2021-2024 CDM Framework Small Business Program PY2022 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

CDM-IS	Content data management information system
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
GW or GWh	Measurement of demand (GW) or energy (GWh) equivalent to 1,000,000,000 W or Whr
HVAC	Heating, ventilation, and air conditioning
IDI	In depth interview
IESO	Independent Electricity System Operator
IF	Interim Framework
kW or kWh	Measurement of demand (kW) or energy (kWh) equivalent to 1,000 W or Whr
LED	Light emitting diode
MW or MWh	Measurement of demand (MW) or energy (MWh) equivalent to 1,000,000 W or Whr
NTG	Net-to-gross
PY	Program year
SO	Spillover

1. Executive Summary

The Independent Electricity System Operator (IESO) retained Resource Innovations (formerly Nexant Inc.), and their subcontractor NMR Group, Inc., to evaluate the Small Business Program (SBP) for the 2022 Conservation Demand Management (CDM) evaluation cycle. This Executive Summary provides a high-level overview of the impact, cost-effectiveness and process evaluation results, and key findings and recommendations for the SBP during the January 1, 2022, through December 31, 2022, evaluation period (PY2022).

1.1. Program Description

The SBP provides owners and tenants of small businesses with 50 or fewer employees the opportunity to receive up to $2,000 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 the incentive limits are eligible for partial cost coverage incentives intended to further the impact and reach of the program. Eligible measures are defined by the program and 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.

1.2. Evaluation Objectives

The IESO has outlined the following objectives for the PY2022 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% level of confidence 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 design and evaluations.
- 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.

1.3. Summary of Results

1.3.1. 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 PY2022. Over the evaluation period, 1,094 projects were completed.

The Eastern region serves as the largest contributor to the SBP projects, accounting for 39% of all completed projects, followed by the Northern region with 36%, the Central region with 16%, the Toronto region with 5%, and the Southwestern region at 4%. The PY2022 SBP program achieved energy and summer peak demand realization rates of 98.55% and 175.78%, 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 93.73% and 90.67%, respectively. A total of 99% of first-year net verified energy savings are projected to persist until the end of the framework accounting period (2026). Table 1-1 presents gross and net verified impact results for the 2022 SBP program. Section 4 presents detailed impact results for the PY2022 SBP.

Table 1-1: 2022 SBP Impact Results

Savings	Reported Savings	Realization Rate	Gross Verified Savings	Gross Verified Precision at 90% Confidence	NTG Ratio	Net Verified Savings	Net Verified Savings at 2026
Energy (MWh)	5,423	98.55%	5,344	6.88%	93.73%	5,009	4,956
Summer Peak Demand (kW)	774	175.78%	1,361	9.34%	90.67%	1,234	1,224

1.3.2. Process Evaluation

The evaluation team performed a process evaluation to better understand program design and delivery during 2022. The team collected primary data to support this evaluation through interviews with IESO staff and program delivery staff as well as surveys with assessors, installers, and participants. The executive summary summarizes key insights from the process evaluation, and Section 5 presents these insights in greater detail.

Site visits. The majority of surveyed participants did not offer improvements through the initial site assessment (74%) or the installer visits (75%). This suggests that program assessors and installers met the majority of customer needs. The most common suggestions for improving the site assessment and installer visits included reducing the time required to complete the visits, providing more flexibility and communication in scheduling visits, improving the Save On Energy representatives' professionalism and transparency, and

improving the assessors' data collection accuracy. Refer to Section 5.3.4 for additional details.

Auditor and contractor program satisfaction. On average, auditors and contractors were somewhat satisfied with the program, giving it an average satisfaction rating of 3.8 on a scale from one to five, where one indicates "not at all satisfied" and five indicates "extremely satisfied." When rating specific program aspects, respondents assigned the highest average satisfaction ratings to program training and education (4.1) and to interactions with the delivery vendor (4.0). On average, respondents assigned the lowest satisfaction ratings to program marketing and outreach (3.0) and to program application process and forms (2.9). Refer to Section 5.2.5 for additional details.

Program barriers. Auditors and contractors cited customers' lack of awareness of the program (six respondents) and the perception of upgrades not being worth the trouble of participating (two respondents) as key barriers that prevented more customers from participating in the program. Auditors and contractors most commonly suggested overcoming these barriers by increasing program advertising and providing more customer education. Refer to Section 5.2.3 for additional details.

Participants identified challenges they experienced in signing up for the program, including extra expenses or fees (30%), difficulty scheduling the initial site visit (23%), and lack of availability of equipment of interest through the program (20%). Refer to Section 5.3.3 for additional details.

Program improvement recommendations. Over one-fifth (20%) of participants offered program improvement recommendations, with the most common recommendations being improvements in marketing and promotion (37%) and improvements in communicating with participants during every stage of the project (15%). Refer to Section 5.3.6 for additional details.

Auditors' and contractors' recommendations included increasing program advertising, replacing the Dropzone application software used during site assessments, minimizing the number of parties involved, and providing more funding for travel. Refer to Section 5.2.6 for additional details.

IESO and delivery vendor staff shared program improvement opportunities, such as providing additional support as needing to address rising costs and supply chain issues, considering the inclusion of additional equipment and services in the program, and increasing marketing support to promote the program (including its new non-lighting offerings). Refer to Section 5.1.4 for additional details.

1.4. Key Findings and Recommendations

This section summarizes the PY2022 evaluation key findings and recommendations. Section 7 presents findings and recommendations in greater detail.

Finding 1. Lighting Reported Peak Demand Savings - Coincidence Factors (CF). The PY2022 SBP reported peak demand savings for lighting measures use a CF of 0.0001425 for all lighting measures, except for LED Exit Signs, which had a CF of 0.0001142. The CFs used, however, seem conservative, resulting in a high demand realization rate (176%) during PY2022.

Recommendation 1. Update the CFs used to report peak demand savings to 0.0002734 to better align with evaluation results. This would apply to all lighting measures, except for LED Exit Signs, which the evaluation team recommends stay unchanged with a CF of 0.0001142. This would help more accurately report summer peak demand savings. The team bases this recommendation on an analysis of the combined PY2021 and PY2022 SBP lighting project samples—a total of 138 evaluated projects reported at the 90% confidence level with 4.9% precision.

Finding 2. During the PY2022 program year, an unplanned, mid-cycle transition to a new implementer affected delivery in the Toronto, Central, and Southwestern regions. These regions delivered 64% of total projects in PY2021 but only 25% of total projects in PY2022. The total number of projects implemented in the Eastern and Northern regions (regions that did not undergo implementer transition) in PY2022 (818 total) very closely aligned with PY2021 participation numbers (829 total) while PY2022 participation in the Toronto, Central, and Southwestern regions (276 total) experienced an 82% decrease from PY2021 participation numbers (1,496 total).

Recommendation 2. If there is a backlog of interested SBP participants in the Southwestern, Central, and Toronto regions who could not participate in PY2022 due to challenges outside of their control, focus additional resources to these regions for future program years.

Finding 3. In PY2022, the condenser coil cleaning measure accounted for 45% of the energy and demand savings for the refrigeration end-use, but the one-year effective useful life (EUL) did not contribute persisting energy or demand savings to the end of the framework accounting period (2026). Additionally, this measure performed poorly from a cost-effectiveness standpoint, scoring a 0.36 PAC ratio.

- **Recommendation 3a.** Evaluate the effectiveness of offering coil cleaning for coolers and freezers as a standalone, non-lighting measure in the SBP.
- **Recommendation 3b.** Consider offering a comprehensive tune up measure for refrigeration and HVAC equipment that incorporates additional service beyond coil cleaning (e.g., refrigerant charge adjustment, changing air filters, optimizing zone temperature setpoints, leak testing and repair, straightening blades and fins), given that comprehensive HVAC tune up measures typically have longer EULs of three or more years.

Finding 4. Awareness of non-lighting equipment is relatively low among participants. PY2022 saw a transition from the Small Business Lighting (SBL) program to SBP, where, for the first time, offerings included non-lighting equipment along with lighting under the same program. Only two-fifths (40%) of participants who installed lighting-only upgrades indicated that they knew the program also offered non-lighting equipment. These same participants most

commonly said they did not install non-lighting equipment either because they did not need to install additional equipment (40%) or because the equipment of interest to them was not available (33%). Assessors and installers indicated that their customers expressed moderate interest levels in learning that SBP now offers non-lighting equipment (average of 3.4 using a scale of one to five, where five means "extremely interested"). IESO staff and program delivery vendors indicated that non-lighting measures experienced relatively low uptake in PY2022. They attributed this to various factors including the fact that PY2022 was the first year that non-lighting offerings became available, a slower than anticipated program ramp-up, limited interest in initiating projects in general, relatively low savings targets for non-lighting measures, and a relatively small population of participants eligible for non-lighting equipment.

- **Recommendation 4a:** Ensure that all eligible customers know of non-lighting and lighting program opportunities from the start. This could be accomplished by clearly explaining program offerings to customers during initial screenings, sharing program materials (e.g., brochures, e-mails, newsletters) that highlight the new non-lighting opportunities, and ensuring that assessors identify lighting and non-lighting opportunities during the initial site assessment.
- **Recommendation 4b:** Consider increasing savings targets for non-lighting measures to encourage program delivery vendors to further promote these offerings to eligible customers.
- **Recommendation 4c:** Explore whether adding other non-lighting equipment to the program may be possible (see Section 8 for equipment suggestions).

Finding 5. Opportunities exist to improve assessor and installer training and education. Most surveyed assessors and installers reported receiving some training and education. Nearly all received information on the program rules, and many others received information on program offerings as well as installation procedures and practices. Assessors and installers provided a moderately high satisfaction rating (a 4.1 on a scale from one to five, where one indicates "not satisfied at all" and five indicates "extremely satisfied") for program training and education received. Assessors and installers most commonly suggested providing marketing and outreach techniques to better promote the program, followed by more information on program rules and offerings.

- **Recommendation 5a**. Ensure trainings stress marketing and outreach techniques and provide more information on program rules and offerings.
- **Recommendation 5b**. Regularly offer training and education to inform new staff about the program and to provide refreshers for other staff.

Please note that a similar recommendation was included in the PY2021 evaluation as well. In response to the recommendation in PY2021, the IESO indicated it would work with delivery partners to ensure training materials and processes remain effective and up-to-date. Additionally, the IESO noted that training/development improvements and marketing were placed on hold due to temporary disruptions to program delivery in PY2021. Given that similar feedback was shared by assessors and installers as part of the PY2022 evaluation, a

similar recommendation has been provided again to ensure that it is carefully considered in future program years.

2. Introduction

Resource Innovations and its partner, NMR Group, Inc. (noted throughout this report as 'the evaluation team'), were retained by the Independent Electric System Operator (IESO) for the evaluation of the 2021-2024 Conservation and Demand Management (CDM) Framework business programs. This report provides impact and process evaluations, a cost-effectiveness assessment, and non-energy benefit results for the PY2022 SBP.

2.1. Program Description

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

Participants seeking to have qualified equipment installed above incentive limits become eligible for additional incentives, intended to further the program's impacts 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 PY2022 program year, the SBP experienced a transition period, with the new SBP launched in March 2022. Changes included new regional delivery vendors, new non-lighting measures, and the removal of certain lighting measures. One service provider delivered the PY2021 SBP across the province and enrolled participants until September 30, 2021. Interested SBP applicants were placed on an enrollment waitlist from October 2021 until March 2022, when the new SBP launched with expanded offerings.

2.2. Evaluation Objectives

The IESO outlined the following objectives for the PY2022 SBP evaluation:

- Conduct audits of completed projects to evaluate, measure, and verify completion as well as 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 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 cost-effectiveness assessment, a greenhouse gas (GHG) savings estimate, a non-energy benefits (NEBs) analysis, and a job-impact quantification.

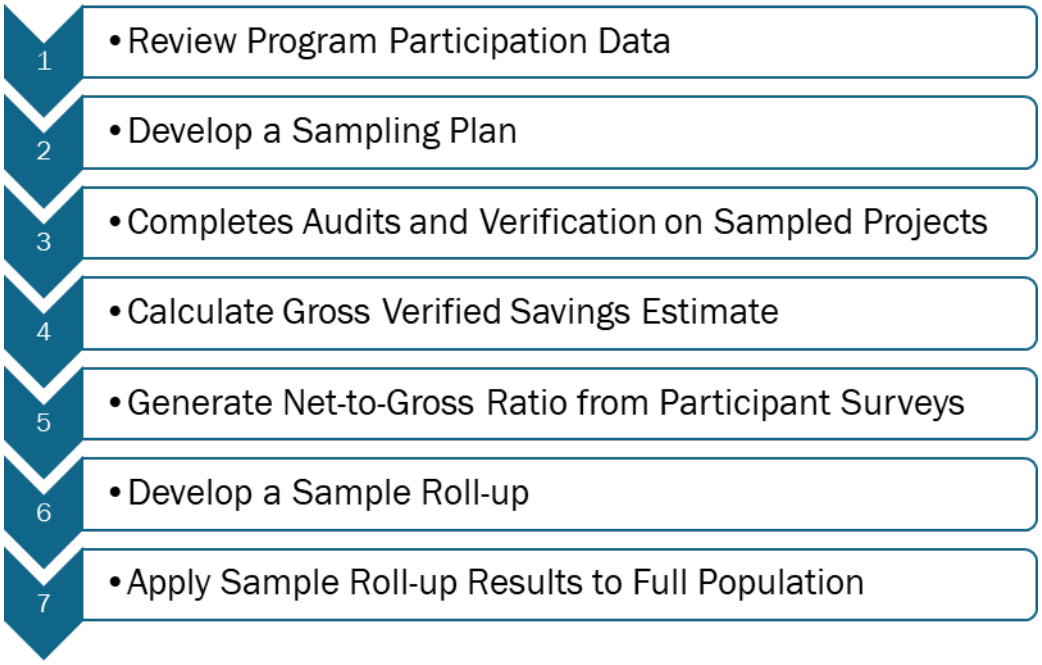
- Conduct a process evaluation by addressing research questions identified with the IESO.
- Deliver annual reports, memos, and impact result templates along with a final report that meets the IESO's requirements and deadlines.
- Provide thoughtful recommendations on program improvements based on feedback obtained through the evaluations.

3. Evaluation Methodology

3.1. Impact Evaluation Methodology

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

Figure 3-1: Impact Evaluation Methodology



3.1.1. Project Participation and Sampling

The evaluation team drew an impact evaluation sample solely from PY2022 SBP projects completed and paid for between January 1 and December 31, 2022. Impact sampling first stratified the population into similar project types to minimize variability and to improve the confidence and precision of the sample results. Initially, the population was stratified by measure types (lighting vs non-lighting).

However, given the limited number of completed non-lighting projects, it did not prove feasible to target 90/10 at the measure-level stratums. The team collected additional samples to ensure representation of these measures as best as possible. Project samples selected from each stratum targeted results achieving a 90% confidence level at a 10% precision level, assuming 0.5 as a coefficient of variation. As shown in Table 3-1, samples for additional non-lighting projects exceeded the evaluation's 68-project target sample size, resulting in the selection of 72 random sample projects.

Table 3-1: Impact Evaluation Sample

Program	Sample Size
SPB	72

The team reviewed each sample project to verify gross and net savings, and then used these individual sample project results to calculate realization rates and NTG ratio adjustment factors applied to savings for all projects in the PY2022 population. Section 8 and Appendix B provide additional detail.

3.1.2. Net-to-Gross Evaluation Methodology

The evaluation team utilized the participant self-report survey results to estimate the NTG ratio. The survey's sample design was the same for both the NTG and process evaluations because the participant self-report survey was inclusive of both evaluation areas. The sample was developed at the province-wide level. The survey sought and achieved a NTG at 90% confidence and 10% precision in the results. The evaluation team calculates net energy and summer peak demand savings that are attributable to the SBP by multiplying the gross verified energy and summer peak demand savings by the NTG. This equation and general methodology are used for estimating both the net energy and summer peak demand savings. The NTG ratio is based on measurement of free-ridership and spillover rates and is defined in Equation 3-1.

Equation 3-1: NTG Ratio

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

Appendix B provides additional detail on the NTG methodology.

3.2. 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 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 interviews, 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	2	-	2	2	100%	0%
Program Delivery Vendor Staff	Phone IDI	2	-	2	2	100%	0%
SBP Assessors and Installers	Web Survey	24	8	-	8	33%	N/A*
SBP Participants	Web and Phone Survey	772	119	15	134[1]	17%	6.5%

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

3.3. Non-Energy Benefits Methodology

For PY2022, the SBP evaluation utilized the same NEB methodology as that from the two previous studies (the *PY2021 SBP Evaluation Report* and the *Non-Energy Benefits Study: Phase II).* These studies assessed the NEBs using energy-efficiency projects funded by the IESO over the 2017-2021 period.[2]

For this evaluation, the team calculated NEBs via two different techniques: the relative scaling approach and the willingness to pay approach. This 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 the data collected from these questions to quantify the NEBs. Appendix G provides additional detail regarding the NEB methodology.

[1] Please note that the process survey response count (n=134) was less than the NTG survey response count (n=142) as some respondents did not complete the process section of the survey.
[2] 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

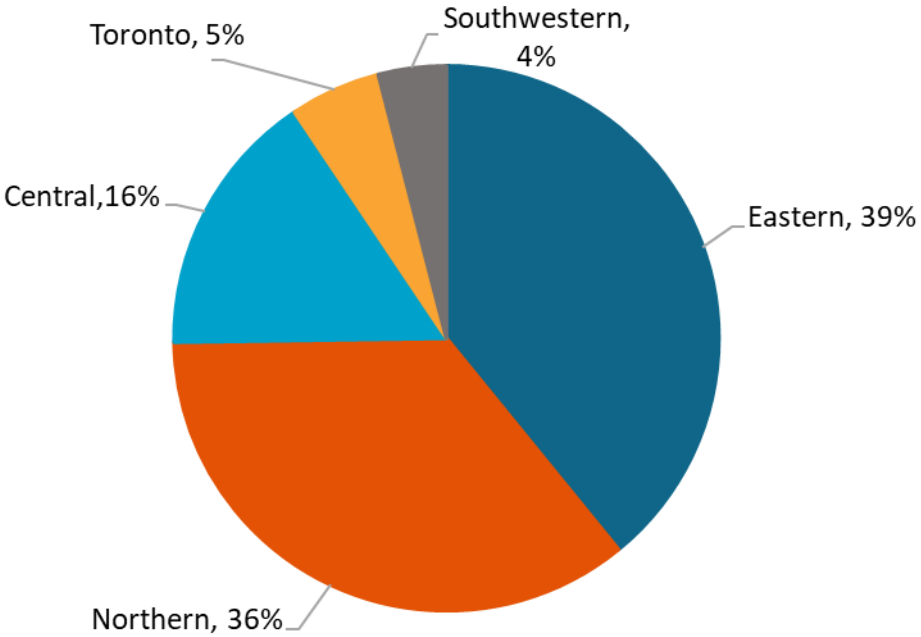
4. Impact Evaluation Results

4.1. Participation

During PY2022, 1,094 SBP projects were completed in the province. Compared to the 2021-2024 CDM Framework for SBP's PY2021, this amounts to slightly less than one-half of the 2,377 projects implemented in PY2021.

The SBP program is delivered in five distinct Delivery Regions: Central, Eastern, Northern, Southwestern, and Toronto. In PY2022, the Eastern region contributed the most to the SBP project count, accounting for 39% of all completed projects, followed by the Northern region at 36%, the Central region at 16%, the Toronto region at 5%, and the Southwestern region at 4%. Figure 4-1 presents the full breakout of projects completed in each geographical region.

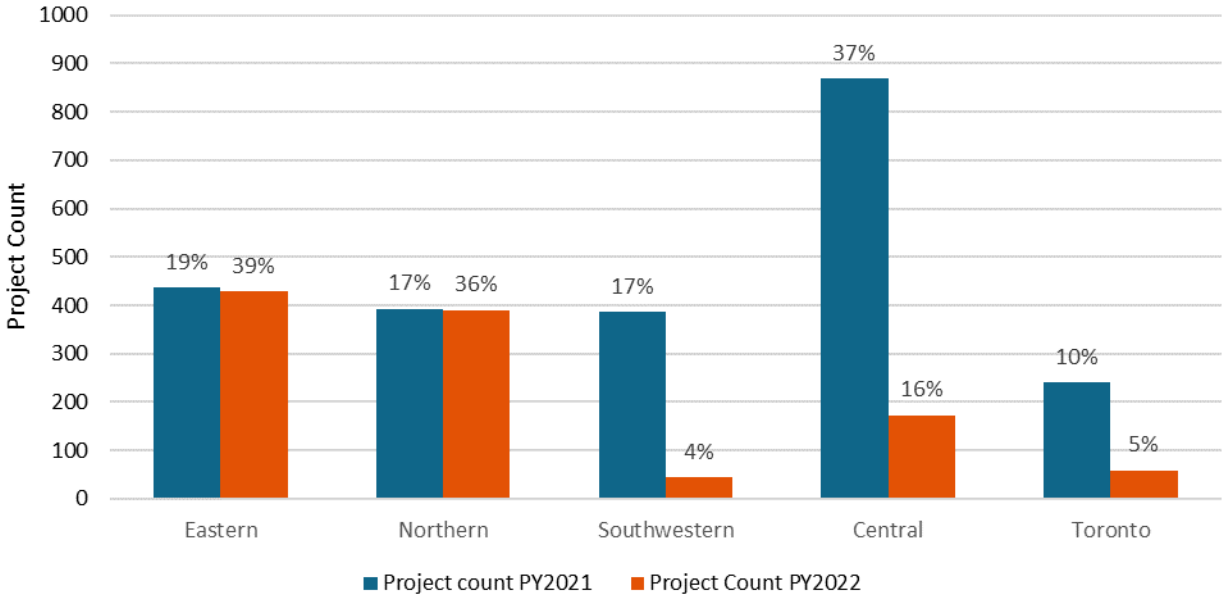
Figure 4-1 PY2022 SBP Projects Count by Region



Comparing the PY2022 SBP project count by region to the PY2021 numbers indicates that decreases in delivered projects primarily remained isolated to three regions with the lowest project count in PY2022: Central, Toronto, and Southwestern.

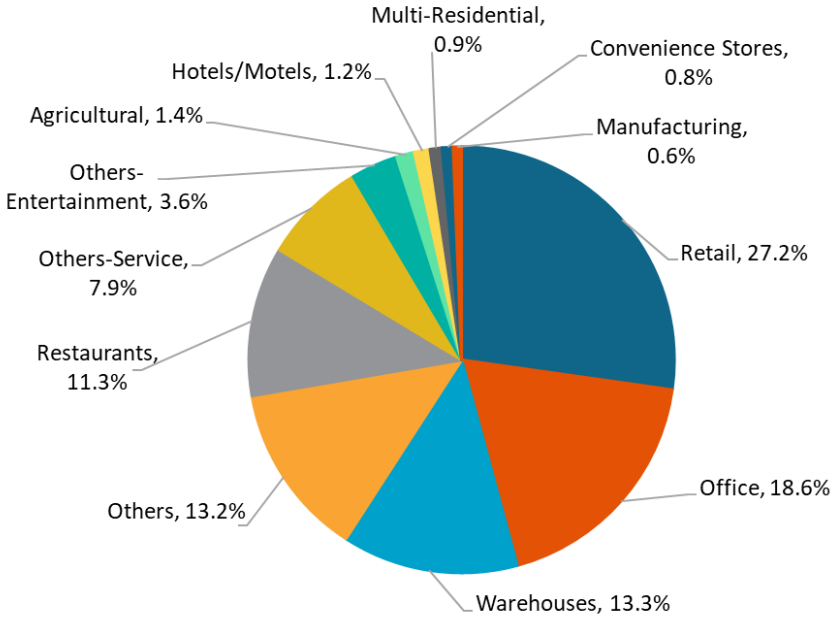
Figure 4-2 compares the PY2022 and PY2021 SBP project counts by region and includes each region's percentage contribution to total SBP projects for that program year. Those three regions served as a primary driver in the reduced project count. Notably, those regions experienced an unplanned mid-cycle transition to a new implementer, which significantly impacted program delivery.

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



The SBP database contained information regarding each completed project's facility type, reporting a total of 83 unique facility types. The team re-categorized each unique entry into one of 12 possible facility types. Appendix H provides a full list of facility types reported in the 2022 SBP program database and their respective re-categorized designation. Similarly, to PY2021, the retail sector, followed by office and warehouses, contributed the most to the PY2022 SBP program, accounting for 60% of completed projects. For the 2022 SBP program, Figure 4-3 presents the full project-count distribution by identified facility type.

Figure 4-3 Project Count Percentage by Facility Type



4.2. Energy and Demand Savings

Table 4-1 provides the PY2022 SBP program's overall impact savings results. First-year net verified energy and summer peak demand savings were 5,009 MWh and 1,234 kW, respectively, with 99% of first-year, net verified energy savings persisting until the end of the framework accounting period (2026). The gross verified savings include interactive effects for applicable lighting measures.

Table 4-1: PY2022 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)	5,423	5,344	5,009	4,956
Summer Peak Demand (kW)	774	1,361	1,234	1,224

Table 4-2 provides energy and summer peak demand sample realization rates for the PY2022 SBP sample. The program achieved a 98.55% energy realization rate and a 175.78% summer peak demand realization rate. The sample results achieved 6.88% precision at the 90% confidence level for energy RR, and 9.3% precision at the 90% confidence level for summer peak demand savings.

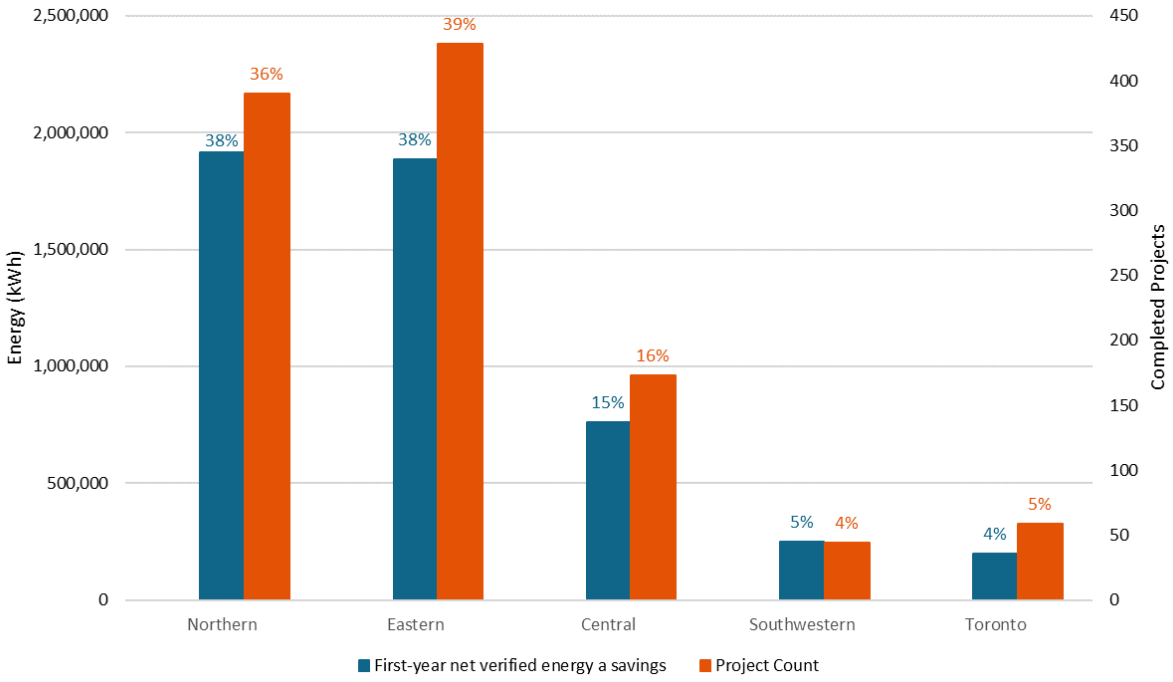
Table 4-2 : PY2022 SBP Sample Realization Rates

Energy Realization Rate	Energy RR Relative Precision at 90% Confidenece	Summer Peak Demand Realization Rate	Demand RR Relative Precision at 90% Confidenece
98.55%	6.88%	175.78%	9.34%

The program realization rates presented in Table 4-2 include the interactive effects that occurred for the HVAC operation due to lighting retrofits. Appendix A describes the methodology used for calculating interactive effects.

Figure 4-4 presents the PY2022 SBP's first-year, net verified, energy-savings contribution and completed project count by region. The Northern and Eastern regions accounted for 76% of the program's net verified energy savings.

Figure 4-4: 2022 SBP First-Year Net Verified Energy Saving and Completed Projects by Regions



4.3. Impact Evaluation Findings

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

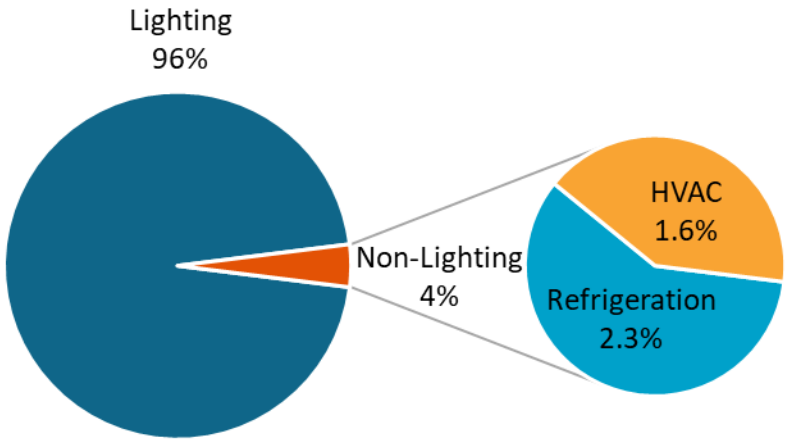
4.3.1. SBP Measure Types

In PY2022, lighting measures produced the majority of the SBP program's first-year net verified savings (96%). Refrigeration and HVAC measures each contributed only 2% of net energy savings. Table 4-3 shows the breakdown of first-year verified energy and summer peak demand savings by end-use. On average, HVAC measures achieved the highest summer peak demand savings per MWh of energy saved at 0.30 kW per MWh. Figure 4-5 provides the distribution of net energy savings by technology.

Table 4-3: Net Verified Savings by End-Use

End-Use	Net Verified First Year Energy Savings (MWh)	Net Verified First Year Summer Peak Demand Savings (kW)	Net Verified Peak Demand Savings per MWh Saved
Lighting	4,811	1,186	0.25
Refrigeration	117	23	0.20
HVAC	81	25	0.30
Total	**5,009**	**1,234**	**0.25**

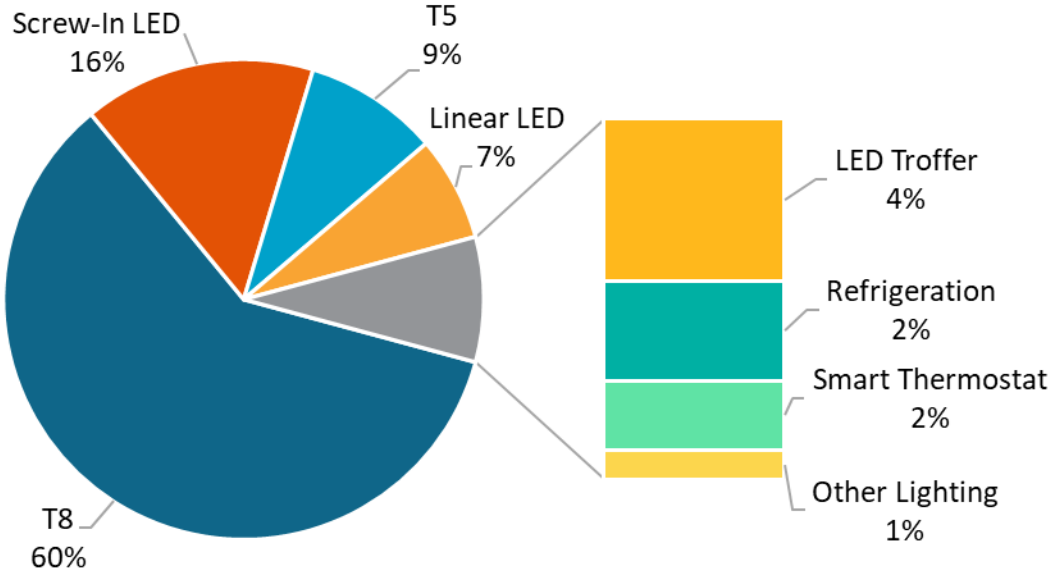
Figure 4-5 2022 SBP Net Energy Savings Contributions by Technology



T8 Linear LEDs and Screw-in LEDs (specifically LED A-Lamps) produced primary lighting savings, making up 60% and 16% of total, first-year, net verified energy savings in 2022, respectively. This trend is consistent with the PY2021 SBP program, where T8 linear LEDs (64%) and screw-in LED lamps (23%) contributed the most to the PY2021 SBP net verified energy savings. Non-lighting measures contributed only 4% of the program's net energy savings. Figure 4-6 shows the full distribution of energy savings by measure type for the 2022 SBP program. Similarly, Figure 4-7 shows T8 Linear LEDs and Screw-in LEDs served as

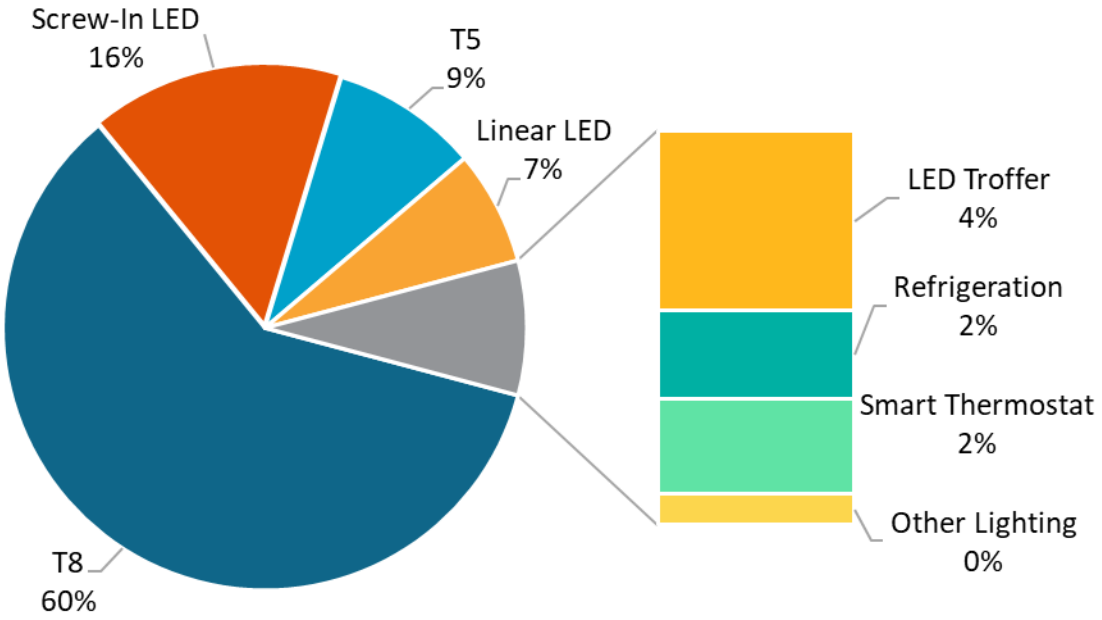
the two main contributors to 2022 SBP summer peak demand savings, accounting for 60% and 16% of total program net verified summer peak demand savings, respectively.

Figure 4-6: 2022 SBP Net Energy Savings Contributions by Measure Type*



*Does not sum to 100% due to rounding.

Figure 4-7 2022 SBP Net Summer Peak Demand Savings by Measure Type*



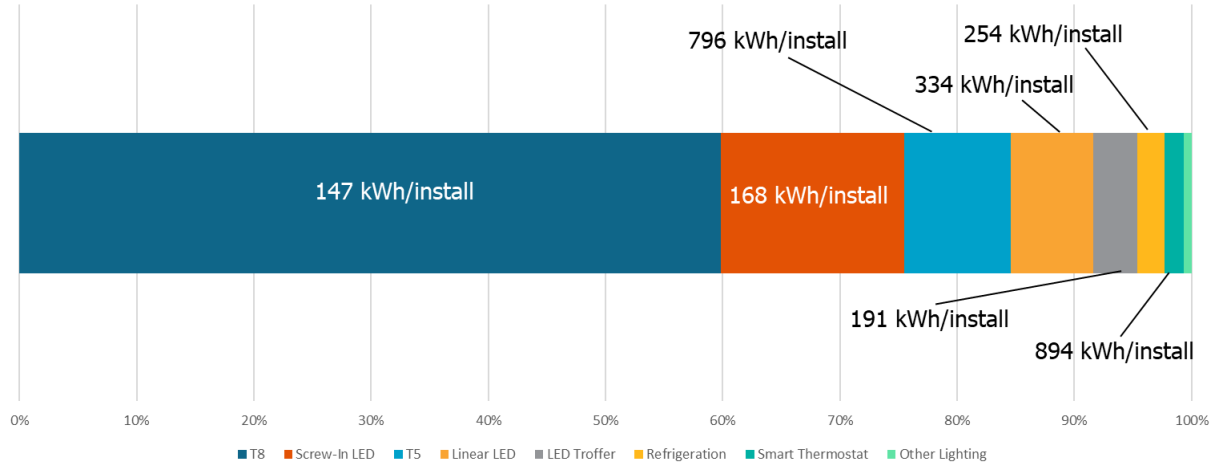
*Does not sum to 100% due to rounding.

Figure 4-8 breaks down program savings per unit measure installed for the 2022 SBP program. T8 installations accounted for 60% of the program's net verified energy savings, with average savings of 147 kWh per measure. 96% of the net verified energy savings from T8 installations were from Type B lamps and the remaining 4% from Type A lamps. Contrarily, T5 installations accounted for 9% of total program net verified energy savings,

though they achieved the highest energy savings among lighting measures at 796 kWh per measure installed.

"Other Lighting" shown in Figure 4-8 refers to the mix of remaining lighting measures that contributed to the SBP program, accounting for less than 1% of the total program energy savings, with an average of 272 kWh per measure. These measures included LED exit signs, Lighting Controls, and Plug-In LEDs. Refrigeration measures included Coil Cleaning, ECM motors, and Strip Curtains, averaging 254 kWh per measure installed. HVAC measures consisted of a single measure—Smart Thermostats, which averaged the highest per-measure savings at 894 kWh per measure installed.

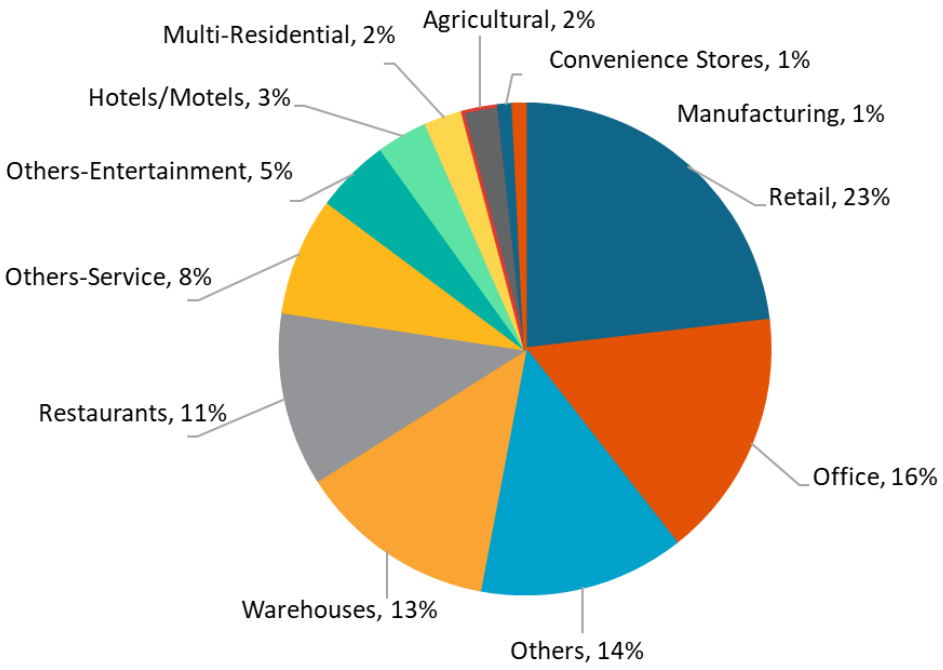
Figure 4-8 2022 SBP per Measure Energy Savings Contribution



4.3.2. SBP Facility Types

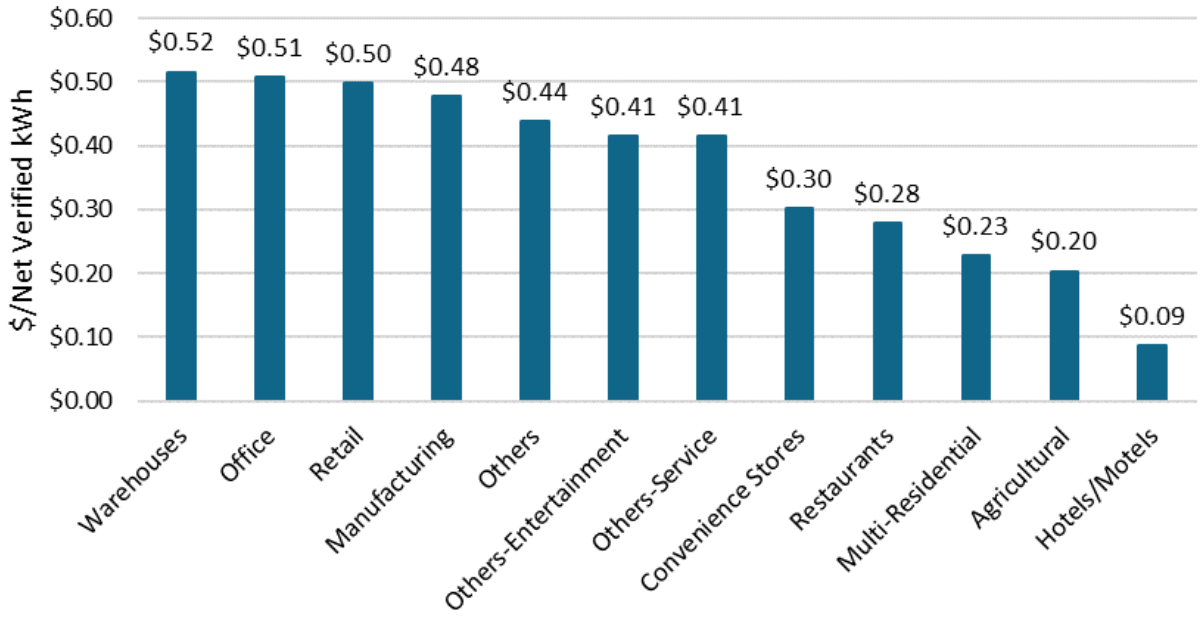
The PY2022 SBP database contained facility types for reported projects. The retail sector accounted for 27% of identified projects in 2022, followed by offices (19%), warehouses (13%), and others (13%). Consistent with project count contributions, top contributors to the 2022 SBP program's net verified energy savings included retail facilities (23%), offices (16%), others (14%), and warehouses (13%), as shown in Figure 4-9. The "others" service category refers to a mix of facility types, such as religious buildings, municipal buildings, police, and fire stations.

Figure 4-9: 2022 SBP Program Net Energy Savings by Facility Type Composition



The program's implementation cost per kWh of net verified energy savings ranged from $0.09 to $0.52, depending on facility types, with an average of $0.43 (Figure 4-10).This cost, which accounted for total project costs charged by the delivery agent, including the IESO-paid incentive and customer contribution (if any), was 43% higher than the average of $0.30 cost per kWh of net verified energy savings for SBP in PY2021.

Figure 4-10: 2022 SBP Facilities Implementation Cost per kWh



This wide cost variation mainly arose from the 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, warehouses, with an average cost of $0.52/kWh, had 70% of their energy savings produced by Linear T8 LED Tubes retrofits and Highbay LEDs. In contrast, hotels/motels, with an average cost of $0.09/kWh, had 58% of energy savings achieved from A-Lamp replacements. These trends remain consistent with PY2021 SBP results, in which warehouses had the highest average cost of $0.45/kWh, with 68% of their energy savings resulting from Linear T8 LED Tube retrofits, and hotels/motels had the lowest average cost of $0.08/kWh, with 68% of their energy savings achieved from A-Lamp replacements.

4.3.3. Incentive Cap

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

The evaluation analysis determined that 75% of the 2022 SBP participants did not exceed the maximum incentive or implement any measures beyond the cap. This means that 25% of SBP participants paid out-of-pocket to install additional energy-saving measures. This more than doubles, however, the 12% of SBP participants that implemented measures beyond the cap in PY2021. The average project incentive received was $1,651. Of the 25% of participants who implemented additional measures above the project cost cap, the average out-of-pocket payment of $1,253/project was significantly higher than the average out-of-pocket payment of $739/project from PY2021. This increase in the out-of-pocket payment is mostly attributed to lighting measures. The evaluators considered any project costs exceeding the participant incentive as an out-of-pocket payment. The most popular measures that participants paid out-of-pocket for were T8 installations, Screw-In LEDs, T5 installations, LED Troffers and Linear LEDs.

4.3.4. Realization Rates

4.3.4.1. 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 leads to an adjustment in savings through the realization rate. As discussed, lighting measures achieved 96% of program energy and demand savings. Table 4-4 shows reported and verified savings for lighting measures in PY2022 SBP.

Table 4-4: PY2022 SBP Lighting Savings

Measurement	Gross Reported Savings	Realization Rate	Gross Verified Savings
Energy (MWh)	5,203	100.21%	5,214
Demand (kW)	741	186.14%	1,380

4.3.4.1.1. Hours of Use

The SBP assessment tool only accepts one schedule for an entire facility. The PY2022 lighting sample (n=64) included 11 instances where lighting equipment was installed in multiple spaces with varying schedules. Additionally, in one instance, all lights were verified as on the same schedule, but a seasonal variation in operations was not accurately documented in the SBP assessment tool. With only one input schedule, assessors tend to input the schedule corresponding to the greatest number of hours a light would operate if observing varying schedules.

4.3.4.1.2. Fixture Wattage

The SBP Eligible Measures List requires retrofit wattages to be equal to or less than the stated required measure wattage. In PY2022, the reported retrofit wattage was always the maximum wattage allowed for that eligible measure. For example, over 55% of reported PY2022 SBP energy savings derived from Type B LED Tube Retrofits, which required 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 lamps. If the SBP assessment tool utilized actual lamp wattages instead of maximum allowable lamp wattages to calculate measure savings, more accurate savings would result.

4.3.4.1.3. Interactive Effects

The 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 4-5 details the results of differing calculation methodologies. Verified energy savings presented elsewhere in this report include interactive effects.

Table 4-5: Significance of Interactive Effects on 2022 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	5,202.71	97.03%	5,048.02	-	-
Included	5,202.71	100.21%	5,213.66	165.64	-7,317

4.3.4.1.4. Summer Peak Demand

The PY2022 SBP achieved an overall summer peak demand realization rate of 175.78% across all lighting and non-lighting measures. The high summer peak demand realization rate mainly resulted from reported lighting demand savings relying on a deemed Coincidence Factor (CF), used in conjunction with the reported energy savings.

The deemed CF of 0.0001425 for all lighting measures (except LED exit signs, which use a factor of 0.0001142) seemed conservative and underestimated summer peak demand savings. In PY2021, SBP's verified savings showed that a 0.0002787 CF would have resulted in accurately reporting of summer peak demand savings.

In PY2022, a CF of 0.0002653 would have resulted in accurately reporting summer peak demand savings. The combined PY2021 and PY2022 SBP lighting project samples suggest a CF of 0.0002734 would accurately report summer peak demand savings at the 90% confidence level with 4.9% precision. Additionally, reported demand savings did not include interactive effects, while verified summer peak demand savings did. The suggested CF of 0.0002734 includes the summer peak demand impact of interactive effects. Table 4-6 presents verified summer peak demand savings for lighting measures with and without these interactive effects.

Table 4-6: Significance of Interactive Effects on 2022 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	741.13	165.35%	1225.46	-
Included	741.13	186.14%	1379.56	154.10

4.3.4.2. Non-Lighting Measures

From October 1st, 2021 through March 2022, SBP program enrollment was placed on-hold, re-launching in March 2022 with additional non-lighting measure offerings. Of 1,094 projects implemented in PY2022, 59 included lighting and non-lighting measures, and an additional 41 consisted only of non-lighting measures. Four non-lighting measure categories were implemented in PY2022: ECM motors, strip curtains, coil cleaning, and smart thermostats.

Table 4-7 presents energy and summer peak demand realization rates for sampled non-lighting measures in PY2022. Due to the limited sample size, these results did not achieve 90% confidence and 10% precision and should only be considered directional.

Table 4-7: Non-Lighting Energy and Summer Peak Demand Realization Rates for 2022 SBP

Measurement	Reported Savings	Realization Rate	Gross Verified Savings
Energy (kWh)	220,224	87.30%	192,245
Summer Peak Demand (kW)	33.15	110.59%	36.66

A breakdown follows of key inputs for calculating energy and 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 realization rate. While the non-lighting projects sample from PY2022 was limited, the evaluation team provides observations of factors influencing realization rates.

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 the equipment operation.

Main factors influencing the realization rate for ECM motors 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 was unknown, an average input wattage of SP and PSC motor types was assumed. Installation in walk-in or reach-in units could be verified by participants during site visits and desk reviews, and, in PY2022, a significant portion of these installations were on reach-in units, which typically have lower energy and demand impacts than walk-in units.

Assessed savings for strip curtains depended on four main inputs: building type, installation in cooler or freezer, curtain area, and whether curtains previously existed. In fact, the curtain area proved to be the main factor influencing realization rates for strip curtains. Delivery vendors did not capture the curtain area, but participants could verify this during site visits and desk reviews. Assessed savings for coil cleaning depended on four main inputs: geographic location of the facility, whether it applied to a display case or walk-in unit, capacity of condensing unit, and cooling efficiency of the system. Installation in walk-in or reach-in units proved to be the main factor influencing the realization rate for coil cleaning. In PY2022, 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, geographic location of the facility, baseline thermostat type, cooling capacity controlled, cooling efficiency, and heating type. For an electric heating type, additional inputs included heating capacity and heating system efficiency.

The main factors influencing the realization rate for smart thermostats were the baseline thermostat type and the cooling capacity controlled. While delivery vendors collected baseline thermostat types, reported savings for the smart thermostat measure were the same for traditional programmable thermostat baselines and non-programmable thermostat baselines. Of the 91 smart thermostats implemented in PY2022, the reported baseline thermostat type was 35 non-programmable thermostats and 56 programmable thermostats. Verified smart thermostat savings, however, were higher per unit for non-programmable thermostat baselines compared to traditional programmable thermostat baselines. Though the delivery vendor did not collect the cooling capacity controlled, this was estimated based on information available from participants and on-site verification activities.

4.4. Net-to-Gross

Table 4-8 presents results for the PY2022 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 4-8: SBP Program NTG Results

Unique Participants	NTG Responses	Savings Weighted Free-Ridership	Spillover – Energy	Spillover – Summer Demand	Weighted NTG – Energy	Weighted NTG – Summer Demand	Energy NTG Precision at 90% Confidence
772	142	12.6%	6.3%	3.3%	93.7%	90.7%	±7.6%

Participant feedback indicates moderate levels of FR at 12.6%, indicating the program generally reached participants who would not have implemented energy-efficiency upgrades without the program. Almost two-thirds of participants (65%) were not planning on upgrading their equipment before learning about the program.

Of the nearly one-third of participants (31%) already planning on upgrading their equipment, over two-fifths (43%) would have waited at least one year without the program, and over one-fourth (26%) would have installed less expensive or less efficient equipment. Over one-fifth (22%) would have installed the same equipment and paid the full cost themselves, which is indicative of some level of FR for these respondents. Program participation resulted in somewhat high spillover (SO) at 6.3%, with over one-tenth (14%) of respondents installing equipment with attributable SO savings.

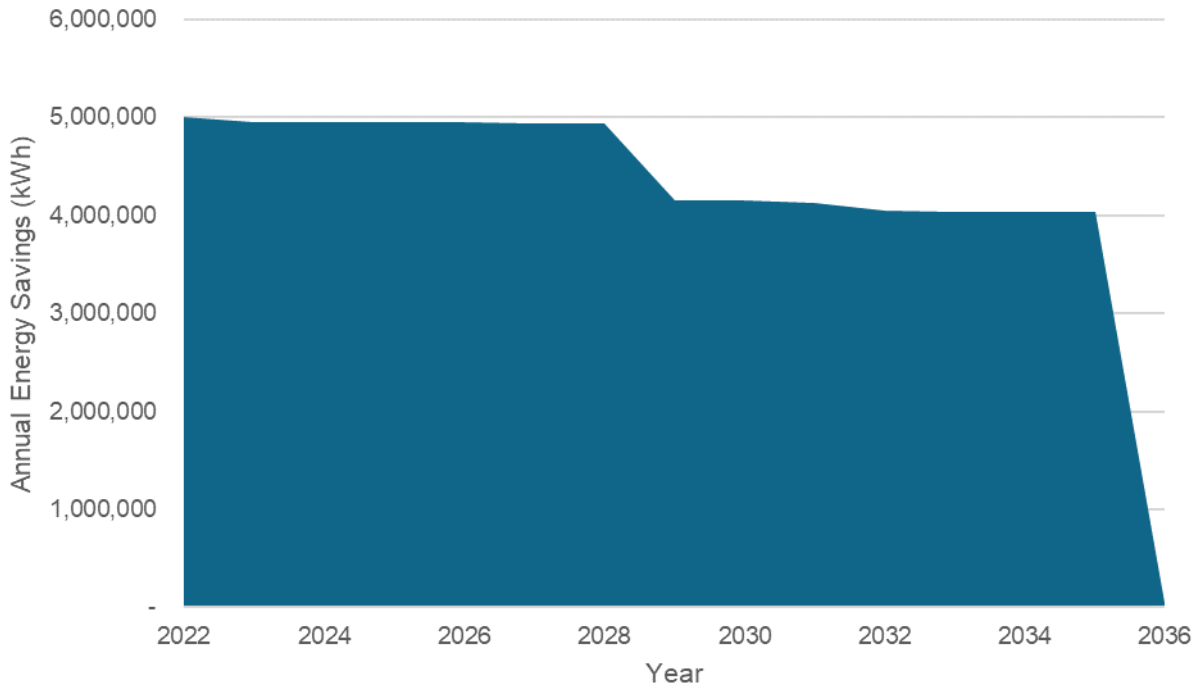
4.5. Savings Persistence

The PY2022 SBP program is expected to achieve 63,314 MWh of lifetime net-verified energy savings, based on installed measures and their respective effective useful lives (EULs). SBP's lifetime savings depend mainly on the EULs of the program's measures, which describe how long savings associated with the measure will persist.

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 2022 SBP program over time. Coil cleaning offers the shortest EUL for the PY2022 SBP measures at one year and over 81% of first-year, net verified savings have a EUL of 14 years, persisting until 2035.

Figure 4-11 Net Verified Energy Savings Over Time



4.6. Cost-Effectiveness

Cost-effectiveness (CE) for the SBP was conducted using IESO's CE Tool V9.1. Table 4-9 presents the CE results. The SBP achieved a PAC ratio of 1.17, exceeding the 1.00 target threshold (designed to determine if a program proves cost-effective).

Table 4-9: SBP Cost-Effectiveness Results

PAC Test	Result
PAC Costs ($)	$2,353,807
PAC Benefits ($)	$2,764,696
PAC Net Benefits ($)	$410,890
PAC Net Benefit (Ratio)	1.17

Levelized Unit Energy Cost (LUEC)	Result
$/kWh	$0.05
$/kW	$208.54

The PY2022 SBP CE results were similar to results from the PY2021 evaluation, when the SBP achieved a PAC ratio of 1.19 and a levelized unit energy cost of $0.04 per kWh and $139.75 per kW.

In PY2022, Type B LEDs (two lamp) 14W nominal wattage and Type B LEDs (four lamp) 14W nominal wattage contributed the greatest PAC net benefits to SBP, at $166,606 and $157,606, respectively. These two measures produced high PAC ratios of 2.46 and 2.74, respectively, and contributed nearly 18% of total SBP net verified energy and demand savings.

Inversely, the two measures that hurt the SBP's net benefits the most in PY2022—the 2' x 2' Integral LED Troffer and the 2' x 4' Integral LED Troffer—produced PAC net benefits of -$12,964 and -$11,906, respectively. These two measures also produced low PAC ratios of 0.28 and 0.56, respectively. The measures contributed only 0.67% of total SBP net verified energy and demand savings, but they accounted for 1.9% of total project costs.

5. 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.

5.1. IESO Program Staff and Delivery Vendor Perspectives

5.1.1. Key Findings

Key findings from IESO staff and delivery vendor staff in-depth interviews (IDIs) include the following:

- The program transition to SBP in PY2022 was relatively well-received by customers, with a wider variety of products available through a new non-lighting offering and additional delivery vendors serving the program.
- Several issues kept the program from achieving its targeted savings. In addition to the new program design's rollout, many businesses reopening after the pandemic deferred participation to deal with other priorities. Moreover, diesel fuel price increases impacted costs of shipping materials and traveling to installation sites.
- IESO staff and delivery vendor staff worked through challenges associated with identifying relevant Electrical Safety Authority (ESA) fees.
- Delivery vendor staff noted difficulties achieving higher savings, given many small businesses remained on reduced operating hours.
- Program opportunities can be found in addressing barriers identified by interviewees, especially related to support needs around rising costs and supply chain issues.
- Other important considerations for future program years include offering additional equipment and program services through the program and providing additional marketing support for promoting the program (including its new non-lighting offerings).

5.1.2. Design and Delivery

PY2022 marked the first year of delivering SBP using a regional delivery approach with multiple delivery vendors serving the program. It also marked the first year that the program offered lighting and non-lighting equipment together. IESO and delivery vendor staff reported the transition from SBL to SBP went relatively smoothly from the customer's perspective, though some barriers emerged (as discussed in Section 5.1.3). IESO staff noted that the program primarily sought to support small businesses through program participation and to help them achieve deep savings. Other program goals included ensuring ease of program participation, achieving program savings targets, and adhering to the program's budget.

IESO program staff reported it helpful to receive feedback from various delivery vendors as they provided unique insights about the regions they served. The program's assessors were employed directly by delivery vendors, and the program typically utilized local, independent firms as installers, contracted by delivery vendors to complete lighting or non-lighting installations. All delivery vendors were responsible for assessor and installer training and education, and they reported frequently communicating with assessors and installers to answer questions and perform quality control. Each delivery vendor noted that nearly all assessors and installers served the program in prior years and these interactions generally went well.

5.1.3. Customer Engagement

Delivery vendors were responsible for lead generation, which was conducted through a mix of door-to-door canvassing, following up with leads from the Save on Energy website, and other referrals. IESO staff reported primarily marketing the program using a "digital first" approach (i.e., through the website, social media, and paid advertising via social media and search engines) as well as through newsletters to subscribers, though marketing paused in fall 2022 due to a backlog of applications associated with a program delivery vendor's bankruptcy.

IESO staff noted that future opportunities may be available to tap into other mediums (e.g., radio, TV, billboards, more print materials), depending on budget limitations. IESO staff indicated that areas for improvements exist in communications between assessors, installers, and participants. At times, customers have been unsure about who serviced their business as they speak with many different individuals when participating. Customers may also initially be on board with proposed equipment, but unsatisfied with actual models installed due to a lack of communication.

5.1.4. Barriers and Opportunities

The program did not meet its targets in PY2022, which IESO staff and delivery vendor staff reported largely resulted from the transition to the new program delivery model. IESO and delivery vendor staff cited increased customer concerns about scams and lower customer interest than in prior years as barriers that posed difficulties in reaching program targets. Additionally, one delivery vendor's bankruptcy meant that the program had to pivot quickly to ensure participants continued to be served.

Delivery vendor staff reported that supply chain issues also posed major barriers. Such issues included longer lead times, project back orders, and shipping delays. Delivery vendors also noted these issues could vary widely from week to week.

IESO and program delivery vendor staff indicated relatively low uptake of non-lighting measures in PY2022, which they attributed to various factors: non-lighting offerings first became available in PY2022; a slower than anticipated program ramp up occurred; generally limited interest from participants in initiating projects; relatively low savings targets

for non-lighting measures (discussed below); and a relatively small population of participants eligible for non-lighting equipment offered through the program.

Delivery vendors only needed to achieve 10% of their energy-saving targets from non-lighting measures, which may have affected awareness of these measures. Additionally, the low non-lighting saving targets may have not provided sufficient motivation to delivery vendors to develop expertise and capacity in this area.

Program delivery vendor staff reported some difficulties in qualifying equipment for the program, given many small businesses maintained reduced operating hours following the pandemic, preventing them from achieving higher savings.

Delivery vendor staff reported periodic challenges in determining whether ESA fees were required for certain equipment types, especially related to new non-lighting equipment such as refrigeration. The IESO staff reported working closely with delivery vendors and installers to determine ESA fees.

Delivery vendor staff reported that some lighting equipment options could be restrictive or might not cover a sufficiently wide variety of equipment to meet all customer needs (e.g., A-Lamp LEDs, specialty lighting equipment). IESO staff noted increased customer interest in smart technologies (such as sensors).

Per delivery vendor staff, diesel cost increases affected their profit margins in PY2022. They found this particularly true for assessments and site visits in the north of the province, where customer sites are farther apart and harder to reach. Delivery vendors indicated that they absorbed increased transportation costs associated with their assessors' transportation costs. IESO staff also reported increases in transportation costs led to increases in delivery and equipment costs.

Program opportunities lie in addressing barriers identified by interviewees, especially those related to support needs affected by rising costs and supply chain issues. Other important consideration areas for future program years include adding equipment and services to the program and increasing marketing support to promote the program (including its new non-lighting offerings).

5.2. Assessor and Installer Perspectives

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

5.2.1. Key Findings

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

- Customers enroll in the program most commonly through program delivery vendor staff generating leads for respondents (cited by three respondents) or respondents describing the program during client calls (cited by two respondents).
- Respondents most often reported customers' lack of awareness of the program as preventing participation (cited by six out of eight respondents).
- Respondents most commonly suggested addressing participation barriers by increasing program marketing (cited by four respondents).
- Respondents indicated that 50% to 90% of their lighting projects reached the incentive cap. On average, respondents reported that the incentive cap reduced the scope for 68% of these projects.
- On average, respondents assigned an overall program satisfaction rating of 3.8 on a scale from one to five, where one indicates "not satisfied at all" and five indicates "extremely satisfied."
- Some recommendations for additional equipment to consider included exterior lighting (two respondents), a variety of light bulbs, fixtures, and controls (one respondent each), and air conditioners (one respondent).
- Program improvement recommendations included increased program advertising, replacing the Dropzone application software, minimizing the number of parties involved, and providing more funding for travel.
- One-half (four of eight) respondents noted rising equipment costs.

5.2.2. Training and Education

When asked what form of training or education respondents received in 2022 related to the program, one-half (four) received training and education via one-on-one, in-person instruction from the program delivery vendor. Other sources of training included receiving training through inquiry responses from the program delivery vendor or the IESO (three respondents) and through a webinar or other online instruction (two respondents). Table D-5 in Appendix D.1 provides a full list of training and education types.

The seven respondents indicating that they received program training were asked which topics the training had addressed. All seven respondents received information on program rules, and most received information on program offerings (six respondents). 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 commonly suggested marketing and outreach techniques to better promote the program to customers (three respondents). Table D-7 in Appendix D.1 provides a full list of recommended training and education topics.

Finally, respondents were asked if they had proper materials and tools to perform assessments and/or installations for SBP. Seven out of eight respondents replied "yes." The eighth respondent stated that the Dropzone application software used during site assessments was an ineffective tool as it was unreliable, redundant, and too sensitive (e.g., drop down options often do not drop down, or error screens appear making it difficult to receive a customer's signature while on site).

5.2.3. Customer Participation

Respondents most commonly reported their customers participated in SBP due to program delivery vendors generating leads for respondents (three out of eight respondents). Table D-8 in Appendix D.1 contains a comprehensive summary of the most typical ways that customers came to participate in the program. Per respondents, the percentage of customers with specific equipment already in mind before signing up for the program ranged from 5% to 75%, with an average of 28%. Table D-9 in Appendix D-1 displays the distribution of customer percentages with specific equipment already in mind, as reported by responding assessors and installers.

When respondents were asked which barriers prevented customers from program participation, six out of eight respondents reported that customers were unaware of the program. The most common suggestion for overcoming this barrier was increased program advertising (four respondents). Table D-10 and Table D-11 in Appendix D-1 provide full lists of participation barriers and suggestions for overcoming them. When respondents were asked if COVID-19 pandemic restrictions or supply chain issues hindered customers from participating in SBP sooner than they did, six out of eight respondents agreed that the restrictions hindered customer participation, while three out of eight respondents agreed supply chain issues hindered customer participation.

Respondents were asked for the primary reasons why an applicant would not be eligible for program participation, most commonly citing (four respondents) that equipment did not meet eligibility requirements. Table D-12 in Appendix D-1 provides a full list of reasons addressed. Additionally, 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 means “not at all interested” and five means “extremely interested,” produced an average rating if 3.4, indicating moderate interest. The distribution of respondents’ ratings can be found in Table D-13 in Appendix D.1.

Finally, respondents were asked to rate how likely their customers would be to install additional energy-efficient equipment if an additional site visit was required for installation. Using a scale of one to five, where one means “not at all likely” and five means “extremely likely,” produced an average rating was 4.0, indicating substantial interest. The distribution of respondents’ ratings can be found in Table D-14 in Appendix D.1.

5.2.4. Project Incentive Cap Impacts

In 2022, SBP set incentive caps at $2,000 for lighting projects and $2,500 for non-lighting projects. When asked to report the percent of their projects reaching the incentive caps, responses for lighting projects ranged from 50% to 90% with an average of 72%. Only one respondent provided a response for non-lighting projects at 50%. Table D-15 in Appendix D.1 provides the distribution of the percent of lighting and non-lighting projects reaching the incentive cap. Respondents, reporting that at least some of their customers’ projects reached the incentive cap, were asked to report the percentage of their customers who had to reduce the size, scope, or efficiency of their equipment upgrades due to the incentive cap.

Responses ranged from 30% to 90%, with an average of 68%. Respondents, reporting that the incentive cap reduced the scope of some or all customers' projects, were asked to specify the percentage of scope reductions. Of these six respondents, two-thirds (four) reported a scope reduction of 26% to 50%. Table D-16 in Appendix D.1 provides a full list of responses regarding a reduction in project scope.

5.2.5. 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 "extremely satisfied." As shown in Table 5-1, respondents were somewhat satisfied with the program, assigning it an average satisfaction rating of 3.8. When rating specific program aspects, respondents assigned the highest average satisfaction ratings to program training and education (4.1), interactions with program representatives from the delivery vendor (4.0), and values that program-covered equipment provided to customers (3.8). On average, respondents assigned the lowest satisfaction ratings to program marketing and outreach (3.0) and program application process and forms (2.9).

Table 5-1: Satisfaction with Program Aspects (n=8)

Program Aspects	Average Satisfaction Rating
The program overall	3.8
Program training and education that you received	4.1
The interactions you had with any Save on Energy SBP representatives from the program delivery vendor	4.0
The value that the equipment covered by the program provided to customers	3.8
The interactions you had with any Save on Energy SBP representatives from the IESO	3.5
Program worksheets and materials	3.4
Number and types of equipment incentivized through the program	3.4
The program website	3.3
Program marketing and outreach	3.0
Program application process and forms	2.9

5.2.6. Program Improvement Recommendations

Respondents were asked to recommend areas for program improvements. The seven respondents providing recommendations offered a variety of responses. Suggestions included advertising the program more, replacing the Dropzone software, minimizing the number of parties involved, and providing more funding for travel. Table D-17 in Appendix D.1 provides a full list of these recommendations. Respondents were asked to recommend additional equipment or models for future inclusion in the program. Two respondents recommended exterior lighting, and one respondent each recommended a variety of light

bulbs, fixtures, and controls. In addition, one respondent recommended air conditioners. Table D-18 in Appendix D.1 provides a full list of these recommendations.

5.2.7. ESA Fees, Cost Increases, and Supply Chain Issues

When asked to indicate how frequently additional ESA fees were incurred for their 2022 SBP projects, using a scale of one to five, where one means "never" and five means "always," the five responding installers assigned an average rating of 3.2. Installers were also asked to indicate how frequently assessors informed the customer about ESA fees before scheduling the installation, using the same one-to-five scale. The four installers providing a response assigned an average rating of 3.0. Finally, installers were asked whom—the customer, the assessor, or the installer—typically paid the ESA fees when they were incurred for SBP projects. All five installers said the installer paid the fees. Additional information about ESA fees can be found in Table D-19 in Appendix D.1.

Five of the eight responding assessors and installers said increases in diesel costs affected their profit margins in 2022. Only one of these five respondents, however, said they typically included diesel cost increases in their SBP project costs. Only two of eight respondents noticed supply chain issues with equipment over the last year, with one mentioning 8-foot linear LED fixtures and the other mentioning LED tubes. Four of eight respondents noticed rising equipment costs, with two respondents reporting rising costs for all equipment, and one respondent reporting rising costs for high-bay lighting and luminaires.

5.3. Participant Perspectives

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

5.3.1. Key Findings

Key findings from participants' responses included the following:

- Only two-fifth (40%) 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 (74%) or installer visits (75%), suggesting the program largely meets these 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 and transparency.
- Over one-half (55%) of respondents said they reached the lighting incentive project cap compared to less than one-tenth (8%) for non-lighting projects.

- Of respondents reaching the incentive project cap, more than one-third (35%) had to cut back on the size, scope, or efficiency of their equipment upgrades. Of respondents not reaching the cap, one-half (50%) said they would take advantage of a co-pay offer to install additional upgrades.
- Respondents recommending additional equipment for consideration (40%) most commonly cited HVAC and water heating (43%), refrigeration (19%), and air-sealing and insulation (15%).
- The one-fifth (20%) of respondents offering program improvement recommendations most commonly suggested improvements in marketing and promotion (37%) and improvements in staying in communication with participants during every stage of the project (e.g., communicating about scheduling, equipment for which customers qualified, why they qualified, work performed, and following up with participants following visits in case questions arise (15%)).
- Most (79%) respondents likely agreed they would install additional energy-efficient equipment through the program, even if requiring an additional site visit.
- The majority (71%) of respondents did not plan to complete electrification projects, suggesting financial incentives and information on upgrades and electrification project costs would prove helpful in helping them complete electrification projects.

5.3.2. Program Awareness

Participants learned about the program primarily through the Save On Energy representative who spoke to them at their business (20%), previous Save on Energy program participation (14%), and the IESO website (14%). Participants also frequently learned of the program through colleagues or competitors (11%), social media (10%), and contractors (10%). Figure D-12 in Appendix D.3 lists the ways participants heard about the program.

Participants who only installed lighting equipment through the program (104 respondents) answered whether they knew the program offered other energy-efficiency equipment upgrades in addition to lighting. Just over one-half said they were not aware of non-lighting options (53%), while two-fifths (40%) said they were aware, and the remainder did not know if they were aware (6%) or declined to respond (1%).

This suggests an opportunity exists to expand the program's marketing and awareness efforts to customers regarding other equipment upgrades beyond lighting. Respondents who said they knew of other equipment upgrades (40% or 42 respondents) were asked why they decided not to install other upgrades. Two-fifths (40%) stated they did not need to install additional equipment. One-third (33%) said equipment of interest was not offered through the program. Figure D-13 in Appendix D.3 provides a full list of reasons for not installing other non-lighting equipment.

5.3.3. Participation Barriers

When participants were asked whether they experienced challenges in signing up for program participation, nearly one-fourth (23%) of participants stated they did so. These

challenges included extra expenses or fees (30%), difficulty scheduling the initial site visit (23%), and lack of availability of equipment of interest through the program (20%). Other, less frequently mentioned challenges included the Save On Energy representative performing the initial site assessment having to make multiple visits (13%) and program delays (7%). Figure D-14 in Appendix D.3 provides a full list of program sign-up challenges. When asked whether they experienced barriers that delayed their program participation, most participants (61%) indicated they did not. One-third of participants (33%) stated they experienced barriers that delayed their participation. The most common barriers included lack of program awareness (32%), lack of time (22%), and COVID-19 pandemic restrictions (18%). Figure D-15 in Appendix D.3 shows a full list of barriers that delayed program participation.

5.3.4. Site Visit Improvement Suggestions

Nearly three-fourths (74%) of respondents 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. The one-fourth of respondents (26%) offering suggestions most commonly included reducing the time required to complete the assessment (29%), providing greater flexibility in scheduling the assessment (17%), and improving the assessors' data collection accuracy (9%). Figure D-16 in Appendix D.3 provides a full list of these suggested improvements. Respondents who suggested improving the professionalism of the Save on Energy representatives who performed the initial site assessment suggested increasing transparency about work performed (three respondents) and increasing responsiveness to questions or concerns (one respondent).

Three-fourths of respondents (75%) did not offer suggestions for improving installation visits, indicating that Save On Energy representatives performing installation visits met the majority of customers' needs. The one-fourth of respondents (25%) offering suggestions most commonly cited reducing the time required to complete visits (29%), providing greater flexibility when scheduling visits (24%), and improving the professionalism of Save on Energy representatives performing the installation visit (18%). Figure D-17 in Appendix D.3 provides a full list of these improvement suggestions. Participants suggesting improvements to the professionalism of Save On Energy representatives who performed installation visits cited increasing transparency about the work performed (three respondents) and the Save on Energy representatives providing their contact information (two respondents).

5.3.5. Recommended Equipment and Services

Nearly one-third of participants (30%) already had specific equipment in mind for installation prior to signing up for the program, with most choosing lighting (85%) or refrigeration (8%) equipment. Other equipment included programmable thermostats (3%), heating and cooling equipment (3%), and appliances (3%). Of respondents asked to provide equipment or services recommendations for future inclusion in the program, two-fifths (40%) provided equipment recommendations, most commonly including HVAC and water heating (43%), refrigeration (19%), and air-sealing and insulation (15%). Figure D-18 in Appendix D.3 provides a full list of these additional equipment recommendations.

5.3.6. Program Improvement Recommendations

When asked to provide additional, overall recommendations for the program, one-fifth of respondents (20%) most commonly included improving marketing and promotion (37%) and improving communications with participants at every stage of the project (15%). The latter included communicating about scheduling, what equipment customers qualified for and why, what work was performed, and following up with participants after visits in case questions arose. Table D-27 in Appendix D.3 provides a full list of overall program recommendations.

5.3.7. Project Incentive Cap

Respondents were asked whether their projects reached the incentive caps ($2,000 for lighting projects and $2,500 for non-lighting projects). More than one-half of lighting projects (55%) reached the incentive cap, compared to less than one-tenth of non-lighting projects (8%). Figure D-20 in Appendix D.3 compares lighting projects that reached the $2,000 incentive cap to non-lighting projects that reached the $2,500 incentive cap. Of respondents reaching the incentive cap, over one-third (35%) reported reducing the size, scope, or equipment efficiency of their upgrades. More than three-fifths (62%) of these respondents did not reduce the scale of their upgrades, and the remaining 3% did not know. Of respondents not reaching their incentive caps, 50% stated they would likely take advantage of a co-pay offer to install additional energy-efficient equipment. About two-fifths (39%) indicated they would not take advantage of the co-pay. Figure D-21 in Appendix D.3 provide additional details on participants' likelihood to take advantage of the co-pay offer.

5.3.8. Electrification Projects

Participants were asked whether their company completed or planned to complete electrification projects at their facilities. The majority of respondents indicated they had not completed nor had plans to complete electrification projects (71%) or did not know or refused to answer (18%). Few respondents (4%) stated they had already completed an electrification project. The remaining respondents (7%) stated they planned to complete a project within the next three months (five respondents), the next nine months (one respondent), or within the next one to three years (three respondents). One respondent indicated that their project completion depended on the availability of program funding. Respondents indicating they had already completed or planned to complete electrification projects were also asked what assistance they found (or would find) helpful in completing their electrification projects. Seven out of ten respondents suggested providing financial incentives. Table D-28 in Appendix D.3 provides a full list of these recommendations.

Respondents stating they did not have plans to complete electrification projects were asked to provide their reasons for not electrifying their facilities. The most common reasons included the high cost of electrification projects and financial constraints (19%), insufficient information on electrification (13%), and their company's plans did not include facility electrification (13%). Other commonly raised reasons included a leased facility (11%), the company recently completing other high-efficiency upgrades (10%), the facility did not use

gas-powered equipment (10%), or their facilities already were partially or fully electric (6%). Table D-29 in Appendix D.3 provides a full list of these reasons.

6. Other Energy-Efficiency Benefits

6.1. Avoided Greenhouse Gas Emissions

Using the IESO CE Tool V9.1, the evaluation team calculated avoided GHG emissions for the first year along with the measures' lifetime savings for PY2022. Table 6-1 shows the results of these avoided GHG emissions calculations. First-year avoided GHG emissions from electricity savings were reduced by the increase in GHG consumption resulting from the gas-heating penalty, resulting in 725.69 Tonnes of CO_2 reduced in the first year. PY2022 SBP projects are expected to achieve a total of 7,057.86 Tonnes of avoided GHG throughout the EUL of the installed measures. All GHG emissions shown are in Tonnes of CO_2 equivalent, unless otherwise noted.

Table 6-1: PY2022 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
1,136.08	(410.38)	725.69	12,322.64	(5,264.79)	7,057.86

*Interactive gas heating penalty.

6.2. Non-Energy Benefits

This subsection discusses the SBP's NEBs in PY2022. Appendix G provides additional detail regarding the NEB methodology and results. Note that PY2022 NEB results presented in this section should be considered only for informational purposes. The evaluation team used Phase II study NEBs values within the PY2022 Cost-Effectiveness calculator rather than the PY2022 NEBs participant evaluation survey values, per the IESO's request. In future evaluation years, this will allow the team to collect additional NEB data.

6.2.1. Key Findings

Key NEB analysis findings include the following:

- Using the *hybrid minimum approach*, PY2022 NEBs values were $0.07/kWh for reduced building and equipment operations and maintenance (O&M), $0.04/kWh for thermal comfort, $0.02/kWh for improved indoor air quality, and $0.0004/kWh for reduced spoilage.

6.2.2. Quantified NEBs Values

The PY2022 SBP participant survey included 48 participants who had 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 participant evaluation survey 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 in the indoor environment.
- **Reduced spoilage:** Reduced spoilage time for perishable products due to improved refrigeration or ventilation.

The majority of PY2022 participants (90%) experienced NEBs from reduced building and equipment O&M, with 17% experiencing NEBs from improved thermal comfort, 4% experiencing NEBs from improved indoor air quality, and 4% experiencing NEBs from reduced spoilage, as shown in Figure 6-1.

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

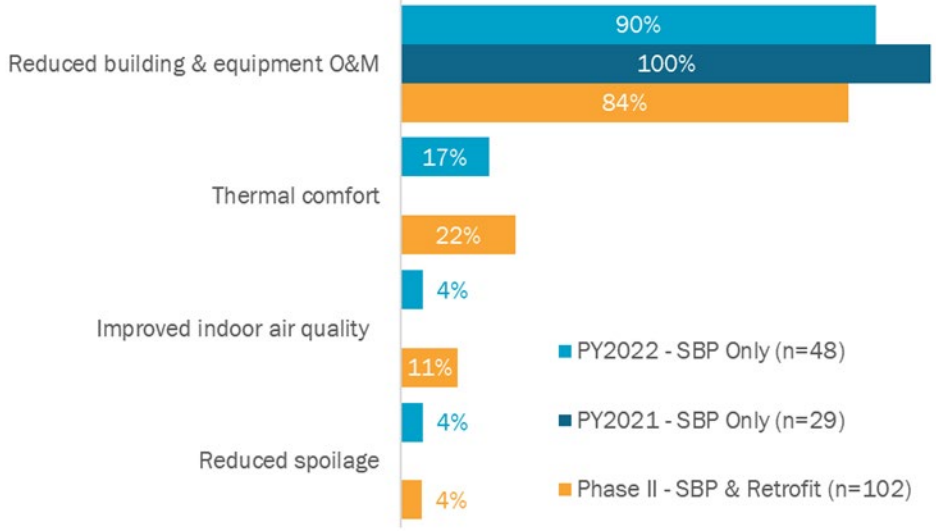


Table 6-2 presents quantified NEB values for Phase II, PY2021, and PY2022, based on the hybrid, minimum ($/kWh) valuation, an approach recommended in the Phase II study.[3] Notably, quantified NEBs from the Phase II study combined participants from the small business lighting and retrofit programs, yet PY2021 and PY2022 results only included SBP participants.

PY2022 SBP respondents primarily valued reduced building and equipment O&M NEB at ($0.08/kWh), followed by thermal comfort ($0.04/kWh), improved indoor air quality ($0.02/kWh), and reduced spoilage ($0.0004/kWh).

[3] 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

These data correspond to NEBs that SBP assessors and installers reported that their customers might have experienced due to their SBP participation. Three of eight respondents indicated that their customers experienced reduced building and equipment O&M, and two indicated their customers experienced improved thermal comfort. Table G-2 in Appendix G provides a comprehensive list of all SBP assessor and installer responses associated with NEBs.

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

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

The Phase II study 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 PY2021 and PY2022, 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, more than two-fifths (43%) were prepared to pay an equal or higher value per year than their electricity bill or savings. This highlights that factors beyond energy savings may motivate energy-efficiency participation or contribute to customers' positive experience with the programs.

6.3. 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.

6.3.1. Key Findings

Key findings from the PY2022 Jobs Impacts approach include the following:

- The analysis used an input-output model which estimates that SBP will create 64 total jobs in Canada, 57 of which will be in Ontario.
- $1M of program investment resulted in the creation of 27 jobs, compared to 31 jobs per $1M in PY2021 SBP.
- Five out of 64 (8%) of jobs impacts were realized in the first year; three of the five first-year jobs impacts resulted from first-year savings.

6.3.2. 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	993	881	1,874
Electric Light Bulbs and Tubes	71	63	133
Switchgear, switchboards, relays and industrial control apparatus	27	24	51
Heating and cooling equipment (except household refrigerators and freezers)	23	20	42
Subtotal	**1,113**	**987**	**2,100**
Office Administrative Services	-	-	594
Total			**2,695**

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 $7.0 million over 20 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.[4] 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 $2.4M program budget or approximately $0.8M.

[4] 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.

6.3.3. 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.

The majority of total job impacts (57 out of 64 estimated total jobs) occurred in Ontario, with 31 of 32 direct jobs across Canada created in Ontario. A slightly smaller proportion of indirect and induced jobs also occurred in Ontario, with 12 out of 16 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 47 FTEs (of all types) created in Ontario and 53 FTEs added nationwide. Almost all direct FTEs (27 of 28) were added in Ontario, with this number representing approximately 57% of total FTEs added in Ontario and 52% of all FTEs created across Canada. In 2022, each $1M of program spending resulted in the creation of 27.3 total jobs.

Table 6-4: 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)
Direct	27	28	31	32	13.5
Indirect	10	13	12	16	6.7
Induced	10	12	14	17	7.2
Total[1]	**47**	**53**	57	64	**27.3**

[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 due to first-year savings, and verbatim comments from program contractors.

7. Key Findings and Recommendations

Finding 1. Lighting Reported Peak Demand Savings—CF. The PY2022 SBP reported peak demand savings for lighting measures use a CF of 0.0001425 for all lighting measures except LED Exit Signs, with a CF of 0.0001142. The CFs used, however, appear conservative, resulting in a high demand realization rate (176%).

- **Recommendation 1**. Update the CFs used to report peak demand savings to 0.0002734 to better align with evaluation results. This would apply to all lighting measures except for LED Exit Signs, which the evaluation team recommends stay unchanged with a CF of 0.0001142. This would help more accurately report summer peak demand savings. The team bases this recommendation on an analysis of the combined PY2021 and PY2022 SBP lighting project samples—a total of 138 evaluated projects reported at the 90% confidence level with 4.9% precision. Section 4.3.4.1 provides more information.

Finding 2. Initially offered in March 2022, SBP experienced a slow uptake in the adoption of non-lighting measures; only 9% of projects included any non-lighting measures, and no non-lighting measures were implemented in the Northern region, despite that this region made up 36% of projects in PY2022. While the number of projects including non-lighting measures was low, 37% of all projects completed in PY2022 were completed in January, February, or March, prior to the non-lighting offerings availability. The evaluation team expects to see the implementation of these non-lighting measures increase as implementers become more familiar with these non-lighting measures.

- **Recommendation 2.** Offer continued training and guidance to assessors and installers about the new SBP non-lighting measures including the benefits and appropriate applications for customers. Ensuring that assessors and installers can effectively educate participants on the benefits offered by these new non-lighting measures will help maximize the impact of these new expanded offerings. See **recommendation 8** for additional information on non-lighting measures.

Finding 3. During the PY2022 program year, an unplanned mid-cycle transition to a new implementer affected delivery in the Toronto, Central, and Southwestern regions, which delivered 64% of total projects in PY2021 but only 25% of total projects in PY2022. The total number of projects implemented in the Eastern and Northern regions (regions that did not undergo implementer transition) in PY2022 (818 total) very closely aligned with PY2021 participation numbers (829 total) while PY2022 participation in the Toronto, Central, and Southwestern regions (276 total) experienced an 82% decrease from PY2021 participation numbers (1,496 total).

- **Recommendation 3.** If there is a backlog of interested SBP participants in the Southwestern, Central, and Toronto regions who could not participate in PY2022 due to challenges outside of their control, focus additional resources to these regions for future program years.

Finding 4. More participants who received recommendations to install additional lighting upgrades beyond the project cost cap made those upgrades in comparison to the previous program year. Program data shows that one-quarter of participants (25%) installed additional energy-efficient equipment despite not receiving full cost coverage following their program participation—a result more than double PY2021's 12%. Of participants installing additional upgrades above the program cost cap in PY2022, the average out-of-pocket payment of $1,253 represents a 70% increase from the PY2021 average out-of-pocket payment of $739.

- **Recommendation 4a.** Continue to encourage assessors and installers to offer participants additional lighting and non-lighting upgrades beyond the program cost cap when applicable.
- **Recommendation 4b.** Help interested participants to complete the work, either by installing additional equipment through the program or by providing participants with a recommended equipment list to consider for future installations.
- **Recommendation 4c.** Re-evaluate the appropriate program cost cap as equipment and labour costs tend to increase over time. See **Recommendation 11** for additional information on program cost caps.

Finding 5. New non-lighting measures delivered slightly lower demand and energy savings per incentive dollar than lighting measures but provided significantly higher demand and energy savings per quantity installed. Specifically, the smart thermostat measure delivers the highest energy and demand savings per unit of any SBP measure category, with a high Program Administrator Cost Test (PAC) Ratio of 1.52. Refrigeration measures did not prove cost-effective, with strip curtains, ECM motors, and coil cleaning measures delivering PAC ratios of 0.46, 0.81, and 0.36, respectively. While delivery in non-lighting measures was low in PY2022, delivering only 4% of program energy and demand savings, the delayed launch of non-lighting offerings until March 2022 impacted the program.

- **Recommendation 5a.** When applicable, encourage assessors and installers to offer non-lighting measures to participants, thus maximizing the SBP's energy and demand impacts. The evaluation team recommends that assessors and installers prioritize and encourage participants to install smart thermostats to increase SBP's impact and cost-effectiveness.
- **Recommendation 5b.** Determining non-lighting measures' program impacts should continue on an ongoing basis as implementers become more comfortable with the new non-lighting offerings and participants complete more projects with non-lighting measures.

Finding 6. In PY2022, the condenser coil cleaning measure accounted for 45% of the energy and demand savings for the refrigeration end-use, but the one-year EUL did not contribute persisting energy or demand savings to the end of the framework accounting period (2026). Additionally, this measure performed poorly from a cost-effectiveness standpoint, scoring a 0.36 PAC ratio.

- **Recommendation 6a.** Evaluate the effectiveness of offering coil cleaning for coolers and freezers as a standalone non-lighting measure in the SBP.
- **Recommendation 6b.** Consider offering a comprehensive tune up measure for refrigeration and HVAC equipment that incorporates additional service beyond coil cleaning (e.g., refrigerant charge adjustment, changing air filters, optimizing zone temperature set points, leak testing and repair, straightening blades and fins), given that comprehensive HVAC tune up measures typically have longer EULs of three or more years.

Finding 7. The SBP delivery mechanisms could provide a promising opportunity to collaborate with gas utilities to deliver highly cost-effective and GHG-reducing direct-install measures, such as aerators, weatherstripping and pipe insulation. Offering a comprehensive program can deliver higher GHG reductions without increasing custom touchpoints, while reducing the time required to implement upgrades that address both electric and gas systems. Additionally, if the local gas utility already offers a similar small business program to customers, this collaboration could reduce overall administrative costs and vehicle miles traveled by assessors and installers.

- **Recommendation 7.** Evaluate the opportunity to collaborate with gas utilities in Ontario to deliver a comprehensive small business assessment program that offers electric and gas energy-efficiency measures.

Finding 8. Awareness of non-lighting equipment is relatively low among participants. PY2022 saw a transition from the SBL program to SBP, where, for the first time, offerings included non-lighting equipment along with lighting under the same program. Only two-fifths of participants (40%) with installed lighting-only upgrades knew the program also offered non-lighting equipment. These same participants most commonly said they did not install non-lighting equipment either because they did not need to install additional equipment (40%) or because the equipment of interest to them was not available (33%). Assessors and installers indicated that their customers expressed moderate interest in learning that SBP now offers non-lighting equipment (at an average of 3.4 using a scale of one to five, where five means “extremely interested”). IESO staff and program delivery vendors indicated non-lighting measures faced relatively low uptake in PY2022. They attributed this to various factors including the fact that it was the first year that non-lighting offerings became available, a slower-than-anticipated program ramp up, limited interest from participants in initiating projects in general, relatively low savings targets for non-lighting measures, and a relatively small population of participants eligible for non-lighting equipment.

- **Recommendation 8a.** Ensure that all eligible customers know of lighting and non-lighting program opportunities from the start. This could be accomplished by clearly explaining program offerings to customers during initial screenings, sharing program materials (e.g., brochures, e-mails, newsletters) that highlight the new non-lighting opportunities, and ensuring that assessors identify lighting and non-lighting opportunities during the initial site assessment.

- **Recommendation 8b.** Consider increasing savings targets for non-lighting measures to encourage program delivery vendors to further promote these offerings to eligible customers.
- **Recommendation 8c.** Explore whether adding other non-lighting equipment to the program may be possible (see Section 8 for equipment suggestions).

Finding 9. Opportunities exist to improve assessor and installer training and education. Most surveyed assessors and installers reported receiving some training and education. Nearly all received information on the program rules, and many others received information on program offerings as well as installation procedures and practices. Assessors and installers provided a moderately high satisfaction rating (a 4.1 on a scale from one to five, where one indicates "not satisfied at all" and five indicates "extremely satisfied") for program training and education received. Assessors and installers most commonly suggested providing marketing and outreach techniques to better promote the program, followed by more information on program rules and offerings.

- **Recommendation 9a**. Ensure trainings stress marketing and outreach techniques and provide more information on program rules and offerings.
- **Recommendation 9b**. Regularly offer training and education to ensure new staff remain well-informed about the program and to provide refreshers for others.

Please note that a similar recommendation was included in the PY2021 evaluation as well. In response to the recommendation in PY2021, the IESO indicated they would work with delivery partners to ensure that training materials and processes are up-to-date and effective. Additionally, the IESO noted that training/development improvements and marketing were placed on hold due to temporary disruptions to program delivery in PY2021. Given that similar feedback was shared by assessors and installers as part of the PY2022 evaluation, a similar recommendation has been provided again to ensure that it is carefully considered in future program years.

Finding 10. Participant perspectives on the site visit process were generally positive, but improvement opportunities remain. Most participants did not offer suggestions for improving the initial site assessment (74%) or the installer visits (75%), which suggests the program largely meets customers' needs. Of those suggesting site visit improvements, respondents most commonly suggested reducing the time required to complete site visits, providing greater flexibility and communication in scheduling visits, improving the assessors' data collection accuracy, and improving the installer's professionalism and transparency in their practices. When asked for other program improvement recommendations, participants frequently suggested improving communications at every stage of the project (e.g., communicating about equipment customers may qualify for before conducting the initial assessment, identifying work performed before leaving the installation site visit, and following up with participants post-visits in case questions arise).

- **Recommendation 10a.** 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 this 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).

- **Recommendation 10b.** Improve communications regarding visit scheduling (e.g., sending reminder e-mails and/or text messages confirming appointments and providing accurate arrival windows).
- **Recommendation 10c.** Provide additional training to assessors and installers to ensure their professionalism during assessments and installation visits (e.g., ensure they share their contact information or business cards and that they remain responsive to questions or concerns raised during the visit).
- **Recommendation 10d.** Encourage transparency about work performed by informing potential participants about additional installation costs that may be incurred (e.g., lift rentals, ESA fees) and require that installers carefully walk customers through upgrades made before leaving the site.
- **Recommendation 10e.** 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 in case questions arise).

Please note that similar recommendations were included in the PY2021 evaluation as well. In response to the recommendation in PY2021, the IESO indicated it they will continue working with program delivery vendors to improve the participant experience, noting that they recognized additional costs prove particularly challenging and processes would be reviewed to ensure that participants received as much information as possible up front regarding installation and equipment costs not covered by the program. They also noted that they monitored the service-level agreement achievement and worked with its delivery vendors to implement improvements to communications and scheduling based on participant feedback. Given that similar improvement suggestions were raised by participants as part of the PY2022 evaluation and given the critical importance of the customer experience overall, similar recommendations have been provided again to ensure they continue to be carefully considered in future program years.

Finding 11. Raising the visibility of existing co-pay options for participants who reach project cost caps and considering co-pay options for participants not reaching the cap may lead to the completion of larger projects. Over one-half of participants (55%) said they reached the lighting incentive project cap of $2,000 compared to less than one-tenth (8%) of participants saying they reached the project incentive cap of $2,500 for non-lighting projects. Of participants reaching the incentive project cap, over one-third (35%) had to cut back on the size, scope, or efficiency of their equipment upgrades. Had they been interested in doing so, customers could have taken advantage of an existing co-pay opportunity offered to customers reaching the cap to help them install additional equipment. Of participants who *did not* reach the project incentive cap, one-half (50%) would have considered taking advantage of a co-pay offer to help them install additional equipment had the offer been available to them (currently, the co-pay offer is only available to those reaching the cap). Program assessors and installers provided similar feedback, indicating that an average of

72% of their lighting projects and 50% of their non-lighting projects reached the caps. Additionally, assessor and installer estimates suggest that an average of 68% of their customers had to reduce the size, scope, or efficiency of equipment upgrades due to reaching the cap. Program delivery vendors reported seeing very little interest in co-pay offers to date as customers are often unwilling to incur a portion of project costs themselves.

- **Recommendation 11a.** Ensure that customers reaching the project incentive caps know of the existing co-pay opportunity available to them.
- **Recommendation 11b.** Explore the feasibility of expanding the customer co-pay option to customers not reaching project incentive caps to increase the scope of projects for these customers.

Please note that a similar recommendation was included in the PY2021 evaluation as well related to the existing customer co-pay option. In response to the recommendation in PY2021, the IESO indicated it would further consider an additional equipment co-payment option for customers not reaching the incentive cap. Given that this year's surveys and interviews asked additional questions regarding the incentive cap and co-payment opportunities, a similar recommendation has been provided again to ensure that it is carefully considered in future program years.

Finding 12. Some participants experienced challenges in signing up for the program or found the customer journey unclear. Nearly one-fourth of participants (23%) stated that they experienced challenges when signing up for program participation, such as extra expenses or fees they had not been informed of (30%) or difficulty scheduling the initial site visit (23%). Similarly, assessors and installers cited some customers remaining unclear about the program when asked about barriers they perceived that prevented more customers from participating. IESO staff indicated that customers are sometimes confused about the process as they speak with many staff involved with the program throughout the process. To reduce customer confusion, assessors and installers recommended providing additional customer education, minimizing the number of steps needed to participate, and minimizing the number of parties involved.

- **Recommendation 12a.** Clarify the program's journey for participants by offering additional customer education about all the steps involved (e.g., carefully explaining the process during initial screening calls, providing infographics in e-mails or brochures describing the steps, reiterating the process during the site visits, offering short video tutorials on the program website or on social media).
- **Recommendation 12b.** Minimize the number of steps needed for program participation to simplify the process. For example, combine site visits for lighting and non-lighting equipment installations whenever possible.
- **Recommendation 12c.** Minimize the number of parties involved to reduce customer confusion. For example, consider assigning a main point of contact to each customer.

Finding 13. Eligibility requirements proved difficult for some customers to meet. Assessors and installers indicated that the main reasons why an applicant was ineligible to participate

in the program were that either the equipment of interest did not meet eligibility requirements or that the customer had already upgraded their equipment. Program delivery vendors noted some difficulties in qualifying equipment for the program, given that many small businesses still operated at reduced hours, preventing them from achieving higher savings.

- **Recommendation 13.** Consider alternative program approaches that may help customers for whom it is difficult to achieve higher savings due to limited operating hours. For example, work with customers with limited operating hours to identify whether they have a timeline to ramp up operating hours, and if so, prioritize reaching back out to them once operating hours have increased.

Finding 14. Though generally well received, the transition from SBL to SBP resulted in some challenges that slowed program ramp up. PY2022 was the first year employing a regional delivery approach for SBP using multiple delivery vendors. Simultaneously, it was the first year that the program offered lighting and non-lighting equipment together. IESO staff and delivery vendors reported that the transition from SBL to SBP went relatively smoothly from the customer's perspective, though they noted it took more time than anticipated to ramp up program delivery. Shipping delays, increased customer concerns about scams, and lower levels of customer interest than in prior years were cited by IESO staff and delivery vendors as main drivers behind the slower-than-anticipated ramp up in PY2022. Additionally, the bankruptcy of one delivery vendor meant the program needed to pivot quickly to ensure the service of existing applications and participants.

- **Recommendation 14.** Continue to support, train, and communicate with delivery vendors as they strive to meet their delivery goals in future program years.

Finding 15. Offering information and guidance around ESA fees will continue to be important. In PY2022, installers indicated that SBP projects sometimes incurred ESA fees, and that the installers typically paid for them themselves. Less than one-tenth of participants (6%) reported paying ESA fees, and all those who paid them indicated they knew of fees prior to signing the work order for their project. Installers, however, noted that assessors sometimes brought up ESA fees prior to signing the work order for their project, though not always. Delivery vendors reported challenges sometimes arose in determining whether ESA fees were required for certain equipment types, especially related to new non-lighting equipment, such as refrigeration. IESO staff reported working closely with delivery vendors and installers to determine ESA fees or to identify updates on ESA fees.

- **Recommendation 15a.** Continue to work closely with delivery vendors and installers when determining ESA fee requirements.
- **Recommendation 15b.** Create a one-page visual aid document detailing ESA fee requirements by technology/measure type for delivery vendors and installers to reference while in the field.
- **Recommendation 15C.** Ensure that all assessors inform customers of any relevant ESA fees prior to signing the work order for their project.

Finding 16. Transportation cost increases have affected delivery vendor and installer profit margins. Five of the eight surveyed assessors and installers said that increases in diesel costs affected their profit margins in PY2022. According to delivery vendors, this particularly held true for assessments and site visits in the north of the province, where customer sites were farther apart and harder to reach. Delivery vendors noted they had been absorbing the increased transportation costs associated with their assessors' transportation costs, and most installers said their own increased transportation costs were typically not included in the costs of their SBP projects.

- **Recommendation 16.** Consider ways to compensate delivery vendors and installers for rising transportation costs (for example, consider further measure cost increases that account for increased transportation costs).

Finding 17. Market conditions continued to present some participation barriers in PY2022. Delivery vendors reported that supply chain issues related to longer lead times, project back orders, and shipping delays posed challenges to program delivery in PY2022. Delivery vendors also noted these issues could vary widely from week to week. IESO staff agreed that increases in delivery and equipment costs and issues with equipment availability continued to impact the program's volume. Two assessors and installers noticed supply chain issues over the last year, identifying issues particularly related to 8-foot linear LED fixtures and LED tubes. Four of eight surveyed assessors and installers cited rising equipment costs, with two reporting that all equipment costs had risen, and one respondent each indicated that costs rose for high-bay lighting and luminaires.

- **Recommendation 17a.** Continue to monitor supply chain issues and equipment costs to ensure the program provides the most appropriate measure mix possible.
- **Recommendation 17b.** Proactively and regularly gather equipment availability and lead times from delivery vendors to ensure the program provides the most appropriate measure mix possible to meet customer needs.

Finding 18. Some customers expressed interest in receiving guidance and financial support to further electrify their facilities. The majority of participants did not plan to complete electrification projects at their facilities to address GHG emissions (71%). Rather, participants' reasons for most commonly not completing electrification projects included financial constraints (19%), insufficient information on electrification (13%), and that their company did not plan to electrify their facilities (13%). Participants suggested financial incentives and information on upgrades and costs of electrification projects would be most useful in helping them complete electrification projects if they consider completing such projects in the future.

- **Recommendation 18.** Explore the feasibility of supporting customers interested in completing electrification projects through financial incentives and information on electrification project upgrades and costs.

8. 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 year's 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 emerged as a common improvement suggestion. Assessors and installers reported relatively low satisfaction levels with the number and types of equipment incentivized (a rating of 3.4 on a scale of one to five, where, where one indicates "not satisfied at all" and five indicates "extremely satisfied"). Assessors, installers, and participants most often recommended exterior lighting, air conditioners, HVAC and water heating, additional refrigeration upgrades, and air sealing and insulation. Delivery vendor staff noted that some lighting equipment options could be restrictive or not cover a sufficiently wide equipment variety to meet all customers' needs (e.g., A-Lamp LEDs, specialty lighting equipment). IESO staff reported increasing customer interest in smart technologies, such as sensors).

- **Improvement Opportunity 1.** Explore the feasibility of including more lighting and non-lighting products. Perform a jurisdictional scan to identify direct install measure offerings that are not currently offered under SBP.

Process Progress Update 2. Further opportunities exist to expand program marketing and outreach. Assessors and installers cited customers' lack of awareness of the program as the main barrier preventing more customers from participating. Similarly, when asked whether they experienced any barriers that delayed their participation in the program, participants identified lack of program awareness as the primary barrier. Assessors, installers, and participants most commonly suggested addressing participant barriers by increasing program marketing. Delivery vendors were responsible for lead generation, largely doing so through a mix of door-to-door canvassing, following up leads from the Save on Energy website, and other referrals. IESO staff reported marketing the program primarily through a "digital first" approach (e.g., through the website, social media, paid advertising via social media and search engines) as well as through newsletters to subscribers. Marketing paused in fall 2022 due to a backlog of applications associated with a program delivery vendor's bankruptcy. IESO staff noted that future opportunities may exist to tap into other media (e.g., radio, TV, billboards, more print materials), depending on budget availability.

- **Improvement Opportunity 2.** Once participation backlogs have been alleviated, consider increasing the variety and frequency of marketing efforts across different mediums (such as through social media, paid digital advertisements, mass media tactics [e.g., radio, TV, billboards], and community groups, such as small business associations and local community organizations).

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 the new projects that need to be included in the PY2022 evaluation.

A.2 Population Sampling

An important part of the evaluation planning process is the sample design for both the net-to-gross (NTG) and impact evaluation activities. Statistical sampling is 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 is generally the 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 need to be detected are relatively small. Our approach exceeded the industry-accepted target 90% confidence level ± 10% precision (90% ± 10%).

- **The 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 72 SBP projects for the PY2022 evaluation. The sample Cv was less than 0.5 for both the energy and demand realization rate. At the 90% Confidence level, this sample achieved better than 10% precision at the program level across the province of Ontario. Due to the similarity in projects' size and installed equipment, and the limited counts of non-lighting projects, all projects were evaluated together as a group without additional sample stratification.

Table A-1: Impact Evaluation Sample

Program	Sample Size
SBP	72

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 include 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 the on-site visits and desk reviews will ensure time spent on-site or during the phone interview is focused on collecting and/or verifying the most important project specifications. Key parameters to be investigated include baseline and retrofitted equipment information, operating hours, lighting controls, and HVAC equipment information.

Discrepancies between reported fixture wattages and operating hours remain 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 will record lamp wattages and ballast factors of retrofitted equipment. Normal, seasonal, and holiday operating hours are also confirmed with the participant.

Following the 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

The data collected as a result of the Level 1 and Level 2 audit activities allow energy and summer peak demand savings to be calculated for each sampled project—these will be termed gross verified savings. The ratio of gross verified savings to the reported savings is

the project realization rate and the ratio of the summation of all project gross verified, and reported savings provide 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 the calculation of verified summer peak demand savings, the Resource Innovations team use the methodology and peak definitions outlined in the EM&V Protocols to calculate verified demand savings (both winter and summer) by reviewing the average demand reduction across all peak hours. For lighting measures in specific, the Resource Innovations team verifies actual lighting operating hours with the participant, including the impact of daily, weekly, seasonal, and holiday schedule variations. The verified summer peak demand savings are then calculated as the average demand savings that occur during the pre-defined summer peak demand period. For example, if the verified lighting schedule does not overlap with the pre-defined peak period, the verified summer peak demand savings for all lighting measures on that schedule will be zero. If the verified lighting schedule overlaps with 50% of the pre-defined peak period, the verified summer peak demand savings for the lighting measures on that schedule will be equal to 50% of the verified demand savings of those measures.

The SBP incentivizes the 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 is important to consider when calculating the benefits of the SBP program as it adopts 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 the changes in the operation of heating, ventilation and air-conditioning (HVAC) equipment due to lower heat loss from energy-efficient lighting equipment.

A.5 Lifetime Savings

When performing the impact evaluation, it is important to consider the total amount of savings over the lifetime of retrofitted equipment. This consideration is necessary given that energy savings, demand savings, avoided energy costs, and other benefits continue to accrue each year the equipment is 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 that were attributable to the program. The evaluation team determined net verified savings by multiplying the gross verified savings by the NTG ratio, as shown in Equation A-3.

Equation A-3: Net Verified Savings

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

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

FR refers to the program savings attributable to free riders (program participants who would have implemented a program measure or practice in the absence of the program). SO refers to additional reductions in energy consumption and demand due to program influences beyond those directly associated with program participation. SO is representative of installations of energy-efficient equipment that were influenced by the participant's

experience with the program and that were completed without receiving any program incentives or other financial support.

The *NTG* ratio is defined by Equation A-4, 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-1: NTG Ratio

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

Where FR is free-ridership and SO is spillover.

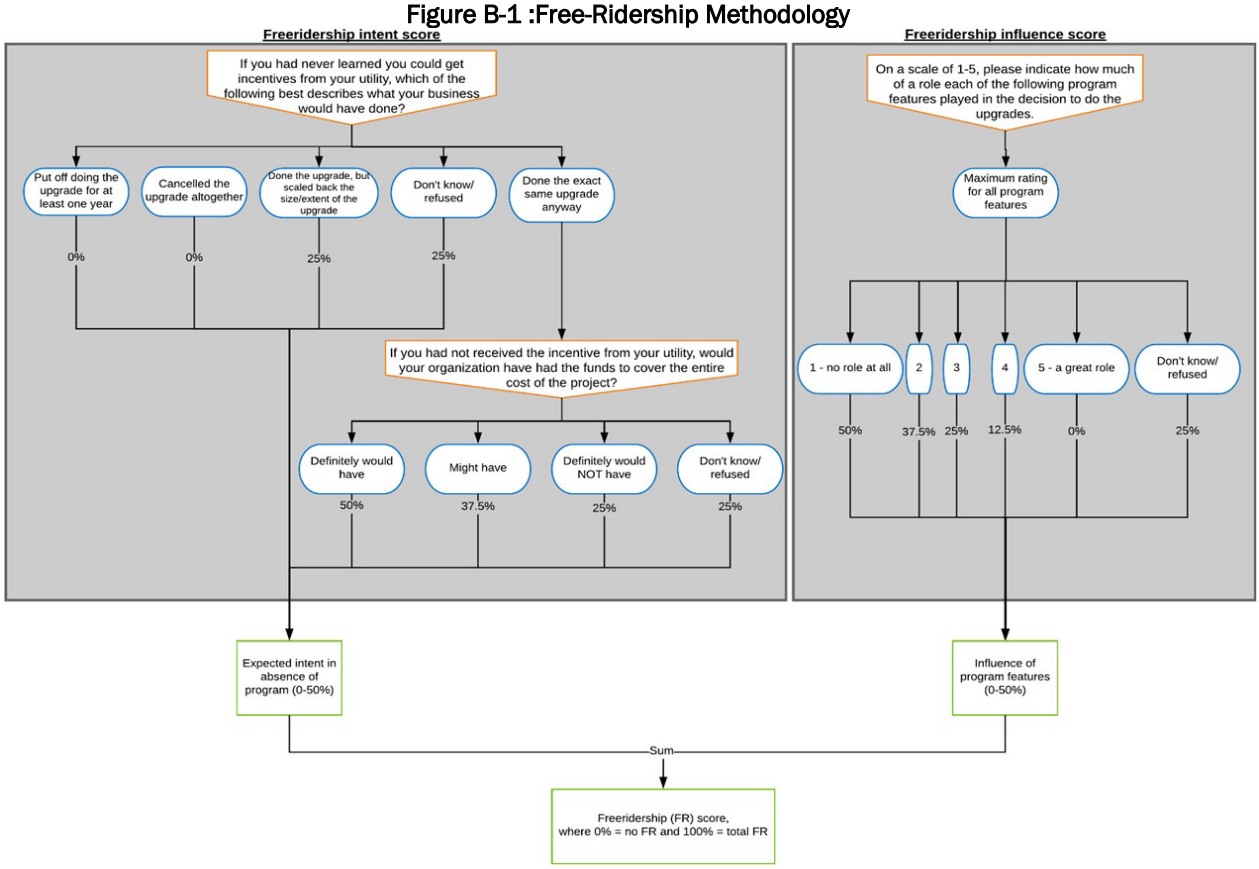
B.1 Free-Ridership Methodology

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 produces scores ranging from 0 to 50. The two components are summed to produce a total FR score ranging from 0 (not a free rider) to 100 (complete free rider). The total score is 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 asks participants how the evaluated project would have differed in the program's absence. The two key questions that determine the intention score are 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: Key to Free-Ridership Intention Score indicates the possible intention scores a respondent could have received depending on their responses to these two questions.

Table B-1: 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 provides 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 are asked the second question before an FR intention score can be assigned.

The second question asks the 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, for each respondent, the evaluation team calculated an intention score, 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 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%
- The bullet points below display the same FR intention scoring approach in a list form. As mentioned above, for each respondent, an intention score was calculated, 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%
- The respondent does not know what they would have done in the absence of the program = 25%
- No change and respondent states firm would not have made funds available = 25%
- No change, but respondent is not sure whether their 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 is reported using a scale from one to five, where one indicates it played no role at all and five indicates 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 is set equal to the maximum influence rating a respondent reports 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-2: 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 bullet points below display the same FR Influence scoring approach in a list form. As mentioned above, for each project, a program influence score was calculated, 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 project to generate an FR score ranging from 0 to 100. The scores are interpreted as % FR: a score of 0 indicates 0% FR (i.e., the participant was not at all a free rider), a score of 100 indicates 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 are 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 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 reports installing without a program incentive.

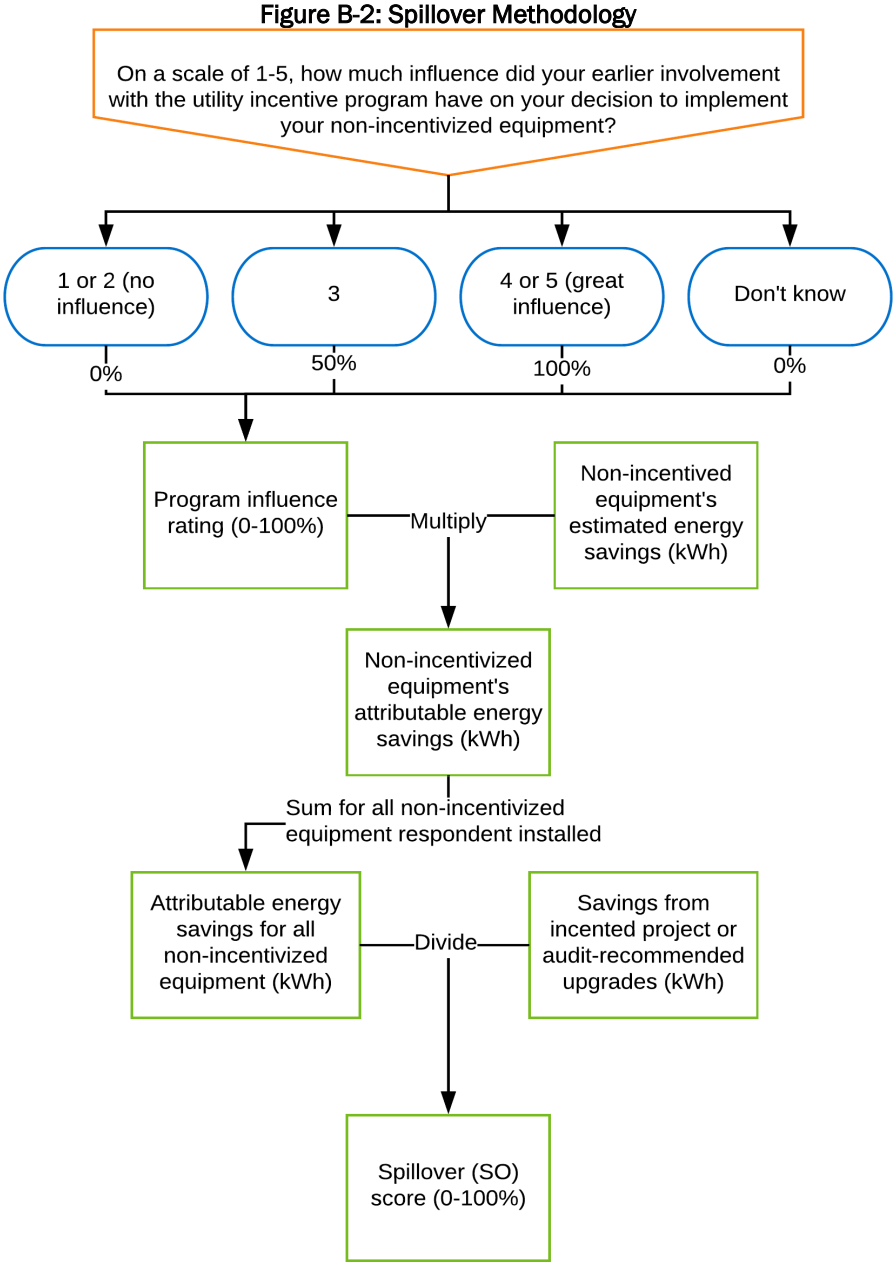
The survey instrument asks about the extent of influence that earlier involvement in the program had on the decision to carry out the upgrades. Influence is reported using a scale from one to five, where one indicates it played no role at all and five indicates it played a great role. Suppose the influence 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 illustrates the SO methodology.

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 2022 through the particular program in question. This approach allowed for the respondent's NTG value across all the projects they completed in 2022 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 is the person primarily involved in decisions about upgrading equipment at their company. Suppose the respondent is not the appropriate contact. In that case, they are asked by the interviewer to 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 will 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 (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.

The responses to these questions are not included in the algorithms for calculating FR or SO, but they provide additional context. The first question ensures that the appropriate person responds to the survey. The other questions provide feedback about responsibility for budget and expenditure decisions, the respondent's job title, application submission process details, and how and when program influence occurs.

B.5 Net-to-Gross Survey Implementation

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

For each of the phone surveys, 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 of 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 fill it out 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 the key research questions and the data sources used to investigate each. Research questions were developed at the beginning of the PY2022 evaluation period in January and February of 2023. They were written in consultation with the IESO program staff and the IESO EM&V staff, and they were finalized after reviewing the timing of the 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-1: 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 areas of process improvement may exist?		✓		
What strategies implemented by IESO were effective in terms of driving participation, increasing program awareness, and avoiding free -ridership?		✓	✓	✓
What are the program's strengths, barriers, and areas of improvement?		✓	✓	✓
What program marketing and outreach occurred in support of the program? How did participants become aware of the program (e.g., targeted marketing campaign in Fall of 2022, website, etc.)?		✓	✓	✓
How well received was the transition from the Small Business Lighting (SBL) program to SBP? Were participants aware of new non-lighting measures?		✓	✓	✓

Research Questions	Document & Program Records Review	IESO & Delivery Vendor Staff Interviews	Participant Surveys	Assessor & Installer Surveys
Is the customer journey clear to the participant and are the requirements to participate clear? Are there any challenges or points of confusion around the eligibility that prevent participants from applying? Are there any other barriers/challenges from the participant's perspective with the application process?		✓	✓	✓
What are the primary reasons for why an applicant is not eligible to participate in the program? What are the primary reasons for why an eligible applicant might choose to not apply (once they are made aware of the program)?		✓		✓
Have market conditions presented any incentive or barriers to participation (e.g., COVID-19 pandemic restrictions, supply chain issues, lack of resourcing/time, larger business/staffing concerns that defer participation, etc.)?		✓	✓	✓
Would small businesses be deterred from receiving additional measures if it required additional visits from installers/technicians and longer time to install measures?			✓	✓
What were the experiences of assessors, and installers in participating in the program?				✓
Do assessors and installers have the proper materials and tools to participate in program delivery?				✓
Are there any opportunities for how the delivery agent and IESO may better enable assessors and installers to improve program delivery?		✓		✓
How, if at all, could the professionalism of the assessors and installers be improved?			✓	
Has the increase in diesel costs affected profit margins, and/or been passed on to the IESO?		✓		✓
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?		✓	✓	✓
How many customers might take advantage of a co-pay offer to install additional measures, if it was available? How could the benefits of this be communicated?		✓	✓	

Research Questions	Document & Program Records Review	IESO & Delivery Vendor Staff Interviews	Participant Surveys	Assessor & Installer Surveys
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?		✓	✓	✓
What proportion of participants request or have specific equipment that they want replaced or actively engage the assessor/installer for replacements?			✓	✓
Which equipment, both offered and not-offered but valuable to consider, have supply chain issues and/or are impacted by rising costs?		✓		✓
Were there any challenges with additional ESA fees not being identified or communicated to customers before the work order was signed?		✓	✓	✓

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. This data, when collected and synthesized, provide 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-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	2	-	2	2	100%	0%
Program Delivery Vendor Staff	Phone IDI	2	-	2	2	100%	0%
SBP Assessors and Installers	Web Survey	24	8	-	8	33%	N/A*

Respondent Type	Methodology	Population	Completes – Web	Completes – Phone	Completes – Total	Response Rate	90% CI Error Margin
SBP Participants	Web and Phone Survey	772	119	15	134[5]	17%	6.5%

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

IESO Program Staff and Program Delivery Vendor Staff Interviews

Two in-depth interviews (IDI) were completed with two members of the IESO program staff, and two IDIs were completed with two members of the program delivery vendor staff (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.

The interview topics addressed program roles and responsibilities, program design and delivery, marketing and outreach, market actor engagement, program strengths and weaknesses, 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 the IESO program staff and the program delivery vendor staff using in-house staff (rather than through a survey lab). The interviews were completed between April 26 and May 2, 2023. Each interview took approximately one hour to complete.

Table C-3: IESO Program Staff and Program Delivery Vendor Staff IDI Disposition

Disposition Report	IESO Program Staff	Program Delivery Vendor Staff	Total
Completes	2	2	4
No Response	-	-	-
Unsubscribed	-	-	-
Partial Complete	-	-	-
Bad Contact Info (No Replacement Found)	-	-	-
Total Invited to Participate	2	2	4

SBP Assessor and Installer Survey

A total of eight assessors and installers were surveyed from a sample of 24 unique assessors and installers (Table C-4). The purpose of the survey was to better understand the SBP assessor and installers' perspectives related to program delivery.

[5] The count of process survey responses (n=172) was less than the count of NTG survey responses (n=183) as some respondents did not complete the survey's process section.

The survey topics addressed the following: respondent roles in the program; firmographics; training and education; adequacy of materials and tools provided; diesel costs impacts; primary participation pathways; barriers to participation; applicant ineligibility; market condition impacts; customer interest in non-lighting upgrades; additional site visit impacts; supply chain issues; rising cost impacts; impacts of the incentive cap; satisfaction with various aspects of the program; 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 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 April 3 and May 1, 2023. The survey took an average of 33 minutes to complete. Weekly email reminders were sent to non-responsive contacts throughout web survey fielding.

Table C-4: Assessor and Installer Survey Disposition

Disposition Report	Total
Completes	8
Emails bounced	2
Bad Contact Info (No Replacement Found)	-
Unsubscribed	-
Partial Complete	0
Screened Out	2
No Response	12
Total Invited to Participate	24

SBP Participant Survey

A total of 134 participants were surveyed from a sample of 772 unique contacts (Table C-5). The purpose of the survey was to better understand the SBP participant perspectives related to program experience.

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

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 27 and April 23, 2023. The survey took an average of 18 minutes to complete after removing outliers.[6] Weekly e-mail reminders were sent to non-responsive contacts throughout the web survey fielding.

Table C-5: SBP Participant Survey Disposition

Disposition Report	Web	Phone	Total
Completes	119	15	134
Emails bounced	63	-	63
Bad Contact Info (No Replacement Found)	7	-	7
Unsubscribed	-	-	0
Partial Complete	9	-	9
Screened Out	38	-	38
Busy	-	4	4
Callback	-	17	17
Soft Refusal	-	4	4
Hard Refusal	-	5	5
Picked up but no response	-	1	1
Emailed new contact	-	3	3
No Eligible Respondent	-	1	1
Non-working #	-	4	4
Left message with operator	-	6	6
Call did not connect	-	1	1
Bad Signal	-	-	0
Voicemail	-	30	30
Agreed to Complete Online	-	17	17
Wrong Number	-	2	2
Language Barriers	-	1	1
No longer with company	-	1	1
Out of business	-	1	1
No Response	536	19	555
Total Invited to Participate	772	132	772

[6] 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 that 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 of the respondents (seven out of eight) reported being hired by the program delivery vendor. One respondent indicated they were hired by an energy management/audit firm. Four of the eight respondents were lighting installation contractors, three were program assessors, and one respondent served as both a lighting installation contractor and a program assessor.

Respondents were asked to report the business category that best represented their company. Of the seven respondents who provided their business category, three reported working for firms in the construction industry, while two reported working for firms in repair and maintenance (Table D-1)

Table D-1: Respondents' Business Category (n=8)

Business Category	Respondents
Repair and maintenance	2
Electric power engineering construction	1
Repair construction	1
Other activities of the construction industry	1
Electrical contracting	1
Lighting specialist	1
Don't know	1

Respondents were asked various questions about their business characteristics. Two respondents worked at companies that had been in business for ten years or less, and three had been in business for over 20 years. Five respondents worked at companies with ten or fewer full-time employees, and six had one or two part-time employees (Table D-2).

Table D-2: Business Characteristics (n=8)

# of Years in Business	Respondents
1 to 10	2
11 to 20	1
21+	3
Don't know/refused	2
# of Full Time Employees	
1 to 10	5
11 to 20	2
Don't know/refused	1
# of Part Time Employees	
1 to 2	6
Don't know/refused	2

Respondents were asked if they performed assessments and/or installations for similar versions of the program offered under previous Save on Energy Frameworks. Six respondents reported performing work through the SBL Program and one respondent reported performing work through the Refrigeration Efficiency Program (Table D-3).

Table D-3: Previous Program Experience (n=8)

Performed Assessments/Installations Under Previous Save on Energy Frameworks	Respondents
Save on Energy SBL Program	6
Save on Energy Refrigeration Efficiency Program	1
No	2

*Does not sum to 8 due to multiple response.

Four respondents completed assessments and five respondents completed installation projects through SBP in 2022. Five respondents reported completing between 1 and 50 projects, three respondents reported completing between 51 and 300 projects, and one respondent reported completing 500 projects (Table D-4).

Table D-4: Projects Completed in 2022 (n=8)

# of Projects Completed in 2022	Assessments (n=4)	Installation Projects (n=5)
1 to 50	2	3
51 to 300	1	2
301 to 500	1	0

All respondents were asked how many staff from their company provided services or support for SBP in 2022. Responses ranged from one to six staff, with an average of 3.6. Installers were asked to estimate the percentage of their company's total 2022 sales that were

represented by work performed for SBP. Responses from these five respondents ranged from 2% to 60%, with an average of 18%. Installers were also asked what percentage of their invoiced project costs were for labor; responses ranged from 40% to 100% with an average of 64%.

Training and Education

Table D-5 includes a list of types of training or education that responding assessors and installers had received related to the program in 2022 and Table D-6 includes a list of the topics covered in the training. Section 5.2.2 includes an additional discussion around these training topics.

Table D-5: Type of Training and Education Received*
(Open-ended and multiple responses allowed; n=8)

Type of Training	Respondents
One-on-one in-person instruction from program delivery vendor	4
Responses to questions	3
Webinar or other online instruction	2
No training	1

*Does not sum to 8 due to multiple response.

Table D-6: Topics Covered in Trainings*
(Open-ended and multiple responses allowed; n=7)

Training Content	Respondents
The program rules	7
The offerings associated with the program	6
Installation procedures and practices	5
Application process training or support	4
Marketing and outreach techniques to better promote the program to customers	3

*Does not sum to 7 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 to support their work in the future. Section 5.2.2 includes an additional discussion around these training topics.

Table D-7: Recommended Training and Education Topics*
(Open-ended and multiple responses allowed; n=8)

Additional Training Content	Respondents
Marketing and outreach techniques to better promote the program to customers	3
The program rules	2
The offerings associated with the program	1
Application process training or support	1
Don't know/refused	2

*Does not sum to 8 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-8: Primary Way Customers Came to Participate (n=8)

Primary Way	Respondents
Staff from the program delivery vendor(s) generated leads and provided them to you	3
You described the program and qualifying equipment during client calls	2
You made cold calls to potential customers	1
You marketed the program during audits or other in-person customer contacts	1
Customers contacted you about installing equipment through the program	1

Table D-9 displays the percentage of respondents' customers that already had specific equipment in mind before signing up for the program. Section 5.2.3 includes an additional discussion around this topic.

Table D-9: Percent of Customers with Specific Equipment in Mind (n=8)

Percent of Customers with Specific Equipment in Mind	Respondents
76 to 100%	-
51 to 75%	1
26% to 50%	1
1 to 25%	3
Don't know/refused	3

Table D-10 includes a list of barriers preventing customers from participating in the program, as reported by the responding assessors and installers. Table D-11 includes a list of suggestions to overcome these barriers. Section 5.2.3 includes an additional discussion around barriers to participation.

Table D-10: Barriers to Customer Participation*
(Open-ended and multiple responses allowed; n=8)

Customer Barriers	Respondents
They did not know about it	6
They did not think the upgrades are worth the trouble of participating	2
Lack of time	2
They were concerned it was a scam	2
Getting efficiency upgrades was not a priority given other priorities	1
They did not think the upgrades will save them any money	1
The application process was not clear	1

*Does not sum to 8 due to multiple response.

Table D-11: Suggestions to Overcome Participation Barriers*
(Open-ended and multiple responses allowed; n=8)

Suggestions to Overcome Barriers	Respondents
Advertise the program more	4
Provide more customer education	2
Minimize the number of parties involved	1
Minimize the number of steps needed to participate	1
Issue work orders more quickly	1
Schedule assessments more quickly	1

*Does not sum to 8 due to multiple response.

Table D-12 includes a list of reasons why an applicant would not be eligible to participate in the program. Section 5.2.3 includes an additional discussion around these reasons.

Table D-12: Reasons Applicants Would not be Eligible*
(Open-ended and multiple responses allowed; n=8)

Reasons Applicants Would Not Be Eligible	Respondents
Equipment does not meet eligibility requirements	4
Already upgraded equipment	2
Fixture replacement project	1
Not individually metered	1
None	1
Don't know/refused	1

*Does not sum to 8 due to multiple responses.

Table D-13 displays the distribution of respondents' ratings of customer interest in SBP equipment upgrades other than lighting. Section 5.2.3 includes an additional discussion regarding customer interest in non-lighting upgrades.

Table D-13: Customer Interest in Non-Lighting Equipment Upgrades (n=8)

Interest in Non-Lighting Equipment Upgrades	Respondents
5 – Extremely interested	1
4	2
3	3
2	1
1 – Not at all interested	-
Don't know/refused	1

Table D-14 displays the distribution of respondents' ratings of the customer's likelihood of agreeing to install additional equipment through SBP if an additional site visit was required. Section 5.2.3 includes an additional discussion regarding this topic.

Table D-14: Customer Likelihood of Installing Equipment if Additional Site Visit Required (n=8)

Likelihood of Installing Equipment	Respondents
5 – Extremely likely	4
4	1
3	-
2	2
1 – Not at all likely	-
Don't know/refused	1

Project Incentive Cap Impacts Table D-15 displays the distribution of the percentage of respondents' lighting and non-lighting projects that reached the incentive caps. Section 5.2.4 includes an additional discussion around incentive caps.

Table D-15: Percent of Projects that Reached Incentive Cap (n=8)

Percent of Projects that Reached Incentive Cap	Lighting Projects	Non-Lighting Projects
76 to 100%	2	-
51 to 75%	3	-
26% to 50%	1	1
1 to 25%	-	-
0%	-	-
Don't know/refused	2	5
Not Applicable	-	2

Table D-16 shows that three out of six respondents reported that over 75% of their customers reduced their project scope as a result of reaching the incentive cap. In addition, four out of six respondents estimated that the incentive cap reduced the scope of their customers' projects by 26% to 50%. Section 5.2.4 includes an additional discussion around reductions in project scope.

Table D-16: Impact of Incentive Cap on Project Scope (n=6)

Percent of Projects that **Reduced** Scope	Respondents
76 to 100%	3
51 to 75%	1
26% to 50%	2
1 to 25%	-
0%	-
Reduction in Project Scope	**Respondents**
The project scope was reduced by 11% to 25% on average	2
The project scope was reduced by 26% to 50% on average	4

Program Improvement Recommendations

Table D-17 includes feedback regarding recommendations to improve the program, as reported by the responding assessors and installers. Section 5.2.6 includes an additional discussion around these recommendations.

Table D-17: Recommendations to Improve Program (n=8)

Program Improvement Suggestion	Respondents
Advertise the program more	2
Provide more customer education	1
Replace Dropzone software	1
Minimize the number of parties involved	1
Provide more funding for travel	1
Streamline the entire process	1
Streamline the paperwork process	1
Don't know	1

*Does not sum to 8 due to multiple responses.

Table D-18 includes feedback regarding equipment or model recommendations to consider for inclusion in the program in future years, as reported by the responding assessors and installers. Section 5.2.6 includes an additional discussion around these recommendations.

Table D-18: Equipment or Model Recommendations for Future Program Years (n=8)

Equipment or Model Recommendations	Respondents
Exterior lighting	2
Occupancy sensors	1
Ambient light sensors	1
Timer controls	1
Fixtures	1
4-lamp 8-foot fixtures	1
4-foot linear LED fixtures	1
8-foot T8 tubes	1
Air conditioners	1
Don't know/refused	3

*Does not sum to 8 due to multiple response.

ESA Fees

Table D-19 shows the distribution of installers' ratings for the frequency that ESA fees were incurred for their SBP projects and how often assessors informed customers about the ESA fees before scheduling the installation. Section 5.2.7 includes an additional discussion around ESA fees.

Table D-19: How Frequently ESA Fees Incurred and Customers Informed (n=5)

Frequency	ESA Fees Incurreed	Customer Informed Before Installation Scheduled
5 – Always	2	1
4	-	-
3	-	2
2	3	-
1 - Never	-	1
Don't know/refused	-	1

D.2 Additional Participant Net-to-Gross Results

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

FreeRidership

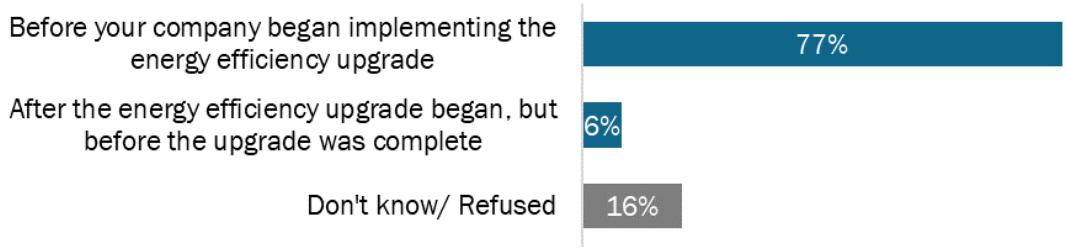
The extent of FR within the program was assessed by surveying the SBP participants, seeking to understand their experiences and plans before learning about the program, what they would have done in the program's absence, and how influential the program was on their decision to implement the energy-efficient 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. Over one-half (53%) of respondents had considered replacing their equipment before learning about the program, while over two-fifths (45%) had not.

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-1). More than three-fourths of respondents (77%) 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 (6%) of respondents stated that they initiated their participation after the upgrade began but before completion. No respondents stated they became a participant after their upgrade was complete. One-sixth of respondents (16%) could not recall when they became program participants.

Figure D-1: Timing of Program Participation (n=142)*



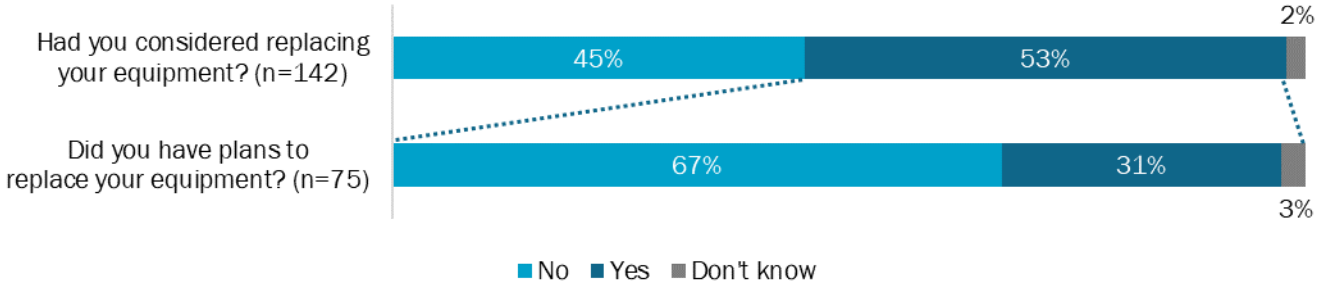
*Does not sum to 100% due to rounding.

The respondents who initiated their participation after the upgrade began provided the following reasoning:

- Was not aware of the program prior to starting the installation three respondents)
- Needed to complete work for an unplanned replacement for recently failed existing equipment (two respondents)
- Time or resource constraints at your organization (two respondents)
- Needed to stick to an internal schedule to complete upgrade (one respondent)
- Time needed to submit application materials to program (one respondent)

Of the 53% of survey respondents who stated that they considered replacing their equipment, almost one-third (31%) already had plans to install new equipment before learning about the program, indicating potential FR (Figure D-2). However, two-thirds (67%) of the respondents who considered new equipment did not plan for any 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-2: Actions Taken Prior to Learning about the Program*

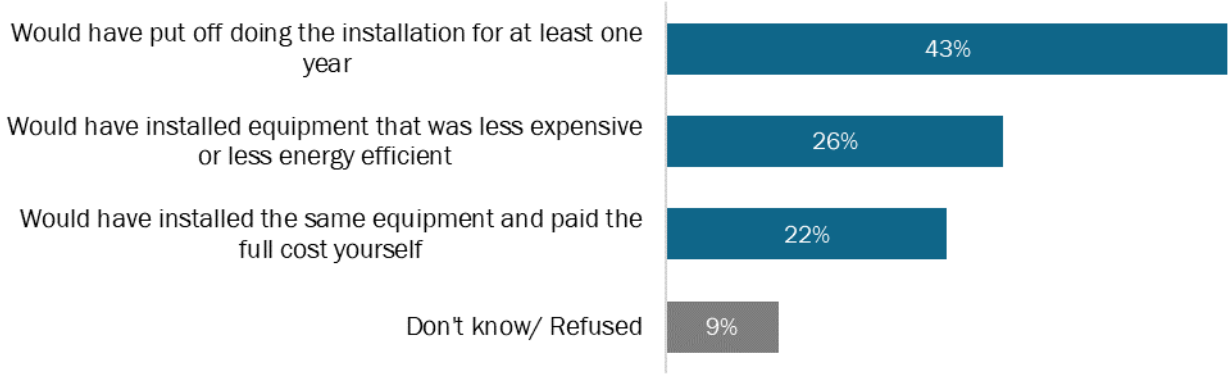


* Does not sum to 100% due to rounding.

Actions in the Absence of the Program

Participants who stated that they had planned for 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-3). Overall, their responses suggest moderate levels of FR, as over two-thirds of respondents (69%) would have put off the upgrades or installed less expensive or less efficient equipment without the program's support. More than one-fifth (22%) of respondents 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-3: Actions in Absence of Program (n=23)



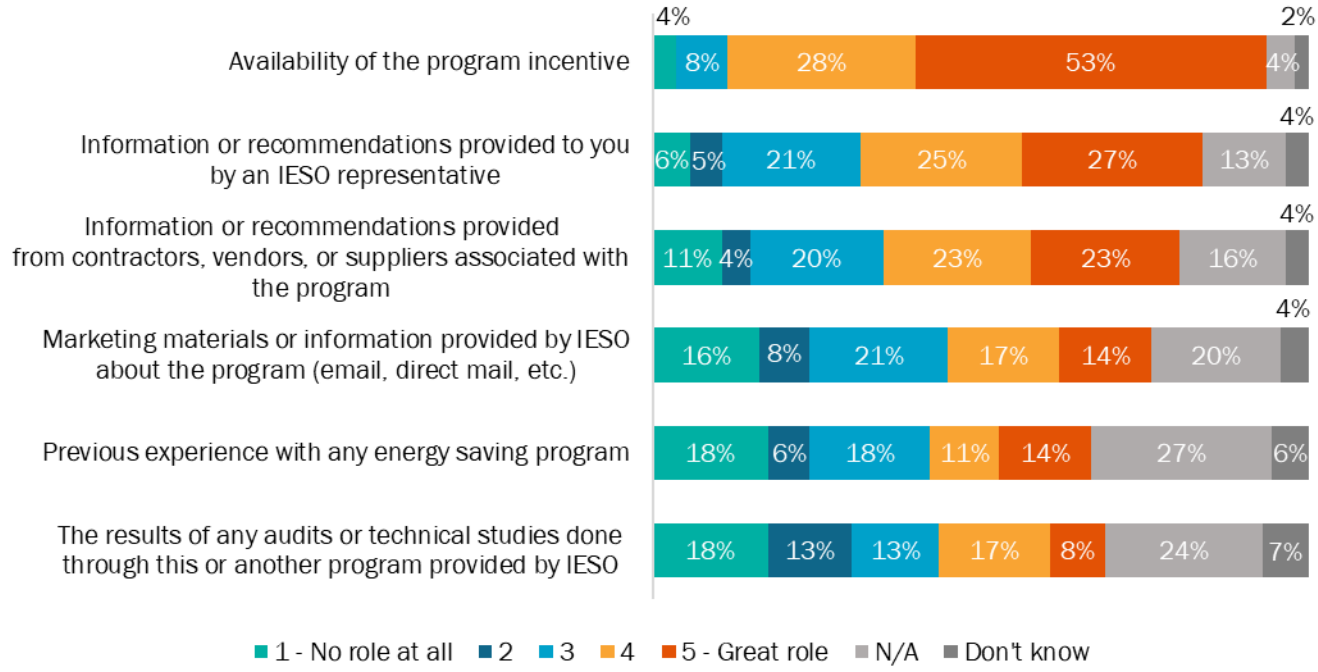
Respondents who indicated they would have installed less expensive or less energy-efficient equipment were then asked to describe how much they would have reduced their project's size, scope, or efficiency. Two of these respondents stated they would have reduced the size, scope, or efficiency by a large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

Four of the five respondents who stated that 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-4). They rated each feature's influence on a scale from one to five, where one indicates "no influence at all," and five indicates "it was extremely influential." The highest-rated responses were the availability of incentives (81% with a rating of 4 or 5) and the information or recommendations provided by an IESO representative (52% 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 (25% each with a rating of 4 or 5). 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-4: Influence of Program Features on Participation (n=142)*
(Rating on a scale from 1 to 5)



*May not sum to 100% due to rounding.

When participants were asked whether any other factors greatly influenced their organization to install energy-efficient lighting, the respondents' answers widely varied (Table D-20) The most common factors were saving money on electricity bills (68%), lighting improvements needed (21%), the lack of cost to participate in the program (15%), saving energy/concern for the environment (13%), and referrals from friends or colleagues (13%).

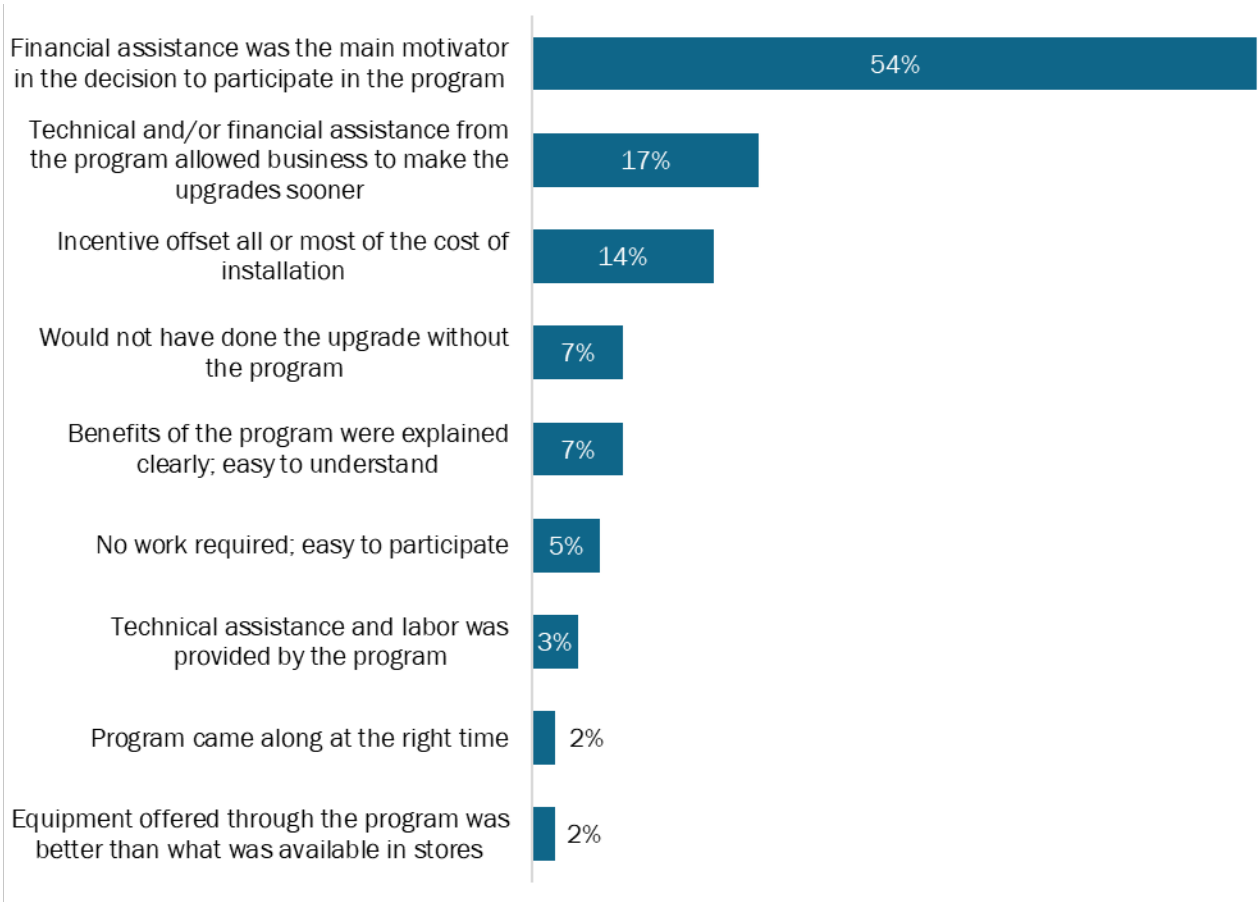
Table D-20: Other Influential Factors on Upgrade Decision
(Open-ended and multiple responses allowed; n=53)*

Other Influential Factors	Respondents
Saving money on electric bill	68%
Lighting improvements were needed	21%
No cost to participate	15%
Energy/environmental concerns	13%
Referral from a friend or colleague	13%
Technical assistance and labor was provided by the program	2%
Was already in the process of upgrading or renovating building	2%

*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 decision to install the program-incentivized equipment at the time that they did (Figure D-5). Of two-fifths (42%) of those who responded, the most common response was that the financial assistance was the main motivator in their decision to participate in the program (54%). Technical and/or financial assistance allowing the business to make upgrades sooner (17%) and the incentive offsetting most or all of the installation cost (14%) were also frequently mentioned.

Figure D-5: Program Impact on Decision to Install Equipment
(Open-ended and multiple responses allowed; n=59)



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

In summary, the FR results among the SBP participants indicated moderate levels of FR (12.6% FR score). In combination with the other responses shown in this section, this FR score demonstrates the program is generally reaching participants who would not have implemented equipment upgrades without the program.

Spillover (SO)

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. Over one-tenth (14%) of respondents reported installing this additional equipment.

Table D-21 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 (75%), followed by ENERGY STAR® Appliances (15%) and motor/pump upgrades (15%).

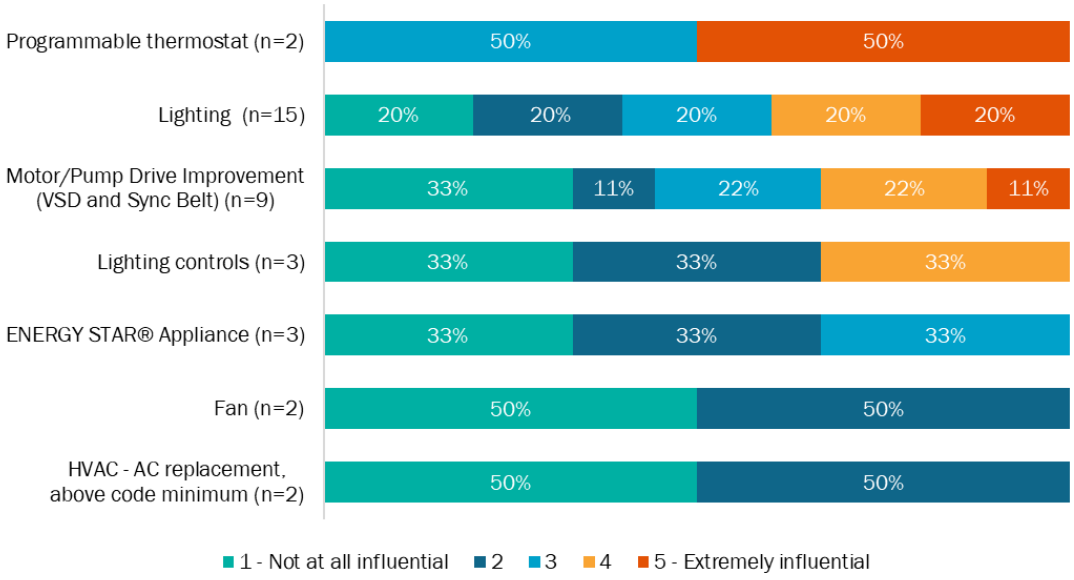
Table D-21: Types of Upgrades Installed after Program Participation*
(Multiple responses allowed; n=20)

Type of Upgrades Installed	Respondents
Lighting	75%
ENERGY STAR® Appliance	15%
Motor/Pump Upgrade	15%
Fan	10%
Air conditioner replacement, above code minimum	10%
Lighting Controls	10%
Programmable thermostats	10%

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

Respondents were asked what level of influence their participation in SBP had on their decision 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-6 for each equipment type. The respondents who installed non-incentivized programmable thermostats reported being influenced by SBP. Fewer respondents reported being influenced by SBP for lighting (60%), motor/pump drive improvements (55%), lighting controls (33%), and ENERGY STAR® appliances (33%).

Figure D-6: Program Influence on Equipment Installed Outside the Program*
(Multiple responses allowed; n=20) (Rating on a scale from 1 to 5)



* Does 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-22 through Table

D-25 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-22: Spillover Measures – ENERGY STAR Appliances

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

Table D-23: Spillover Measures – Lighting & Lighting Controls

Lighting or Lighting Control Type	Number of Respondents	Number of Bulbs	Number of Fixtures	Wattage/ Type	Fixture Location
LED exterior	3	103			Against building
LED linear	5		59		
LED screw base	4	74		11-20	
Linear fluorescent	2	22 (2 lamps per fixture)	11	T5	High ceiling (20+ ft)
Occupancy sensor	0				

Table D-24: Spillover Measures – Motor/Pump Upgrade

Equipment Type	Number of Respondents	Number Installed	End Use	Efficiency	Horse Power
Motor/Pump Upgrade	1	1	Process	Standard	1.1-5.0

Table D-25: Spillover Measures – Programmable Thermostats

Equipment Type	Number of Respondents	Number Installed
Programmable Thermostats	2	2

D.3 Additional Participant Process Results

Firmographics

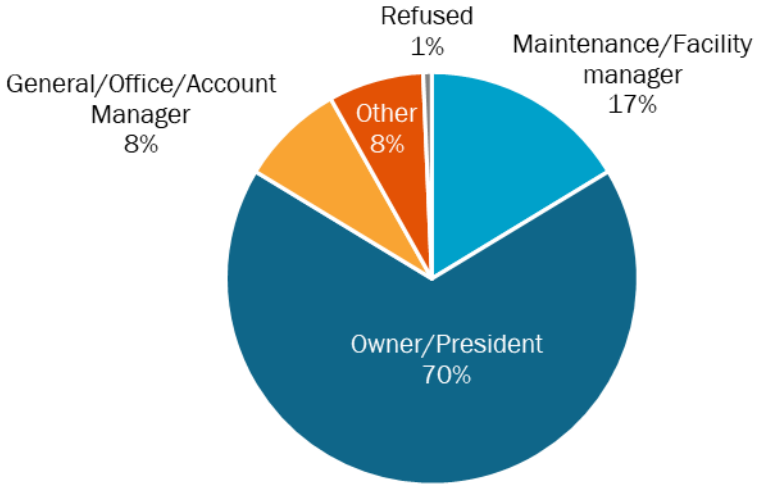
Participants were asked various questions to collect information on their job titles, ownership status, and responsibilities in relation to the program. Details on participants' companies (e.g., primary activities, chain or franchise status, facility floor space, whether the facility participated in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

Roles and Ownership Status

Over two-thirds of survey respondents (70%) were owners or presidents of their companies, while one-fourth (25%) were managers (Figure D-7). Two-thirds (66%) were the primary

employees responsible for the SBP upgrades, and less than one-third (29%) shared the responsibility.

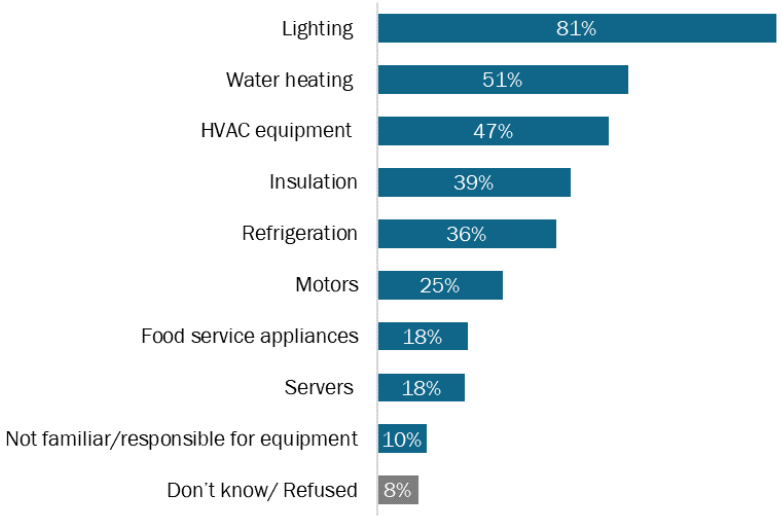
Figure D-7: Role of Respondent
(Open-ended and multiple responses allowed; n=142)*



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

Most of the survey respondents (82%) were familiar with or responsible for the maintenance of equipment at their facilities (Figure D-8). The most common equipment types were lighting (81%), water heating (51%), and HVAC (47%).

Figure D-8: Equipment Maintenance Responsibility
(Multiple responses allowed; n=130)*

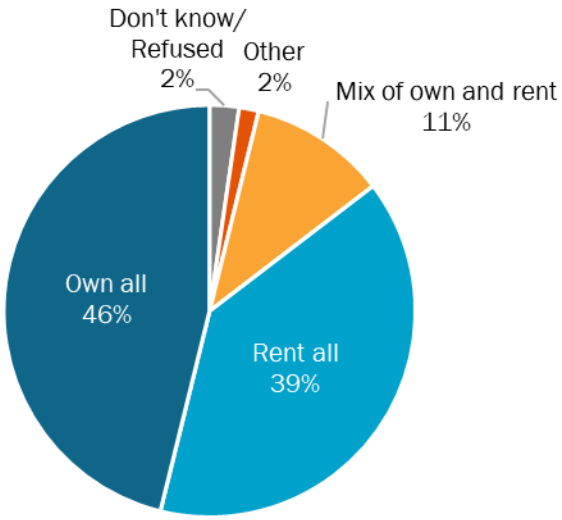


* Does not sum to 100% due to multiple responses.

More than two-fifths (46%) of participating companies owned the property where the program upgrades were conducted, and over one-third (39%) rented the property (Figure

D-9). One-tenth (11%) owned and rented their properties. Most (88%) were responsible for paying their electric utility bills.

Figure D-9: Ownership Status
(Open-end and multiple responses allowed; n=130)



Primary Activity at Facility

The facilities served by the program were mainly in the retail and wholesale sectors (24%) (Table D-26). The next most common sectors were lodging and food service (12%), non-profits (12%), and other services (12%). More than four-fifths (83%) of respondents stated their company was not part of a franchise or chain.

Table D-26: Primary Activity at Facility
(Open-ended and multiple responses allowed; n=129)

Primary Business Categories	Respondents
Retail and wholesale	24%
Lodging and food service	12%
Non-profit	12%
Other services	12%
Manufacturing	8%
Healthcare services	7%
Repair, maintenance, and operations	6%
Arts, entertainment, recreation, advertising, and travel	5%
Construction	4%
Agriculture, forestry, husbandry, mining, and extraction	3%
Scientific, technical, and information services	3%

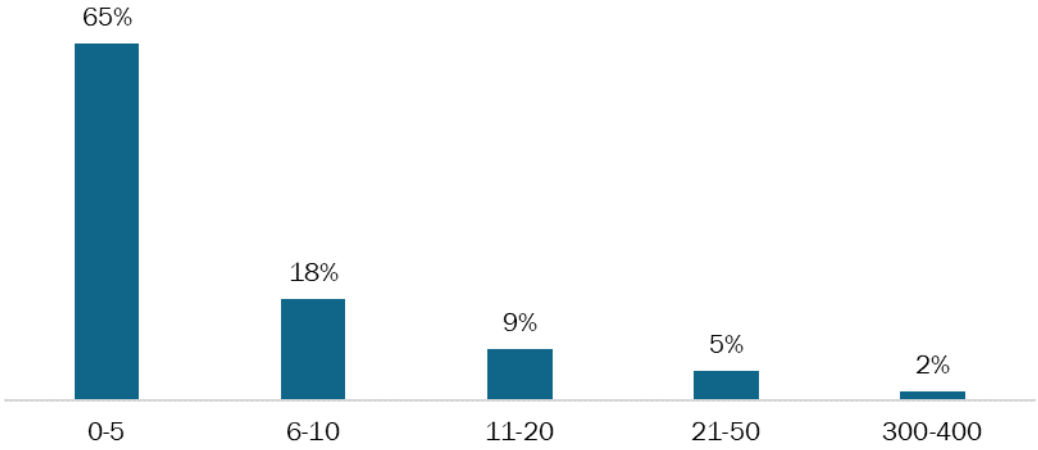
Primary Business Categories	Respondents
Educational services	1%
Finance, insurance, real estate, and property management	1%
Government services	1%
Transportation and warehousing	1%

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

Number of Employees

Participants were asked to provide the number of employees (Figure D-10). Two-thirds (65%) stated they had fewer than six employees.

Figure D-10: Number of Employees (n=130)*

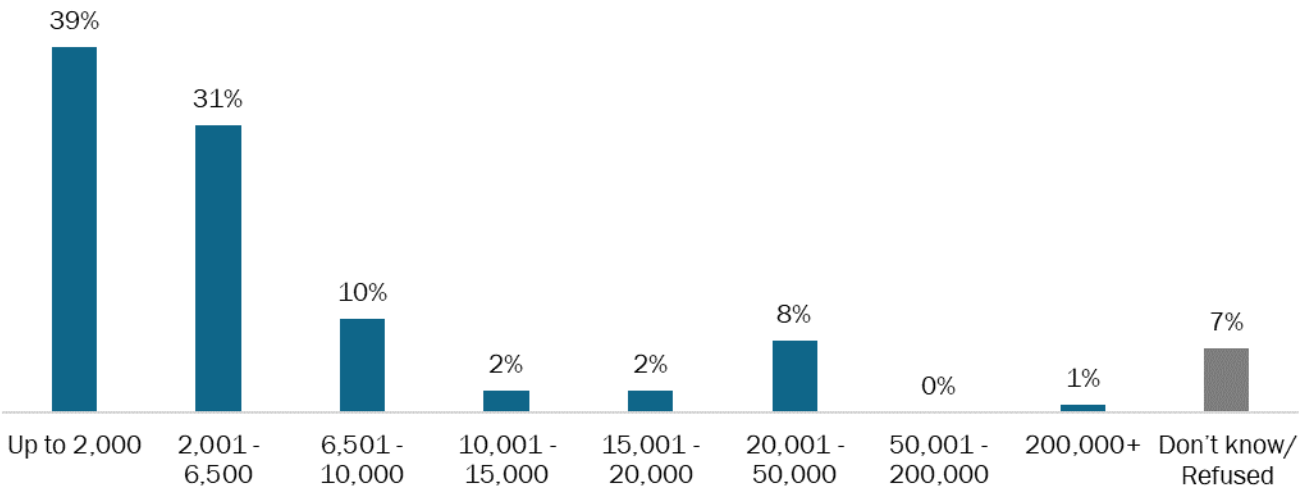


* Does not sum to 100% due to rounding.

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-11). More than two-thirds (70%) of respondents stated the total square footage of their facilities was under 6,501 square feet.

Figure D-11: Total Square Footage for All Buildings (n=130)

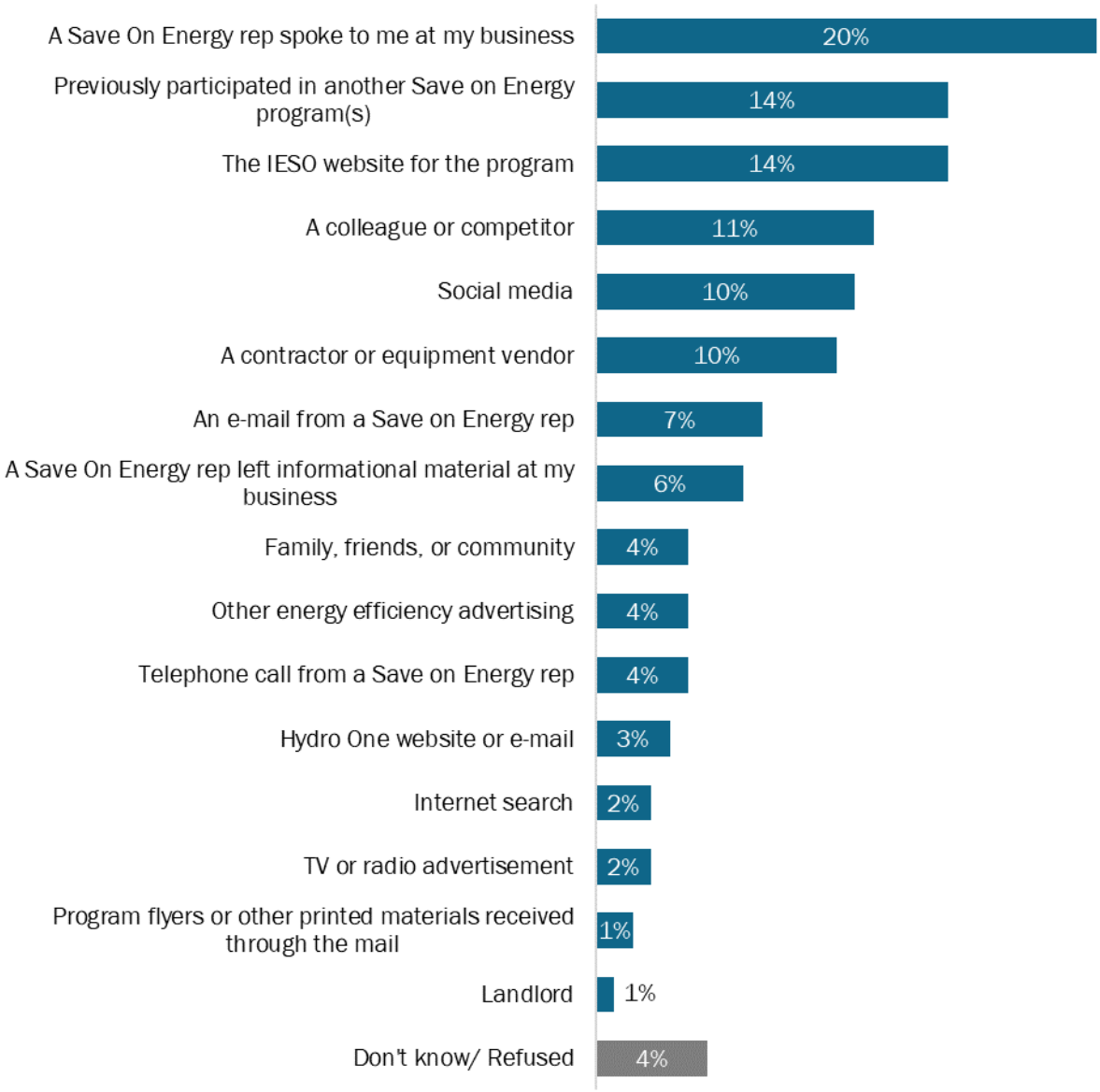


Program Awareness

How Participants Heard About the Program

Figure D-12 includes a list of ways participants heard about the program. Participants most commonly said they heard about the program from their Save on Energy representative who spoke to them at their business. Section 5.3.2 includes additional discussion about program awareness.

Figure D-12: Sources of Program Awareness
(Open-ended and multiple responses allowed; n=134)*

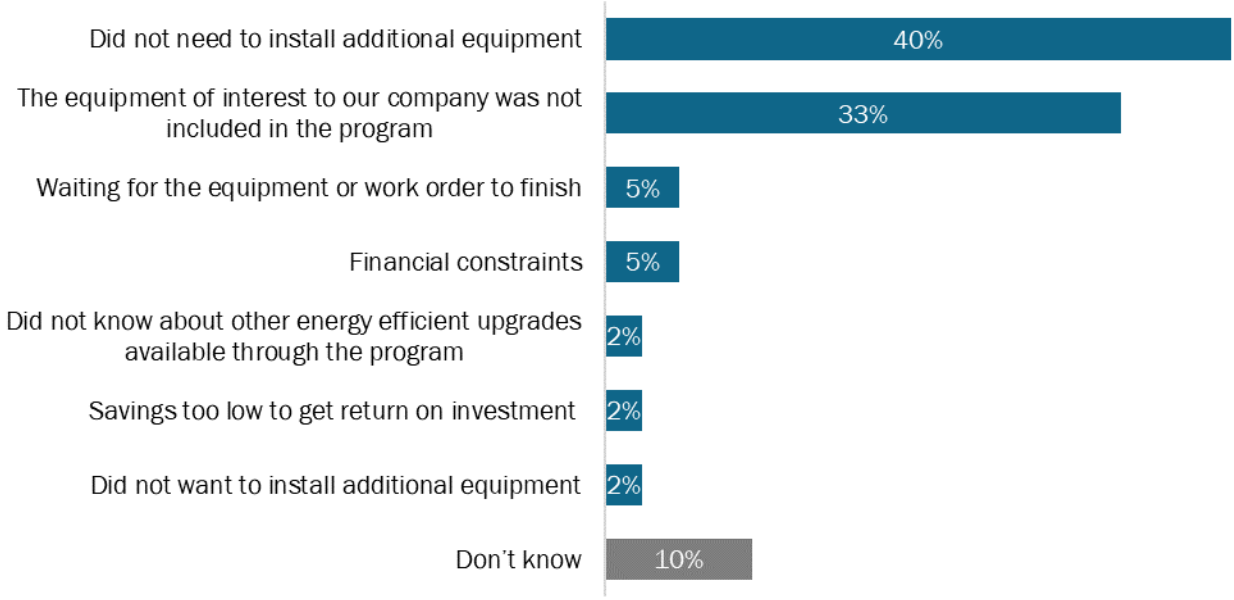


* Does not sum to 100% due to multiple responses.

Participant Reasons for Not Installing Non-lighting Equipment

Figure D-13 includes a list of participant reasons for not installing other non-lighting equipment. Section 5.3.2 includes an additional discussion around these reasons.

Figure D-13: Reasons for Not Installing Other Non-lighting Equipment
(Open-ended allowed; n=42)



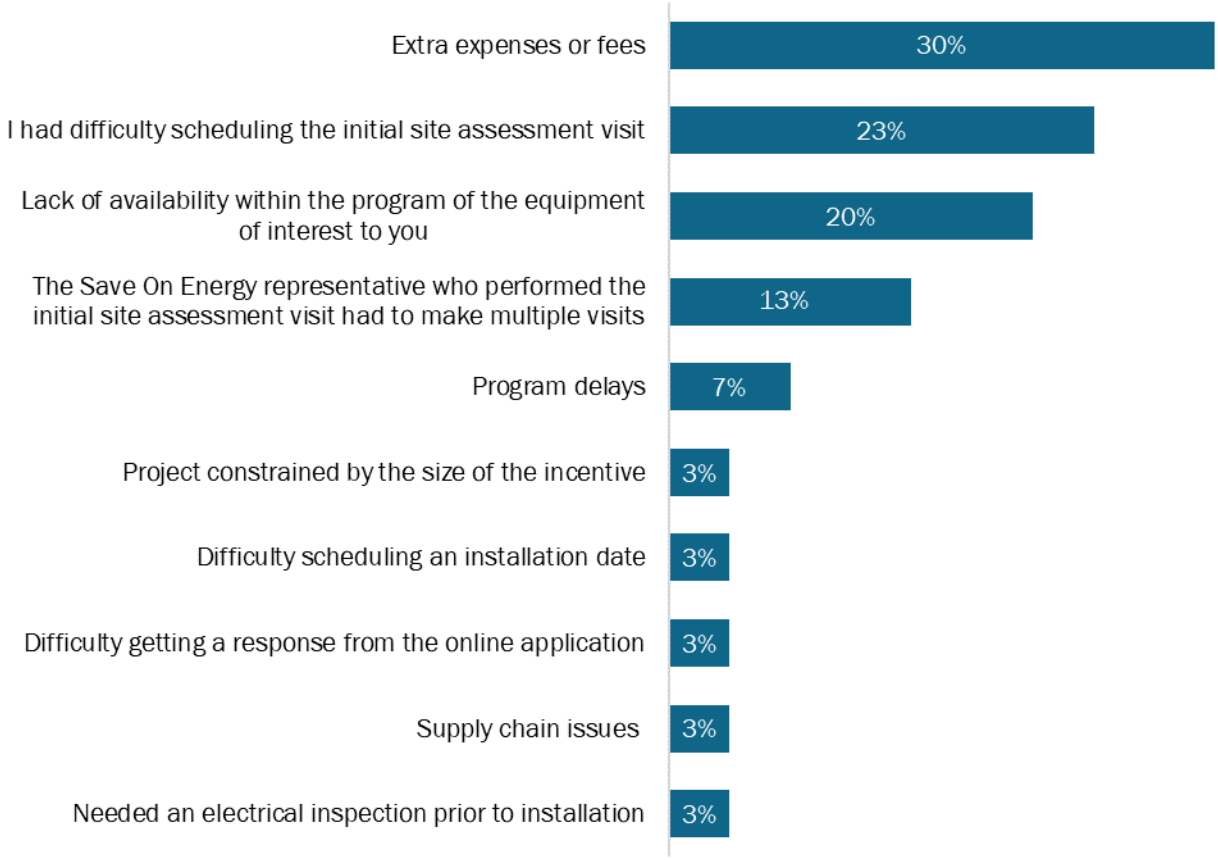
* Does not sum to 100% due to rounding.

Participation Barriers

Program Sign Up Challenges

Figure D-14 lists the challenges experienced when signing up for the program, as described by participants. Section 5.3.3 includes additional discussion on program sign up challenges.

Figure D-14: Program Sign Up Challenges (n=30)*

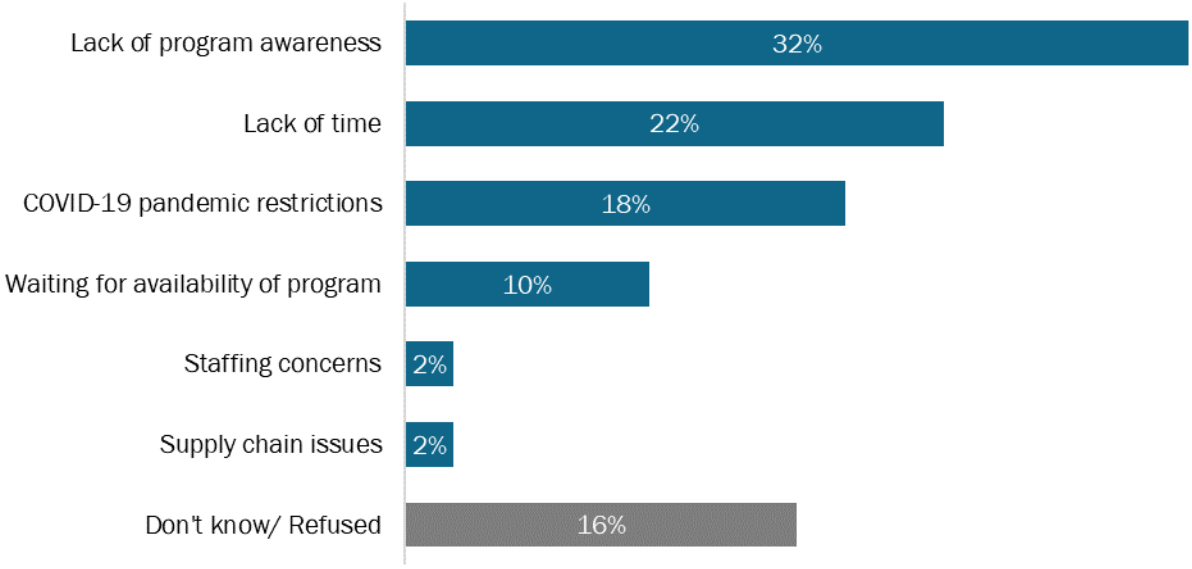


* Does not sum to 100% due to multiple responses.

Barriers Delaying Program Participation

Figure D-15 lists the barriers that delayed program participation. The most commonly mentioned barrier was lack of program awareness (32%). Section 5.3.3 includes additional discussion on barriers delaying program participation.

Figure D-15: Barriers Delaying Program Participation (n=50)*



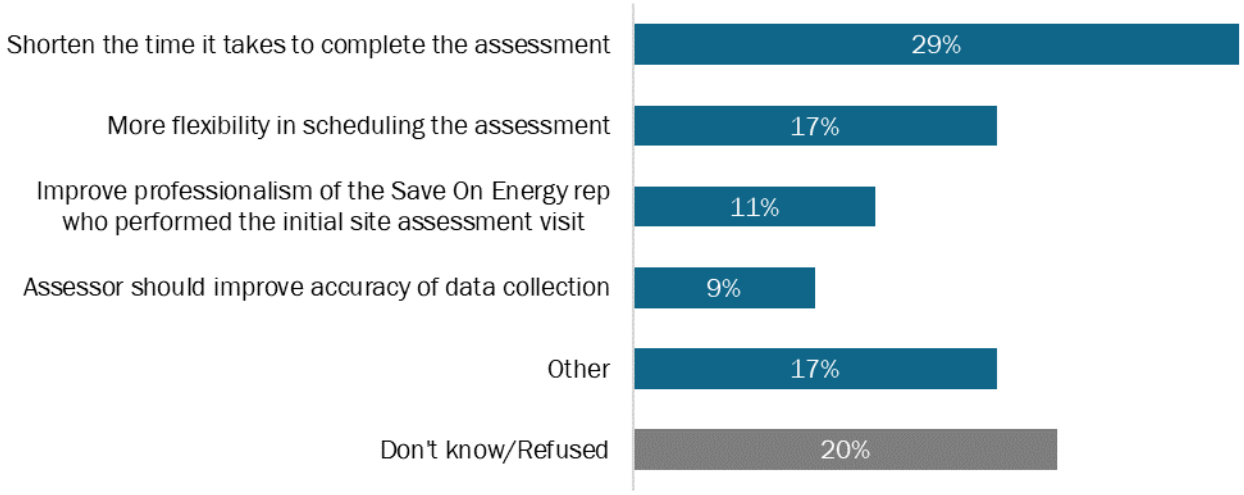
* Does not sum to 100% due to multiple responses.

Site Visit Improvement Suggestions

Initial Site Assessment Visits

Figure D-16 includes a list of initial site visit improvement suggestions, as reported by the participants. The most commonly mentioned suggestion was to shorten the time it takes to complete the assessment (29%). Responses included in the "other" category (17%) included improving communication between Save on Energy representatives who perform the initial site assessments and those who perform the installation visit, employing local Save on Energy representatives to perform the initial site assessment visit, for the Save on Energy representative to recommend non-lighting options, shorten the time between when the application was submitted and the scheduling of the site visit, for the Save on Energy representative to better explain the equipment options available, and for the Save on Energy representative to provide a copy of the assessment (each mentioned once). Section 5.3.4 includes an additional discussion around these improvement suggestions.

Figure D-16: Suggestions to Improve the Initial Site Assessment Visit
(Open-end and multiple responses allowed; n=35)

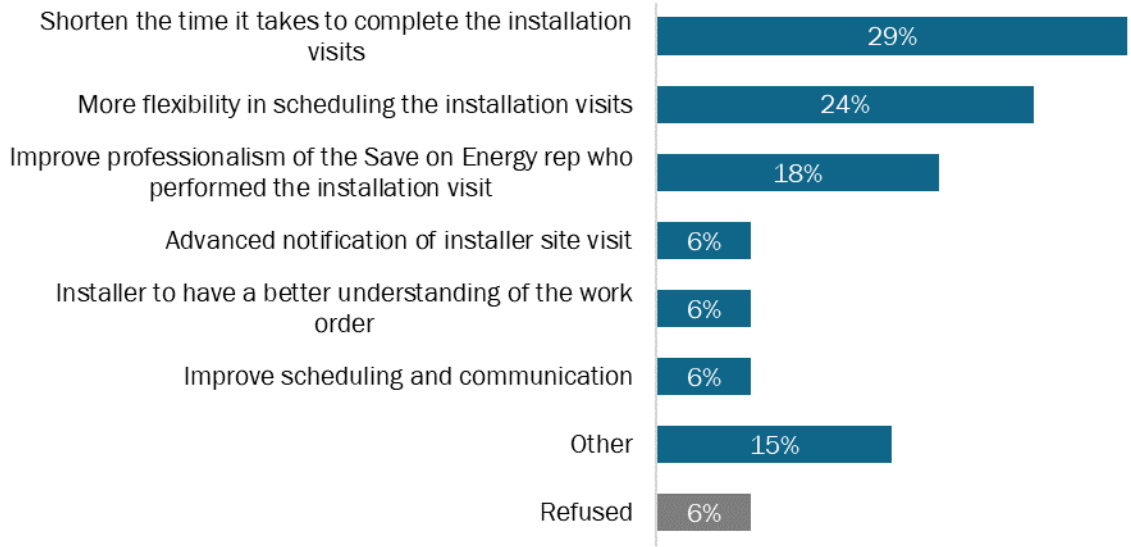


* Does not sum to 100% due to multiple responses.

Installation Visits

Figure D-17 includes a list of installation site-visit improvement suggestions, as reported by the participants. Responses included in the "other" category (15%) included allowing installations in hard-to-reach places, installing consistent-colored lighting, employing local and more specialized installers, and having installers provide before-and-after pictures of work completed (one respondent each). Section 5.3.4 includes additional discussion around these improvement suggestions.

Figure D-17: Suggestions to Improve the Installation Site Visit
(Open-ended and multiple responses allowed; n=34)



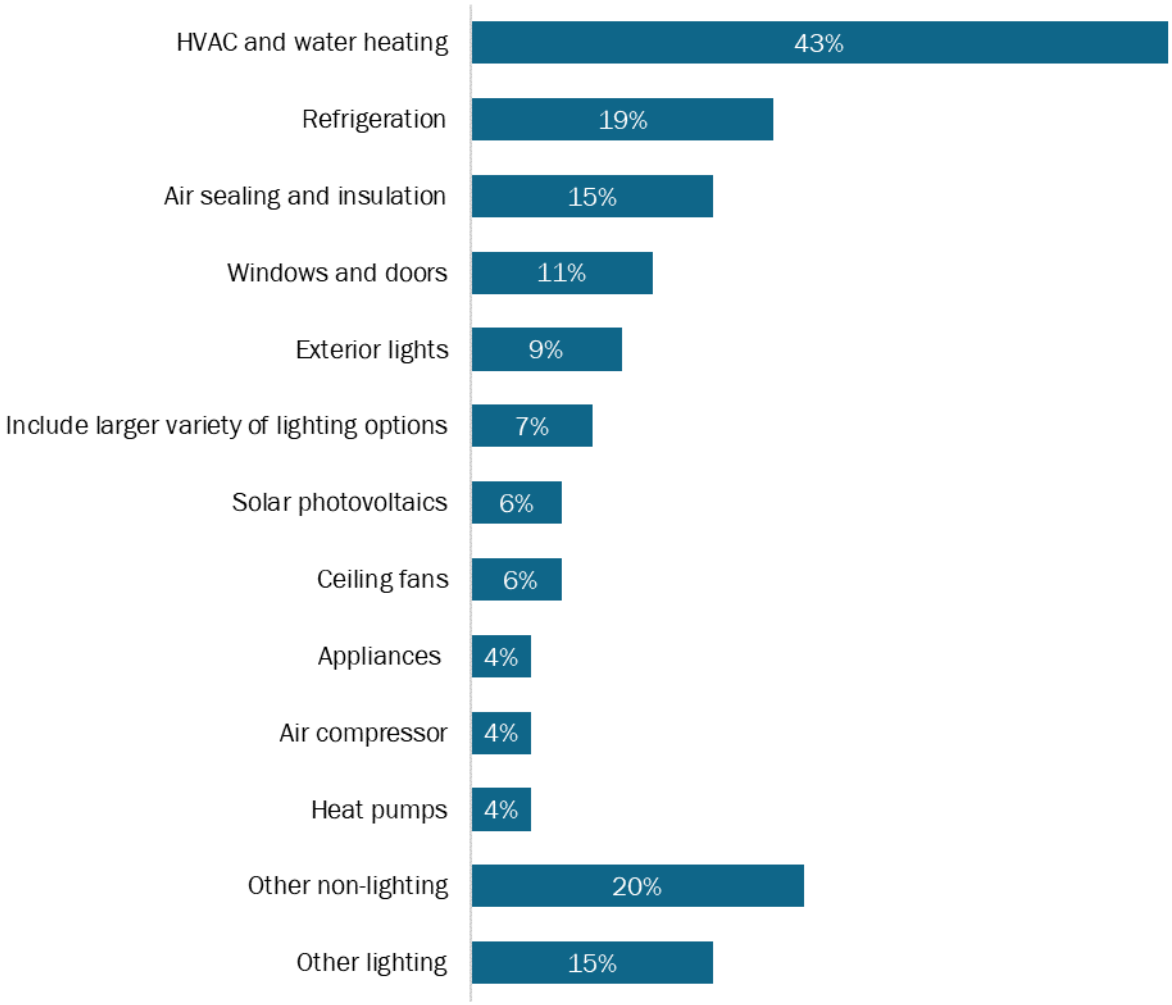
* Does not sum to 100% due to multiple responses.

Recommended Equipment and Services

Figure D-18 includes a full list of recommended additional equipment or services for inclusion in the program in future years, as reported by the participants. Responses included in the "other non-lighting" category included automated sliding doors, timer and auto shut off switches, thermostats, refrigeration controls, VFD/VSD motors, ECM pumps and motors, electrification equipment, uninterruptible power supply (UPS), EV charging equipment, battery storage, and upgrading HVAC wiring. Responses in the "other lighting" category included overhead halogen lights, lighting poles, occupancy sensors, outdoor business signs, compact fluorescents, lighting for refrigeration, change or upgrade fixtures, and a post-installation support system for follow-up issues (one respondent each). Section 5.3.5 includes an additional discussion around these equipment recommendations.

Figure D-18: Additional Equipment Recommendations*

(Open-ended and multiple responses allowed; n=54)



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

Program Improvement Recommendations

Table D-27 includes a full list of additional program improvement recommendations, as provided by participants. Section 5.3.6 includes an additional discussion around these overall recommendations.

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

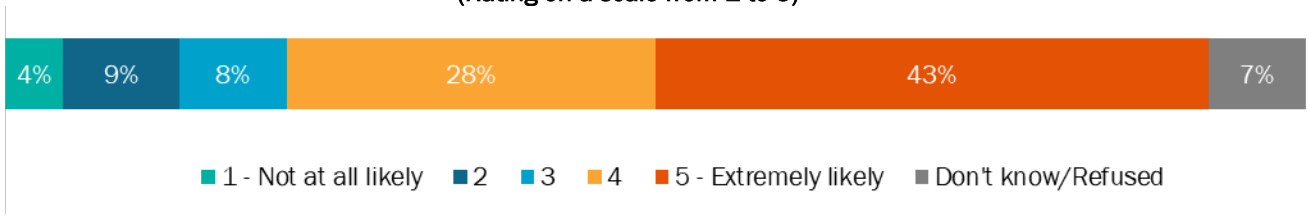
Recommendations	Respondents
Improve marketing and promotion	37%
Improve communication with participant at every stage of the project (e.g., for scheduling, work performed, qualified equipment installation/upgrades, follow ups)	15%
Provide energy audit with energy savings estimates	11%
Program should increase size of the incentive	7%
Improve application form online submission process	7%
Ensure contractors provide lower/more realistic quotes	7%
Allow customers to select their own contractor	7%
Improve vetting of contractors and installers	4%
Contract local contractors to do the installation	4%
Increase transparency about the work performed	4%
Increase response times from Save On Energy representatives	4%
Contractors to stick closer to work orders	4%
Offer services in French	4%

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

Additional Energy-Efficient Upgrades

Respondents were asked how likely their company would have been to agree to install additional energy-efficiency equipment through the program even if an additional site visit would have been required (Figure D-19). Participants rated their likelihood on a scale from one to five, where one indicates "not at all likely," and five indicates "extremely likely." Close to four-fifths (79%) of respondents reported being likely to agree to installing additional equipment with an additional site visit compared to one-eighth (13%) of respondents who were not likely.

Figure D-19: Likelihood of Installing Additional Energy-Efficient Upgrades with Additional Site Visit*
(Multiple responses allowed; n=134)
(Rating on a scale from 1 to 5)

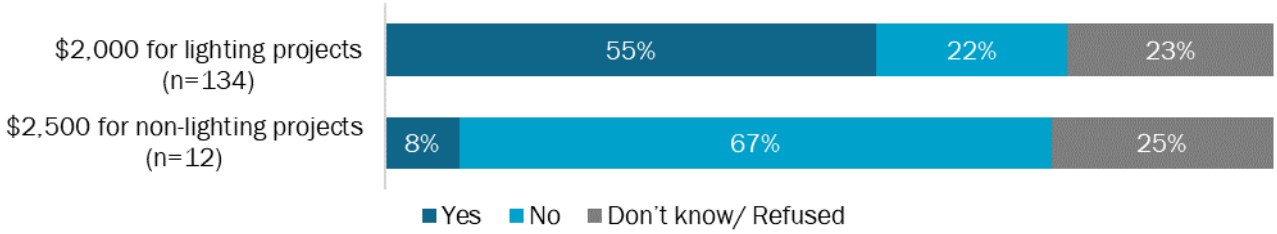


* Does not sum to 100% due to rounding.

Project Incentive Cap

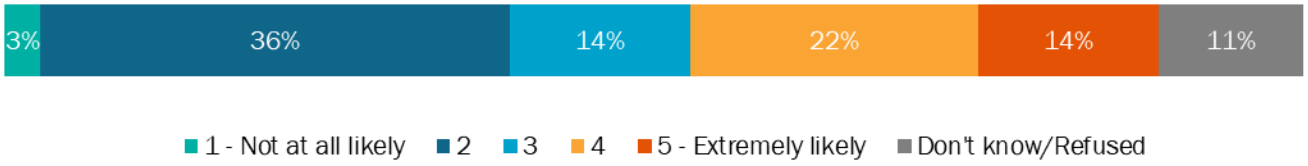
Figure D-20 compares the lighting projects that reached the incentive cap for non-lighting projects. Section 5.3.7 provides an additional discussion on these results.

Figure D-20: Projects that Reached Incentive Cap



Respondents who did not reach their incentive cap were asked how likely their company would have been to take advantage of a co-pay offer to install additional energy-efficiency equipment (Figure D-21). Participants rated their likelihood on a scale from one to five, where one indicates "not at all likely," and five indicates "extremely likely." One-half (50%) of these respondents reported being likely to take advantage of a co-pay offer to install additional upgrades compared to around two-fifths (39%) of respondents who were not likely to take advantage of a co-pay offer.

Figure D-21: Likelihood to Take Advantage of Co-pay Offer to Install Additional Energy-Efficient Upgrades
(Multiple responses allowed; n=36)
(Rating on a scale from 1 to 5)



ESA Fees

Participants were asked whether their company paid ESA fees that were associated with their upgrades. Less than one-tenth (6%) of respondents had to pay ESA fees compared to two-thirds (64%) of respondents who did not. The remaining 30% did not know. All respondents who paid ESA fees indicated they were informed about these ESA fees prior to signing the work order for their projects.

Electrification Projects

Table D-28 includes a list of electrification project assistance suggestions as provided by participants. Respondents suggested financial incentives (seven respondents), information on project upgrades and costs (two respondents), and information or recommendations on contractors that do electrification projects (one respondent). One respondent suggested providing them with the results of the audits done through SBP. Section 5.3.8 includes an additional discussion around respondent electrification project decision-making and recommendations.

Table D-28: Electrification Project Assistance Recommendations*

(Open-ended and multiple responses allowed; n=10)

Recommendations	Respondents
Incentives towards electrification projects	7
Information on upgrades and costs of electrification projects	2
The results of the audit done through this program	1
Information or recommendations for electricians or contractors that do electrification projects	1

* Does not sum to 10 due to multiple responses.

Table D-29 includes a full list of reasons why respondents had not considered electrifying their facilities. Section 5.3.8 includes an additional discussion around reasons for not electrifying.

Table D-29: Reasons for Not Considering Electrification Projects*

(Open-ended and multiple responses allowed; n=62)

Recommendations	Respondents
The cost to complete electrification projects is too high; financial constraints	19%
Not enough information on electrification	13%
Not in the company's plans to electrify facilities	13%
Company is leasing the facility	11%
Recently upgraded to new or high efficiency HVAC	10%
Facility does not use gas powered equipment	10%
Already partially/fully electric	6%
Not applicable to business	6%
Time or resource constraints at your company	5%
Gas, propane, and oil are less expensive fuels than electricity to run equipment	5%
Facility does not rely on electricity that much to run appliances and equipment	5%
Company is planning to relocate or close	3%
Does not like electrification	2%

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

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 the dollar values of the

exogenous shocks from program implementation. The data sources for each research question were as follows:

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 are funded by a volumetric charge on electricity bills, and residential customers accounted for 35% of consumption and non-residential customers accounted for 65% in 2021. 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 the 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 components of the shocks could be consolidated and others could be addressed without full runs of the model. The three shocks that were modelled were as follows:

1. Demand shock, as outlined in RQ1, representing the impact of the 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 that are captured by increased bill charges (thus this acts as a negative shock on the economy (RQ3)). This was estimated by taking the portion of program funding that is 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 from first adding employees to install measures and handle administrative duties. For the business reinvestment shock, direct impacts could be internal jobs created by businesses reinvesting savings back into the company, or they could be jobs created by businesses 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:

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

Model run results are 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 the 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 64 total jobs in Canada, with 57 jobs created in Ontario. Of the 64 estimated total jobs, 32 are direct jobs, 15 are indirect jobs, and another 17 are induced. In terms of FTEs, the numbers are slightly lower, with 47 FTEs created in Ontario and 52 FTEs created nationwide. Of these 52 FTEs, direct jobs account for 29 FTEs, 11 FTEs are indirect jobs and 12 FTEs are induced jobs. In total, the SBP Program created 27.3 jobs per million dollars of investment (i.e. program budget).

Table F-1: 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	27	29	31	32	13.5
Indirect	10	11	12	15	6.5
Induced	10	12	14	17	7.3
Total[1]	**47**	**52**	**57**	**64**	**27.3**

Section F.1 details the values of the 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 the demand for energy-efficient products and services from SBP.
- The business reinvestment shock, representing the 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 below displays the input values for the demand shock representing the 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 $1.9 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 $0.05M and $0.04M of the total project costs, respectively. 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-2: Summary of Input Values for Demand Shock

Category Description	Non-Labour	Labour	Total Demand Shock
	($ Thousands)		
Lighting Fixtures	993	881	1,874
Electric Light Bulbs and Tubes	71	63	133
Switchgear, switchboards, relays and industrial control apparatus	27	24	51
Heating and cooling equipment (except household refrigerators and freezers)	23	20	42
Subtotal	**1,113**	**987**	**2,100**
Office Administrative Services	-	-	594
Total			**2,695**

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 ($8.6 million) was the net of electricity bill savings (NPV = $8.9 million), and the portion of project costs not covered by incentives ($0.3 million). The portion of this $8.6 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 81% of bill savings would be reinvested ($7.0 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 $7.0 million over 20 industries, as shown in the table.

Table F-3: Summary of Input Values for Business Reinvestment Shock

Category Description	Business Reinvestment Shock *($ Thousands)*
Accommodation and food services	494
Arts, entertainment and recreation	290
Crop and animal production	132
Crop, animal, food, and beverage	145
Educational services	60
Finance, insurance, real estate, rental and leasing and holding companies	60
Forestry, logging, paper, and printing	72
Health care and social assistance	468
Non-profit institutions serving households	396
Non-residential building construction	72
Other	1,974
Other aboriginal government services	72
Other activities of the construction industry	145
Other services (except public administration)	264
Repair, maintenance and operating and office supplies	362
Retail trade	1,544
Support activities for agriculture and forestry	145
Transportation and warehousing	132
Transportation margins	72
Wholesale trade	72
Total	**6,972**

The third model input is the household expenditure shock.[7] 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 $2.4M program budget or $0.8M.

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

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 26 total jobs (measured in person-years) in Canada, of which 24 will be in Ontario. Of the 26 jobs, 14 were direct, 5 indirect and 7 induced. In terms of FTEs the numbers are slightly lower; 20 FTEs were estimated to be created in Ontario and 21 in total across Canada. Of those 21 FTEs, 12 were direct, 4 indirect and 5 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-4: 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	12	12	14	14
Indirect	3	4	4	5
Induced	5	5	6	7
Total	**20**	**21**	**24**	**26**

Table F-5 shows the results of the model run for the business reinvestment shock. Job impacts generated by business investment were equal to 19 direct total FTEs and 21 direct total jobs. Overall, business investments were responsible for 36 FTEs and 44 total jobs across Canada.

Table F-5: 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	17	19	20	21
Indirect	8	9	9	12
Induced	6	8	9	11
Total	**31**	**36**	**38**	**44**

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 5 FTE and 6 total job across Canada due to the decreased household spending.

Table F-6: 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	2	3	3	3
Indirect	1	1	1	2
Induced	1	1	1	1
Total	**4**	**5**	5	6

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[8]. 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 32 estimated total direct jobs, 31 were in Ontario. Similar proportion of the indirect and induced jobs were also in Ontario; 12 of 16 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 47 FTEs (of all types) created in Ontario and 53 FTEs added nationwide. Almost all direct FTEs (27 of 28) were added in Ontario, with this number representing approximately 57% of the total FTEs added in Ontario and 51% of all FTEs created across Canada. In 2022, each $1M of program spend resulted in the creation of 27.3 total jobs compared to 30.9 jobs per $1M for the PY21 SBP program and 29.6 jobs per $1M for the PY21 SBL program. The decrease of 3.6 jobs per $1M observed in SBP is potentially due to of higher participant reinvestment costs per dollar than in 2021. In 2021, the amounts that participants spent on efficient equipment represented $0.02 of every dollar reinvested by participants due to money saved

[8] Annual Planning Outlook – A view of Ontario's electricity system needs; 2022. IESO.

on energy bills. In 2022, residents spent $0.05 of every dollar reinvested on efficient equipment. This means that for each dollar reinvested, participants spent 60% more in 2022 than they did the year prior to receive the same amount of bill savings. This leads to smaller economic reinvestment shocks, thus leading to the observed decrease in job creation per $1M in program spend.

Table F-7: 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	27	28	31	32	13.5
Indirect	10	13	12	16	6.7
Induced	10	12	14	17	7.2
Total[1]	**47**	**53**	**57**	**64**	**27.3**

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 5 out of the total of 64 person-years. Three of these person-years come from first year energy savings. The remaining 59 total job-years are due to energy savings after the first year—and the reinvestment generated by the bill savings.

Table F-8: 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	29	32
Indirect	1	14	15
Induced	1	16	17
Total[1]	**5**	**59**	**64**

[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 16.5 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 Retail trade were the industries with the next most added jobs, gaining 7.3 and 6.1 jobs respectively.

Table F-9: 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	13.2	13.5	16.1	16.5
Non-residential building construction	6.3	6.3	7.3	7.3
Retail trade	4.1	4.6	5.5	6.1
Manufacturing	3.7	5.4	3.9	5.6
Professional, scientific and technical services	3.5	4.2	4.4	5.3
Wholesale trade	4.0	4.8	4.1	4.9
Finance, insurance, real estate, rental and leasing and holding companies	2.3	2.7	2.8	3.4
Transportation and warehousing	1.6	2.0	1.8	2.4
Accommodation and food services	1.1	1.4	1.6	2.2
Government education services	1.2	1.2	1.5	1.5
Information and cultural industries	0.9	1.3	1.0	1.5
Other services (except public administration)	0.7	0.9	1.0	1.3
Engineering construction	0.9	0.9	1.0	1.0
Health care and social assistance	0.4	0.5	0.7	0.8
Residential building construction	0.5	0.5	0.7	0.7
Repair construction	0.5	0.6	0.6	0.6
Arts, entertainment and recreation	0.2	0.3	0.4	0.5
Educational services	0.2	0.2	0.4	0.4
Other federal government services	0.4	0.4	0.4	0.4
Other municipal government services	0.3	0.3	0.3	0.3
Non-profit institutions serving households	0.2	0.3	0.3	0.3
Crop and animal production	0.1	0.2	0.2	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	0.1
Other provincial and territorial government services	0.1	0.1	0.1	0.1
Total[1]	**47**	**53**	**57**	**64**

[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 Small Business Program Assessors and Installer survey responses support the results of the model showing positive job impacts. The survey instrument contained questions for contractors and applicant representatives related to the impact of the SBP program on their firms and employment levels. Two questions in particular 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 2022 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:

   - "Exposure to new customers."
   - "More clients to serve."
   - "More customers, more interactions, sometimes extra work picked up through interactions."
   - "Continued to provide off seasonal work for the staff."
   - The program hindered the growth of my business in the following ways:
   - No responses provided

2. Did the 2021 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:

   "Yes, we carried additional staff for the program [number of staff not provided]."

   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 two previous studies, the *PY2021 SBP Evaluation Report* and the *Non-Energy Benefits Study: Phase II* assessed the NEBs from energy-efficiency projects funded by the IESO over the 2017-2021 period.[9] The PY2022 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 ask 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 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.

[9] 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

- **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.

Table G-1: Quantified NEBs by Participant and by Savings, Phase II, PY2021, & PY2022

NEB Test	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**
Reduced building & equipment O&M	0.11	0.08	0.32	0.13	0.12	0.08
Thermal comfort	0.07	0.04			0.63	0.05
Improved indoor air quality	0.004	0.02			0.09	0.007
Reduced spoilage	0.001	0.0004			0.01	0.0002
Hybrid (RS-priority) (Avg $/kWh)	**Per Participant**	**Overall**	**Per Participant**	**Overall**	**Per Participant**	**Overall**
Reduced building & equipment O&M	0.26	0.20	0.46	0.21	0.72	0.17
Thermal comfort	0.10	0.06			0.65	0.09
Improved indoor air quality	0.004	0.02			0.10	0.02
Reduced spoilage	0.001	0.001			0.01	0.0003

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.

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 as a result of their participation in SBP (Table G-2). Three of the eight respondents did not believe their customers experienced any NEBs. Three respondents believed their customers experienced reduced building and equipment O&M, two suspected customers experienced improved thermal comfort, one suspected benefits from reduced food spoilage, and one suspected benefits from reduced eye strain.

Table G-2: Assessor and Installer Reported NEBs
(Open-ended and multiple responses allowed; n=8)*

NEB	Respondents
None	3
Reduced time and costs for buildings and equipment operations and maintenance	3
Reduced cold/heat-related stress (improved thermal comfort)	2
Reduced food spoilage	1
Reduced eye strain	1

*Does not sum to 8 due to multiple response.

Appendix H SBP Building Types

Table H-1: 2022 SBP Program Reported Building Types

Building Type Reported in SBP Database	Resource Innovations Designation
Retailer Stores	Retail
Grocery Stores	Retail
Fast Food Restaurant	Restaurants
Small Retail Stores	Retail
Industrial Plants: Offices	Office
Municipal Bldgs - Town Halls	Others-Service
Barber Shops	Others-Service
Hotels: Corridors	Hotels/Motels
Medical Centres & Clinic	Others-Service
Agricultural Other	Agricultural
Schools	Others
Places of Worship	Others-Service
Convenience Stores	Convenience Stores
Warehouses	Warehouses
Office (small suite)	Office
Full Service Restaurants	Restaurants
Fire Stations	Others-Service
Libraries	Others-Service
Dental Offices	Others-Service
Supermarkets	Retail
Laboratories	Others
Beauty Parlors	Others-Service
Low Rise Office Bldgs - Core	Office
Hotels/Motels: Guest Rooms	Hotels/Motels
Cocktail Lounges	Restaurants
Department Stores	Retail
Clubhouses	Others-Entertainment
Banks	Others-Service
Dairy Farm	Agricultural
Retail Stores in Malls	Retail
Museums	Others-Entertainment
Hotels/Motels: Public Spaces	Hotels/Motels
Commercial - Food Retail	Retail
Commercial - Small Office	Office
Commercial - Small Retail	Retail

Building Type Reported in SBP Database	Resource Innovations Designation
Warehouse/Wholesale	Warehouses
Entertainment/Sport	Others-Entertainment
Manufacturing	Manufacturing
Large Office	Office
Small Office	Office
Other	Others
Small Retail	Retail
Place of Worship	Others-Service
Commercial - Large Retail	Retail
Parks and Recreation	Others-Service
Commercial - Other	Others
Agricultural - Other	Agricultural
Commercial - Restaurant	Restaurants
Restaurant	Restaurants
Food Retail	Retail
Large Retail	Retail
Petroleum/Plastic	Manufacturing
Public Works	Others-Service
Administrative Buildings	Office
Emergency Services	Others-Service
Culture and Tourism	Others-Entertainment
Long Term Care Facility	Multi-Residential
Rental Apartment	Multi-Residential
Greenhouse	Agricultural
Commercial - Large Office	Office
School (K-12)	Others
Hospital	Others-Service
Hotel	Hotels/Motels
Long Term Care Facility	Multi-Residential
Public - School (K-12)	Others
Govt/Public - Place of Worship	Others-Service
Agricultural - Dairy Farm	Agricultural
Government/Public - Parks and Recreation	Others-Service
Multi-Residential - Other	Multi-Residential
Government/Public - Culture and Tourism	Others-Entertainment
Government/Public - Emergency Services	Others-Service
Government/Public - Administrative Buildings	Office
Government/Public - Other	Others

Building Type Reported in SBP Database	Resource Innovations Designation
Government/Public - Public Works	Others-Service
Commercial - Warehouse/Wholesale	Warehouses
Commercial - Motel	Hotels/Motels
Commercial - Entertainment/Sport	Others-Entertainment
Industrial/Manufacturing - Mining	Manufacturing
Government/Public - School (K-12)	Others
Industrial/Manufacturing - Manufacturing	Manufacturing
Commercial - Hotel	Hotels/Motels
Government/Public - Long Term Care Facility	Multi-Residential
Multi-Residential - Condominium	Multi-Residential