment/services meet customer needs? Were participants able to install all equipment models of interest to them? What suggestions exist for additional equipment/services? Are there specific equipment types that are needed by sector? Is there any sector that makes sense to target? And what offerings would be needed to do so?		✓	✓	✓
Are there measures that were rejected by participants? If so, why (e.g., project was capped, other reasons)?			✓	✓
Were the program's project incentive caps (for both Lighting and Non-lighting) reached? If one or more of the incentive caps were reached, did this lead to reductions in the scope of the project?		✓	✓	✓
For participants who reached the cost cap, what additional measures would have been of interest? What is the magnitude of additional cost?			✓	
For participants who express that they are not interested/ moderately interested in non-lighting measures, what is the reason? Was the equipment of interest not available? If so, what types/ models of equipment could be added?			✓	✓
How appropriate was the length of site visits? Did participants feel that enough time was spent in the premises?			✓	
How useful were the findings of the site visits to participants (quality of work order/ audit deliverables)? Did the work order have all of information and details the participant expected? Was it clearly explained and understood?			✓	
For participants who reported experiencing additional "surprise" fees, what were these for? Any recurring themes?			✓	✓
Would it be beneficial to increase the maximum employee limit to qualify for SBP? Are there businesses that are missing out, or is the current limit still sufficient?		✓		
Has SBP saturated the marketplace (e.g., for lighting), or are there still opportunities available through the program?		✓		✓
Do participants trust the program delivery vendors, assessors, and installers, or are there concerns with their legitimacy? If there are concerns, what could be done to increase trustworthiness?			✓	

C.2 In-Depth Interview and Survey Methodology

The process evaluation collected primary data from key program actors, including the IESO program staff, program delivery vendor staff, assessors, installers, and participants (Table C-2). Data were collected using web surveys or telephone-based IDIs, depending on the form most suitable for a particular respondent group. These data, when collected and synthesized, provided a comprehensive understanding of the program.

All process evaluation data collection activities were carried out or managed by the evaluators. All survey instruments, interview guides, and sample files were developed by the evaluators for interviews and surveys. The IESO EM&V staff approved the survey instruments and interview guides. The data used to develop the sample files were retained from program records, supplied either by the IESO EM&V staff or the program delivery vendor.

Table C-5: Process Evaluation Primary Data Sources

Respondent Type	Methodology	Population	Completes: Web	Completes: Phone	Completes: Total	Response Rate	90% CI Error Margin
IESO Program Staff	Phone IDI	3	-	3	3	100%	N/A*
Program Delivery Vendor Staff	Phone IDI	2	-	2	2	100%	N/A*
SBP Assessors and Installers	Web Survey	37	12	-	12	32%	N/A*
SBP Participants	Web and Phone Survey	1,441	230	50	280[14]	19%	4.4%

*Error margin not displayed if the respondent count falls below 30, unless census is achieved.

[14] The count of process survey responses (n=280) was less than the count of NTG survey responses (n=297) as some respondents did not complete the survey's process section.

C.3 IESO Program Staff and Program Delivery Vendor Staff Interviews

Three IDIs were completed with three members of the IESO program staff, and two IDIs were completed with two members of the program delivery vendor staff (as shown in Table C-3). The purpose of the interviews was to better understand the perspectives of the IESO program staff and program delivery vendor staff related to program design and delivery.

Interview topics addressed program roles and responsibilities, program design and delivery, marketing and outreach, market actor engagement, program strengths and weaknesses, market impact, and suggestions for improvements.

The appropriate staff to interview were identified in consultation with the IESO's EM&V staff. Telephone IDIs were conducted with IESO program staff and program delivery vendor staff using in-house staff (rather than through a survey lab). The interviews were completed between May 6 and May 21, 2024. Each interview took approximately one hour to complete.

Table C-6: IESO Program Staff and Program Delivery Vendor Staff IDI Disposition

Disposition Report	IESO Program Staff	Program Delivery Vendor Staff	Total
Completes	3	2	5
Total Invited to Participate	3	2	5

C.4 SBP Assessor and Installer Survey

A total of 12 assessors and installers were surveyed from a sample of 37 unique assessors and installers (as shown in Table C-4). The purpose of the survey was to better understand the SBP assessor and installers' perspectives related to program delivery.

Survey topics addressed the following: respondent roles in the program; firmographics; training and education; adequacy of materials and tools provided; primary participation pathways; barriers to participation; ineligibility related to the program cap on the number of employees a business can have; customer interest in non-lighting upgrades; impacts of the incentive cap; unexpected fees; business sectors that might respond to targeted marketing; remaining market opportunities for lighting upgrades; satisfaction with various program aspects; suggestions for improvements, including additional equipment or services to consider as well as the program overall; NEBs; and job impacts.

The sample was developed from program records provided by program delivery vendor staff. A census-based approach was employed to reach the largest number of respondents possible, given the small number of unique contacts.

The survey was delivered over the web by the NMR staff using Qualtrics survey software. Survey implementation was conducted between March 25 and April 22, 2024. The survey took an average of 23 minutes to complete after removing outliers.[15] Weekly email reminders were sent to non-responsive contacts throughout web survey fielding.

Table C-7: Assessor and Installer Survey Disposition

Disposition Report	Total
Completes	12
Emails bounced	6
Unsubscribed	-
Partial Complete	4
Screened Out	-
No Response	3
Total Invited to Participate	37

C.5 SBP Participant Survey

A total of 280 participants were surveyed from a sample of 1,441 unique contacts (as shown in Table C-5). The purpose of the survey was to better understand the SBP participant perspectives related to program experience.

Survey topics addressed the following: firmographics; FR and SO; program awareness; customer interest in non-lighting upgrades; all application processes; interest in non-lighting upgrades; eligibility requirements; participation barriers; improvement suggestions about the initial site assessment and the follow-up visit; adequacy of the work order; trustworthiness of program delivery vendor and IESO staff; unexpected fees; impacts of the incentive cap; suggestions for improvements, including additional equipment or services to consider as well as the program overall; NEBs; and job impacts. The sample was developed from program records provided by the IESO EM&V staff.

[15] The survey was designed to allow a respondent to complete it at a later time if they preferred. The average survey time was calculated with this in mind and assumed that any survey taking 40 minutes or more to complete was likely completed by a respondent who took a break before completing the survey.

The survey was delivered over the phone and on the web in partnership with the Resource Innovations survey lab, using Qualtrics survey software. Survey implementation was conducted between March 18 and April 24, 2024. The survey took an average of 15 minutes to complete after removing outliers.[16] Weekly e-mail reminders were sent to non-responsive contacts throughout the web survey fielding.

Table C-8: SBP Participant Survey Disposition

Disposition Report	Web	Phone	Total
Completes	230	50	280
Emails bounced	120	-	120
Unsubscribed	19	-	19
Partial Complete	67	2	125
Screened Out	11	2	13
Busy	-	5	5
Callback	-	98	98
Refusal	-	37	37
No Eligible Respondent	-	11	11
Non-working #	-	23	23
Voicemail	-	190	190
Agreed to Complete Online	-	104	104
Wrong Number	-	7	7
Language Barriers	-	7	7
Already completed survey	-	15	15
No Response	994	79	1,073
Total Invited to Participate	1,380	630	1,441

[16] Note that the survey was designed to allow the respondent to come back to it at a later time to complete it if they preferred. The average survey time was calculated with this in mind, assuming any survey that took 40 minutes or more to complete was likely completed by a respondent who took a break before completing the survey.

Appendix D Additional Net-to-Gross and Process Evaluation Results

This appendix provides additional results in support of the NTG and process evaluations.

D.1 Additional Assessor and Installer Process Results

This section provides additional detail regarding the process evaluation results collected as part of the SBP assessor and installer survey.

Firmographics and Program Experience

Responding assessors and installers were asked various questions to better understand their roles in SBP. Most respondents (ten out of twelve) reported being hired by the program delivery vendor. Six of the twelve respondents were lighting installation contractors, four were program assessors, and two respondents served as both lighting installation contractors and program assessors.

Respondents were asked to report the business category that best represented their company. Six of the eight respondents who provided their business category reported working for firms in repair and maintenance (as shown in Table D-1).

Table D-9: Respondents' Business Category* (n=8)

Business Category	Respondents
Repair and maintenance	6
Electric power engineering construction	3
Non-residential building construction	3
Repair construction	3
Residential building construction	2
Communication engineering construction	1
Operating supplies	1

* Does not sum to 8 due to multiple response. Excludes respondents working for the program delivery vendor as assessors.

Respondents were asked various questions about their business characteristics. One respondent worked at a company that had been in business for ten years or less, and two had been in business for over 20 years. Five respondents worked at companies

with ten or fewer full-time employees, and seven had one or two part-time employees (as shown in Table D-2).

Table D-10: Business Characteristics (n=8)

Number of Years in Business	Respondents
1 to 10	1
11 to 20	5
21+	2
Number of Full Time Employees	
1 to 10	5
11 to 20	2
Don't know/refused	1
Number of Part Time Employees	
1 to 2	7
Don't know/refused	1

*Excludes respondents who work for a program delivery vendor as an assessor.

Respondents were asked if they performed assessments and/or installations for similar versions of the program offered under previous Save On Energy Frameworks. Eleven respondents reported performing work through the Small Business Lighting Program (SBL) and four respondent reported performing work through the Refrigeration Efficiency Program (as shown in Table D-3).

Table D-11: Previous Program Experience (n=12)

Performed Assessments/Installations Under Previous Save-On-Energy Frameworks	Respondents
Save on Energy SBL Program	11
Save on Energy Refrigeration Efficiency Program	4
Did not complete assessments and/or installations for similar versions of SBP under previous SoE Frameworks	1

*Does not sum to 12 due to multiple response.

Six respondents completed assessments, and eight respondents completed installation projects through SBP in 2023. Four respondents reported completing 1 to 50 projects, six respondents reported completing 51 to 300 projects, and four respondents reported completing 301 to 500 projects (as shown in Table D-4).

Table D-12: Projects Completed in 2023 (n=12)

Number of Projects Completed in 2023	Assessments (n=6)	Installation Projects (n=8)
1 to 50	1	3
51 to 300	2	4
301 to 500	3	1

Respondents were asked how many staff from their company provided services or support for SBP in 2023. Responses ranged from two to seven staff, with an average of five.[17] Installers were asked to estimate the percentage of their company's total 2023 sales represented by work performed for SBP. Responses from these eight respondents ranged from 2% to 60%, with an average of 24%. Installers were also asked what percentage of their invoiced project costs were for labour; responses ranged from 30% to 100% with an average of 63%.

Training and Education

Table D-5 lists types of training or education that responding assessors and installers received related to the program in 2023, and Table D-6 includes a list of topics covered through trainings. Section 5.2.2 includes an additional discussion regarding these training topics.

**Table D-13: Type of Training and Education Received*
(Open-ended and multiple responses allowed; n=12)**

Type of Training	Respondents
One-on-one in-person instruction from program delivery vendor	7
Responses to questions	4
Webinar or other online instruction	4
One-on-one in-person instruction from IESO staff	2
No training	1
Don't know/refused	1

*Does not sum to 12 due to multiple response.

[17] Excludes respondents working for the program delivery vendor as assessors.

Table D-14: Topics Covered in Trainings*
(Open-ended and multiple responses allowed; n=10)

Training Content	Respondents
Program rules	8
Offerings associated with the program	7
Installation procedures and practices	7
Application process training or support	7
Marketing and outreach techniques to better promote the program to customers	5

*Does not sum to 10 due to multiple responses.

Table D-7 includes a list of additional training or education topics that responding assessors and installers indicated would be helpful in supporting their work in the future. Section 5.2.2 includes an additional discussion around these training topics.

Table D-15: Recommended Training and Education Topics*
(Open-ended and multiple responses allowed; n=12)

Additional Training Content	Respondents
Marketing and outreach techniques to better promote the program to customers	5
Offerings associated with the program	1
Installation procedures and practices	1
Application process training or support	1
Don't know/refused	5

*Does not sum to 12 due to multiple responses.

Customer Participation

Table D-8 includes a list of the most common ways that customers came to participate in the program, as reported by the responding assessors and installers. Section 5.2.3 includes an additional discussion around these participation pathways.

Table D-16: Primary Way Customers Came to Participate (n=12)

Primary Way	Respondents
Staff from the program delivery vendor(s) generated leads and provided them to you	5
You marketed the program during audits or other in-person customer contacts	5
You described the program and qualifying equipment during client calls	1
You made cold calls to potential customers	1

Table D-9 presents a list of barriers preventing customers from participating in the program, as reported by the responding assessors and installers.

Table D-17: Barriers to Customer Participation*
(Open-ended and multiple responses allowed; n=12)

Customer Barriers	Respondents
They did not know about it	8
Concerned it was not legitimate	3
Getting efficiency upgrades was not a priority given other priorities	2
They did not think the upgrades were worth the trouble of participating	2
They did not think the upgrades would save them any money	2
The application process was not clear	2
The requirements to participate were not clear	2
Lack of time	1
Like-for-like replacement requirement	1
No barriers to program participation	1
Don't know/refused	1

*Does not sum to 12 due to multiple response.

Table D-10 includes a list of suggestions to overcome these barriers. Section 5.2.3 includes an additional discussion around participation barriers.

Table D-18: Suggestions to Overcome Participation Barriers*
(Open-ended and multiple responses allowed; n=10)

Suggestions to Overcome Barriers	Respondents
Advertise the program more	8
Provide more flexibility	1
Don't know/refused	2

*Does not sum to 10 due to multiple response.

Eligibility Limitation

Respondents were asked how many prospective participants they had to turn away because of the eligibility limitation requiring businesses to have an operating capacity of 50 or fewer employees to qualify. Table D-11 displays the number of prospective participants respondents reported turning away. Section 5.2.3 includes an additional discussion regarding this eligibility limitation.

Table D-19: Customers Turned Away Due to an Operating Capacity Limit of 50 of Fewer Employees (n=12)

Number of Prospective Participants	Respondents
100	1
5	1
0	6
Don't know/refused	4

Non-Lighting Equipment

Figure D-1 displays the distribution of respondents' ratings of customer interest in SBP equipment upgrades other than lighting. Table D-12 lists suggestions to increase uptake of non-lighting equipment upgrades. The two respondents who suggested offering more measures specified: (1) additional non-lighting measures; and (2) HVAC measures. Section 5.2.3 includes an additional discussion regarding these topics.

Figure D-3: Customer Interest in Non-Lighting Equipment Upgrades (n=12)

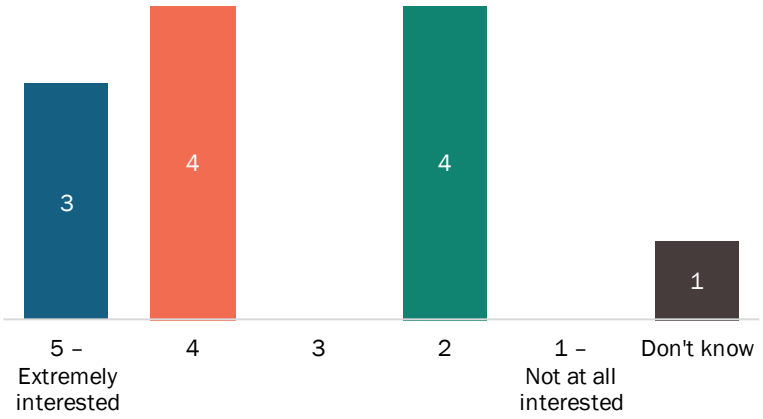


Table D-20: Suggestions to Increase Uptake of Non-Lighting Equipment Upgrades* (Open-ended and multiple responses allowed; n=12)

Suggestions to Increase Update	Respondents
More marketing	3
Cover all thermostat installation costs	2
More measures	2
Allow contractors to do both the assessments and installations in the North	1
More training for assessors	1
Don't know/refused	4

*Does not sum to 12 due to multiple response.

Remaining Program Opportunity

Table D-13 displays the distribution of respondents' ratings regarding how much opportunity still exists for SBP to generate new participants who are interested in installing energy-efficient lighting upgrades. Section 5.2.3 includes an additional discussion regarding this topic.

Table D-21: Opportunity to Generate New Lighting Participants (n=12)

Opportunity to Generate New Lighting Participants	Respondents
5 – A great amount of opportunity still exists	7
4	5
3	-
2	-
1 – No further opportunity exists	-
Don't know/refused	-

Incentive Cap

Table D-14 shows that seven out of twelve respondents reported that 50% or less of their customers reduced their project scope due to reaching the incentive cap. In addition, four out of twelve respondents estimated that the incentive cap reduced the scope of their customers' projects by 1% to 25%.

Table D-22: Impact of Incentive Cap on Project Scope (n=12)

Percent of Projects that Reduced Scope	Respondents
76 to 100%	1
51 to 75%	2
26% to 50%	4
1 to 25%	3
0%	-
Don't know/refused	2
Reduction in Project Scope	**Respondents**
The project scope was reduced by 26% to 50% on average	2
The project scope was reduced by 11% to 25% on average	3
The project scope was reduced by 1% to 10% on average	1
Don't know/refused	6

Program Satisfaction

Table D-15 includes feedback regarding program satisfaction, as reported by responding assessors and installers. Respondents provided feedback on their satisfaction levels with various program aspects, rating each aspect on a scale from one to five, where one indicates "not satisfied at all satisfied" and five indicates "completely satisfied." Respondents were very satisfied with the program, assigning it an average satisfaction rating of 4.5. One respondent reported, "The program is very good, and most business owners appreciate the effectiveness, ease to enroll in the program, and associated savings. Great program!" Section 5.2.4 includes an additional discussion regarding this topic.

Table D-23: Satisfaction with Program Aspects (n=12)

Program Aspects	Average Satisfaction Rating
The program overall	4.5
The interactions you had with any Save On Energy SBP representatives from the program delivery vendor	4.6
The value that the equipment covered by the program provided to customers	4.5
Program application process and forms	4.5
Program worksheets and materials	4.4
The interactions you had with any Save On Energy SBP representatives from the IESO	4.3
Number and types of equipment incentivized through the program	4.2
Program training and education that you received	4.1

Program Aspects	Average Satisfaction Rating
The program website	4.0
Program marketing and outreach	3.1

Program Improvement Recommendations

Table D-16 includes feedback regarding recommendations to improve the program, as reported by responding assessors and installers. Section 5.2.5 includes an additional discussion around these recommendations.

Table D-24: Recommendations to Improve Program* (n=12)

Program Improvement Suggestion	Respondents
Increase marketing	6
Improve auditor efficiency	1
Speed up approval process	1
Include electrical inspections	1
Include EV chargers	1
Target government buildings	1
Don't know/refused	3

*Does not sum to 12 due to multiple responses.

Table D-17 includes feedback regarding equipment or model recommendations to consider including in the program in the future, as reported by responding assessors and installers. Section 5.2.5 includes an additional discussion around these recommendations.

Table D-25: Equipment or Model Recommendations for Future Program Years*
(Open-ended and multiple responses allowed; n=12)

Equipment or Model Recommendations	Respondents
Exterior lighting	3
T5 replacements	3
A-lamps	2
Cooling equipment	2
Dimmer switches	2
Signs	2
17w (2x2) tubes	1
59w (4x8) fixtures	1
PL type CFLs	1
Delamping fluorescent tube fixtures	1
Commercial solar systems	1
Heating equipment	1
Kitchen vent systems	1
Low pressure HVAC refrigeration systems	1
Don't know/refused	4

*Does not sum to 12 due to multiple response.

Equipment Customers Did Not Agree to Install

Table D-18 includes a list of recommended energy-efficient equipment upgrades that customers frequently did not agree to install.

Table D-26: Equipment Upgrades Customer Frequently did not Agree to Install*
(Open-ended and multiple responses allowed; n=12)

Equipment Upgrades Not Installed	Respondents
Fan motors	2
Thermostats	2
Anything not free	2
Strip curtains	1
Lamps (versus panels)	1
Don't know/refused	5

*Does not sum to 12 due to multiple response.

Small Business Sectors to Target

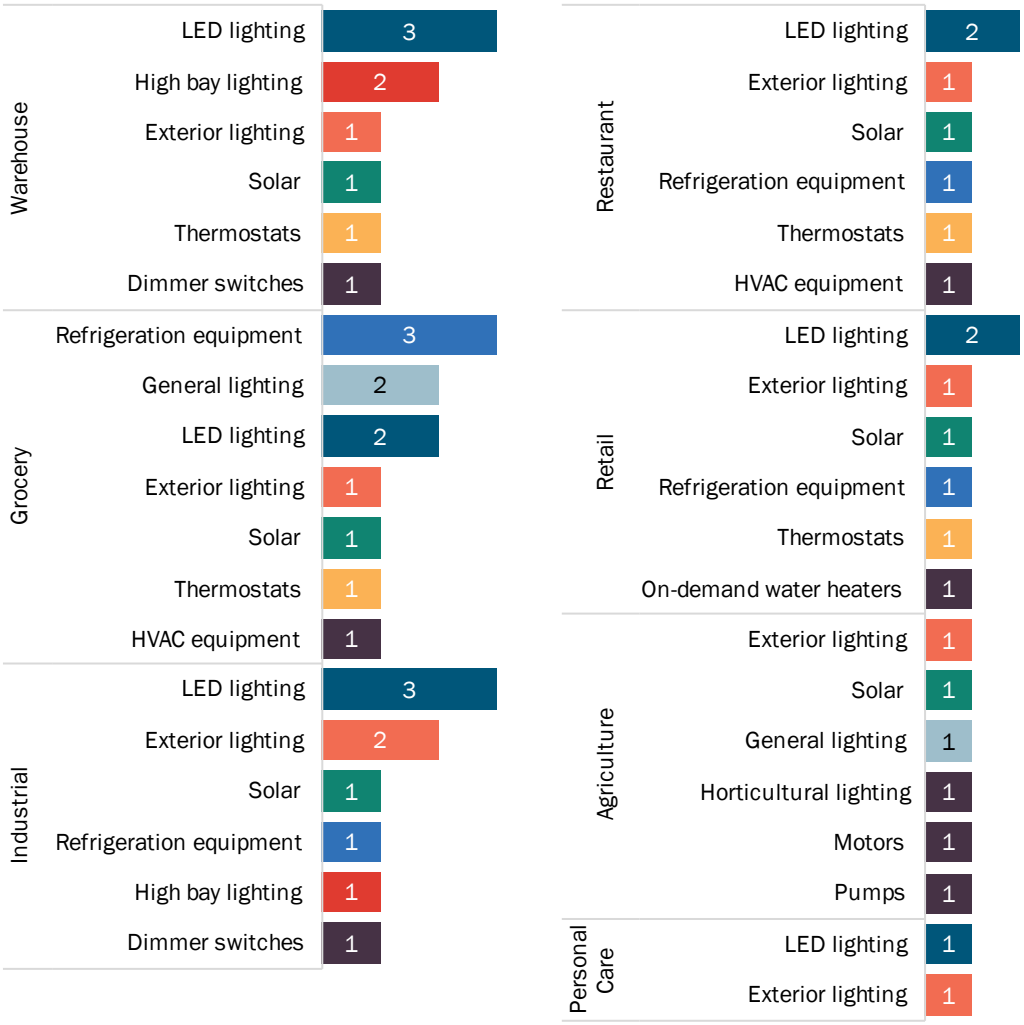
Table D-19 lists small business sectors respondents that indicated SBP should target more directly. Figure D-2 displays the energy-efficiency equipment types respondents thought would likely be of the most interest to each sector.

Table D-27: Small Business Sectors SBP Should Consider Targeting* (n=12)

Small Business Sector	Respondents
Warehouse	9
Grocery	8
Industrial	8
Restaurant	6
Retail	6
Agriculture	5
Personal care	5
Don't know/refused	1

*Does not sum to 12 due to multiple response.

Figure D-4: Equipment of Interest by Sector* (n=11)



*Does not sum to 11 due to multiple response.

Unexpected Fees

When asked to indicate how frequently unexpected fees were incurred for their 2023 SBP projects, using a scale of one to five, where one indicates "never" and five indicates "always," the eight responding installers assigned an average rating of 2.1 (as shown in Table D-20**)**. Types of unexpected fees included additional materials (three respondents), repairs (two respondents), and Electrical Safety Authority (ESA) fees (one respondent).

Additionally, installers were asked to indicate how frequently assessors informed the customer about fees before scheduling the installation, using the same one-to-five scale. The five installers assigned an average rating of 3.6.

Finally, installers were asked whom—the customer, the assessor, or the installer—typically paid unexpected fees incurred for SBP projects. Four installers said the participating customer paid the fees, and one said the installer paid the fees.

Table D-28: How Frequently Unexpected Fees Incurred and Customers Informed

Frequency	Unexpected Fees Incurreed (n=8)	Customer Informed Before Installation Scheduled (n=5)
5 – Always	-	1
4	-	2
3	3	1
2	2	1
1 - Never	2	-
Don't know/refused	1	-
Average	**2.1**	**3.6**

D.2 Additional Participant Net-to-Gross Results

This section includes detailed FR and SO results associated with the NTGR for SBP participants.

Free-Ridership

The extent of FR within the program was assessed by surveying SBP participants, seeking to understand their experiences and plans before learning about the program, what they would have done in the program's absence, and how influential the program was on their decisions to implement the energy-efficient upgrades.

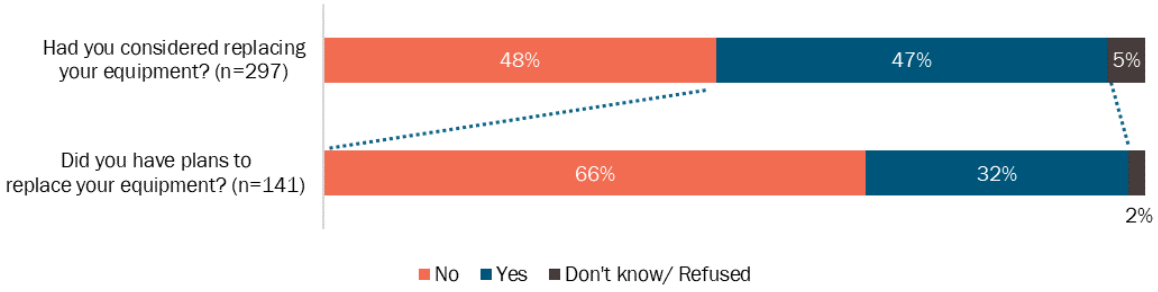
Program Awareness and Timing of Program Participation

Participants were first asked whether they had considered or had plans to implement equipment upgrades before learning they could receive energy-efficiency incentives through SBP. Nearly one-half (47%) of respondents had considered replacing their equipment before learning about the program, while an equal share (48%) had not.

Of those stating that they considered replacing their equipment, nearly one-third (32%) already had plans to install new equipment before learning about the program, indicating potential FR (shown in Figure D-3). However, two-thirds (66%) of respondents who considered new equipment did not plan for installations prior to learning about the program, indicating the program strongly influenced their decision to begin the project. While responses to these questions were not included

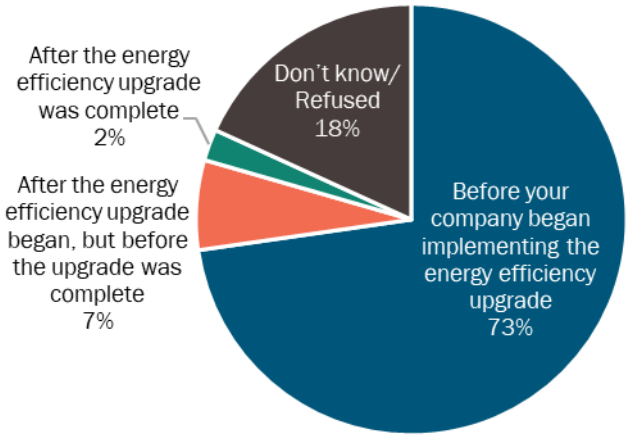
in the estimation of the FR score, they provide additional context for understanding the participants' decision-making processes.

Figure D-5: Actions Taken Prior to Learning about the Program



Next, participants were asked about the timing of their participation in the program in relation to the start of their energy-efficient upgrade project (Figure D-4). Nearly three-fourths of respondents (73%) stated they became a participant before their company began implementing the upgrade, which suggests most participants were engaged by the program as intended. Less than one-tenth (7%) of respondents stated that they initiated their participation after the upgrade began but before completion. Less than one-twentieth (2%) of respondents stated they became a participant after their upgrade was complete. Nearly one-fifth of respondents (18%) could not recall when they became program participants.

Figure D-6: Timing of Program Participation (n=297)



When asked why they initiated their participation after the upgrade began, respondents who indicated doing so most commonly said they needed to complete work for an unplanned replacement for recently failed existing equipment (31%), needed to meet an internal schedule to complete the upgrade (23%), needed more

time to submit the application (19%), and time or resource constraints at their organization (15%) (Table D-21).

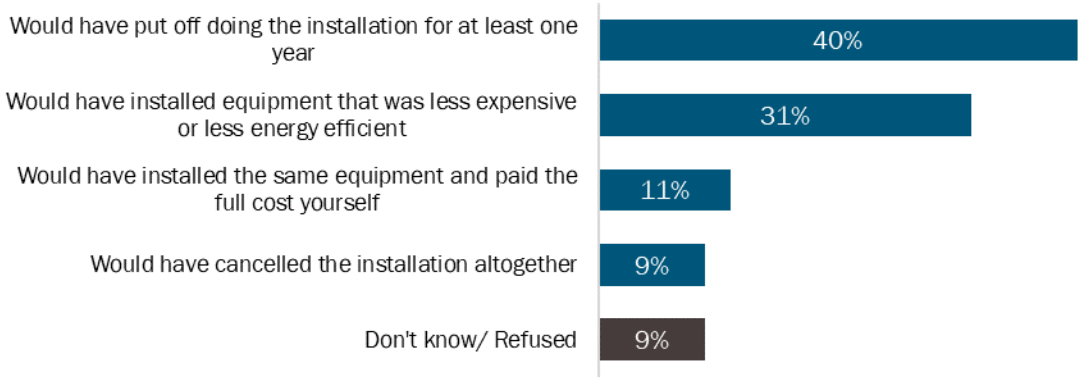
Table D-29: Reasons for Beginning Installations Before Applying (Open-ended and multiple responses allowed; n=26)

Other Influential Factors	Respondents
Needed to complete work for an unplanned replacement for recently failed existing equipment	31%
Needed to meet an internal schedule to complete upgrade	23%
Time needed to submit application through the program application system	19%
Time or resource constraints at your organization	15%
Was not aware of the program prior to starting the installation	4%
Wanted to save energy	4%
Don't know/Refused	4%

Actions in the Absence of the Program

Participants who stated that they had planned equipment upgrades before applying to SBP were then asked what their company would have done in the absence of the program's free audit and equipment installation (Figure D-5). Overall, their responses suggest low levels of FR, as nearly one-half (49%) of respondents would have either cancelled the installation altogether (9%) or would have put off the upgrades for at least a year (40%). Close to one-third (31%) would have installed less-expensive or less-efficient equipment without the program's support. More than one-tenth (11%) would have installed the same equipment and paid the full cost themselves, indicating a high FR level for these respondents. Responses from this participant intent question were factored into the FR analysis.

Figure D-7: Actions in Absence of Program (n=45)



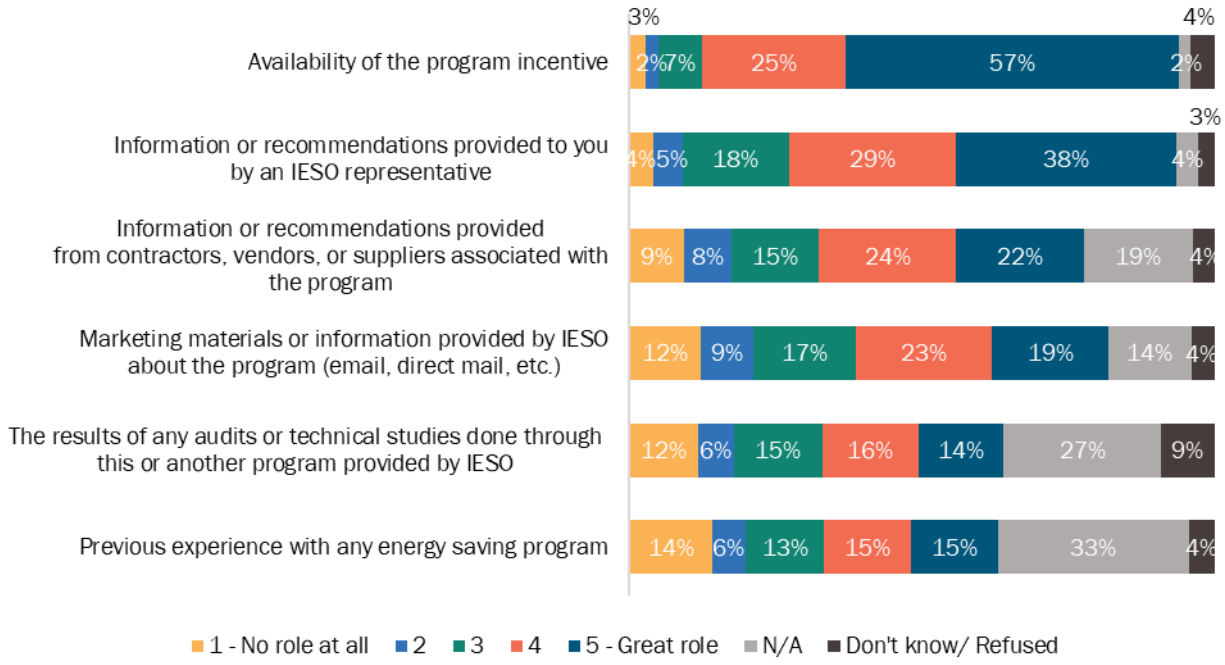
Respondents who indicated they would have installed less-expensive or less-energy-efficient equipment were asked to describe how much they would have reduced their project's size, scope, or efficiency. Three respondents stated they would have reduced the size, scope, or efficiency by a large amount. Eight respondents reported they would have reduced it by a moderate amount, and another respondent would have reduced it a small amount. The remaining two respondents were unsure. These results indicate the program helped some customers increase their project's size and/or scope to a degree beyond that achieved independently. This question was not used to calculate the FR score, but it provides additional context around participant intentions.

All five respondents who stated they would have installed the same equipment in the program's absence further confirmed that they would have paid for it themselves, indicating a high FR level for these respondents. It should be noted that while these responses were used to estimate FR, the participants' scores constituted a small percentage of the total number of survey respondents and did not have a notable impact on the program's overall FR level.

Influence of Program Features on Participation

Participants were asked how influential various program features were on their decision to install energy-efficient equipment (Figure D-6). They rated each feature's influence on a scale from one to five, where one indicated "no influence at all," and five indicated "it was extremely influential." The highest-rated responses were the availability of incentives (81% with a rating of 4 or 5) and information or recommendations provided by an IESO representative (66% with a rating of 4 or 5). Respondents rated their previous experience with energy-saving programs and audit or technical study results completed through SBP or other programs as the least influential element (31% and 30% with a rating of 4 or 5, respectively). This suggests an opportunity exists to further cross-promote SBP through other programs and to assess the program's effectiveness in providing technical information to customers. This question, which focuses on the program's influence, was used along with the prior questions about customer intentions to estimate the FR score.

Figure D-8: Influence of Program Features on Participation (n=297)*
(Rating on a scale from 1 to 5)



*May not sum to 100% due to rounding.

When participants were asked whether other factors greatly influenced their organization to install energy-efficient lighting, respondents' answers widely varied (Table D-22). The most common factors identified were saving energy/money on electricity bills (52%), lighting improvements needed (18%), lack of cost to participate in the program (15%), concern for the environment (12%), and ease of participation in the program (11%).

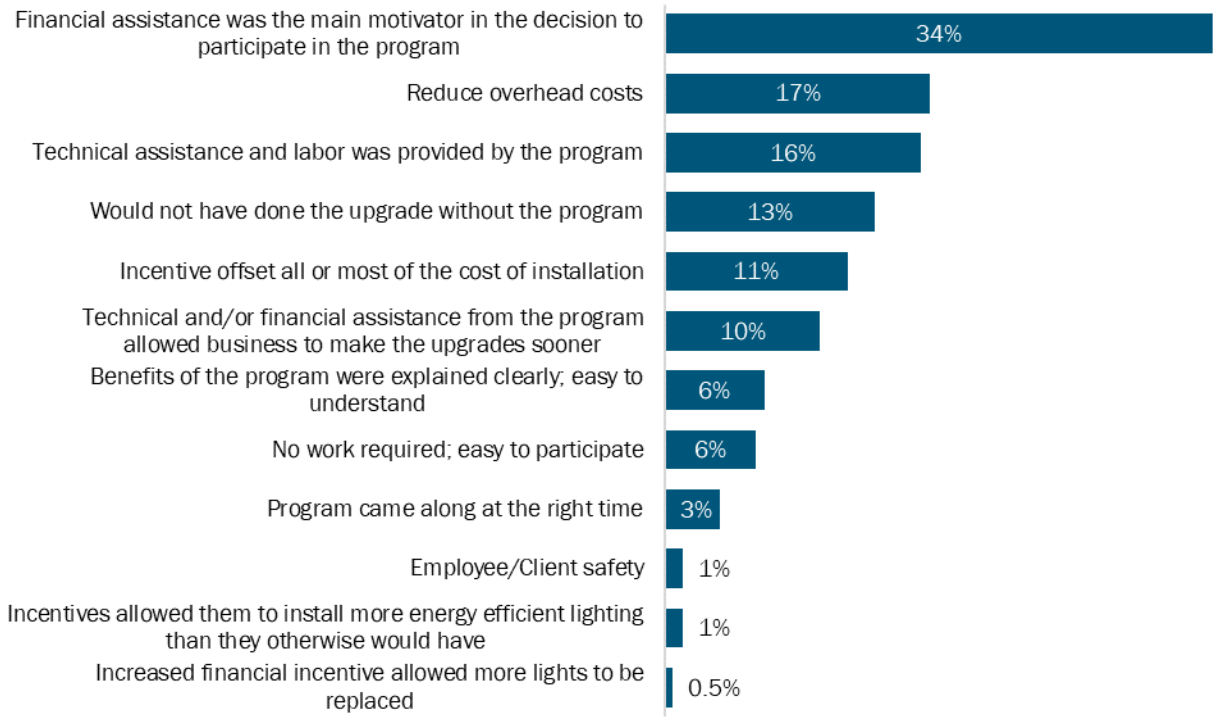
Table D-30: Other Influential Factors on Upgrade Decision (Open-ended and multiple responses allowed; n=84)*

Other Influential Factors	Respondents
Cost/Energy savings	52%
Improved lighting (brighter lighting, more lighting, newer lighting)	18%
No cost to participate	15%
Environmental goals or concerns	12%
Ease of participating in the program	11%
Equipment upgrades were needed	10%
Referral from a friend or colleague	6%
To reduce maintenance costs	4%
Employee health	2%
Technical assistance and labor was provided by the program	1%
Employee/Client safety	1%
Information on the program website	1%
Was already in the process of upgrading or renovating building	1%

*Does not sum to 100% due to multiple responses.

Participants were then asked to explain (in their own words) what impact, if any, the financial support or technical assistance they received from the program had on their decisions to install the program-incentivized equipment at the time that they did (Figure D-7). Of the nearly three-fifths (59%) of those responding, the most common response was that the financial assistance served as the main motivator in their decisions to participate in the program (34%). Other frequent responses included to reduce overhead costs (17%), technical assistance and labour provided by the program (16%), and that they would not have done the upgrades without the program (13%).

Figure D-9: Program Impact on Decision to Install Equipment
(Open-ended and multiple responses allowed; n=175)



*Does not sum to 100% due to multiple responses.

In summary, the FR results among the SBP participants indicated low FR levels (7.6% FR score). In combination with the other responses shown in this section, this FR score demonstrates the program mostly reached participants who would not have implemented equipment upgrades without the program.

Spillover

To estimate SO, participants were asked if they installed any energy-efficient equipment for which they *did not* receive an incentive following their participation in SBP. One-seventh (14%) of respondents reported installing this additional equipment.

Table D-23 displays the types of non-incentivized equipment installed by companies after their SBP project was completed. Some survey respondents installed multiple equipment types. Non-incentivized lighting was the most common equipment type installed (81%), followed by ENERGY STAR® Appliances (14%).

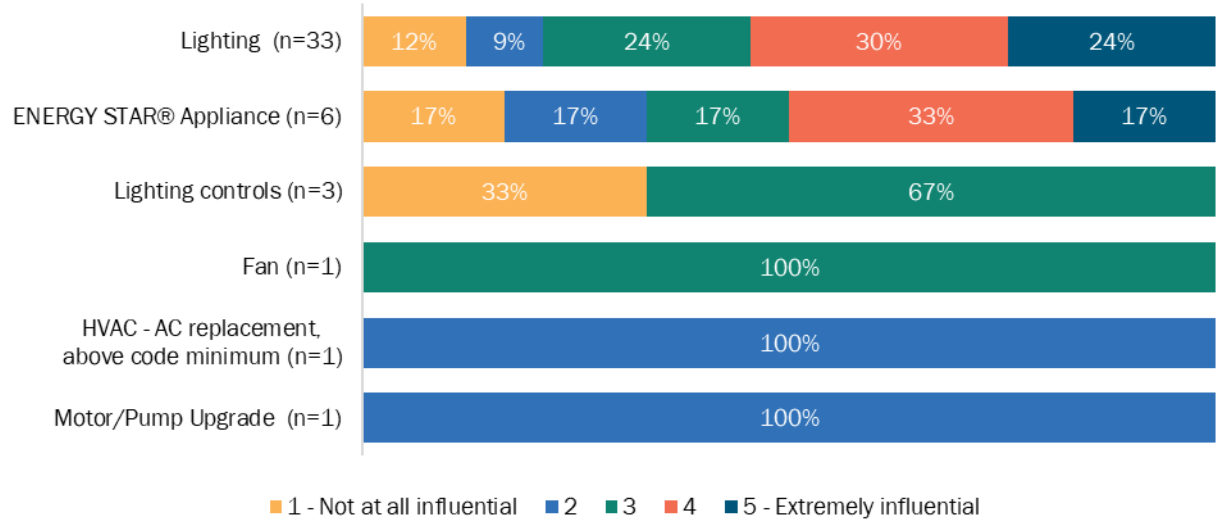
Table D-31: Types of Upgrades Installed after Program Participation*
(Multiple responses allowed; n=42)

Type of Upgrades Installed	Respondents
Lighting	81%
ENERGY STAR® Appliance	14%
Air conditioner replacement, above code minimum	2%
Lighting Controls	2%
Motor/Pump Upgrade	2%
Fan	2%
Motor/Pump Drive Improvement (VSD and Sync Belt)	2%

* Does not sum to 100% due to multiple responses.

Respondents were asked what influence level their SBP participation had on their decisions to install this additional energy-efficient equipment. Participants rated the program's influence on a scale from one to five, where one indicates "the program had no influence at all" and five indicates "the program was extremely influential." The number of survey respondents influenced by the program (a rating of 3 or higher) is shown in Figure D-8 for each equipment type. The respondent who installed non-incentivized fans reported being completely influenced by SBP. Fewer respondents reported being influenced by SBP for lighting (78%), ENERGY STAR® appliances (67%), and lighting controls (67%).

Figure D-10: Program Influence on Equipment Installed Outside the Program*
(Multiple responses allowed; n=42) (Rating on a scale from 1 to 5)



* May not sum to 100% due to rounding.

Participants who indicated they installed the program-influenced, non-incentivized equipment were asked a series of follow-up questions (e.g., capacity, efficiency, annual hours of operation). These detailed questions are displayed in Table D-24 through Table D-26 and were used within the NTG algorithm to attribute SO savings to each equipment installation. SO savings were driven mainly by the installation of 103 new exterior LED bulbs completed by three respondents.

Table D-32: Spillover Measures–ENERGY STAR Appliances

ENERGY STAR Appliance	Number of Respondents	Number of Appliances
Refrigerator	3	3
Clothes Washer	1	1

Table D-33: Spillover Measures–Fans

ENERGY STAR Appliance	Number of Respondents	Diameter of Fan (ft)	Number of Fans
2 – 3.99 feet	1	1	2

Table D-34: Spillover Measures–Lighting & Lighting Controls

Lighting or Lighting Control Type	Number of Respondents	Number of Bulbs	Number of Fixtures	Wattage/ Type	Fixture Location	Efficiency of the Equipment	Hours of Use (hrs)
Compact fluorescent	2	13					
LED exterior (close ended responses)	3	32			Pole mount (n=1), against building (n=1), under canopy (n=1)		
LED exterior (open ended responses)	1		10			120V, 1500 lumens, 17 Watts, efficiency per Watt 88	10-11
LED linear	15		290				
LED screw base	6	143		11-20 (n=3), 21-30 (n=2), 31+ (n=1)			

Lighting or Lighting Control Type	Number of Respondents	Number of Bulbs	Number of Fixtures	Wattage/ Type	Fixture Location	Efficiency of the Equipment	Hours of Use (hrs)
Linear fluorescent	2	176 (2-4 lamps per fixture)	48	T5 (n=1), T8 (n=1)	Low ceiling (<20 ft; n=1), High ceiling (20+ ft, n=1)		
Occupancy sensor	2						

D.3 Additional Participant Process Results

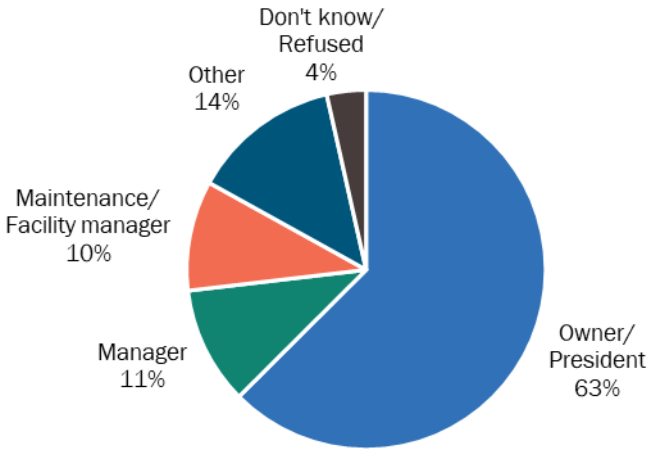
Firmographics

Participants were asked various questions to collect information on their job titles, ownership status, and responsibilities in relation to the program. Details on participants' companies (e.g., primary activities, chain or franchise status, facility floor space, whether the facility participated in other business programs) were also gathered during the survey.

Roles and Ownership Status

More than three-fifths of survey respondents (63%) were owners or presidents of their companies, while more than one-fifth (21%) were managers (Figure D-9). Nearly three-fifths (59%) were the primary employees responsible for SBP upgrades, and more than one-third (34%) shared the responsibility.

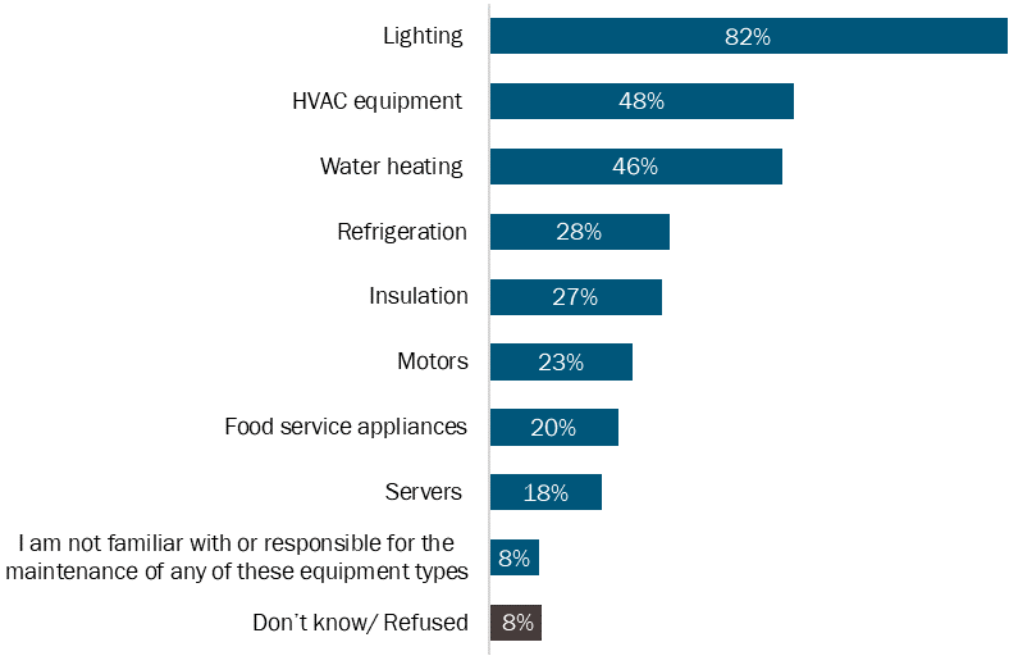
Figure D-11: Role of Respondent
(Open-ended and multiple responses allowed; n=280)*



*Does not sum to 100% due to multiple response.

Most survey respondents (84%) were familiar with or responsible for maintaining the equipment at their facilities (Figure D-10), with the most common equipment types including lighting (82%), HVAC (48%), and water heating (46%).

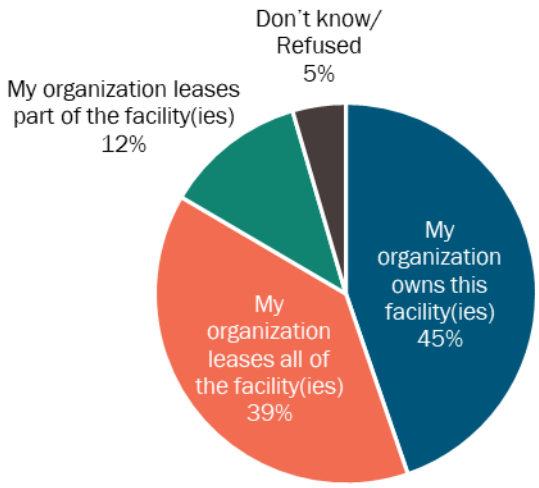
Figure D-12: Equipment Maintenance Responsibility
(Multiple responses allowed; n=264)*



* Does not sum to 100% due to multiple responses.

More than two-fifths (45%) of participating companies owned the property where the program upgrades were conducted, and close to two-fifths (39%) rented the property (Figure D-11). One-tenth (12%) owned and rented their properties. Most (93%) were responsible for paying their electric utility bills.

Figure D-13: Ownership Status
(Open-end and multiple responses allowed; n=264)



Primary Activity at Facility

The program mainly served facilities in the retail and wholesale sectors (29%) (Table D-27). The next most common sectors were: other services (13%), non-profits (10%), and lodging and food service (8%). More than five-sixths (87%) of respondents stated their company was not part of a franchise or chain.

Table D-35: Primary Activity at Facility (Open-ended and multiple responses allowed; n=262)

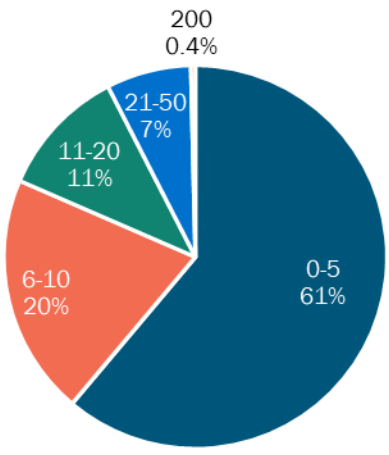
Primary Business Categories	Respondents
Retail and wholesale	29%
Other services	13%
Non-profit	10%
Lodging and food service	8%
Healthcare services	7%
Manufacturing	6%
Arts, entertainment, recreation, advertising, and travel	5%
Finance, insurance, real estate, and property management	5%
Construction	4%
Agriculture, forestry, husbandry, mining, and extraction	3%
Educational services	3%
Government services	3%
Repair, maintenance, and operations	2%
Scientific, technical, and information services	0.4%
Transportation and warehousing	0.4%
Utilities	0.4%

* Does not sum to 100% due to multiple responses.

Number of Employees

Participants were asked how many employees their company had (Figure D-12). More than three-fifths (61%) stated they had fewer than six employees.

Figure D-14: Number of Employees (n=265)*

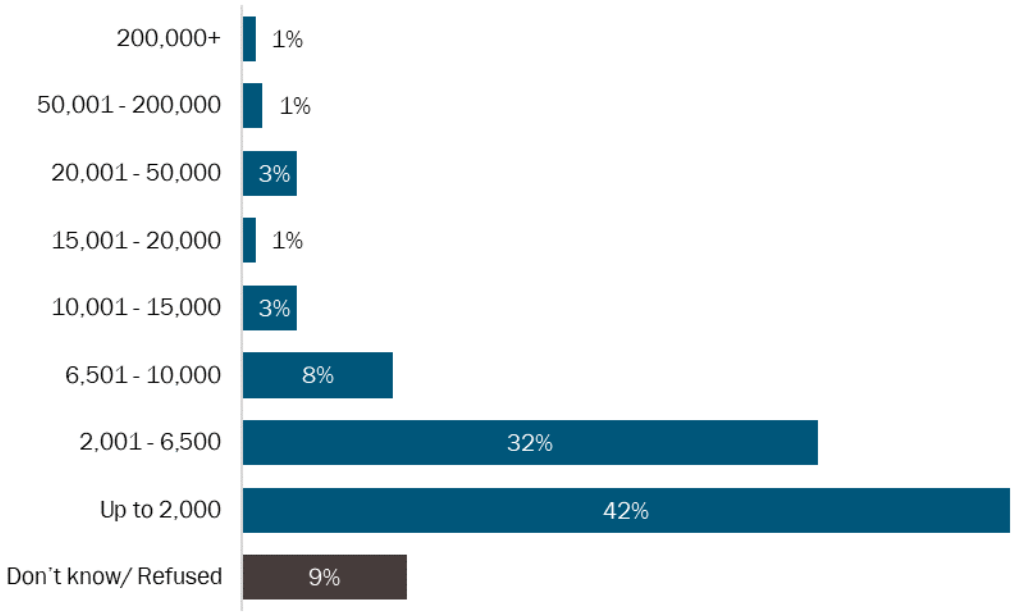


* Does not sum to 100% due to rounding.

Facility Size

Participants were asked to provide the square footage of the project facilities. If multiple facilities received lighting upgrades, participants were asked to provide the total square footage for all their facilities (Figure D-13). Nearly three-fourths (74%) of respondents stated the total square footage of their facilities was under 6,501 square feet.

Figure D-15: Total Square Footage for All Buildings (n=265)

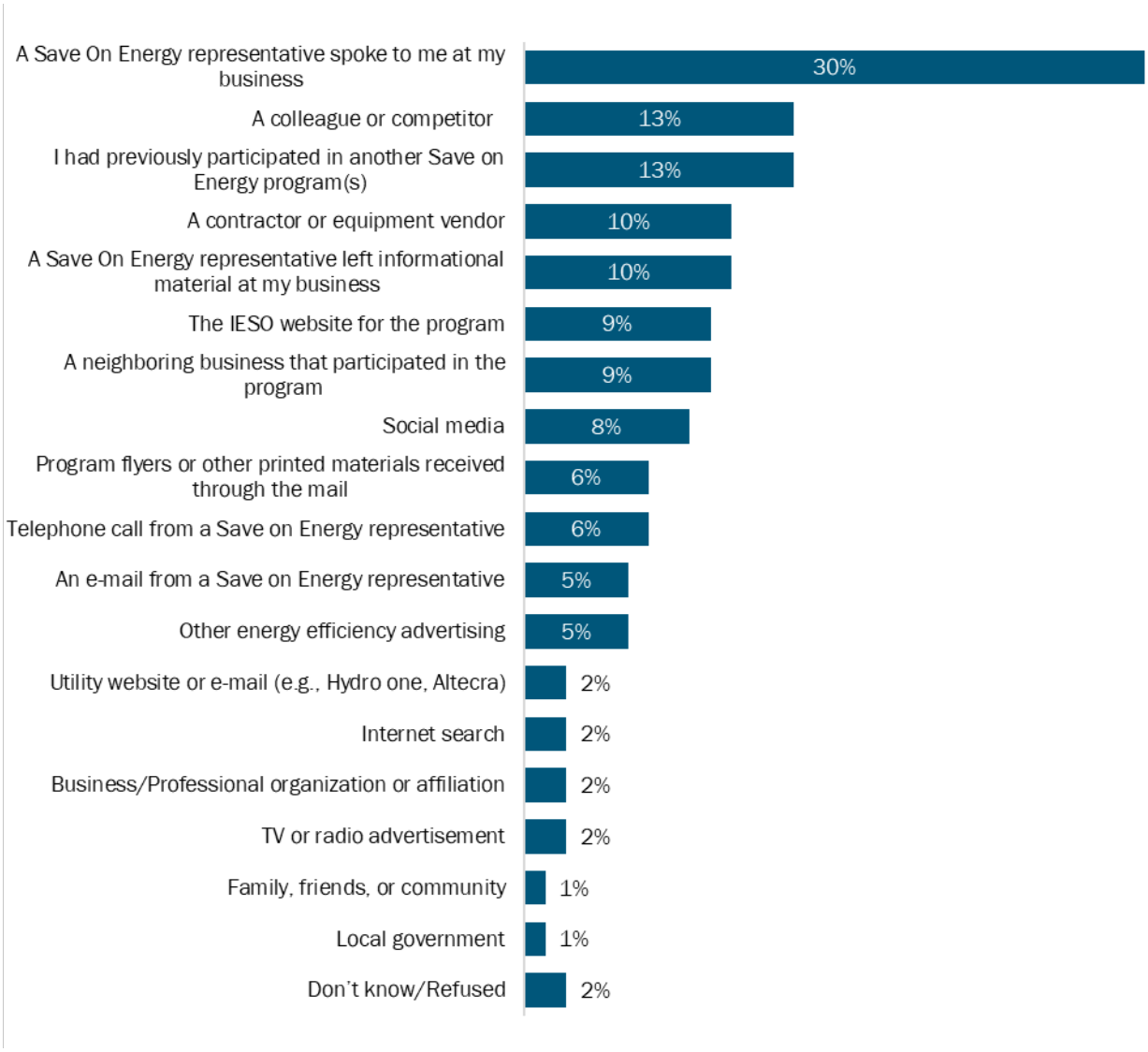


Program Awareness

How Participants Heard About the Program

Figure D-14 includes a list of ways participants heard about the program. Participants most commonly heard about the program from their Save On Energy representative who spoke to them at their business (30%). Section 5.3.2 includes additional discussion about program awareness.

Figure D-16: Sources of Program Awareness
(Open-ended and multiple responses allowed; n=280)*

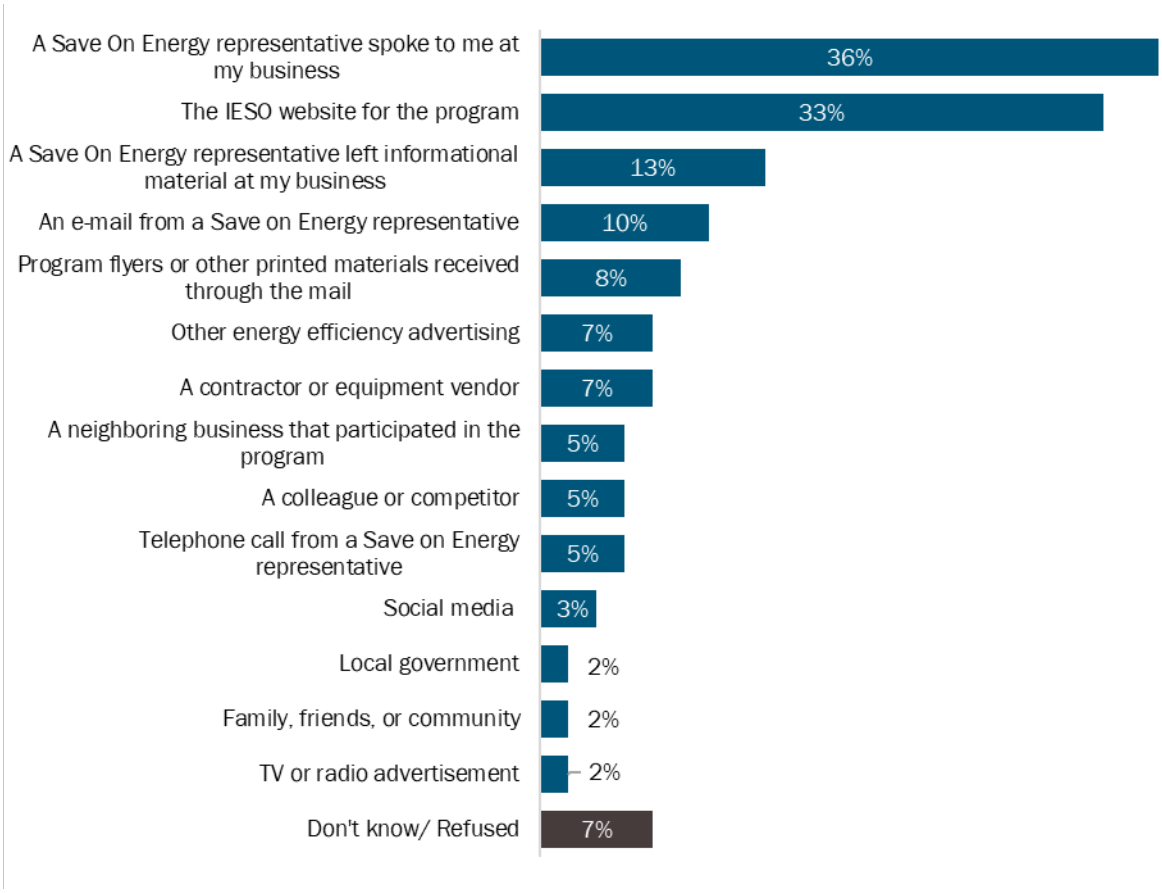


* Does not sum to 100% due to multiple responses.

How Participants Heard About Program Offerings in Addition to Lighting

Figure D-15 includes a list of ways that participants became aware that the program offered other energy-efficient equipment upgrades in addition to lighting. Section 5.3.2 includes additional discussion about program awareness.

Figure D-17: Sources of Awareness of Program Offerings in Addition to Lighting
(Open-ended and multiple responses allowed; n=61)*

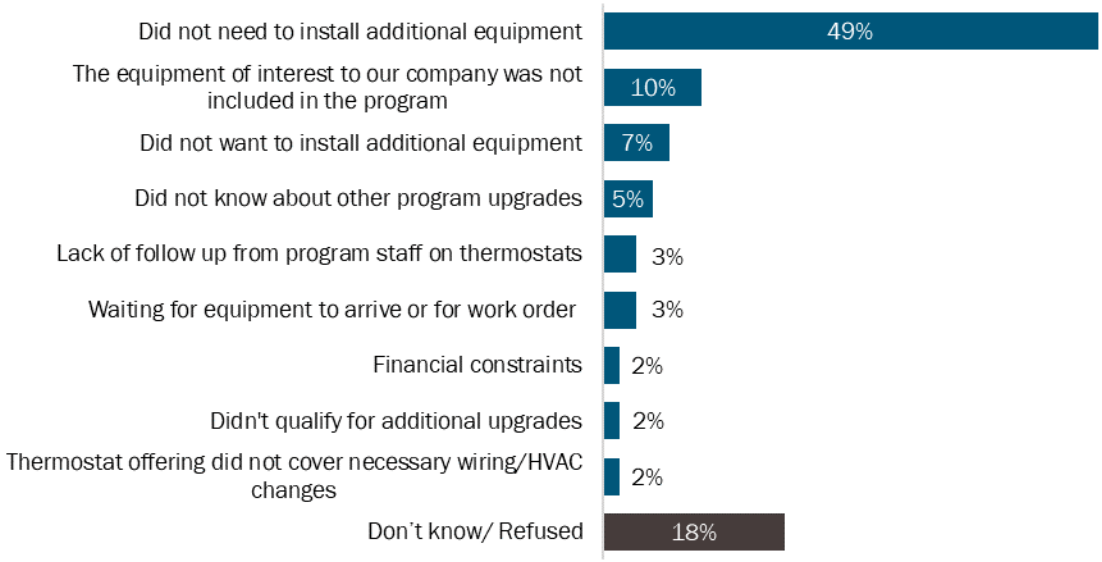


* Does not sum to 100% due to multiple responses.

Participant Reasons for Not Installing Non-Lighting Equipment

Figure D-16 includes a list of participants' reasons for not installing other non-lighting equipment. Section 5.3.2 includes an additional discussion regarding these reasons.

Figure D-18: Reasons for Not Installing Other Non-Lighting Equipment (Open-ended allowed; n=61)



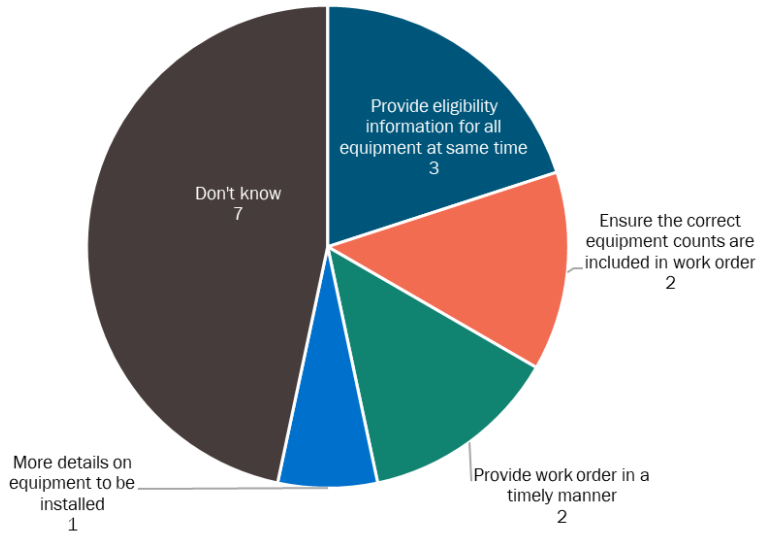
* Does not sum to 100% due to rounding.

Work Order

Suggestions for Additional Clarity in Work Order

Over four-fifths (85%) of participants stated that the work order they received after the initial site assessment included all the information they required to inform their decision to move forward with the work. Of participants saying the work order needed more information (5%, or 15 respondents), nearly one-half (47%) were unable to provide suggestions for additional information to include. The most common suggestion mentioned was to provide eligibility information for all equipment at the same time (three respondents). Figure D-17 lists additional information that participants would have found helpful had it been included in the work order.

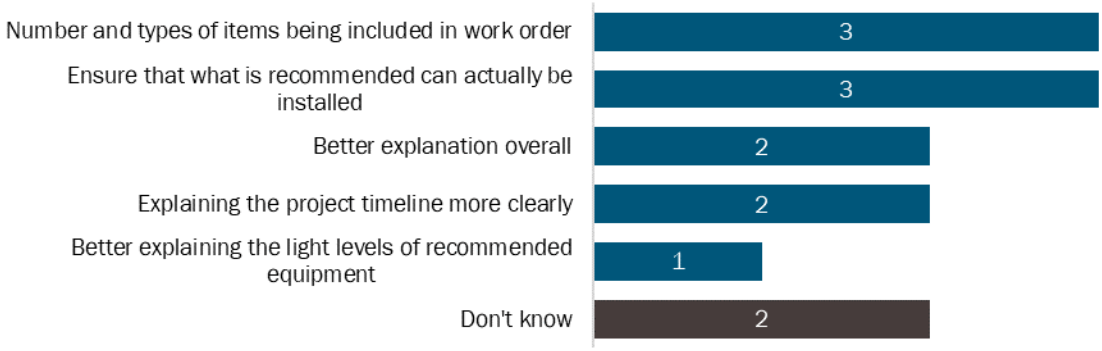
Figure D-19: Additional Information to be Included in Work Order (n=15)



Work Order Topics

Most participants (93%) said the Save On Energy representative who performed the initial site assessment clearly explained what was in the work order. The remaining participants who felt the representative needed to provide more clarity (4%, or 12 respondents) most commonly specified that they would like clarification on the numbers and types of items included and for representatives to ensure recommendations could actually be installed (three respondents each). Figure D-18 lists work-order related information that respondents would have found helpful for the Save On Energy representative to explain with greater clearly.

Figure D-20: Work Order Topics for Representatives to Explain More Clearly (n=12)*



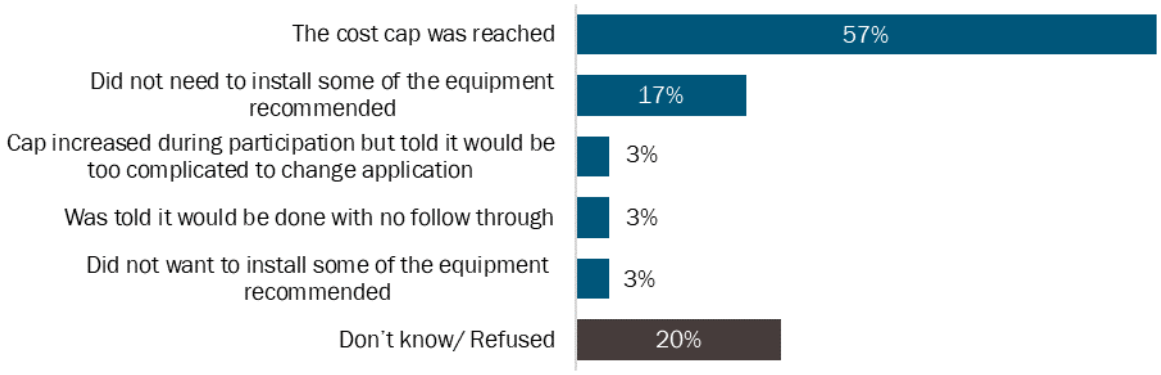
* Does not sum to 12 due to multiple responses.

Installation Decision-Making

Participant Reasons for Not-Installing Recommended Equipment

Figure D-19 includes a list of participant reasons for not installing energy-efficient equipment recommended during the initial site assessment. Section 5.3.4 includes an additional discussion around these reasons.

Figure D-21: Reasons for Not Installing Recommended Equipment (n=30)*

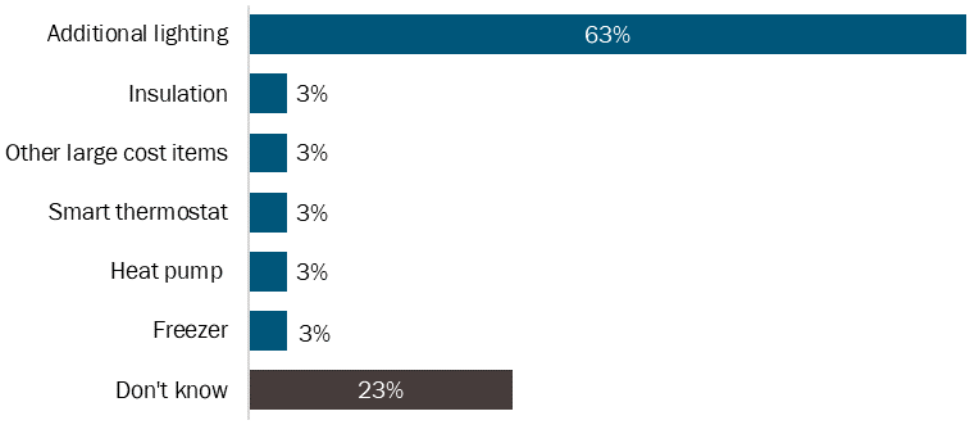


* Does not sum to 100% due to multiple responses.

Recommended Equipment Not Installed

Figure D-20 includes a list of energy-efficient equipment recommended during the initial site assessment that was not installed. Section 5.3.4 includes additional discussion about the equipment not installed.

Figure D-22: Equipment Recommended in Initial Site Assessment Not Installed (n=30)*



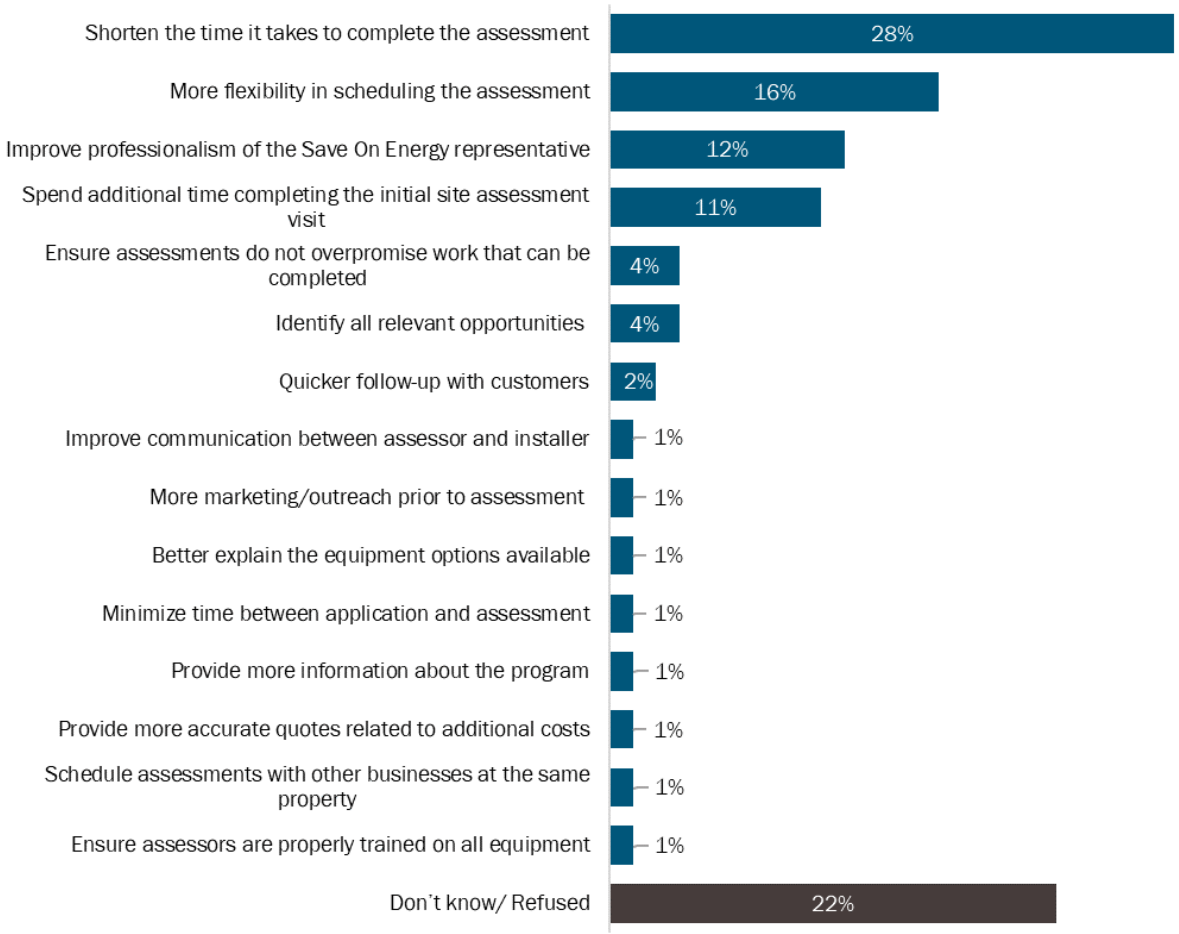
* Does not sum to 100% due to multiple responses.

Site Visits **Improvement Suggestions**

Initial Site Assessment Visits

Figure D-21 includes a list of initial site visit improvement suggestions, as reported by participants. The most commonly mentioned suggestion was to shorten the time required to complete the assessment (28%). Section 5.3.3 includes an additional discussion around these improvement suggestions.

Figure D-23: Suggestions to Improve the Initial Site Assessment Visit
(Open-end and multiple responses allowed; n=85)

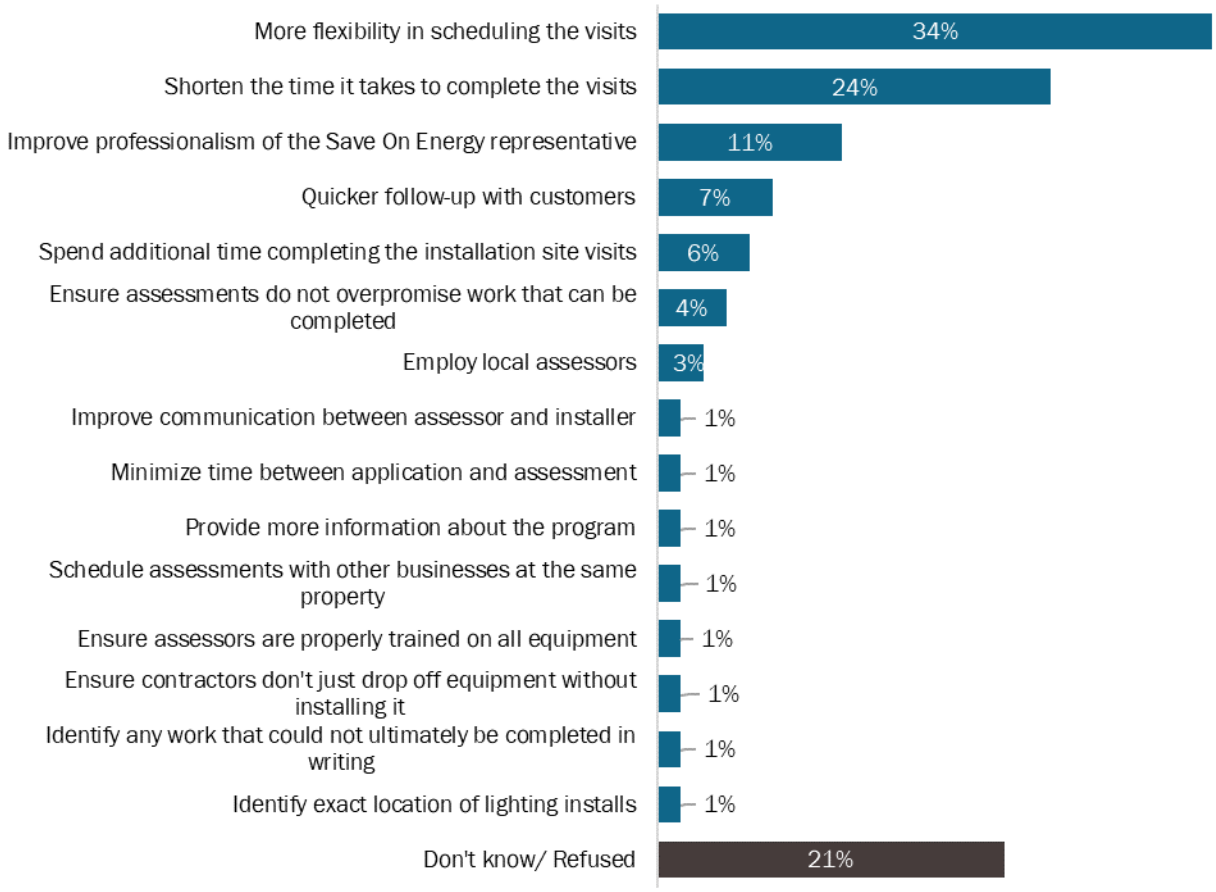


* Does not sum to 100% due to multiple responses.

Installation Visits

Figure D-22 includes a list of installation site visit improvement suggestions, as reported by participants. The most commonly mentioned suggestion was to provide more flexibility in scheduling visits (34%). Section 5.3.3 includes additional discussion around these improvement suggestions.

Figure D-24: Suggestions to Improve the Installation Site Visit
(Open-ended and multiple responses allowed; n=70)*

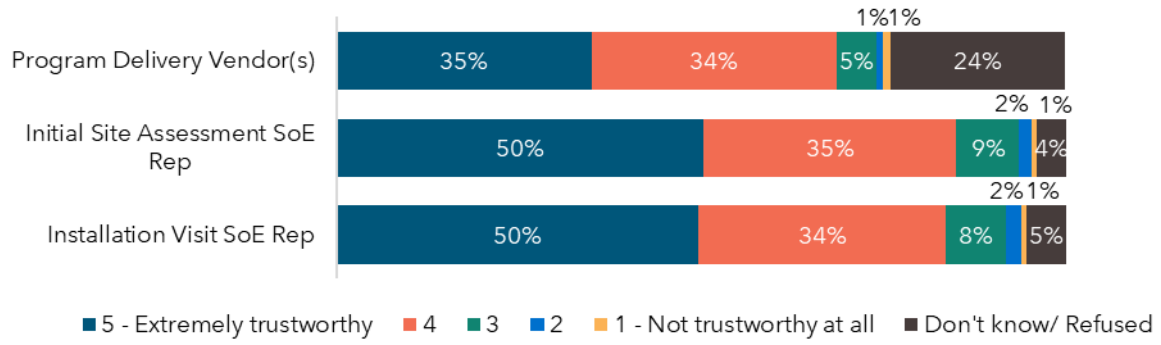


* Does not sum to 100% due to multiple responses.

Program Partner Trustworthiness

Figure D-23 shows the trustworthiness of program delivery vendors, Save On Energy representatives who performed the initial site assessment, and Save On Energy representatives who performed the installation site visit, on a scale from one to five, where one indicates "not trustworthy at all" and five indicates "extremely trustworthy." Section 5.3.5 provides an additional discussion regarding these results.

Figure D-25: Trustworthiness of Program Partners* (n=280)
(Rating on a scale from 1 to 5)



* Does not sum to 100% due to rounding.

Participants who did not find the *program delivery vendors* trustworthy (n=6) most commonly mentioned providing shorter timelines to complete the work as a way to improve their trustworthiness (two respondents).

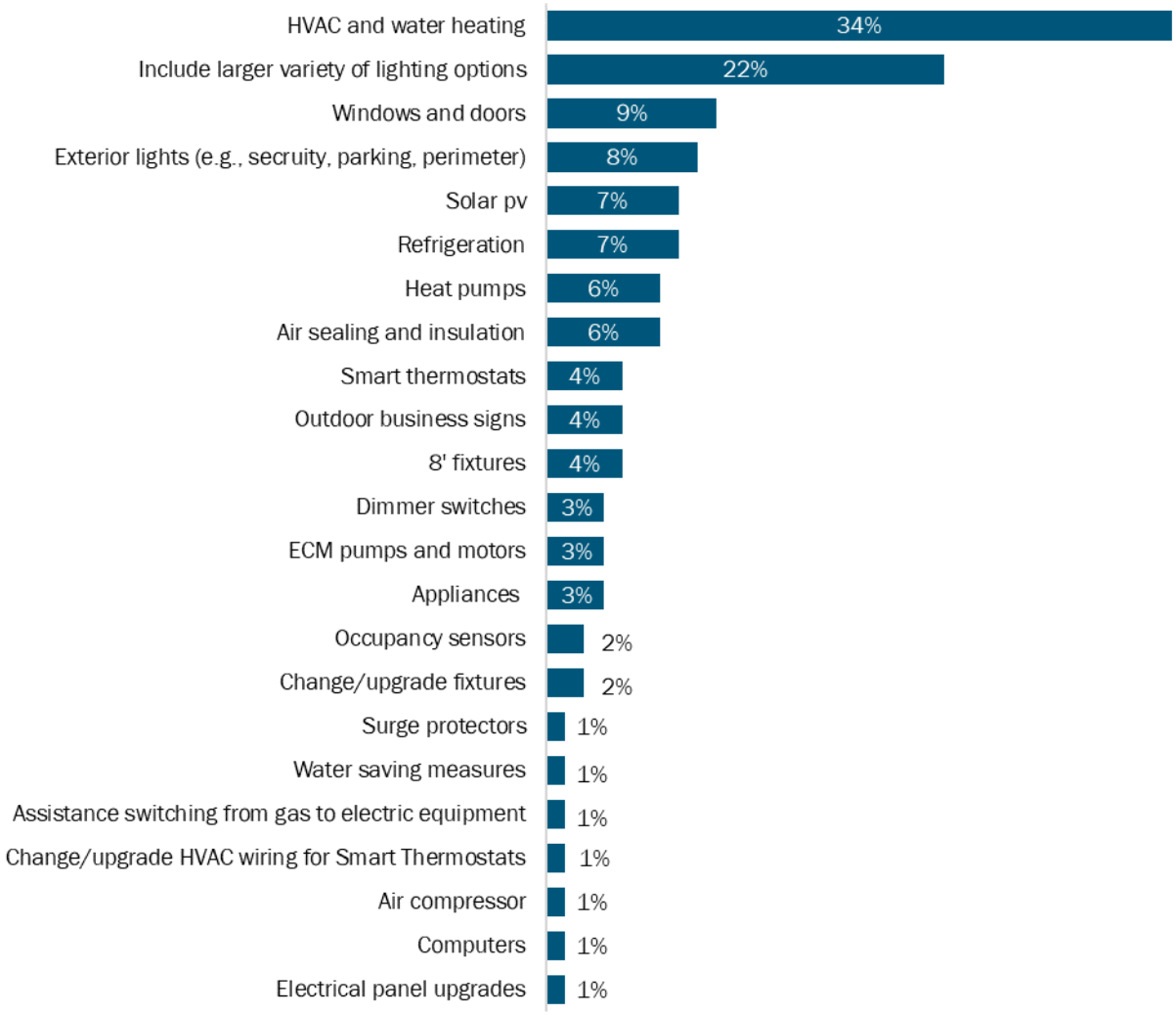
Participants who did not find the Save On Energy representatives who performed initial site assessments to be trustworthy (n=7) most commonly mentioned that improvements could be made to ensure representatives follow through with all aspects of the job as a way to improve their trustworthiness (two respondents).

Participants who did not find the Save On Energy representatives who performed the installation visits to be trustworthy (n=8) most commonly mentioned improving their promptness in following-up with customers and providing reassurance that the program was legitimate (three respondents each).

Recommended Equipment and Services

Figure D-24 includes a full list of recommended additional equipment or services for inclusion in the program during future years, as reported by participants. Responses related to lighting included exterior lights (e.g., security, parking, perimeter), 8' fixtures, outdoor business signage, changing/upgrading fixtures, and occupancy sensors. Responses not related to lighting included HVAC and water heating, windows and doors, solar equipment, air sealing and insulation, and heat pumps. Section 5.3.6 includes an additional discussion around these equipment recommendations.

Figure D-26: Additional Equipment Recommendations*
(Open-ended and multiple responses allowed; n=96)

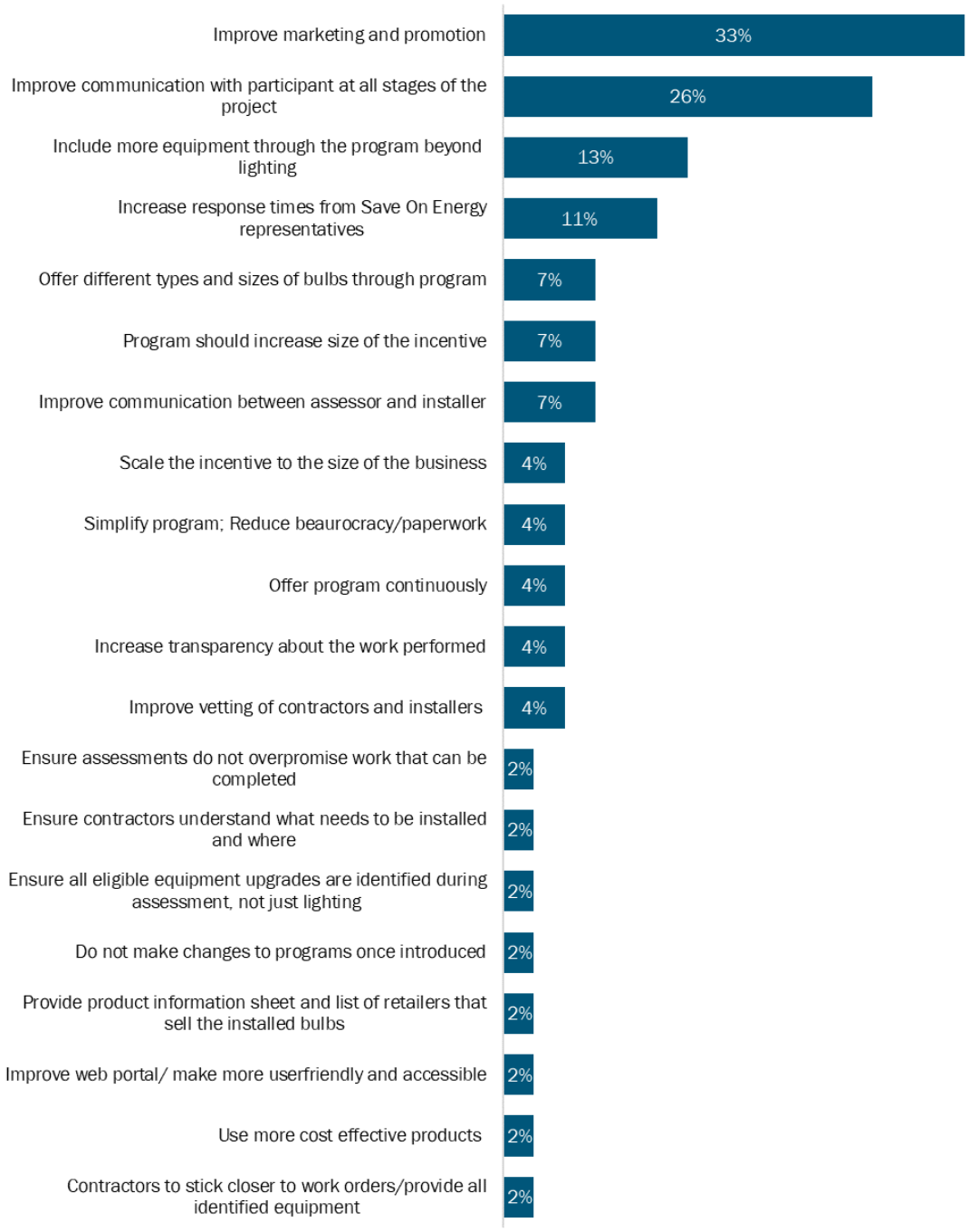


* Does not sum to 100% due to multiple responses.

Program Improvement Recommendations

Figure D-25 includes a full list of additional program improvement recommendations provided by participants. Section 5.3.7 includes an additional discussion around these overall recommendations.

Figure D-27: Recommendations for Program Improvement*
(Open-ended and multiple responses allowed; n=27)

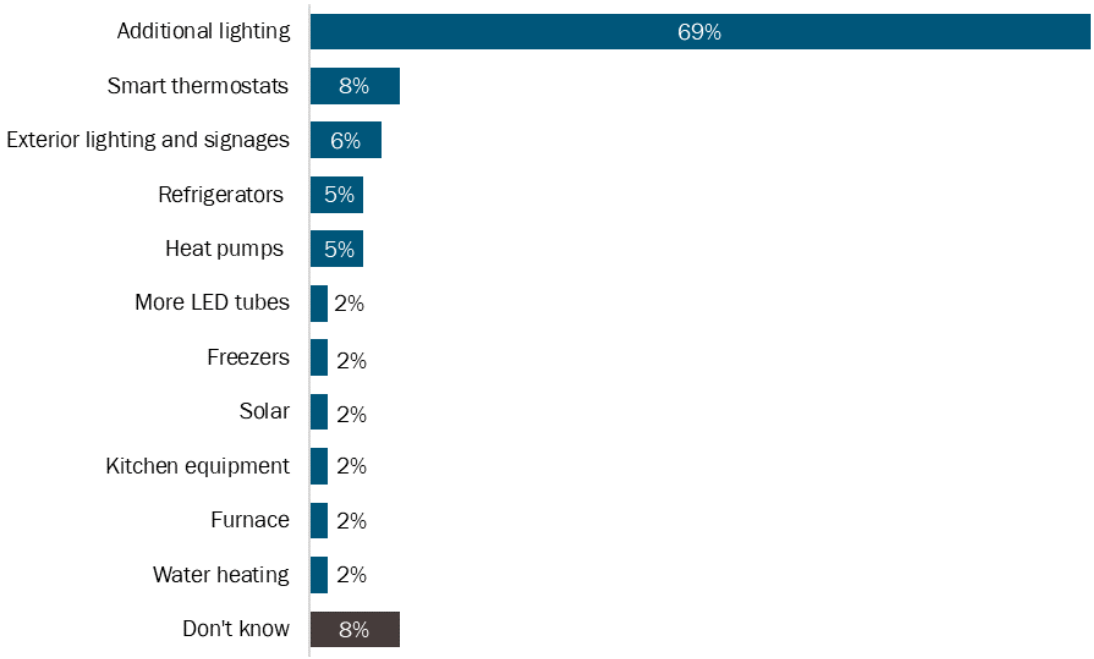


* Does not sum to 100% due to multiple responses.

Project Cost Cap

Figure D-26 identifies the additional energy-efficient equipment upgrades that would have been of interest to respondents who had reached the project cost cap(s) if there had not been a cap(s). Section 5.3.8 provides an additional discussion on these results.

Figure D-28: Additional Energy-Efficient Upgrades of Interest if No Incentive Cap (Open-ended and multiple responses allowed; n=63)



* Does not sum to 100% due to rounding.

Unexpected Fees

Figure D-27 shows whether participants paid any fees associated with their Save On Energy SBP project in 2023. Less than one-tenth (8%) of respondents had to pay fees compared to almost three-fourths (74%) of respondents who did not. Those who reported paying fees mentioned paying ESA fees (6%), a lift fee to access lighting (1%), or they paid a fee but did not recall what it was for (1%).

Figure D-29: Whether Respondent Paid Any Fees Associated with Program
(Open-ended and multiple responses allowed; n=280)

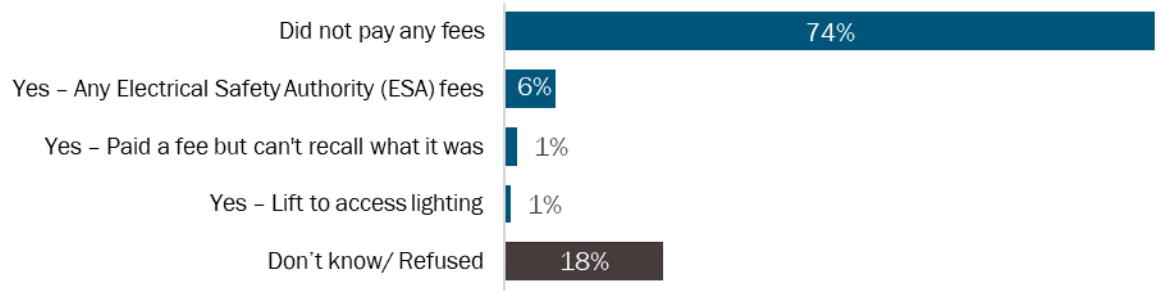


Figure D-28 shows participants who paid ESA fees (6% or 16 respondents) and their awareness of the fees prior to signing the work order. Over one-half (56% or nine respondents) said they were informed about the ESA fees prior to signing the work order, while one-fourth (25% or four respondents) were not informed.

Figure D-30: Awareness of ESA Fees Prior to Signing Work Order (n=16)

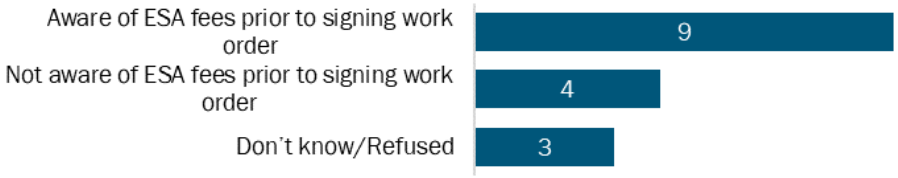
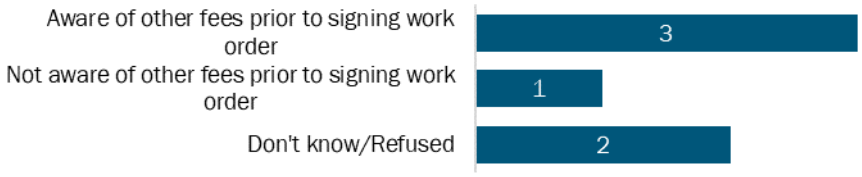


Figure D-29 shows whether participants who reported paying other fees (six respondents) were informed about these other fees prior to signing the work order. One-half (50% or three respondents) said they were informed about these other fees prior to signing the work order, while the remainder were not informed (one respondent) or did not know if they were aware or refused to answer (two respondents).

Figure D-31: Awareness of Other Fees Prior to Signing Work Order (n=6)



Appendix E Job Impacts Methodology

This appendix provides a detailed breakdown of the Jobs Impact Evaluation methodology.

E.1 Developed Specific Research Questions

The first step in modeling the job impacts from the SBP program was to determine which specific research questions (RQs) the model would answer. In a scenario without the existence of the SBP program, customers receive electricity from the IESO and pay for it via the monthly billing process. Implementing the SBP introduces a set of economic supply and demand shocks to different sectors of the economy. The four research questions below address these shocks:

1. **What are the job impacts from new demand for energy-efficient measures and related program delivery services?** Funds collected for the SBP program generate demand for efficient equipment and appliances. They also generate demand for services related to program delivery, such as general overhead for program implementation and staffing. This demand creates jobs among firms that supply these products and services. Third-party implementers collect funds from the IESO to cover a portion of the project cost, while the participant covers the remainder of the costs.
2. **What are the job impacts from business reinvestments?** Once energy-efficient equipment is installed, the customers realize annual energy savings for the useful life of the measures. Businesses can choose to use this money to pay off debt, disburse it to shareholders as dividends, or reinvest it in the business. This additional money and the decision to save or spend has implications for additional job creation. For instance, additional business spending on goods and services generates demand that can create jobs in other sectors of the economy.
3. **What are the job impacts from funding the energy-efficiency program?** The IESO **energy-efficiency** programs are funded via volumetric bill charges for all customers—both residential and non-residential. This additional charge can reduce the money that households have for savings and for spending on other goods and services, which results in a negative impact on jobs in the Canadian economy.
4. **What are the job impacts from reduced electricity production?** The energy-efficient measures will allow businesses to receive the same benefit while using less electricity. The program as a whole will reduce the demand for electricity in the commercial sector. This reduced demand could have upstream impacts on the utility industry (for example, generation) and related industries, such as companies in the generator fuel supply chain.

E.2 Developed Model Inputs

The second step in modelling job impacts was gathering the data required for the StatCan IO model to answer each research question. Model input data included dollar values of the exogenous shocks from program implementation. Data sources for each research question included the following:

1) **Demand for energy-efficient measures and related program delivery services:** The StatCan IO Model divides the Canadian economy into 240 industry classifications and 500 SUPCs. Each measure installed as part of the program was classified into one of the SUPCs. The dollar value for each product-related demand shock was calculated using the project cost and measure savings data from the impact evaluation. Services that were part of the implementation process were also classified into SUPCs. These services were entirely program administrative services, the value of which was obtained from program budget actuals.

   It was necessary to specify the amount of each demand shock attributed to labour versus non-labour. For the product categories, we used a representative sample of invoices to estimate the average labour versus non-labour cost proportions. For the service categories, the IO model contained underlying estimates that defined the portion of labour versus overhead (non-labour).

2) **Business energy bill savings:** This value was calculated for the model as the net present value (NPV) of the discounted future stream of energy bill savings by participants. It was calculated by multiplying net energy savings (in kWh) in each future year by that future year's retail rate ($/kWh). This calculation was performed for each future year through the end of the measure's expected useful life (EUL). Savings beyond the EUL were assumed to be zero. Project-level net energy savings were obtained using results from the impact evaluation and already accounted for other calculation parameters (i.e., discount rate, measure EULs, and retail rate **forecast).**

3) **Customers' intentions: whether to reinvest, save, or distribute to owners/shareholders the money saved on energy bills were obtained via a short section on the participant surveys, as follows:**

   J1. *How do you anticipate your company will spend the money it saves on its electricity bill from the energy-efficient equipment upgrades?*
   1. *Pay as dividends to shareholders or otherwise distribute to owners*
   2. *Retain as savings*

3. *Reinvest in the company (labour/additional hiring, materials, equipment, reduce losses, etc.)*
4. *Split – Reinvest and pay as dividends/retain as savings*
5. *96. Other, please specify:*
6. *98. Don't know*
7. *99. Refused*

J2. Do you anticipate the distribution of these electricity bill savings to be treated differently than any other earnings?

8. *Yes – More distributed to shareholders/owners*
9. *Yes – More to savings*
10. *Yes – More to reinvestment*
11. *No*
12. *98. Don't know*
13. *99. Refused*

J3. Approximately what would be the split between distribution, retention, and reinvestment of money saved on electricity bills? [ALLOW MULTIPLE RESPONSE OPTION]

14. *Percent distribute [NUMERIC RESPONSE BETWEEN 0 AND 100]*
15. *Percent save/retain earnings [NUMERIC RESPONSE BETWEEN 0 AND 100]*
16. *Percent reinvest [NUMERIC RESPONSE BETWEEN 0 AND 100]*

For estimating job impacts, the key input value was the amount of bill savings that businesses would reinvest as opposed to paying down debt or redistributing to shareholders.

4) **SBP funding: IESO energy-efficiency programs were funded by a volumetric charge on electricity bills, and residential customers accounted for 35% of consumption, while non-residential customers accounted for 65% in 2023. The overall program budget was distributed between these two customer classes by these percentages and used as input values for the analysis.**

5) **Reduced electricity production: The NPV of retail savings (estimated as part of RQ2) was also the input for examining the potential impact of producing less electricity.**

E.3 Run Model and Interpret Results

Determining total job impacts from the SBP required considering possible impacts from each of the four shocks represented by the research questions. Addressing the four research questions above required three runs of the StatCan IO model, as certain shock components could be consolidated and others could be addressed without full runs of the model. The following three shocks were modelled:

1) Demand shock, as outlined in RQ1, representing the impact of demand for energy-efficient **products** and services due to the SBP.

2) Business Reinvestment shock, representing the net amount of additional spending that the commercial sector would undertake, as described in RQ2. This was estimated by taking the NPV of energy bill savings and subtracting the number of project costs covered by participants.

3) Household Expenditure shock, representing the portion of household funds captured by increased bill charges (thus acting as a negative shock on the economy [RQ3]). This was estimated by taking the portion of program funding paid for by increases to residential electricity bills.

The model output generated three types of job impact estimates.

Direct Impacts

Jobs created during the initial round of spending from the exogenous shocks. For the demand shock for energy-efficient products and services, direct impacts would be derived by first adding employees to install measures and handle administrative duties. For the business reinvestment shock, direct impacts could be internal jobs created by businesses that reinvest savings back into the company, or by jobs that businesses created in buying additional goods and services with energy bill savings.

Indirect Impacts

Job impacts due to inter-industry purchases as firms respond to the new demands of the directly affected industries. These include jobs created up supply chains due to the demand created by the energy-efficiency program, such as the manufacturing of goods or the supply of inputs.

Induced Impacts

Job impacts due to changes in the production of goods and services in response to consumer expenditures induced by households' incomes (i.e., wages) generated by the production of the direct and indirect requirements. The IO model provides estimates for each type of job impact in the unit of *person-years* or a job for one person for one year. It further distinguishes between two types of job impacts:

1) **Total number of jobs:** This covers employee jobs and self-employed jobs (including persons working in a family business without pay). The total

number of jobs includes full-time, part-time, temporary, and self-employed jobs. It does not consider the number of hours worked per employee.

2) **Full-time Equivalent (FTE) number of jobs:** This only includes employee jobs that are converted to full-time equivalence, based on overall average full-time hours worked in either the business or government sectors.

Model run results were presented in terms of the job impact types (direct, indirect, and induced) and on the type of job (total jobs vs. FTEs). These results—along with model input shock values—are presented and discussed at a higher level in Section 6.3 and in more detail in Appendix F.

Appendix F Detailed Job Impacts Inputs and Results

This section presents the detailed results of the job impact analysis, as summarized in Section 6.3. Table F-1 presents the total jobs impacts by type. As the fourth and fifth columns indicate, the analysis estimated that the SBP program would create 74 total jobs in Canada, with 66 jobs created in Ontario. Of the 74 estimated total jobs, 40 are direct jobs, 17 are indirect jobs, and another 17 are induced. In terms of FTEs, the numbers are slightly lower, with 57 FTEs created in Ontario and 64 FTEs created nationwide. Of these 64 FTEs, direct jobs account for 36 FTEs, 15 FTEs are indirect jobs and 13 FTEs are induced jobs. In total, the SBP Program created 21.2 jobs per million dollars of investment (i.e. program budget).

Table F-36: Total Job Impacts by Type

Job Impact Type	FTE *(in person-years)*	FTE *(in person-years)*	Total Jobs *(in person-years)*	Total Jobs *(in person-years)*	Total Jobs per $1M Investment *(in person-years)*
	Ontario	Total	Ontario	Total	
Direct	35	36	38	40	11.4
Indirect	12	15	14	17	4.9
Induced	11	13	14	17	5.0
Total[1]	**57**	**64**	**66**	**74**	**21.2**

Section F.1 details the values of inputs used in the model runs. Section F.2 presents the analysis results, including the details of job impacts and assumptions.

F.1 Model Inputs

The model was used to estimate the impacts of three economic shocks:

- The demand shock, representing demand for energy-efficient products and services from SBP.
- The business reinvestment shock, representing increased business reinvestment due to bill savings (and net of project funding).
- The household expenditure shock, representing decreases in household spending on goods and services due to increases in the residential portion of program funding.

Table F-2 displays input values for the demand shock representing products and services related to SBP. Each measure installed as part of the program was categorized according to the StatCan IO Supply and Use Product Classifications (SUPCs).

The first two rows of Table F-2 contain the categories corresponding to products, which were the measures installed in businesses. The last row contains the costs allocated to services. Lighting fixtures had the highest total cost of the four product categories and accounted for $3.5 million of the overall program cost. Electric light bulbs and tubes contained the second highest total cost, at $0.1 million of total costs. The final two product categories (Switchgear, switchboards and industrial control apparatus and Heating & cooling equipment) accounted for $0.06M of the total project costs each. The similarities of the two most prevalent product categories reflect the relatively narrow range of measures typically installed as a part of SBP, compared to other programs such as Commercial Retrofit. Each measure's cost was divided into labour and non-labour, as the IO Model required this distinction to determine direct versus indirect impacts. Program implementers were asked to estimate the approximate split between labour and non-labour costs. Program implementers stated that, on average, 47% of a project's cost is spent on labour. This estimate was used as the labour portion for the model input.

The single service category in the table, Office administrative services, included general overhead and administrative services associated with program delivery. The labour and non-labour amounts are not specified for this category, as the IO Model has built-in assumptions for this category.

Table F-37: Summary of Input Values for Demand Shock

Category Description	Non-Labour	Labour	Total Demand Shock
	($ Thousands)		
Lighting Fixtures	1,864	1,653	3,516
Electric Light Bulbs and Tubes	67	59	126
Switchgear, switchboards, relays and industrial control apparatus	37	22	59
Heating and cooling equipment (except household refrigerators and freezers)	36	19	55
Subtotal	**2,004**	**1,753**	**3,757**
Office Administrative Services	-	-	142
Total			**3,899**

The second shock modelled by the IO Model was the business reinvestment shock. This shock represented the amount that businesses would reinvest and thus inject

back into the economy. The net amount that businesses have available to either reinvest, pay off debt, or distribute to owners/shareholders ($11.1 million) was the net of electricity bill savings (NPV = $11.5 million), and the portion of project costs not covered by incentives ($0.4 million). The portion of this $11.1 million that was to be reinvested was estimated using the surveys administered to participants as part of the SBP Process Evaluation. The surveys included several questions about what businesses would do with the money they saved on their electricity bills and the type of business. Overall, respondents indicated that 75% of bill savings would be reinvested ($8.3 million). The remaining savings would either be used to pay off debt or disbursed to owners/shareholders.

To properly model the effects of the business reinvestment shock, the IO Model required the reinvestment estimates by industry. Each industrial category has a production function in the model, and these functions were adjusted to account for the reinvestment shock. Table F-3 presents the input values for the business reinvestment shock by industry. The total business expenditure shock would be $8.3 million over 26 industries, as shown in the table.

Table F-38: Summary of Input Values for Business Reinvestment Shock

Category Description	Business Reinvestment Shock *($ Thousands)*
Accommodation and food services	563
Arts, entertainment and recreation	243
Computer and electrical	51
Crop and animal production	192
Crop, animal, food, and beverage	90
Educational services	358
Finance, insurance, real estate, rental and leasing and holding companies	153
Forestry and logging	51
Forestry, logging, paper, and printing	90
Health care and social assistance	613
Machinery	90
Non-profit institutions serving households	371
Non-residential building construction	51
Other	2185
Other activities of the construction industry	102
Other municipal government services	102
Other services (except public administration)	447
Primary and fabricated metal	51
Professional, scientific and technical services	26
Repair construction	51

Category Description	Business Reinvestment Shock *($ Thousands)*
Repair, maintenance and operating and office supplies	306
Residential building construction	51
Retail trade	1801
Textile and clothing	51
Utilities	51
Wholesale trade	153
Total	**8,294**

The third model input is the household expenditure shock.[18] This shock represents the incremental increase in electricity bills to the residential sector from funding the program. The assumption is that the IESO programs are funded by all customers in proportion to the overall consumption of electricity. Thus, the residential funding portion was 35% of the $3.5M program budget or $1.2M.

F.2 Results

The StatCan IO Model generated results based on the input values detailed in Sections 6.3.2 and F.1. Table F-4 shows the results of the model run for the demand shock for products and services. This shock accounts for just under 40% of job impacts. As the two right columns show, the model estimated that the demand shock will result in the creation of 34 total jobs (measured in person-years) in Canada, of which 31 will be in Ontario. Of the 34 jobs, 19 were direct, 6 indirect and 8 induced. In terms of FTEs the numbers are slightly lower; 27 FTEs were estimated to be created in Ontario and 29 in total across Canada. Of those 29 FTEs, 17 were direct, 5 indirect and 6 induced. Direct jobs impacts were realized exclusively in Ontario, as shown in the table. As we move to indirect and induced jobs, impacts are dispersed outside of the province.

Table F-39: Job Impacts from Demand Shock

Job Impact Type	FTE (in person-years) Ontario	FTE *(in person-years)* Total	Total Jobs *(in person-years)* Ontario	Total Jobs *(in person-years)* Total
Direct	17	17	19	19
Indirect	4	5	5	6
Induced	5	6	7	8
Total	**27**	**29**	**31**	**34**

[18] The model ran with a normalized value of $1 million in extra household expenditures, and job results can be scaled by actual demand shock.

Table F-5 shows the results of the model run for the business reinvestment shock. Job impacts generated by business investment were equal to 22 direct total FTEs and 25 direct total jobs. Overall, business investments were responsible for 41 FTEs and 48 total jobs across Canada.

Table F-40: Job Impacts from Business Reinvestment Shock

Job Impact Type	FTE (in person-years) Ontario	FTE *(in person-years)* Total	Total Jobs *(in person-years)* Ontario	Total Jobs *(in person-years)* Total
Direct	20	22	23	25
Indirect	9	11	11	13
Induced	6	8	8	10
Total	**35**	**41**	**42**	**48**

The third shock was the reduction in household spending from the increase in electricity bills to fund the program. Table F-6 presents the job impacts from the model run. It represents the number of jobs attributed to reduced household spending; this amount could have been spent in other sectors of the economy but was instead spent on funding the SBP program. The model estimated a reduction of 6 FTEs and 8 total jobs across Canada due to the decreased household spending.

Table F-41: Job Impacts from Residential Funding Shock

Job Impact Type	FTE *(in person-years)* Ontario	FTE *(in person-years)* Total	Total Jobs *(in person-years)* Ontario	Total Jobs *(in person-years)* Total
Direct	3	3	4	4
Indirect	1	2	2	2
Induced	1	1	1	1
Total	**5**	**6**	**7**	**8**

The non-residential sector also contributes to program funding. The StatCan IO Model does not adjust production functions for all industries experiencing marginally higher electricity price changes, so this portion of the shock would be modeled by assuming that surplus would be reduced by the extra amount spent on electricity. The model captures energy bill increases from program funding as an impact on direct GDP (value-added) and not as a reduction in employment. The GDP impact is

equivalent to the profit loss resulting from the increase in electricity bills from program funding.

The economic impact of the reduction of electricity production as a result of the increase in energy efficiency was another potential economic shock. Technically speaking, it can be estimated using StatCan Input-Output multipliers without running the model. However, the IO model is linear, and not well suited to model small decreases in electricity production. Total electricity demand has been increasing over time and is projected to continue increasing[19]. The relatively small decrease in overall consumption attributed to SBP program savings may work to slow the rate of consumption growth over time but would likely not result in actual job losses in the utility industry or upstream suppliers. The linearity of the IO model means that it will provide estimates regardless of the size of the impact. Given the nature of electricity production, it is reasonable to conclude that the linear IO multiplier is not appropriate for estimating job impacts. This analysis assumes that job losses from decreased electricity production are negligible. Table F-7 shows the total estimated job impacts by type, calculated by combining the jobs estimated in Table F-4, Table F-5, and Table F-6. Of the 40 estimated total direct jobs, 38 were in Ontario. Similar proportion of the indirect and induced jobs were also in Ontario; 14 of 17 indirect jobs and 14 of 17 induced jobs were estimated to be created within the province. The FTE estimates were slightly lower overall than the total jobs, with a total of 57 FTEs (of all types) created in Ontario and 64 FTEs added nationwide. Almost all direct FTEs (35 of 36) were added in Ontario, with this number representing approximately 61% of the total FTEs added in Ontario and 54% of all FTEs created across Canada. In 2023, each $1M of program spend resulted in the creation of 21.2 total jobs compared to 27.3 jobs per $1M for the PY22 SBP program. The decrease of 6.2 jobs per $1M observed in SBP is potentially due to an increase in the ratio of the cost required to run the program that is funded by households to the normalized bundle used to represent average household purchases. In PY22, the ratio of the amount spent by household to fund the program to the normalized bundle was 0.8; in PY23, the ratio was 1.2. That means that customers were paying about 50% less in PY22 to fund the program compared to PY23. Higher household costs reduces the amount of available income for households to spend on other goods and services, which leads to a larger decrease in job impacts than in the previous year. This leads to smaller economic reinvestment shocks, thus leading to the observed decrease in job creation per $1M in program spend.

[19] Annual Planning Outlook—A View of Ontario's Electricity System Needs; 2023. IESO.

Table F-42: Total Job Impacts by Type

Job Impact Type	FTE *(in person-years)* Ontario	FTE *(in person-years)* Total	Total Jobs *(in person-years)* Ontario	Total Jobs *(in person-years)* Total	Total Jobs per $1M Investment *(in person-years)*
Direct	35	36	38	40	11.4
Indirect	12	15	14	17	4.9
Induced	11	13	14	17	5.0
Total[1]	**57**	**64**	**66**	**74**	**21.2**

The model does not provide year-by-year results for job impacts, but we are able to make some estimates about the temporal nature of the impacts. Table F-8 shows the total jobs created due to program activities and energy savings in the first year versus from after the first year. The table assumes that "first year activities" are the initial demand shock for EE products and services, the program funding shock, and the first year energy savings (resulting in bill savings and reinvestment). Job impacts after the first year are due to energy savings over the course of the measures' EULs. Job impacts from first year activities make up roughly 8% of the total, with 6 out of the total of 74 person-years. Three of these person-years come from first year energy savings. The remaining 68 total job-years are due to energy savings after the first year—and the reinvestment generated by the bill savings.

Table F-43: Job Impacts from First Year Shocks

Job Impact Type	Total Jobs *(in person-years)*		
	From First Year Activities	From Bill Savings After First Year	Total
Direct	3	37	40
Indirect	1	16	17
Induced	1	16	17
Total[1]	**6**	**68**	**74**

1 Columns may not add to totals due to rounding. Real values are rounded to the nearest whole number and the whole numbers do not sum exactly to the whole number total in every column.

Table F-9 shows the job impacts in more detail, with jobs added by type and industry category. Industries are sorted from top to bottom by those with the most impacts to the least, with industries that showed no impacts not included in the table. The table shows that the industry with the largest job impacts was Administrative and support, waste management and remediation services, which added 21.6 jobs. This category is large and non-specific, and reflects the need to hire individuals to fill a large range

of roles based on program need (e.g. office administration, call centre operations, program management, etc.). Non-residential business construction and Manufacturing were the industries with the next most added jobs, gaining 9.7 and 6.9 jobs respectively.

Table F-44: Job Impacts by Industry

Output Industry Category	FTE *(in person-years)* Ontario	FTE *(in person-years)* Total	Total Jobs *(in person-years)* Ontario	Total Jobs *(in person-years)* Total
Administrative and support, waste management and remediation services	18.8	19.1	21.2	21.6
Non-residential building construction	8.5	8.5	9.7	9.7
Manufacturing	4.6	6.7	4.7	6.9
Retail trade	4.6	5.1	6.1	6.7
Wholesale trade	5.1	6.0	5.2	6.1
Professional, scientific and technical services	3.7	4.6	4.4	5.6
Finance, insurance, real estate, rental and leasing and holding companies	2.5	2.9	3.1	3.6
Transportation and warehousing	1.8	2.2	2.1	2.7
Accommodation and food services	0.8	1.1	1.3	1.7
Information and cultural industries	1.0	1.3	1.1	1.5
Government education services	1.0	1.1	1.2	1.2
Other services (except public administration)	0.6	0.7	0.8	1.0
Repair construction	0.5	0.6	0.6	0.7
Health care and social assistance	0.4	0.4	0.6	0.7
Residential building construction	0.4	0.4	0.6	0.6
Engineering construction	0.5	0.5	0.5	0.5
Other federal government services	0.4	0.4	0.5	0.5
Arts, entertainment and recreation	0.2	0.2	0.3	0.4
Educational services	0.1	0.2	0.3	0.4
Other municipal government services	0.3	0.3	0.3	0.3
Crop and animal production	0.1	0.2	0.2	0.3
Non-profit institutions serving households	0.2	0.2	0.3	0.3
Utilities	0.2	0.2	0.2	0.2
Government health services	0.1	0.2	0.2	0.2
Mining, quarrying, and oil and gas extraction	0.1	0.2	0.1	0.2

Output Industry Category	FTE *(in person-years)* Ontario	FTE *(in person-years)* Total	Total Jobs *(in person-years)* Ontario	Total Jobs *(in person-years)* Total
Other provincial and territorial government services	0.1	0.1	0.1	0.1
Total[1]	**57**	**64**	**66**	**74**

1 Columns may not add to totals due to rounding. Real values are rounded to the nearest whole number and the whole numbers do not sum exactly to the whole number total in every column. Values presented in this table are rounded to the nearest 0.1 to better show the distribution of small jobs impacts.

The SBP Assessors and Installer survey responses support the model results showing positive job impacts. The survey instrument contained questions for contractors and applicant representatives related to SBP program impacts on their firms and employment levels. Two questions were informative to understand the nature of the impacts to respondents, which would be considered direct impacts. These two questions are below, with relevant illustrative verbatim responses below:

1. Did the 2023 program help or hinder the growth of your business in any way? If so, please explain how:

   The program helped the growth of my business in the following ways:

   - "Besides the work orders, has access to more customers and opportunities."
   - "Work during slow times."
   - "It has helped me reach out to many of my old customers."

   The program hindered the growth of my business in the following ways:

   - No responses provided

2. Did the 2023 program have an impact on the number of people you hired in the last year? Yes, the program impacted the number of people hired in the last year in the following ways:

   Positive Impacts:

   - "More manpower needed."
   - "I have more employees now than I did before. I am also trying to hire more employees soon."

   Negative Impacts:

   - No responses provided.

Respondents indicated that the program generally resulted in slight increases in staffing overall, although the exact number of increased staff was not provided.

Participants additionally stated that the program afforded steady revenue streams during times that business would otherwise be slower as well increasing client touch points and opportunities for business. No respondents indicated decreases in staffing due to the SBP program or that the program had a negative effect on business opportunities. In general, responses reveal the potential for beneficial impacts the program can have on firms.

Input-Output models are informative for understanding the potential magnitudes and dynamics of economic shocks created by policies and programs. While useful, the StatCan IO Model is a simplified representation of the Canadian economy and thus has limitations. The model is based on the assumption of fixed technological coefficients. It does not take into account economies of scale, constraint capabilities, technological change, externalities, or price changes.

This makes analyses less accurate for long-term and large impacts, where firms would adjust their production technology and the IO technological coefficients would become outdated. Assuming that firms adjust their production technology over time to become more efficient implies that the impact of a change in the final demand will tend to be overestimated. For household consumption, the model is based on the assumptions of constant consumption behaviour and fixed expenditure shares relative to incomes.

Appendix G Detailed Non-Energy Benefits Methodology and Additional Results

This appendix provides additional details about the NEBs methodology as well as additional NEB results. A summary of the methodology was provided in **Section 3.3** and results were provided in **Section 6.2.**

G.1 Methodology

Participant Survey

The three previous studies, the *PY2022* and *PY2021 SBP Evaluation Reports* and the *Non-Energy Benefits Study: Phase II* assessed the NEBs from energy-efficiency projects funded by the IESO over the 2017-2022 period.[20] The PY2023 evaluation applied the same methodology as the previous studies to assess NEBs, using two different types of questions to determine the value of NEBs that program participants realized by installing program measures:

- **Relative scaling:** Relative scaling questions ask participants to state the value of an item of interest relative to some base. For this survey, participants were asked to state the value of each NEB relative to the annual electricity bill savings that they estimated or (if they could not estimate savings) their annual electricity bill.
- **Willingness-to-pay:** Willingness-to-pay questions asked participants to assign the dollar value that they would be willing to pay for the item of interest. In this case, participants were asked what they would be willing to pay for each relevant NEB.

All survey respondents were asked to value all NEBs using both techniques. The data collected from these questions were then used to quantify the NEBs.

NEBs Quantification

For each individual NEB, the total value across all participants was divided by the total gross savings values across all participants. This was completed using both Relative

[20] Dunsky. (July 2021). *Non-Energy Benefits: Phase II; Quantified Benefits and Qualitative Insights*. https://www.ieso.ca/-/media/Files/IESO/Document-Library/conservation-reports/Non-Energy-Benefits-Study-Phase-II.ashx

Scaling and Willingness to Pay NEB values. Two hybrid approaches were then calculated to be more representative of the sample:

- **Hybrid relative scaling priority**, in which the evaluation team gave priority to the relative-scaling response value. In this approach, the team only considered the willingness to pay if the participant did not answer the relative scaling question.
- **Hybrid minimum approach**, in which the team considered the lowest non-null response between the relative scaling and the willingness-to-pay questions.

As a final step, the evaluation team calculated the average value ($/kWh) for each NEB, weighted by energy savings across all participants.

Table G-1 presents the average NEB values based on two different calculation approaches:

- **Average (per participant):** A $/kWh value was calculated for each individual participant, then all values were averaged.
- **Average (overall):** An overall average value where total NEB benefits ($s) were summed across all survey participants who reported experiencing a NEB and then divided by the total energy savings (kWh) across all survey participants who reported experiencing a NEB.

All recommended values in the Phase II study were based on the hybrid minimum approach. Additional detail on the methodology and NEBs quantification can be found in the Phase II study.

Table G-45: Quantified NEBs by Participant and by Savings, Phase II, PY2021, PY2022, & PY2023

NEB Test	PY2023 (SBP only)	PY2023 (SBP only)	PY2022 (SBP only)	PY2022 (SBP only)	PY2021 (SBP only)	PY2021 (SBP only)	Phase II (SBP & Retrofit)	**Phase II (SBP & Retrofit)**
Hybrid (min approach) (Avg $/kWh)	**Per Participant**	**Overall**	**Per Participant**	**Overall**	**Per Participant**	**Overall**	**Per Participant**	**Overall**
Reduced building & equipment O&M	0.43	0.13	0.11	0.08	0.32	0.13	0.12	0.08
Thermal comfort	0.04	0.01	0.07	0.04			0.63	0.05
Improved indoor air quality	0.00	0.00	0.004	0.02			0.09	0.007
Reduced spoilage	0.0004	0.0005	0.001	0.0004			0.01	0.0002
Hybrid (RS-priority) (Avg $/kWh)	**Per Participant**	**Overall**	**Per Participant**	**Overall**	**Per Participant**	**Overall**	**Per Participant**	**Overall**
Reduced building & equipment O&M	0.52	0.17	0.26	0.20	0.46	0.21	0.72	0.17
Thermal comfort	0.07	0.02	0.10	0.06			0.65	0.09
Improved indoor air quality	0.00	0.00	0.004	0.02			0.10	0.02
Reduced spoilage	0.001	0.002	0.001	0.001			0.01	0.0003

G.2 Assessor and Installer Non-Energy Benefits Results

As part of the assessor and installer survey, respondents were asked to indicate NEBs that they believed their customers may have experienced due to their SBP participation (Table G-2). Ten respondents believed their customers experienced reduced building and equipment O&M, eight suspected benefits from reduced food spoilage, and six suspected customers experienced improved thermal comfort. Two of twelve respondents did not believe their customers experienced any NEBs.

Table G-46: Assessor and Installer Reported NEBs*
(Open-ended and multiple responses allowed; n=12)

NEB	Respondents
Reduced building and equipment operations and maintenance	10
Reduced food spoilage	8
Improved thermal comfort	6
Improved visibility	2
Improved indoor air quality	2
Increased productivity	1
Improved staff or customer wellbeing	1
Consistent light colour throughout premise	1
None	2

*Does not sum to 12 due to multiple response.

Respondents were asked to rank the NEBs they selected from most to least important to their customers. Figure G-1 shows that assessors and installers perceived improved visibility as the most important NEB to their customers, followed by reduced O&M, reduced food spoilage, improved thermal comfort, improved indoor air quality, and other NEBs.

Figure G-32: NEBs Ranked by Perceived Importance

Appendix H SBP Building Types

Table H-47: 2023 SBP Program Reported Building Types

Building Type Reported in SBP Database	Resource Innovations Designation
Agricultural - Cattle Farm	Agricultural
Agricultural - Other	Agricultural
Commercial - Entertainment/Sport	Commercial (Other)
Commercial - Food Retail	Commercial (Retail)
Commercial - Hotel	Commercial (Other)
Commercial - Large Office	Commercial (Office)
Commercial - Large Retail	Commercial (Retail)
Commercial - Motel	Commercial (Other)
Commercial - Other	Commercial (Other)
Commercial - Restaurant	Commercial (Restaurant)
Commercial - Small Office	Commercial (Office)
Commercial - Small Retail	Commercial (Retail)
Commercial - Warehouse/Wholesale	Commercial (Warehouse/Wholesale)
Commercial-Entertainment/Sport	Commercial (Other)
Entertainment/Sport	Commercial (Other)
Food and Beverage	Industrial/Manufacturing
Government/Public - Administrative Buildings	Government/Public Institution
Government/Public - Culture and Tourism	Government/Public Institution
Government/Public - Emergency Services	Government/Public Institution
Government/Public - Hospital	Government/Public Institution
Government/Public - Long Term Care Facility	Government/Public Institution
Government/Public - Other	Government/Public Institution
Government/Public - Parks and Recreation	Government/Public Institution
Government/Public - Place of Worship	Government/Public Institution
Government/Public - Public Works	Government/Public Institution
Government/Public - School (K-12)	Government/Public Institution
Government/Public - University/College	Government/Public Institution
Industrial/Manufacturing - Food and Beverage	Industrial/Manufacturing
Industrial/Manufacturing - Iron/Steel	Industrial/Manufacturing
Industrial/Manufacturing - Manufacturing	Industrial/Manufacturing
Industrial/Manufacturing - Other	Industrial/Manufacturing
Industrial/Manufacturing - Petroleum/Plastic	Industrial/Manufacturing
Industrial/Manufacturing-Other	Industrial/Manufacturing
Industrial/Mfg - Iron/Steel	Industrial/Manufacturing

Building Type Reported in SBP Database	Resource Innovations Designation
Industrial/Mfg - Manufacturing	Industrial/Manufacturing
Multi-Residential - Condominium	Multi-Residential
Multi-Residential - Other	Multi-Residential
Multi-Residential - Rental	Multi-Residential
Multi-Residential - Rental Apartment	Multi-Residential
Place of Worship	Government/Public Institution
Warehouse/Wholesale	Commercial (Warehouse/Wholesale)