2021-2024 CDM Framework Small Business Program PY2021 Evaluation Results

Submitted to IESO

in partnership with NMR Group

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Principal authors:

Resource Innovations – Henri van Rensburg, Ron Shaw, Bashar Alhayek

NMR Group – Joanne O'Donnell, Kiersten von Trapp, Shirley Pon, Sam Kodua

Resource Innovations

TD Canada Trust Tower

161 Bay Street, 27th Floor

M5J 2S1 Toronto, Canada

416.572.2433

resource-innovations.com

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Acronyms and Abbreviations

CDM-IS	Content data management information system
DCKV	Demand control kitchen ventilation
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
P1	Evaluation Period 1 (January through June)
P2	Evaluation Period 2 (July through December)
SO	Spillover

1. Executive Summary

The Independent Electricity System Operator (IESO) retained Resource Innovations (formerly Nexant Inc.), and their sub-contractor NMR Group, Inc., to conduct an evaluation of the Small Business Program (SBP) for the 2021 Conservation Demand Management (CDM) evaluation cycle. This Executive Summary provides a high-level overview of the impact, cost-effectiveness and process evaluation results, key findings and recommendations for the SBP during the January 1, 2021 through December 31, 2021 evaluation period.

1.1. Program Description

The Small Business Program (SBP) provides owners and tenants of small business commercial, institutional, agricultural facilities, and multi-family facilities with less than 50 employees the opportunity to receive up to $2,000 in free lighting upgrades and up to $2,500 in free non-lighting upgrades. Participants who wish to have qualified equipment installed above the incentive limits are eligible for additional incentives intended to further the impacts and reach of the program. Eligible measures are defined by the program and include a wide variety of lighting fixtures and lamps and refrigeration 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 may be made.

1.2. Evaluation Objectives

The IESO has outlined the following objectives for the PY 2021 SBP evaluation:

- Conduct audits of completed projects to verify equipment installation and evaluate operating parameters through desk reviews and site visits.
- Verify gross energy and summer peak demand savings at a 90% confidence level at 10% precision.
- Assess free-ridership (FR) and participant spillover (SO) to determine an appropriate net-to-gross (NTG) ratio.
- Perform a cost-effectiveness assessment, greenhouse gas savings estimate, a Non-energy Benefits (NEBs) analysis, and job impact quantification.
- Provide thoughtful recommendations on program improvements based on feedback obtained from the evaluations.

1.3. Summary of Results

1.3.1. Impact Evaluation

An impact evaluation was performed to analyze the impact of the program's improvements and quantify the savings generated as a result of implementing the SBP projects in Ontario

in PY2021. During the evaluation period, 2,325 projects were completed. The Central region is the primary contributor to the SBP projects, accounting for 37% of all completed projects, followed by the Eastern with 19%, the Northern and Southwestern regions both with 17% and the Toronto region at 10%[1]. The PY2021 SBP program achieved energy and summer peak demand realization rates of 99.38% and 195.56%, respectively. These realization rates include interactive effects observed on HVAC equipment due to high-efficiency lighting. The energy and summer peak demand net-to-gross ratios are 89.4% and 91.1%, respectively. A total of 100% of the first-year net verified energy savings are projected to persist until the end of the framework accounting period (2026). The gross and net verified impact results of the 2021 SBP program are presented in Table 1-1. Detailed impact results for the PY2021 SBP are presented in Section 4.

Table 1-1: 2021 SBP Impact Results

Savings	Reported Savings	Realization Rate	Gross Verified Savings	Gross Verified Precision at 90% Confidence	Net-to-Gross Ratio	Net Verified Savings	Net Verified Savings at 2026
Energy (MWh)	13,044	99.38%	12,964	4.82%	89.4%	11,592	11,592
Summer Peak Demand (kW)	1,857	195.56%	3,632	14.37%	91.1%	3,308	3,308

1.3.2. Process Evaluation

The evaluation team performed a process evaluation to better understand program design and delivery in 2021. Primary data was collected to support this evaluation through interviews with the IESO staff and program delivery staff and surveys with assessors, installers, and participants. Key insights from the process evaluation are summarized below and are presented in detail in the Process Evaluation Results section.

Site visits. The majority of surveyed participants had no suggestions for improving the initial site assessment (76%), the installer visit(s) (69%), or the overall installation process (87%). This suggests a high level of satisfaction with the program. The most common suggestions for improving the site assessment, installer visit(s), or the overall installation process include reducing the time it takes to complete the visits, providing more flexibility and communication in scheduling the visits, and improving the Save On Energy representatives' professionalism and transparency.

Incentive impacts. Most auditors and contractors (nine of fifteen respondents) noted the incentive cap had reduced the scope of some of their customers' projects, and one reported it had reduced the scope of all their customers' projects. The interviewed delivery vendor

[1] A list of postal code designation and exact project counts for each region are presented in Appendix H.

staff noted that program incentives have not risen in recent years to help offset the rising equipment, fuel, and installation costs associated with completing program projects.

Program barriers. Customers' lack of awareness of the program and the perception of upgrades not being worth the trouble of participating were cited by auditors and contractors as barriers that prevented more customers from participating in the program (mentioned by five respondents each). The most common suggestion mentioned by auditors and contractors to address barriers to participation was to increase the marketing of the program (mentioned by five respondents).

Auditor and contractor program satisfaction. On average, auditors and contractors were very satisfied with the program overall, assigning an overall program satisfaction rating of 4.1 on a scale from one (1) to five (5), where one indicates "not at all satisfied" and five indicates "extremely satisfied." When rating specific aspects of the program, respondents assigned the highest average satisfaction rating to the interactions that they had with the program delivery vendor (4.6) and the lowest satisfaction ratings to the number and types of equipment incentivized through the program (3.9) and program training and education (3.9).

Program improvement recommendations. Over one-tenth (12%) of participants had program improvement recommendations, with the most common recommendations being to increase incentives (25%) and to offer additional marketing and outreach beyond the door-to-door visits (25%). Recommendations mentioned by auditors and contractors included hiring quality assessors, reducing the reimbursement time for contractors, more in-person training, and simplifying worksheets (mentioned by one respondent each). Recommendations mentioned by the interviewed IESO staff and delivery vendor staff included ensuring that Electrical Safety Authority (ESA) fees are identified and communicated about upfront, that the program consider ways in which smaller industrial customers could be served by this program or similar direct install programs, and that the program identify possible opportunities to collaborate with gas utilities in the future to make a wider variety of equipment available to customers while also helping to address customer interest in decarbonization.

1.4. Key Findings and Recommendations

Finding 1. Reported Peak Demand Savings – Coincidence Factors (CF). The SBP reported peak demand savings seem to be calculated based on a predetermined coincidence factor (CFs). This is an improvement from previous years (i.e., the SBL program), where connected demand was reported instead of actual peak demand. However, the CFs used seem conservative, resulting in a high demand realization rate (198%).

- **Recommendation 1**. It is recommended to further review and update the CFs used to report the peak demand savings to better align with evaluation results. Another approach that would result in high accuracy of reported peak demand is using the facility's actual HOU to determine project-specific CF. The SBP Assessment Tool collects the actual hours of operation data for each assessed facility. These hours

can be utilized to calculate the corresponding portion of the change in the connected load that occurred during the peak window or CF of each project. This would help to correctly report summer peak demand savings.

Finding 2 Improved Baseline and Retrofit Photos. Assessors and installers of the 2021 SBP submitted photos of the pre-existing baseline and retrofitted fixtures and lamps. These photos are critical when verifying the baseline and retrofit conditions. In most cases, the photos submitted were taken from wide angles and a few feet away, which do not provide useful information about the lamp wattage or type. There were a few instances where the photos captured enough detail of the lamps or fixtures to definitively determine the wattages. This is consistent with previous observations from the previous iteration of the Small Business Lighting (SBL) program, where photos did not provide sufficient information to determine the technical specifications of the removed and new fixtures/lights.

- **Recommendation 2** As previously recommended for the SBL program, it is recommended to specify what information should be captured in the pre-retrofit and post-retrofit pictures that are taken by the SBL assessors/installers. Specifying that pictures of the replaced equipment should capture the wattage of the lamps and, if applicable, the type of ballast. This is specifically critical for direct install programs. The participants of such programs often do not possess/provide sufficient information regarding the baseline and retrofit equipment. The photos collected by the program delivery vendor would help provide the data required for evaluation.

Finding 3 SBP Reporting and Tracking (Measure-Level Cost). Consistent with the previous iterations of the SBL program, the SBP reporting database is structured into two sets of data; one for projects' high-level information such as the address, contact information and business type. The other set is for measures' information which details key aspects of the individual measures included within each project, such as quantity and type of equipment installed. Currently, cost data is reported at the project level, and no measure-level information is available.

- **Recommendation 3** As previously recommended for the SBL program, along with measure-specific energy and demand savings and incentive data, it is recommended to report separate cost values for each measure, as opposed to reporting project-level cost. Access to such information will increase the evaluator's visibility into the program's performance and allow the evaluator to run various analyses regarding the cost-effectiveness and performance of implemented measure types.

Finding 4. Many participants who were recommended additional lighting upgrades beyond the project cost cap made those upgrades. Over one-tenth (14%) of participants reported installing additional energy-efficient equipment for which they did not receive an incentive following their participation in the program. Of those, more than one-third (35%) stated the upgrades were recommended to them by their assessors or installers. Participants who installed additional lighting upgrades did so because the additional equipment did not qualify for the program (35%), the energy or monetary savings justified the additional cost (27%), or the incentive cap was not sufficient to complete the project (15%). Some

participants who did not install additional lighting beyond the project cost cap stated they did not do so as the cap was not sufficient to cover the additional upgrades (23%) or the equipment types they were interested in were not offered through the program (9%).

- **Recommendation 4** When applicable, it is recommended to encourage assessors and installers to offer additional lighting upgrades to participants beyond those available through the program. In addition, helping interested participants identify ways to complete the work, either by installing the additional equipment at the time of participation or by providing them with a recommended equipment list to consider installing in the future.

Finding 5. Expanding the scope of lighting offerings was a common improvement suggestion. Assessors and installers were least satisfied with the number and types of equipment incentivized (rating of 3.9 on a scale from one (1) to five (5), where one indicates "not at all satisfied" and five indicates "extremely satisfied." Assessors, installers, and participants most often recommended including exterior lighting and signage offerings. Incentivizing fixtures upgrades, LED panels, and UV lighting were mentioned with less frequency. Both IESO staff and delivery vendor staff noted that, while the program offers a wide variety of measures to customers, it must also adhere to cost-effectiveness targets and demand-saving priorities.

- **Recommendation 5a.** Explore the feasibility of including more lighting products that align with program goals and cost-effectiveness targets.
- **Recommendation 5b.** Explore the feasibility of offering a customer co-pay option to expand the scope of customer projects.

Finding 6. Opportunities exist to improve assessor and installer training and education. Most surveyed assessors and installers reported receiving training and education. Nearly all had received information on the program rules, and many others received information on program offerings. However, program training and education received the lowest satisfaction rating (a 3.9 on a scale from one (1) to five (5), where one indicates "not at all satisfied" and five indicates "extremely satisfied") from assessors and installers. Providing marketing and outreach techniques to better promote the program to customers was the most common improvement recommendation, followed by more information on the program offerings and rules and training on installation procedures and practices.

- **Recommendation 6a**. Revisit the assessor and installer training topics to ensure they cover areas of most interest to them (for example, marketing and outreach techniques, more information on offerings and rules, and installation procedures and practices).
- **Recommendation 6b**. Offer training and education with regularity to ensure that assessors and installers to ensure new staff are well-informed about the program and to provide refreshers to others.

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 Programs Years (PY) 2021-2022 of the 2021-2024 Conservation and Demand Management Framework (CDM) business programs. The following report presents the results of the PY 2021 SBP evaluation. This report covers the PY 2021 impact and process evaluation, cost-effectiveness assessment, and job impacts results.

2.1. Program Description

The Small Business Program (SBP) provides owners and tenants of small business commercial, institutional, agricultural facilities, and multi-family facilities with 50 or fewer employees the opportunity to receive up to $2,000 in free lighting upgrades and up to $2,500 in free non-lighting upgrades. Participants who wish to have qualified equipment installed above the incentive limits are eligible for additional incentives that are intended to further the impacts and reach of the program. Eligible measures are defined by the program and include a wide variety of lighting fixtures and lamps, and refrigeration 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 may be made.

2.2. Evaluation Objectives

The IESO has outlined the following objectives for the PYs 2021-2022 SBP evaluation:

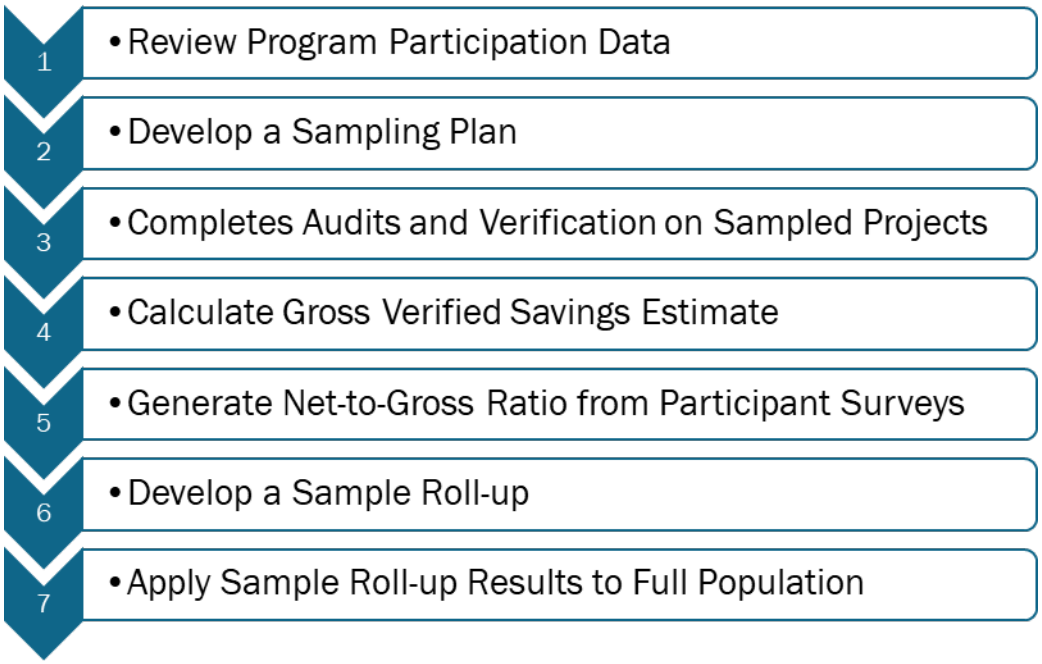
- Conduct audits of completed projects to evaluate, measure and verify completion and operating parameters through desk reviews, virtual site visits, and on-site inspections and metering.
- Verify gross energy and summer peak demand savings at a 90% confidence level at 10% precision. Assess free-ridership 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 design and evaluations.
- Perform a cost-effectiveness assessment, greenhouse gas savings estimate, a Non-energy Benefits (NEBs) analysis, and job impact quantification.
- 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.

3. Evaluation Methodology

3.1. Impact Evaluation Methodology

The impact evaluation methodology, comprised of distinct components, is presented in Figure 3-1.

Figure 3-1: Impact Evaluation Methodology



3.1.1. Project Participation and Sampling

The impact evaluation sample was drawn solely from a list of PY2021 SBP projects completed and paid between January 1st and December 31st, 2021. Impact sampling first involved stratifying the population into similar project types to minimize variability and improve the confidence and precision of the sample results. The population was stratified by measure type and then randomly sampled from each stratum. The number of projects selected from each stratum targeted results that achieved a 90% confidence level at a 10% precision level, assuming a coefficient of variation of 0.5. A total of 74 random sample projects were selected, as shown in Table 3-1.

Table 3-1: Impact Evaluation Sample

Program	Sample Size
Small Business Program	74

Each sample project was reviewed to verify the amount of gross and net savings. These individual sample projects' results were then used to calculate realization rates and net-to-gross ratio adjustment factors applied to the savings of all projects in the PY2021 population. Additional detail can be found in Appendix A and Appendix B.

3.2. Process Evaluation Methodology

The process evaluation focused on program design and delivery. Program processes were assessed through interviews and surveys with relevant program actors, including the IESO program staff, program delivery vendor staff, assessors and installers, and participants. For each respondent type, a customized interview guide or survey instrument was developed 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 the surveys or interviews, the total number of completed surveys or interviews, and the sampling error at the 90% confidence level for each respondent type. Additional detail regarding the process evaluation methodology can be found in Appendix C.

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 In-depth Interview (IDI)	1	-	1	1	100%	0%
Program Delivery Vendor Staff	Phone IDI	1	-	1	1	100%	0%
SBP Assessors and Installers	Web Survey	46	15	-	15	33%	N/A*
SBP Participants	Web and Phone Survey	819	144	28	172[2]	21%	5.6%

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

[2] Please note that the count of process survey responses (n=172) is less than the count of NTG survey responses (n=183) because some respondents did not complete the process section of the survey.

3.3. Non-Energy Benefits Methodology

The NEBs methodology for the PY2021 Small Business program followed the same methodology as the Phase II study, which assessed the NEBs from energy-efficiency projects funded by the IESO over the 2017-2019 period.[3] The NEBs were calculated using two different techniques, the relative scaling approach and the willingness to pay approach, to determine the value of NEBs that program participants realized by installing program measures. 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. Additional detail regarding the NEB methodology can be found in Appendix G.

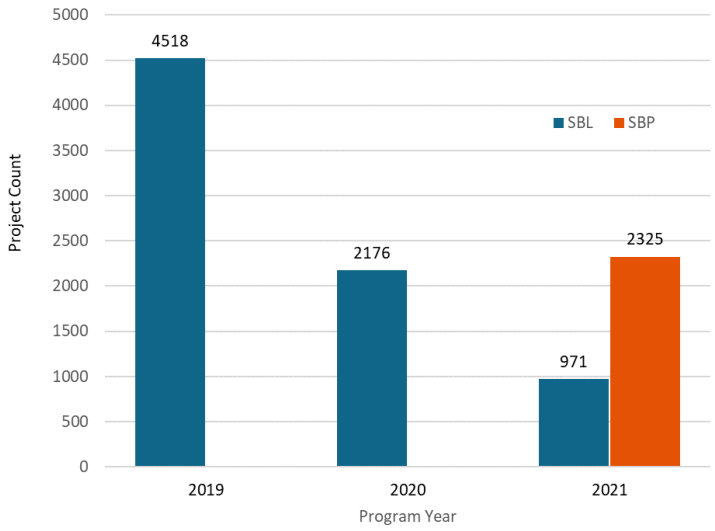
[3] Dunsky. (July 2021). *Non-Energy Benefits: Phase II; Quantified Benefits and Qualitative Insights*. https://www.ieso.ca/-/media/Files/IESO/Document-Library/conservation-reports/Non-Energy-Benefits-Study-Phase-II.ashx

4. Impact Evaluation Results

4.1. Participation

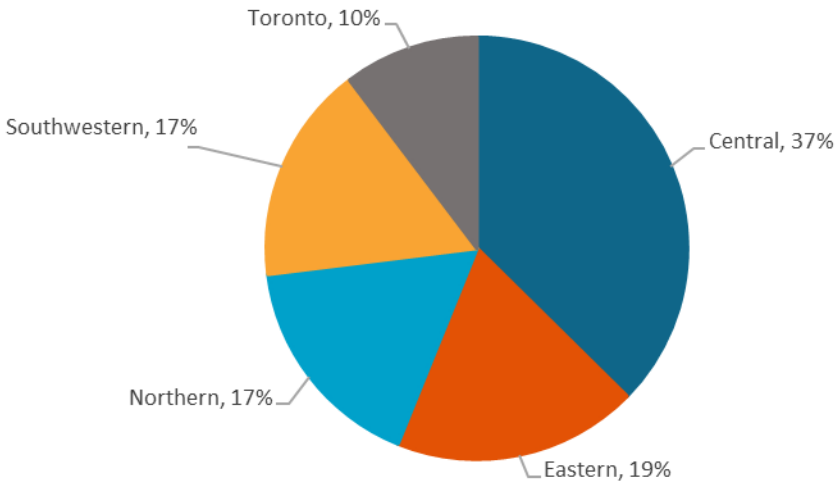
A total of 2325 SBP projects were completed in the province during PY2021. Since this is the first program year of the 2021-2024 CDM Framework SBP, the best comparison of participation is the Interim Framework Small Business Lighting (SBL) program. Figure 4-1 depicts the 2021 SBP participation is higher but comparable to the number of projects completed in the 2020 SBL program. PY2021 was the last year of the SBL program.

Figure 4-1 2021 SBP Participation Compared to SBL



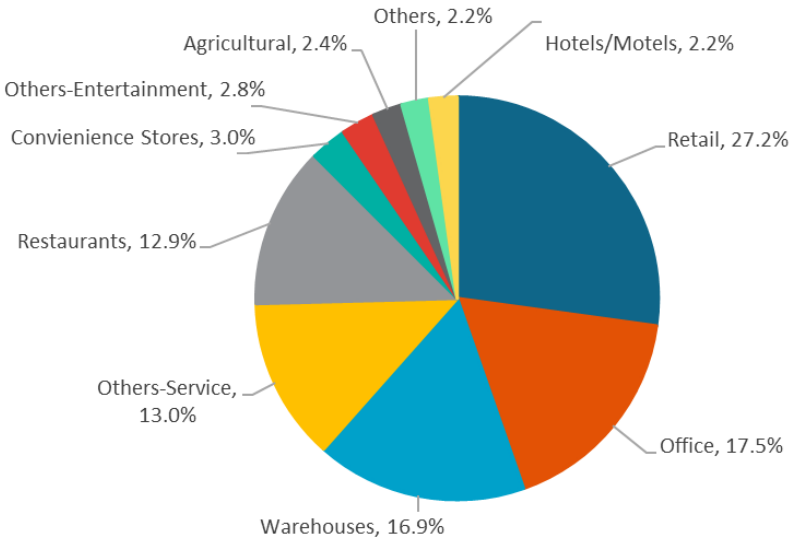
The SBP program database contains postal code information for each completed project, whereby each project was assigned to one of five geographical delivery regions. The Central region is the primary contributor to the SBP projects, accounting for 37% of all completed projects, followed by the Eastern with 19%, the Northern and Southwestern regions both with 17% and the Toronto region with 10%. A list of postal code designation and exact project counts for each region are presented in Appendix H. The full breakout of projects completed in each geographical region is presented in Figure 4-2.

Figure 4-2 SBP Projects Count by Region



The SBP database contained information regarding each completed project's facility type, with a total of 49 unique facility types reported. Each unique entry was re-categorized into one of 10 possible facility types. Unlike the PY2021 SBL program, the PY2021 SBP database had no projects categorized as "unidentified." A full list of the facility types reported in the 2021 SBP program database and their respective re-categorized designation is provided in Appendix H. The Retail sector, followed by Office and Warehouses, contributed the most to the 2021 SBP program accounting for 62% of completed projects. The full project count distribution by identified facility type for the 2021 SBP program is presented in Figure 4-3.

Figure 4-3 Project Count Percentage by Facility Type



4.2. Energy and Demand Savings

The overall impact savings results of the PY2021 SBP Program are presented in Table 4-1. The first-year net verified energy and summer peak demand savings are 13,044 MWh and 1,857 kW, respectively, with 100% of the first-year net verified energy savings persisting until the end of the framework accounting period (2026). Interactive effects and baseline shift adjustment factors have been included in the gross verified savings for applicable lighting measures.

Table 4-1: PY2021 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)*	13,044	12,964	11,592	11,592
Summer Peak Demand (kW)*	1,857	3,632	3,308	3,308

The energy and summer peak demand sample realization rates for the PY 2021 SBP sample are presented in Table 4-2. The program achieved an energy realization rate of 99.38% and a summer peak demand realization rate of 195.56%. The sample results achieved the precision of 10% at the 90% confidence level. A precision of 4.82% was achieved at the 90% confidence level for energy savings.

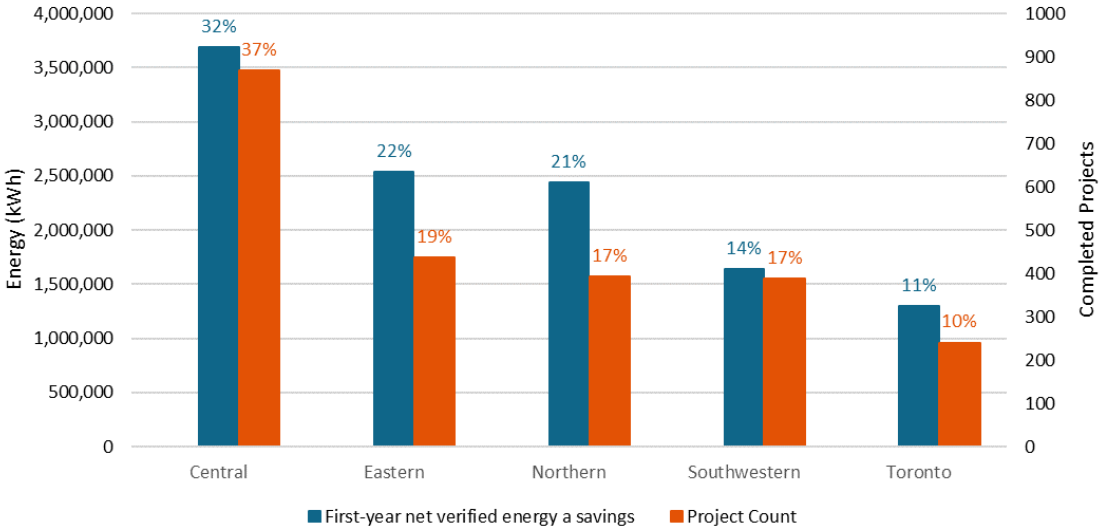
Table 4-2 : PY2021 SBP Sample Realization Rates

Energy Realization Rate	Energy RR Relative Precision	Summer Peak Demand Realization Rate	Demand RR Relative Precision
99.38%	4.82%	195.56%	14.37%

The program realization rates presented in Table 4-2 include the interactive effects that occurred on the HVAC operation as a result of the lighting retrofits. The methodology for calculating the interactive effects is described Appendix A.

Figure 4-4 presents the 2021 SBP first-year net verified energy savings contribution and completed project count by region[4]. The Central and Eastern regions accounted for 56% of the program's net verified energy savings.

Figure 4-4 2021 SBP First-Year Net Verified Energy saving and completed projects by regions



4.3. Impact Evaluation Findings

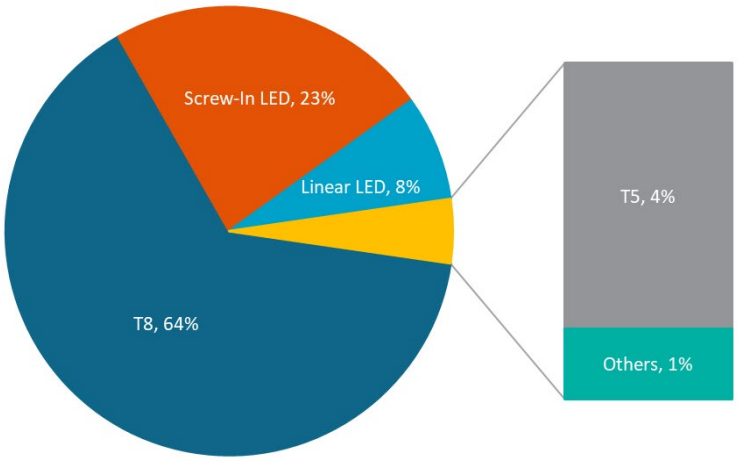
The following sections provide details on the impact findings of the installed measures, the first-year net savings, contribution by measure, types of upgraded facilities, incentives, and program realization rates.

4.3.1. SBP Measure Types

The SBP program's first-year net verified savings in 2021 were produced primarily by T8 Linear LEDs and Screw-in LEDs (specifically LED A-Lamps). These two measures made up 64% and 23% of the total first-year net verified energy savings in 2021, respectively. This trend is consistent with the PY2021 SBL program, where T8 linear LEDs (64%) and screw-in LED lamps (23%) contributed the most to the PY2021 SBL net verified energy savings. The full distribution of energy savings by measure type in the 2021 SBP program is shown in Figure 4-5. Similarly, T8 Linear LEDs and Screw-in LEDs are the two main contributors to the 2021 SBP summer peak demand savings, where they comprised 65% and 23% of the total program net verified summer peak demand savings, respectively (Figure 4-6).

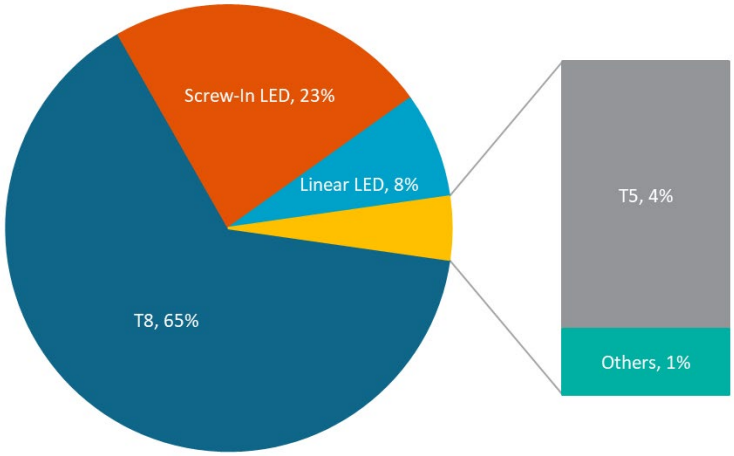
[4] A list of postal code designation and exact project counts for each region are presented in Appendix H.

Figure 4-5 2021 SBP Net Energy Savings Contributions by Measure Type*



*Does not sum to 100% due to rounding.

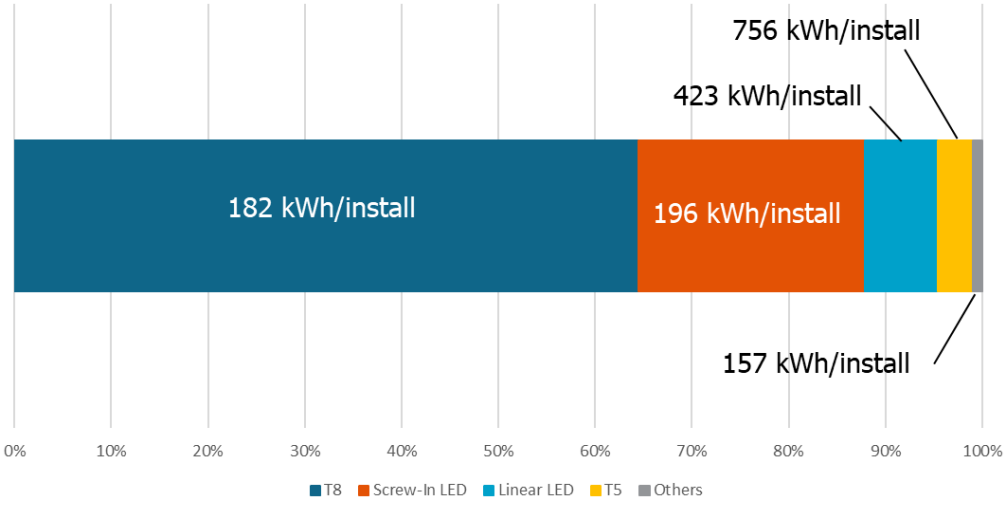
Figure 4-6 2021 SBP Net Summer Peak Demand Savings by Measure Type*



*Does not sum to 100% due to rounding.

A breakdown of the program savings per unit measure installed for the 2021 SBP program is provided in Figure 4-7. T8 installations accounted for 65% of the program's net verified energy savings, with an average savings of 182 kWh per measure. Contrarily, T5 installations accounted for merely 4% of the total program net verified energy savings, though they had the highest energy savings of 756 kWh per measure installed. The "Others" category in Figure 4-7 refers to the mix of the remaining measures that contributed to the SBP program and accounted for less than 1% of the total program energy savings, with an average of 157 kWh per measure. These measures mainly consisted of LED Troffers and exit signs.

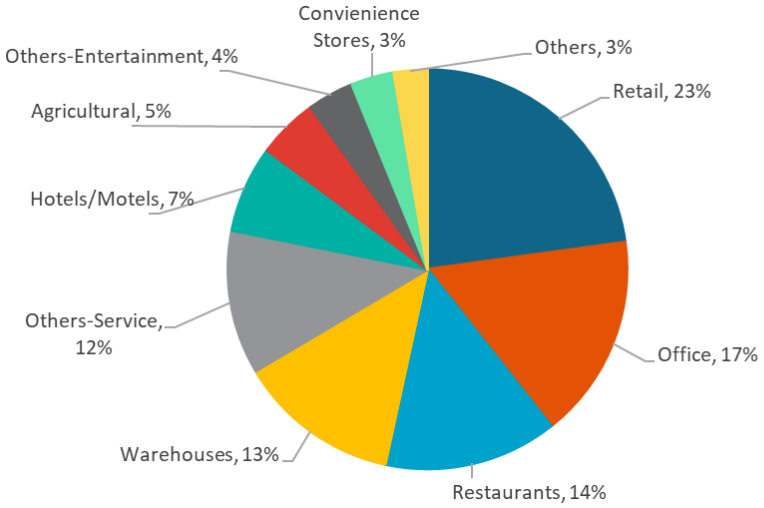
Figure 4-7 2021 SBP per Measure Energy Savings Contribution



4.3.2. SBP Facility Types

The PY2021 SBP database contained the facility type for reported projects. The retail sector accounted for 27% of identified projects in 2021, followed by offices (17%) and restaurants (13%). Consistent with project count contribution, the top contributors to the 2021 SBP program's net verified energy savings were retail facilities (23%), offices (17%) and restaurants (14%) (Figure 4-8). The "others" service category shown in the figure below refers to a mix of facility types such as religious buildings, municipal buildings, police, and fire stations.

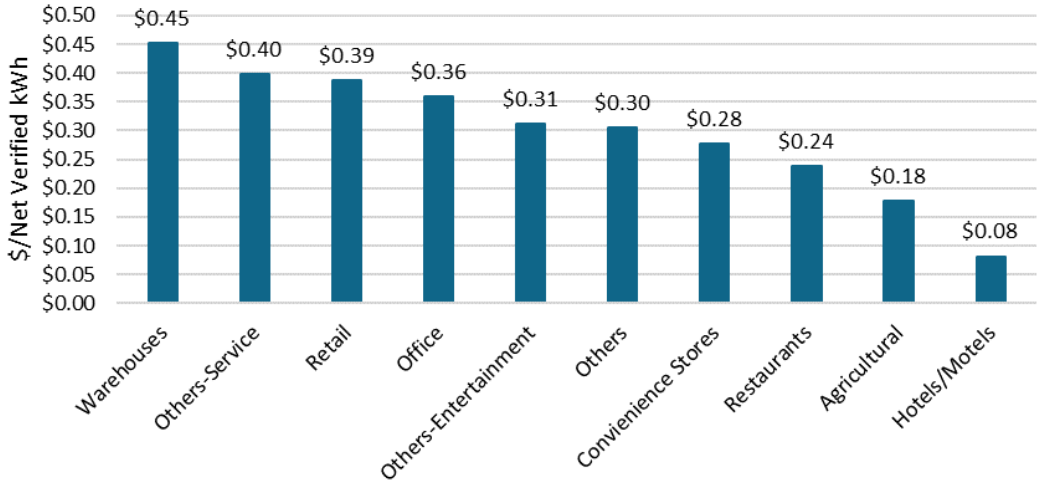
Figure 4-8 2021 SBP Program Net Energy Savings by Facility Type Composition



The implementation cost per kWh of net verified energy savings for the program ranged from $0.08 to $0.45, depending on the facility type, with an average of $0.30 (Figure 4-9). This

cost accounts for the total project cost charged by the delivery agent, including the IESO paid incentive and customer contribution (if any).

Figure 4-9: 2021 SBP Facilities Implementation Cost per kWh



This wide variation in cost is mainly attributed to the different measure types typically suitable and implemented at each facility. The higher costs resulted from installing more Linear LED Tubes, while the lower costs were attributed to installing a higher quantity of screw-in fixtures. For instance, warehouses, which had an average cost of $0.45/kWh, had 60% of their energy savings produced by Linear T8 LED Tubes retrofits. In contrast, hotels/motels, which had an average cost of $0.08/kWh, had 68% of their energy savings achieved from A-lamps replacements. These trends are consistent with PY2019 through the PY2021 SBL program.

4.3.3. Incentive Cap

The current design of the SBP program provides participants with the opportunity to receive up to $2,000 in free lighting upgrades. Participants who wish to install additional qualified equipment above the $2,000 limit are eligible for additional incentives intended to expand the program's impact and reach. The evaluation analysis determined that 88% of the 2021 SBP participants did not exceed the maximum incentive or implement any measures beyond the cap. The average project incentive was $1,518. Only 12% of the participants exceeded the $2,000 limit and paid out-of-pocket to install additional measures, with an average out-of-pocket payment of $739/project.

4.3.4. Realization Rates

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 the verified and reported values across these three main inputs will lead to an adjustment in savings through the realization rate.

Hours of Use

The SBP assessment tool only accepts one schedule for the entire facility. Nine (9) instances were found in the PY2021 sample (n=74), where lighting equipment was installed in multiple spaces with varying schedules. With only one input schedule, assessors tend to input the schedule corresponding to the greatest number of hours a light would operate if varying schedules were observed.

Interactive Effects

The reported savings achieved through the SBP program did not include interactive effects observed on the operation of HVAC equipment through the installation of more efficient lighting fixtures. The verified savings were calculated both with and without these interactive effects. The results of the different calculation methodologies are detailed in Table 4-3. The verified energy savings presented elsewhere in this report include interactive effects.

Table 4-3: Significance of Interactive Effects on 2021 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	13,044.44	94.39%	12,312.14	-	-
Included	13,044.44	99.38%	12,963.56	651.42	-22,606

Summer Peak Demand

The summer peak demand realization rate for the 2021 SBP program is 195.56%. The high summer peak demand realization rate is mainly due to the reported demand saving relying on a predetermined factor that is used in conjunction with the reported energy savings (i.e. EM&V factor). This factor seems to be conservative and is underestimating the summer peak demand savings. Additionally, the reported demand savings do not include interactive effects, while the verified summer peak demand savings accounted for these effects.

Table 4-4 presents the verified summer peak demand savings both with and without these interactive effects.

Table 4-4: Significance of Interactive Effects on 2021 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	1857	166.72%	3097	-
Included	1857	195.56%	3632	535

4.4. Net-to-Gross (NTG)

Table 4-5 presents the results of the 2021 SBP NTG evaluation. The evaluation targeted and achieved 90% confidence and 10% precision levels when calculating the NTG ratio for this program. Participant feedback indicates moderate levels of FR at 13.5%, which indicates the program generally reaches the participants who would not have implemented lighting upgrades without the program.

Almost two-thirds (65%) of participants were not planning on upgrading their lighting before learning about the program. Of the nearly one-third (31%) of respondents already planning on upgrading their lighting, over two-fifths (44%) of respondents would have waited at least one year without the program, almost one-fifth (18%) would have installed less expensive or less efficient lighting, and few (3%) would have cancelled the project altogether. One-fourth (24%) of respondents would have installed the same lighting and paid for the full cost themselves, which is indicative of some level of FR for these respondents. Participation in the program resulted in a moderate SO at 2.9%, with around one-tenth (9%) of respondents installing equipment with attributable SO savings. Additional analyses performed to assist in the interpretation of these values can be found in Appendix D.2.

Table 4-5: SBP Program Net-to-Gross Results

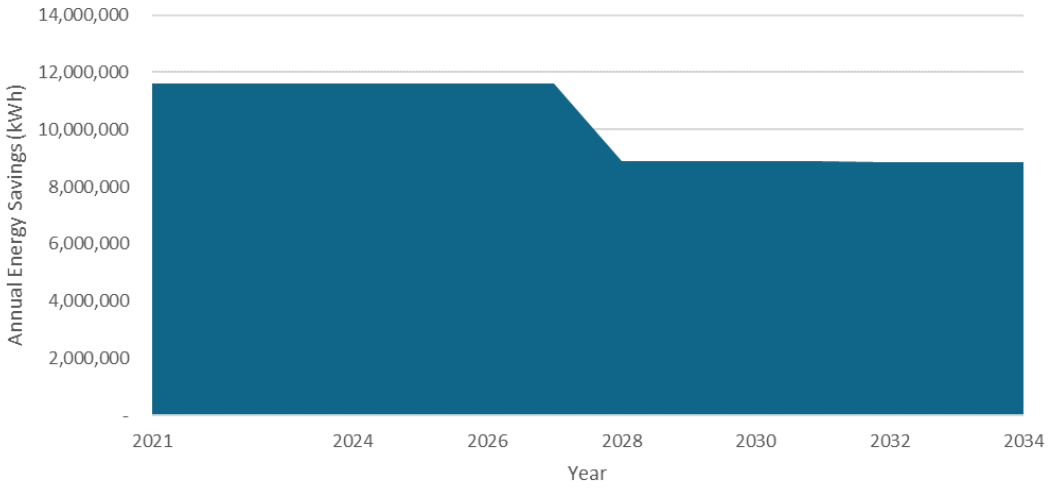
Unique Participants	NTG Responses	Savings Weighted Free-Ridership	Spillover – Energy	Spillover – Summer Demand	Weighted Net-to-Gross – Energy	Weighted Net-to-Gross – Summer Demand	Energy NTG Precision at 90% Confidence
819	183	13.5%	2.9%	4.5%	89.4%	91.1%	±7.6%

4.5. Savings Persistence

The 2021 SBP program is expected to achieve 143,195 MWh of lifetime net verified energy savings based on the installed measures and their respective effective useful lives (EULs). The lifetime savings of the SBP program depend mainly on the effective useful lives (EULs) of the SBP measures, which describe how long the savings associated with the measure will persist. The IESO's list of eligible SBP measures provides an estimated rated lifespan in hours for each measure. The rated life and assumed hours of use (HOU) are used to calculate each measure's EUL. For example, the average rated life of a Linear LED Tube is

50,000 hours, and its assumed average HOU is 3,700 hours annually, leading to a calculated EUL of 13.5 years (50,000 hours /3,700 hours). Figure 4-10 illustrates the annual net verified energy savings of the 2021 SBP program over time. The shortest EUL for the 2021 SBP measures is seven years, and over 77% of the first-year net verified savings have a EUL of 14 years and will persist until 2034.

Figure 4-10 Net Verified Energy Savings over Time



4.6. Cost Effectiveness

A cost-effectiveness (CE) for the SBP was conducted using IESO's CE Tool V9.1. The CE results are presented in Table 4-6. The SBP achieved a PAC ratio of 1.19 and exceeded the target threshold of 1.00 set to determine if a program is cost-effective.

Table 4-6: SBP Cost Effectiveness Results

Program Administrator Cost (PAC) Test	Result
PAC Costs ($)	$4,236,674
PAC Benefits ($)	$5,043,319
PAC Net Benefits ($)	$806,645
PAC Net Benefit (Ratio)	1.19
Levelized Unit Energy Cost (LUEC)	**Result**
$/kWh	$0.04
$/kW	$139.75

5. Process Evaluation Results

A process evaluation was performed to better understand the design and delivery of SBP. The IESO program staff and delivery vendor interviews as well as assessor, installer, and participant surveys were utilized to gather primary data to support this evaluation. In the sections below, counts are shown rather than percentages if the number of respondents to a question is under 20. The 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 the IESO program staff IDIs include the following:

- The IESO staff indicated that the program's delivery went well in 2021 despite the challenges associated with COVID-19. They noted the delivery vendor effectively engaged eligible customers, providing consistent and reliable customer support.
- The IESO staff noted that rising equipment costs and a changing mix of measures eligible for the program had influenced the cost-effectiveness of the program. Considering the addition of a customer co-pay option was recommended as a potential way to open the program up to additional measure offerings.
- Delivery vendor staff noted that program incentives have not risen in recent years to help offset the rising equipment, fuel, and installation costs associated with completing program projects.
- Electrical Safety Authority (ESA) fees were identified by both the IESO staff and delivery vendor staff as a challenge in 2021. Ensuring that these fees are identified by the assessors and communicated upfront before work orders are signed was recommended by both the IESO and delivery vendor staff.
- Identifying ways in which smaller industrial customers may be better served by this program or similar direct install programs was also recommended for further consideration by the IESO staff.

5.1.2. Design and Delivery

The IESO staff reported that the program met their expectations in 2021 despite the ongoing pandemic and the program not meeting its savings targets for the year. They indicated that the program continued to attract interest from the market, and the delivery vendor responded well despite the ongoing COVID-related issues. The IESO and the delivery vendor had routine touchpoints to receive updates and feedback on any pain points. The IESO staff indicated that they worked collaboratively with the vendor to address any opportunities or challenges as they arose.

The program's primary goal, as reported by the IESO staff, was to target small businesses and achieve deep savings for them. An additional program goal is ensuring the ease of participation in the program.

As in prior years, the program's assessors were employed directly by the delivery vendor. The program's installers were typically local, independent firms contracted by the delivery vendor to complete the lighting installations. The delivery vendor was responsible for all onboarding, assessor and installer training, and ongoing communications with assessors and installers regarding program updates. The delivery vendor staff reported that most of the assessors and installers had participated in the program in prior years and that the process of delivering the program with them went smoothly overall.

5.1.3. Customer Engagement

While the program vendor was primarily tasked with marketing the program, it was also promoted by the IESO through the Save on Energy website, which received updates to its small business page in 2021. Additionally, the IESO performed limited social media outreach in 2021, which led to increased customer inquiries in the program, according to the delivery vendor. The IESO staff indicated that customer satisfaction with the program was very high in 2021, as measured by the IESO's customer satisfaction surveys. The IESO staff also indicated that if customers were dissatisfied with the work completed through the program, a communication channel was in place to allow them to contact the vendor or installer to find replacement products or to determine if their products could be repaired or replaced under warranty. The IESO staff also indicated that they worked closely with the delivery vendor to encourage contractors to confirm that the installations meet customer needs before leaving customer sites.

5.1.4. Barriers and Opportunities

The IESO and delivery vendor staff indicated that the main barriers to the program in 2021 were COVID-19, related lockdowns and provincial health and safety requirements. To help address these barriers, given that the program's design involves direct installations at customer sites, they worked closely with the delivery vendor to ensure safety was the top priority. During lockdowns, the delivery vendor also established a waitlist of customers, noting that the lockdowns were often the busiest period of inbound customer inquiries. Once restrictions were lifted, the delivery vendor reached out to those on the waitlist. While many customers were still engaged with the program, others were no longer interested or could not participate given shifting priorities. Despite these challenges, the IESO program staff stated that the delivery vendor effectively communicated with and set expectations with customers to ensure that as many customers as possible were retained as program participants.

The IESO and delivery vendor staff stated that the program is limited in terms of the measures it can make available to customers. The program also needs to adhere to cost-effectiveness targets and energy-savings priorities. The IESO staff noted that rising equipment costs and a changing mix of eligible measures had influenced the program's

cost-effectiveness. One IESO staff member stated that if a customer co-pay were to be considered, it might open the program up to additional measure offerings. The IESO staff noted that while there may be some measures the program cannot offer, it does offer a wide array of equipment that customers have reported satisfaction with. The delivery vendor staff reiterated that it could be challenging to meet customer needs, especially if the funding available is insufficient to complete the project the customer has in mind. Additionally, the delivery vendor staff noted that program incentives have not risen in recent years to help offset the rising equipment, fuel, and installation costs associated with completing program projects.

The IESO staff also identified unexpected fees, specifically those from the Electrical Safety Authority (ESA), as a challenge in 2021. ESA fees, which are associated with installing certain types of eligible measures, sometimes arose after the work orders were signed. While the program often covered ESA fees, they were not always, and in some instances, the customer was not made aware of the fees until the installation occurred. The IESO staff acknowledged the challenges with identifying these fees up front, but there is an opportunity to both ensure the assessors have the knowledge to do so before work orders are signed and to ensure they are communicating about them with contractors and customers.

The IESO staff recommended considering ways in which smaller industrial customers may be better served by this program or similar direct install programs. For example, they noted that certain equipment types, such as air compressors, do not qualify for the program but could potentially work well as part of a direct-install program model.

5.2. Assessor and Installer Perspectives

The following subsections highlight the feedback received from the assessor and installer survey. Additional results can be found in Appendix D.1.

5.2.1. Key Findings

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

- Many respondents received program training via webinars or online instruction (seven out of fifteen), through responses to questions (five out of fifteen), or one-on-one instruction from the vendor (five out of fifteen).
- Most respondents (ten out of fifteen) indicated that customers participated in the program after being informed by the program delivery vendor.
- Customers' lack of awareness of the program and the perception of upgrades not being worth the trouble of participating were cited as reasons that prevented more customers from participating (mentioned by five respondents each).
- The most common suggestion to address barriers to participation was to increase the marketing of the program (mentioned by five respondents).

- Most respondents (nine of fifteen) noted that the incentive cap had reduced the scope of some of their customers' projects, and one reported it had reduced the scope of all their customers' projects.
- On average, respondents assigned an overall program satisfaction rating of 4.1 on a scale from one (1) to five (5), where one indicates "not satisfied at all" and five indicates "extremely satisfied."
- Some program improvement recommendations included hiring quality assessors, reducing the reimbursement time for contractors, more in-person training, and making worksheets simpler (mentioned by one respondent each).

5.2.2. Training and Education

Respondents were asked what form of training or education they had received related to the program in 2021. Most respondents (seven out of fifteen) received training and education via a webinar or other online instruction. Others received training through responses to inquiries from the program delivery vendor or the IESO (five respondents) and one-on-one in-person instruction from the program delivery vendor (five respondents). A full list of these training and education types can be found in Table D-4 in Appendix D.1

The twelve respondents who indicated they had received program training were asked what topics had been addressed in the training. Nearly all respondents (eleven out of twelve) had received information on the program rules, and many others received information on program offerings (nine respondents). A full list of these training and education topics covered can be found in Table D-5 in Appendix D.1

All respondents were asked what additional training or education topics would be helpful to support their work in the future. Respondents' most common topic suggestion was marketing and outreach techniques to better promote the program to customers (six respondents). A full list of these recommended training and education topics can be found in Table D-6 in Appendix D.1.

5.2.3. Customer Participation

Most respondents indicated that customers most commonly participated in the program after being informed by the program delivery vendor (ten out of fifteen respondents). Table D-7 in Appendix D.1 contains a comprehensive summary of the most typical methods customers came to participate.

Respondents were asked what barriers prevented customers from participating in the program. The most common barriers reported by five respondents each were customers being unaware of the program and customers deeming the upgrades not worth the trouble of participating. A full list of barriers to participation can be found in Table D-8 in Appendix D.1.

The nine respondents who had identified barriers to participation were asked how the program could address them. The most common suggestion increasing program marketing (mentioned by five respondents). Specific marketing suggestions included: providing information sheets to distribute to businesses, social media outreach, bill inserts, and more advertising by mail or radio. Other suggestions, mentioned by one respondent each, included: more customer education, sharing long-term savings data and testimonials from previous participants, direct promotion from the IESO, providing more options for lighting products, providing eligible contractor lists for customers to reference, and hiring more program assessors. A full list of suggestions to overcome barriers to participation can be found in Table D-9 in Appendix D.1.

All respondents were asked if participants could typically install all the lighting types of interest to them through the program. Ten respondents reported that participants had been able to install the lighting products of interest to them. Three respondents reported that participants had not been able to install all lighting products of interest to them through the program, and two did not recall. As a follow-up, respondents were asked what types of lighting equipment or models participants had been interested in but could not install through the program. The three respondents to this question stated that some participants had been interested in exterior lighting but had not been able to install it since it is ineligible through the program.

5.2.4. Project Incentive Cap Impacts

Respondents were asked how the $2,000 project incentive cap impacted how their customers could participate in the program, if at all. Most respondents (nine of fifteen) noted that the incentive cap had reduced the scope of *some* of their customers' projects, and one reported it had reduced the scope of *all* their customers' projects. Two respondents noted that the incentive cap increased the scope of *some* of their customers' projects, and two felt it had had no impact at all on customer participation. A full list of ways the incentive cap impacts customer projects can be found in Table D-10 in Appendix D.1.

Respondents who reported that the incentive cap reduced the scope of some or all of their customers' projects were asked to specify the percentage of scope reductions. Of these ten respondents, one-half (5 respondents) reported a scope reduction of 26% or more. A full list of the feedback provided regarding the reduction in project scope can be found in Table D-11 in Appendix D.1.

Respondents were asked if any participants had installed additional energy-efficient equipment upgrades that exceeded the project incentive cap. The majority (eleven out of fifteen) indicated that participants had installed additional energy-efficient equipment upgrades. Full detail regarding this feedback can be found in Table D-12 in Appendix D.1.

The 11 respondents who indicated that participants had installed additional energy-efficient equipment upgrades that exceeded the project incentive cap were asked to describe the upgrades. Additional lighting fixtures were mentioned most frequently (seven respondents). A full list of these additional upgrades can be found in Table D-13 in Appendix D.1.

These same 11 respondents were also asked why they thought some participants had decided to install the additional upgrades that exceeded the project incentive cap. Most respondents (six out of eleven) indicated that the incentive cap was insufficient to complete the project, and four respondents indicated that participants felt the energy or monetary savings justified the additional cost. A full list of these additional upgrades can be found in Table D-14 in Appendix D.1.

All respondents were asked if any participants had completed projects that did not reach the project incentive cap of $2,000. Most respondents (ten out of fifteen) indicated that participants completed projects that had not reached the incentive cap, and three respondents indicated participants had not. Full detail regarding this feedback can be found in Table D-15 in Appendix D.1.

The ten respondents who indicated that some participants had completed projects that did not reach the incentive cap were asked why they thought these projects had not reached the cap. Reasons varied, with the most common being that the customer did not need to install additional energy-efficient equipment (three respondents). A full list of these reasons can be found in Table D-16 in Appendix D.1.

5.2.5. Program Satisfaction

Respondents provided feedback on their level of satisfaction with various program aspects. They rated each aspect on a scale from one (1) to five (5), where one indicates "not at all satisfied" and five indicates "extremely satisfied" (Table 5-1). Overall, respondents were very satisfied with the program, giving it an average satisfaction rating of 4.1. When rating specific aspects of the program, respondents assigned the highest average satisfaction rating to the interactions that they had with program representatives from either the delivery vendor (4.6) or the IESO (4.5) and to the program website (4.3). On average, respondents assigned the lowest satisfaction ratings to the number and types of equipment incentivized through the program (3.9) and program training and education (3.9).

Table 5-1: Satisfaction with Aspects of the Program (n=15)

Program Aspects	Average Satisfaction Rating
The program overall	4.1
The interactions you had with any program representatives from the delivery vendor	4.6
The interactions you had with any program representatives from the IESO	4.5
The program website	4.3
Program worksheets and materials	4.1
The value that the equipment covered by the program provides to customers	4.1
Program marketing and outreach	4.1
Program application process and forms	4.0

Program Aspects	Average Satisfaction Rating
Number and types of equipment incentivized through the program	3.9
Program training and education received	3.9

5.2.6. Program Improvement Recommendations

Respondents were asked to recommend areas of improvement for the program. The six respondents who provided recommendations mentioned a variety of responses, with each mentioning one suggestion. Some suggestions included hiring quality assessors (reported by contractors), paying installers more, and reducing the reimbursement time for installers. A full list of these recommendations can be found in Table D-17 in Appendix D.1.

Respondents were asked to recommend additional lighting equipment or models for inclusion in the program in future years. Of the ten respondents who provided a response, most cited exterior lighting (seven respondents). A full list of these recommendations can be found in Table D-18 in Appendix D.1.

5.3. Participant Perspectives

The following subsections highlight the feedback received from the participant survey. Additional results can be found in Appendix D.3.

5.3.1. Key Findings

Key findings from participants' responses include the following:

- The majority of survey respondents had no suggestions for improving the initial site assessment (76%), the installer visit(s) (69%), or the overall installation process (87%). This suggests a high level of satisfaction with the program.
- Of those with suggestions for improving the site assessment, installer visit(s), or the overall installation process, the most common suggestions were to reduce the time it takes to complete the visits, provide more flexibility and communication in scheduling the visits, and improve the Save On Energy representatives' professionalism and transparency.
- Close to one-fifth (19%) of respondents provided lighting equipment recommendations (e.g., exterior lighting, outdoor business signs) and over one-seventh (15%) provided non-lighting equipment recommendations (e.g., HVAC, water heating).

- Of the over one-tenth (12%) of respondents with additional recommendations, the most common were to increase incentives (25%) and to offer additional marketing and outreach beyond the door-to-door visits (25%).
- More than one-seventh (15%) of respondents stated they installed additional energy-efficient equipment upgrades following their participation in the program, and of those respondents, more than one-third (35%) stated the upgrades were recommended to them by a Save on Energy representative.

5.3.2. Site Visit Improvement Suggestions

Initial Site Assessment Visits

Over three-fourths (76%) of respondents had no suggestions for improving the initial site assessment visit, indicating that the majority were satisfied with the work done by the Save On Energy representative who performed the initial site assessment visit. Of the nearly one-fourth (24%) who had a suggestion, the most common responses were to reduce the time it takes to complete the assessment (46%) and more flexibility in scheduling the assessment (17%). A full list of these improvement suggestions can be found in Figure 7-14 in Appendix D.3.

The respondents who suggested improving the professionalism of the Save on Energy representative who performed the initial site assessment suggested the following:

- Increase the transparency about the work performed (2 respondents)
- Be more responsive to questions or concerns (2 respondents)
- Respect for the company's time (1 respondent)

Installation Visits

Almost two-thirds (69%) of respondents did not have suggestions for improving installation visits, indicating that a large majority were satisfied with the work performed by the Save On Energy representative who performed the installation visit. Of the nearly one-third (31%) of respondents who had a suggestion, the most common suggestions were to reduce the time it takes to complete the visit(s) (35%) and provide greater flexibility when scheduling the visit(s) (26%). A full list of these improvement suggestions can be found in Figure 7-15 in Appendix D.3.

Participants who suggested improvements to the professionalism of the Save On Energy representative who performed the installation visit mentioned the following:

- Politeness/business etiquette (2 respondents)
- Increase transparency about the work performed (2 respondents)
- Respect for their company's time during the visit (1 respondent)
- Respect for their company's business practices during the visit (1 respondent)
- Responsiveness to questions or concerns (1 respondent)

Overall Installation Process

Over four-fifths (87%) of respondents did not have suggestions for improving the overall installation process, indicating a high level of satisfaction with the program. A wide variety of respondents were provided by one-tenth (13%) of respondents who had suggestions, with the most common suggestions being to improve scheduling communications (26%) and to increase the transparency about the work performed, including additional installation costs that may be incurred (e.g., lift rental). A full list of these improvement suggestions can be found in Table D-26 in Appendix D.3.

5.3.3. Recommended Equipment and Services

Respondents were asked to recommend equipment or services for inclusion in the program in future years. Close to one-fifth (19%) of respondents provided lighting equipment recommendations, and over one-seventh (15%) provided non-lighting equipment recommendations. Of the respondents who recommended lighting equipment, the most common were exterior lights (e.g., security, parking, perimeter) (33%) and outdoor business signs (24%). A full list of these additional lighting equipment recommendations can be found in Figure 7-16 in Appendix D.3.

The most common equipment recommended by respondents who recommended non-lighting equipment and services were HVAC and water heating (52%), followed by air sealing and insulation (20%). A full list of these additional non-lighting equipment recommendations can be found in Figure 7-17 in Appendix D.3.

5.3.4. Overall Program Recommendations

Respondents were asked to provide improvement recommendations for the program overall. Of the over one-tenth (12%) respondents with additional recommendations, the most common were to increase incentives (25%), to offer additional marketing and outreach beyond the door-to-door visits to help reduce skepticism over the legitimacy of the program (25%), and to offer customers an option of purchasing additional lighting beyond what is covered by the program at reduced costs (15%). A full list of these overall program recommendations can be found in Table D-27 in Appendix D.3.

5.3.5. Additional Energy-Efficient Upgrades

More than one-seventh (14%) of respondents reported installing additional energy-efficient equipment upgrades after participating in the program. The most common reasons they provided for installing these upgrades without the assistance of the program were that the additional upgrades did not qualify for the program (35%), the energy or monetary savings justified the costs (27%), and the incentive cap was not sufficient to complete the project (15%). More than one-third (35%) of respondents who installed additional equipment upgrades stated they were recommended by a Save on Energy representative. A full list of these reasons can be found in Figure 7-18 in Appendix D.3.

Over four-fifths (83%) of respondents reported that they did not install additional energy-efficient equipment upgrades following their participation in the program. The most common reasons they provided for not installing additional energy-efficient equipment upgrades were that they did not need to install additional upgrades (40%), the $2,000 program incentive cap was not sufficient to cover the additional upgrades (23%), or the equipment types they were interested in were not offered through the program (9%). A full list of these reasons can be found in Figure 7-19 in Appendix D.3.

6. Other Energy-Efficiency Benefits

6.1. Avoided Greenhouse Gas Emissions

The evaluation team used the IESO CE Tool V9.1 to calculate the avoided GHG emissions for the first year and lifetime savings of the measures in the 2021 program year. Table 6-1 below represents the results of the avoided GHG emissions calculations. The first-year avoided GHG resulting from electricity savings are offset by the increase in GHG consumption due to the gas penalty, resulting in -14.03 Tonnes of CO_2 in 2021. However, the PY2021 SBP is expected to achieve a total of 10,847.28 Tonnes of avoided GHG throughout the EUL of the installed measures. This is mainly due to the IESO estimates of the future avoided GHG in Ontario, where avoided future electricity consumption is estimated to have higher GHG reduction, while the GHG increase due to gas penalty is estimated to remain consistent. All GHG emissions below are in Tonnes of CO_2 equivalent, unless otherwise mentioned.

Table 6-1: 2021 SBP Avoided Greenhouse Gas 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
1,253.61	(1,267.64)	(14.03)	26,506.38	(15,659.10)	10,847.28

*Interactive gas penalty

6.2. Non-Energy Benefits

The following subsection discusses the non-energy benefits (NEBs) of the Small Business Lighting Program in PY2021. Additional detail regarding the NEBs methodology and results can be found in Appendix G. Please note that the PY2021 NEB results are presented in this section for informational purposes only. The team used the Phase II study NEBs values within the PY2021 Cost Effectiveness calculator rather than the PY2021 NEBs study values per IESO request. This will allow the team to collect additional NEBs data in future evaluation years.

6.2.1. Key Findings

Key findings from the NEBs analysis include the following:

- Using the **hybrid minimum approach**, the PY2021 NEBs value for reduced building and equipment O&M was $0.13/kWh.

6.2.2. Quantified NEBs Values

The PY2021 SBP participant survey included 29 participants who had experienced non-energy benefits from the measures installed through the program. The participant survey asked about participant experiences with one NEB:

- **Reduced building and equipment operations & maintenance (O&M):** Reduced labour or other costs associated with reduced operations and maintenance to maintain building systems.

Table 6-2 presents quantified NEBs values for Phase II and PY2021 based on the hybrid, minimum ($/kWh) valuation, the approach recommended by the Phase II study.[5] Note that quantified NEBs from the Phase II study combined participants from the small business lighting and retrofit programs, yet the PY2021 results only included small business lighting program participants.

Reduced building and equipment O&M NEB was valued at ($0.13/kWh) by SBP participants in PY2021. This feedback corresponds to the NEBs contractors reported their customers might have experienced due to their participation in SBP. Five of the nine respondents indicated that their customers experienced reduced building and equipment O&M. A comprehensive list of all contractor feedback associated with the NEBs can be found in Table G-2 in Appendix G.

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

NEB	PY2021 (SBP Only)	Phase II (Retrofit & SBP)
Reduced building and equipment O&M	$0.13	$0.08

The Phase II study found that program participants placed significant value on NEBs. In many cases, the value of the NEBs exceeded the value of the participants' energy savings. This was also the case in PY2021, with most respondents reporting NEBs having an equal or higher value on an annual basis than the amount of their electricity bill or savings. Furthermore, when asked if they had to pay for a certain benefit, independently from the energy savings, more than one-third (36%) were prepared to pay an equal or higher value per year than the amount of their electricity bill or savings. This highlights that factors beyond energy savings may motivate participation in energy efficiency or contribute to positive customer experiences with programs.

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

6.3. Job Impacts

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

6.3.1. Key Findings

Key findings from the PY21 Jobs Impacts approach include the following:

- The analysis used an input-output model, which estimated that SBP will create 131 total jobs in Canada, of which 116 will be in Ontario.
- $1M of program investment resulted in the creation of 31 jobs, compared to 30 jobs per $1M in PY21 SBL.
- 11 out of 131 (8%) of jobs impacts were realized in the first year – 7 of the 11 first-year jobs impacts were due to first-year savings.

6.3.2. Input Values

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 6-3 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).

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

Category Description	Non-Labour ($ Thousands)	Labour ($ Thousands)	Total Demand Shock($ Thousands)
Lighting Fixtures	1,844	1,635	3,479
Electric Light Bulbs and Tubes	186	165	351
Subtotal	**2,029**	**1,800**	**3,829**
Office Administrative Services	-	-	709
Total			**4,538**

The second shock modelled by the IO Model was the business reinvestment shock. This shock represented the amount businesses would reinvest and thus inject back into the economy. This amount was split over various industries to properly model the demand shock. The business reinvestment shock totalled $14.2 million over 27 different industries. More detail on the business reinvestment shock, along with the reinvestment values by industry, can be found in Appendix F.

The third model input is the household expenditure shock.[6] 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 $4.2M program budget or $1.5M.

6.3.3. Model Results

Impacts from the StatCan I-O model are generated separately for each shock and added together to calculate overall program job impacts. In the case of SBP, three different sets of job impacts are combined into the overall job impacts. Table 6-4 presents the total estimated job impacts by type – combining the impacts from the demand, business reinvestment and household expenditure shocks. The majority (116 out of the 131 estimated total jobs) were in Ontario. Of the 69 direct jobs created across Canada, 65 were created in Ontario. A slightly smaller proportion of the indirect and induced jobs were in Ontario; 24 out of 31 indirect jobs and 26 of 31 induced jobs were estimated to be created within the province for both categories. The FTE estimates were slightly lower overall than the total jobs, with a total of 96 FTEs (of all types) created in Ontario and 108 FTEs added nationwide. Almost all direct FTEs (56 of 60) were added in Ontario, representing approximately 58% of the total FTEs added in Ontario, and 54% of all FTEs created across Canada. In 2021, each $1M of the program spent resulted in creating 30.9 total jobs.

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

Table 6-4: Total Job Impacts by Type

Job Impact Type	Ontario FTE (In Person-Years)	Total FTE (In Person-Years)	Ontario Total Jobs (In Person-Years)	Total Total Jobs (In Person-Years)	Total Jobs per $1M Investment (In Person-Years)
Direct	56	60	65	69	16.2
Indirect	20	24	24	31	7.3
Induced	19	24	26	31	7.4
Total[1]	**96**	**108**	**116**	**131**	**30.9**

[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.

A more detailed write up of the model impacts – including a breakout of impacts by industry, impacts due to first-year savings and verbatims from program contractors – can be found in Appendix F.

7. Key Findings and Recommendations

Finding 1. Reported Peak Demand Savings – Coincidence Factors (CF). The SBP reported peak demand savings seem to be calculated based on a predetermined coincidence factor (CFs). This is an improvement from previous years (i.e., the SBL program) where connected demand was reported instead of actual peak demand. However, the CFs used seem conservative, resulting in a high demand realization rate (198%).

- **Recommendation 1.** It is recommended to further review and update the CFs used to report the peak demand savings to better align with evaluation results. Another approach that would result in high accuracy of reported peak demand is using the facility's actual HOU to determine project specific CF. The SBP Assessment Tool collects the actual hours of operation data for each assessed facility. These hours can be utilized to calculate the corresponding portion of the change in the connected load that occurred during the peak window, or CF of each project. This would help to correctly report summer peak demand savings.

Finding 2 Improved Baseline and Retrofit Photos. Assessors and installers of the 2021 SBP submitted photos of the pre-existing baseline and retrofitted fixtures and lamps. These photos are critical when verifying the baseline and retrofit conditions. In most cases, the photos submitted were taken from wide angles and a few feet away, which do not provide useful information about the lamp wattage or type. There were a few instances where the photos captured enough detail of the lamps or fixtures to definitively determine the wattages. This is consistent with previous observations from the previous iteration of the Small Business Lighting (SBL) program, where photos did not provide sufficient information to determine the technical specifications of the removed and new fixtures/lights.

- **Recommendation 2** As previously recommended for the SBL program, it is recommended to specify what information should be captured in the pre-retrofit and post-retrofit pictures that are taken by the SBL assessors/installers. Specifying that pictures of the replaced equipment should capture the wattage of the lamps and, if applicable, the type of ballast. This is specifically critical for direct install programs. The participants of such programs often do not possess/provide sufficient information regarding the baseline and retrofit equipment. The photos collected by the program delivery vendor would help provide the data required for evaluation.

Finding 3 SBP Reporting and Tracking (Measure-Level Cost). Consistent with the previous iterations of the SBL program, the SBP reporting database is structured into two sets of data; one for projects' high-level information such as the address, contact information and business type. The other set is for measures' information which details key aspects of the individual measures included within each project, such as quantity and type of equipment installed. Currently, cost data is reported at the project level, and no measure-level information is available.

- **Recommendation 3** As previously recommended for the SBL program, along with measure-specific energy and demand savings, and incentive data, it is recommended to report separate cost values for each measure, as opposed to reporting project-level cost. Access to such information will increase the evaluator's visibility into the program's performance and allow the evaluator to run various analyses regarding the cost-effectiveness and performance of implemented measure types.

Finding 4. Many participants who were recommended additional lighting upgrades beyond the project cost cap made those upgrades. Over one-tenth (14%) of participants reported installing additional energy-efficient equipment for which they did not receive an incentive following their participation in the program. Of those, more than one-third (35%) stated the upgrades were recommended to them by their assessors or installers. Participants who installed additional lighting upgrades did so because the additional equipment did not qualify for the program (35%), the energy or monetary savings justified the additional cost (27%), or the incentive cap was not sufficient to complete the project (15%). Some participants who did not install additional lighting beyond the project cost cap stated they did not do so as the cap was not sufficient to cover the additional upgrades (23%) or the equipment types they were interested in were not offered through the program (9%).

- **Recommendation 4** When applicable, it is recommended to encourage assessors and installers to offer additional lighting upgrades to participants beyond those available through the program. In addition, helping interested participants identify ways to complete the work, either by installing the additional equipment at the time of participation or by providing them with a recommended equipment list to consider installing in the future.

Please note that a similar recommendation to Recommendation 4 was included in the PY2020 evaluation as well. In response to the recommendation in PY2020, the IESO indicated they will continue to work with the program delivery vendors to ensure installations are completed effectively and with the right supply of eligible measures. Given that similar feedback was shared as part of the PY2021 evaluation, a similar recommendation has been provided again to ensure that it is carefully considered in future program years.

Finding 5. Expanding the scope of lighting offerings was a common improvement suggestion. Assessors and installers were least satisfied with the number and types of equipment incentivized (rating of 3.9 on a scale of one (1) to five (5) where, where one indicates "not satisfied at all" and five indicates "extremely satisfied"). Assessors, installers, and participants most often recommended including exterior lighting and signage offerings. Incentivizing fixtures upgrades, LED panels, and UV lighting were mentioned with less frequency. Both IESO staff and delivery vendor staff noted that, while the program offers a wide variety of measures to customers, it must also adhere to cost-effectiveness targets and demand-saving priorities.

- **Recommendation 5a.** Explore the feasibility of including more lighting products that align with program goals and cost-effectiveness targets.

- **Recommendation 5b.** Explore the feasibility of offering a customer co-pay option to expand the scope of customer projects.

Please note that a similar recommendation to Recommendation 5a was included in the PY2020 evaluation as well. In response to the recommendation in PY2020, the IESO indicated they would continue to evaluate and update the program offerings to include measures that deliver cost-effective savings and support the needs of small businesses. They also noted that eligible businesses would be encouraged to participate in other Save on Energy programs that offer additional measures and opportunities. Given that similar feedback was shared as part of the PY2021 evaluation, a similar recommendation has been provided again to ensure that it is carefully considered in future program years.

Finding 6. Opportunities exist to improve assessor and installer training and education. Most surveyed assessors and installers reported receiving training and education. Nearly all had received information on the program rules, and many others received information on program offerings. However, program training and education received the lowest satisfaction rating (a 3.9 on a scale from one (1) to five (5) where one indicates "not satisfied at all" and five indicates "extremely satisfied") from assessors and installers. Providing marketing and outreach techniques to better promote the program to customers was the most common improvement recommendation, followed by more information on the program offerings and rules, and training on installation procedures and practices.

- **Recommendation 6a**. Revisit the assessor and installer training topics to ensure they cover areas of most interest to them (for example, marketing and outreach techniques, more information on offerings and rules, and installation procedures and practices).
- **Recommendation 6b**. Offer training and education with regularity to ensure that assessors and installers to ensure new staff are well-informed about the program and to provide refreshers to others.

Finding 7. Participant perspectives on the program and its processes were positive overall, but there were some suggestions for program improvement. Most participants had no suggestions for improving the initial site assessment (76%), the installer visit(s) (69%), or the overall installation process (87%), which suggests the program is largely meeting customer needs. Of those with suggestions for improvements, the most common suggestions were to reduce the time it takes to complete the assessment and installation visits, provide greater flexibility when scheduling the visits, and improve the assessor or installer's professionalism and transparency in their practices.

- **Recommendation 7a.** Reduce the time it takes to complete the assessment and installation visits. Identify areas where additional program support or resources could allow the assessors/installers to complete this task more promptly.
- **Recommendation 7b:** Provide additional training to assessors and installers to ensure professionalism during assessments and installation visits.

- **Recommendation 7c:** Improve communication around scheduling the visits (for example, sending reminder e-mails and/or text messages confirming appointments and providing accurate arrival windows).
- **Recommendation 7d:** Encourage transparency about the work performed by being upfront about additional installation costs that may be incurred (for example, lift rentals, ESA fees) and requiring that installers carefully walk customers through the upgrades made before leaving the site.

Please note that similar recommendations to Recommendations 7a through 7c were included in the PY2019 and PY2020 evaluations as well. In response to the recommendation in PY2020, the IESO indicated that they would continue to identify methods to improve customer satisfaction, including increasing scheduling flexibility and professionalism and addressing installation time issues. They also noted that additional precautions were implemented to support businesses during the pandemic and that they would continue to administer satisfaction surveys to monitor customer experience. Given that similar improvement suggestions were raised by participants as part of the PY2021 evaluation and given the critical importance of the customer experience overall, similar recommendations have been provided again to ensure that they continue to be carefully considered in future program years.

Finding 8. Opportunities exist to expand program marketing. Assessors and installers cited customers' lack of awareness of the program as one of the main reasons preventing more customers from participating in the program. The most common suggestion to address barriers to participation was to increase the marketing of the program.

- **Recommendation 8.** Increase marketing efforts across different platforms (for example, social media, online, and through community groups such as small business associations and local community organizations).

Please note that a similar recommendation to Recommendation 8 was included in the PY2020 evaluation as well. In response to the recommendation in PY2020, the IESO indicated they would continue to work with its program delivery vendors to increase program awareness by implementing online marketing initiatives and by reaching out to industry associations. Given that similar feedback was shared as part of the PY2021 evaluation, a similar recommendation has been provided again to ensure that it is carefully considered in future program years.

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. The SBP impact evaluation 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

Since the SBP database assigns a unique number to each project, these numbers and the project completion date will be used to determine the new projects that need to be included in the PY 2021 evaluation. Participants with multiple projects completed at different locations will be separated to minimize customer touch points and ensure customers are contacted once to reduce survey fatigue.

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 pre-defined 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 Population of Interest:** This could differ between 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 is 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 require larger sample sizes, especially if the changes that need to be detected are relatively small. Our planned approach will meet or

exceed the industry-accepted minimum 90% confidence level ± 10% precision (90% ± 10%).

- **The Inherent Variability in the Data:** The more volatile the load, the larger the sample size must be to meet precision requirements. The coefficient of variance (Cv) will be initially set at 0.5 unless a known reason that suggests otherwise (i.e., prior evaluation studies).

Resource Innovations is planning to sample 74 SBP projects for the PY 2021 evaluation. Assuming a coefficient of variation (Cv) of 0.5, this sample will target 90% confidence at the 10% precision at the program level across the province of Ontario. Due to similarity in projects' size and installed equipment, all projects will be evaluated together as a group without additional sample stratification.

Table A-1: Targeted Impact Evaluation Sample

Program	Sample Size
Small Business Program	74

A.3 Data Collection and Analysis

The Level 1 audit of the SBP projects will start 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, site photos, etc. This information will be used to develop Measurement and Verification (M&V) plans for projects that are selected for analysis. Level 2 audits will include a virtual site review and verification of the installed equipment for a limited number of sampled projects. Development of M&V plans 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 the 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 will be calculated by applying sample level adjustment factors (energy and demand realization rates and net-to-gross ratios) to the overall program population.

A.4 Establish the Verified Savings

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

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 2.

Equation 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 net-to-gross (NTG) ratio, as shown in Equation 3.

Equation 3: Net Verified Savings

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

Where:

$Savings_{net}$ = Net verified savings impact (kW or kWh)

$Savings_{verified}$ = 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 estimated for each survey respondent, and those results are then aggregated to develop total FR and SO estimates. Results are weighted by the percent 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 that are 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 4, where FR is the participant free-ridership percentage, and SO is the participant spillover percentage.

Equation 4: Net-to-Gross

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

The evaluation team calculated FR and SO for a single incented project for each sampled participant. The evaluation team 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: Net-to-gross Ratio

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

Where FR is free-ridership and SO is spillover.

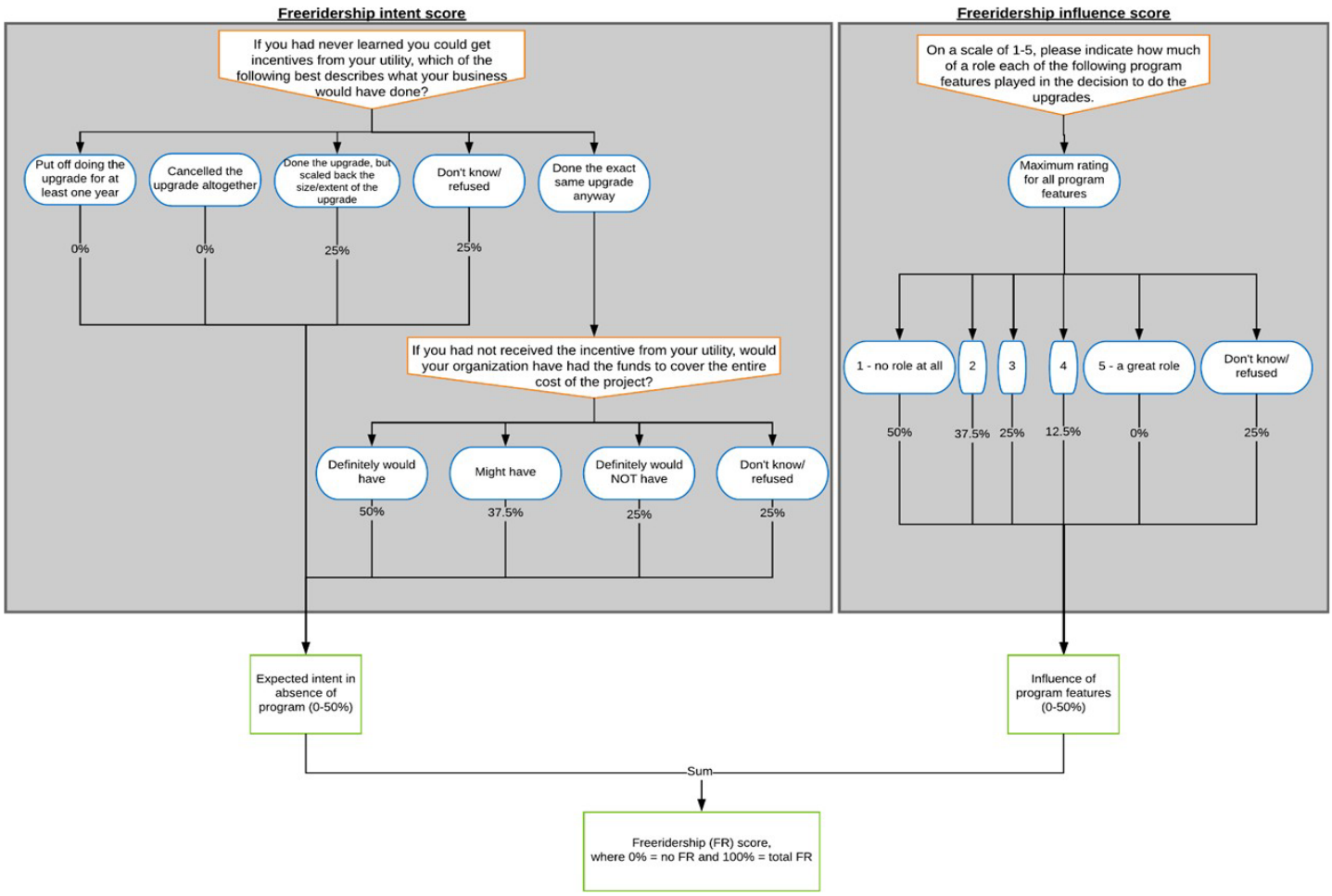
B.1 Free-Ridership Methodology

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 7-1 illustrates the FR methodology.

Figure 7-1: 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 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 (3) (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 (4) (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 (1) (definitely would have had the funds), the respondent received a score of 50% (associated with high FR). If the respondent answered two (2) (might have had the funds), they received a slightly lower FR score of 37.5%. If the respondent

answered three (3) (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 (1) to five (5), 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 (1) to five (5), 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:

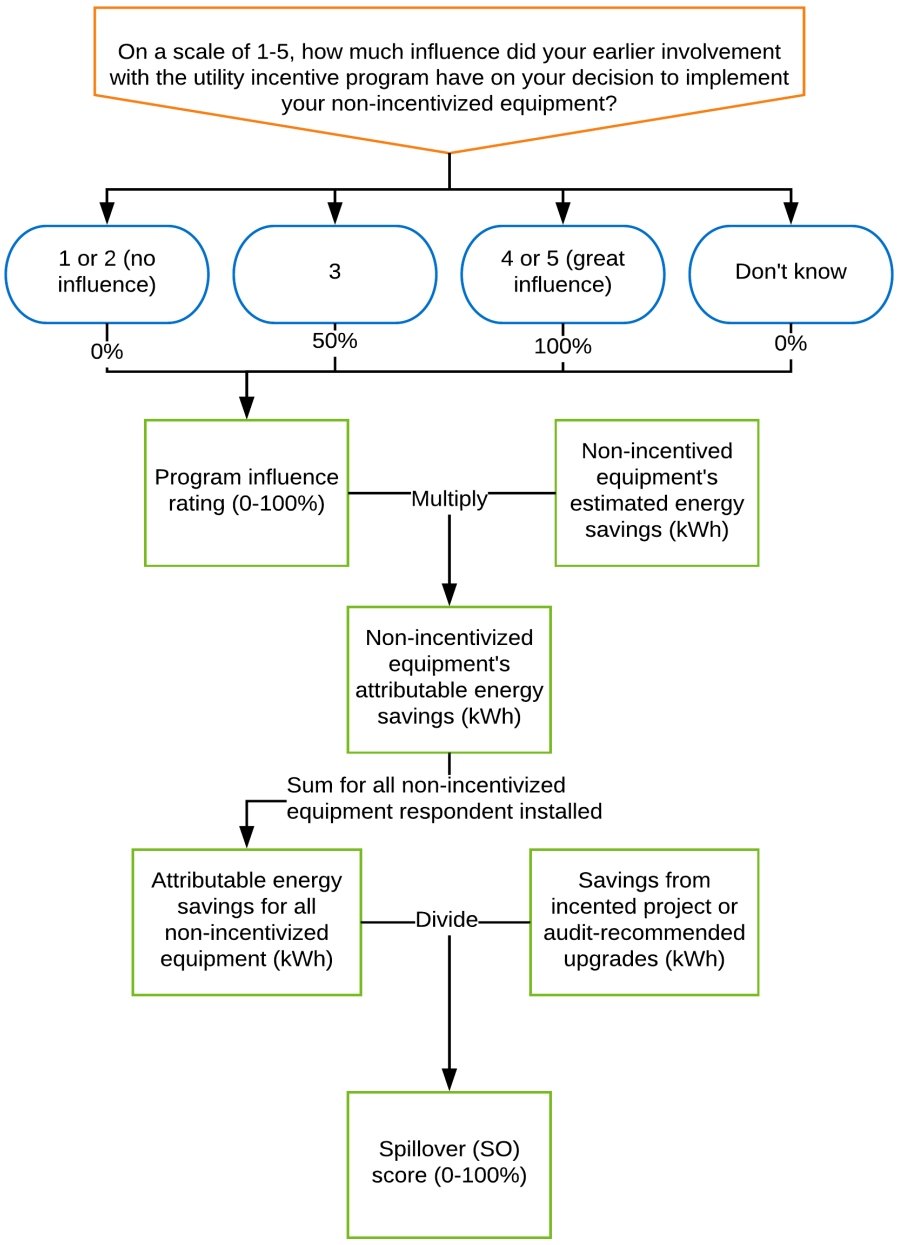
- Maximum rating of 1 or 2 (no influence) = 0%
- Maximum rating of 3 = 50%
- Maximum rating of 4 or 5 (great influence) = 100%
- Respondent does not know how much influence any factor had = 0%

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 7-2 illustrates the SO methodology.

Figure 7-2: Spillover Methodology



B.3 Identification of Project or Upgrade for NTG Assessment

Participants were asked to consider all their completed projects in 2020 through the particular program in question. This approach allowed for the respondent's NTG value across all the projects they completed in 2020 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 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 for 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. These research questions were developed at the beginning of the PY2021 evaluation period in January and February of 2022. They were written in consultation with the IESO program staff and the IESO EM&V staff 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 and Program Records Review	IESO & Delivery Vendor Staff Interviews	Participant Surveys	Assessor and 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 were the experiences of, assessors, and installers in participating in the program?				✓
What are the program's strengths, barriers, and areas of improvement? How, if at all, could the professionalism of the assessors and installers be improved?				✓
How useful and clear were the program materials? What, if any, improvements could be made to them?	✓		✓	✓

Research Questions	Document and Program Records Review	IESO & Delivery Vendor Staff Interviews	Participant Surveys	Assessor and Installer Surveys
What additional equipment purchases occurred above the program's project incentive cap? What additional equipment purchases occurred above the project incentive cap? Why did some work not occur despite the project incentive cap not being reached?		✓	✓	✓
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 types of control equipment may have been installed at customer sites (e.g., advanced controls for rooftop units, energy management information systems, network connected lighting) and how are they used?			✓	
What preferences, if any, do participants have about when site visits occur (e.g., normal business hours, after hours)?			✓	
How willing are participants to pay for Electrical Safety Authority (ESA) site visits for measures that require them? How frequently are additional ESA fees incurred, what are the reasons they are incurred, and what regional differences may exist? What differences are there in ESA fees paid by IESO in PY2021 compared to prior years?	✓		✓	
How were participants, assessors, and installers impacted by the COVID-19 crisis? Are provincial guidelines for health and safety followed by the assessors and installers?			✓	✓
What program marketing and outreach occurred in support of other Save on Energy programs? What other programs have customers participated in?			✓	
What firmographics are associated with participating customers (e.g., building type, business ownership, building size, number of employees, etc.)?			✓	

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 what was most suitable for a particular respondent group. This data, when collected and synthesized, provides 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 was 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	1	-	1	1	100%	0%
Program Delivery Vendor Staff	Phone IDI	1	-	1	1	100%	0%
SBP Assessors and Installers	Web Survey	46	15	-	15	33%	N/A*
SBP Participants	Web and Phone Survey	819	144	28	172[7]	21%	5.6%

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

IESO Program Staff and Program Delivery Vendor Staff Interviews

One in-depth interview (IDI) was completed with two members of the IESO program staff, and a second IDI was completed with one member 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.

[7] Please note that the count of process survey responses (n=172) is less than the count of NTG survey responses (n=183) because some respondents did not complete the process section of the survey.

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 improvement.

The appropriate staff to interview were identified in consultation with the IESO 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 May 5 and May 10, 2022. 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	1	3
No Response	-	-	-
Unsubscribed	-	-	-
Partial Complete	-	-	-
Bad Contact Info (No Replacement Found)	-	-	-
Total Invited to Participate	2	1	3

SBP Assessor and Installer Survey

A total of 17 assessors and installers were surveyed from a sample of 48 unique companies (Table C-4). The purpose of the survey was to better understand the SBP assessor and installer's perspectives related to program delivery.

The survey topics addressed firmographics, project background, training and education, customer participation, equipment feedback, impacts of the incentive cap, barriers to participation, equipment feedback, suggestions for improvement, satisfaction, NEBs, job impacts, and impacts of the COVID-19 crisis. 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 March 23 and April 18, 2022. The survey took an average of 30 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	15
Emails bounced	1
Bad Contact Info (No Replacement Found)	1
Unsubscribed	-
Partial Complete	5
Screened Out	-
No Response	25
Total Invited to Participate	46

SBP Participant Survey

A total of 172 participants were surveyed from a sample of 819 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 firmographics; improvement suggestions about the initial site assessment, the follow-up visit, and the overall installation process; FR and SO, additional lighting upgrades, control equipment, participation in other programs, job impacts, and the impacts of the COVID-19 crisis.

The sample was developed from program records provided by the IESO EM&V staff. Given the large number of program participants, a random subset of participants was selected for inclusion in the survey sample that did not overlap with the impact evaluation sampling.

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 28 and April 27, 2022. The survey took an average of 14 minutes to complete after removing outliers.[8] Weekly e-mail reminders were sent to non-responsive contacts throughout web survey fielding.

[8] 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 and assumed 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.

Table C-5: SBP Participant Survey Disposition

Disposition Report	Web	Phone	Total
Completes	144	28	172
Emails bounced	45	-	45
Bad Contact Info (No Replacement Found)	12	-	12
Unsubscribed	-	-	0
Partial Complete	24	-	56
Screened Out	6	1	7
Busy	-	41	41
Callback	-	74	74
Hard Refusal	-	56	56
No answer	-	122	122
No Eligible Respondent	-	11	11
Non-working #	-	10	10
Voicemail	-	117	117
Agreed to Complete Online	-	13	13
Wrong Number	-	9	9
Language Barriers	-	2	2
No Response	577	0	880
Total Invited to Participate	808	484	1,627

Appendix D Additional NTG 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 (fourteen out of fifteen) reported being hired by the program delivery vendor. One respondent indicated that the program had been recommended to them by another installer. All fifteen respondents were lighting installation contractors, but one was also an assessor.

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

Table D-1: Respondents' Business Category (n=14)

Sectors and Business Categories	Respondents
Construction	8
Non-Residential	4
Residential	1
Repair	3
Repair, maintenance, and operations	5
Other	1

Respondents were asked various questions about their business characteristics. Three respondents worked at companies that had been in business for ten years or less, and eight had been in business for twenty years or more. Ten respondents worked at companies with less than twenty full-time employees, and seven had one to four part-time employees (Table D-2).

Table D-2: Business Characteristics (n=13)

# of Years in Business	Respondents
1 to 10	3
11 to 20	0
20+	8
Don't know/Refused	1
# of Full Time Employees	
1 to 10	6
11 to 20	4
21 - 30	1
Don't know/Refused	2
# of Part Time Employees	
1 to 4	7
Don't know/Refused	6

Respondents were asked to indicate whether they performed assessments and/or installations for the Save on Energy Small Business Lighting (SBL) Program under the Conservation First Framework, with six respondents reported having previously done so. In 2021, ten respondents reported completing less than 50 projects through the SBP and SBL programs, two completed 150 projects, one reported 400 projects, and one reported 800 projects. The one respondent that also served as an assessor reported completing 300 projects and estimated that 35% of their total sales was represented by the work that they performed under the program in 2021 (Table D-3).

Table D-3: Program Experience (n=15)

Performed Assessments/Installations Under CFF	Respondents
Yes	6
No	3
Don't know/Refused	6
# of Projects Completed in 2021	
1 to 50	10
150	2
300	1
400	1
800	1

Training and Education

Table D-4 includes a list of types of training or education that responding assessors and installers had received related to the program in 2021. Section 5.2.2 includes an additional discussion around these improvement suggestions.

Table D-4: Type of Training and Education Received*

(Open-ended and multiple responses allowed; n=15)

Type of Training	Responses
Webinar or other online instruction	7
Responses to questions	5
One-on-one in-person instruction from Sonepar	5
One-on-one in-person instruction from IESO staff	1
No training	2
Don't know/Refused	1

*Does not sum to 15 due to multiple response.

Table D-5 includes a list of the topics covered in the training that responding assessors and installers participated in. Section 5.2.2 includes an additional discussion around these training topics.

Table D-5: Topics Covered in Trainings*

(Open-ended and multiple responses allowed; n=12)

Training Content	Respondents
The program rules	11
The offerings associated with the program	9
Installation procedures and practices	7
Marketing and outreach techniques	5
Application process training or support	4

*Does not sum to 12 due to multiple response.

Table D-6 includes a list of additional training or education topics that would be helpful to support the work responding assessors and installers work in the future. Section 5.2.2 includes an additional discussion around these training topics.

Table D-6: Recommended Training and Education Topics*

(Open-ended and multiple responses allowed; n=15)

Additional Training Content	Respondents
Marketing and outreach techniques	6
The offerings associated with the program	3
The program rules	3
Installation procedures and practices	3
Application process training or support	2
Don't know/Refused	5

*Does not sum to 15 due to multiple response.

Customer Participation

Table D-7 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-7: Primary Way Customers Came to Participate*

(Open-ended and multiple responses allowed; n=15)

Primary Ways	Respondents
Staff from delivery vendor generated leads and provided them to the assessor or installer	10
Assessor or installer described the program and qualifying equipment during client calls	2
Marketed the program during audits or other in-person customer contacts	1
Customers contacted you about installing equipment through the program	1
Don't know/Refused	1

Table D-8 includes a list of barriers preventing customers from participating in the program, as reported by the responding assessors and installers. Section 5.2.3 includes an additional discussion around these barriers to participation.

Table D-8: Barriers to Customer Participation*

(Open-ended and multiple responses allowed; n=15)

Customer Barriers	Respondents
They did not know about it	5
They did not think the upgrades are worth the trouble of participating	5
COVID-19 restrictions	4
Getting efficiency upgrades was not a priority given other priorities	2
They did not think the upgrades will save them any money	1
Limited assessor availability	1
Don't know/Refused	2

*Does not sum to 15 due to multiple response.

Table D-9 includes a list of suggestions to overcome barriers preventing customers from participating 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-9: Suggestions to Overcome Participation Barriers

(Open-ended and multiple responses allowed; n=9)

Suggestions to Overcome Barriers	Respondents
Increase marketing	5
Customer education	1
Share customer testimonials	1
Direct promotion from IESO	1
Provide more options for lighting products	1
Provide eligible contractor lists	1
Hire more assessors	1

*Does not sum to 9 due to multiple response.

Project Incentive Cap Impacts

Table D-10 includes a list of ways the project incentive cap of $2,000 impacted how customers were able to participate in the program, if at all, as reported by the responding assessors and installers. Section 5.2.4 includes an additional discussion around incentive cap impacts.

Table D-10: Impacts of Incentive Cap on Project Scope (n=15)

Impacts of Incentive Cap	Respondents
It reduced the scope of *some* of my customers' projects	9
It reduced the scope of *all* my customers' projects	1
It increased the scope of *some* of my customers' projects	2
It had no impact on customer participation	2
Don't know	1

Table D-11 includes feedback regarding the reduction in customer project scopes due to the incentive cap, as reported by the responding assessors and installers. Section 5.2.4 includes an additional discussion around reductions in project scope.

Table D-11: Reduction in Project Scope due to Incentive Cap (n=10)

Reduction in Project Scope	Respondents
The project scope was reduced by 1% to 10% on average	1
The project scope was reduced by 11% to 25% on average	2
The project scope was reduced by 26% to 50% on average	4
The project scope was reduced by 51% to 75% on average	1
Don't know/Refused	2

Table D-12 includes feedback regarding whether any participants had installed additional energy-efficient equipment upgrades that exceeded the project incentive cap, as reported by the responding assessors and installers. Section 5.2.4 includes an additional discussion around this feedback.

Table D-12: Participants' Installation of Additional Upgrades that Exceeded Incentive Cap (n=-15)

Installation of Additional Upgrades	Respondents
Yes	11
No	3
Don't know/Refused	1

Table D-13 includes feedback regarding the additional energy-efficient equipment upgrades that participants had installed and that exceeded the incentive cap, as reported by the responding assessors and installers. Section 5.2.4 includes an additional discussion around reductions in project scope.

Table D-13: Description of Additional Upgrades Installed by Participants

(Open-ended and multiple responses allowed; n=11)

Description of Additional Upgrades	Respondents
More lighting fixtures	7
Ballast replacements	2
Electrical upgrades to support retrofits	1
Don't know	1

Table D-14 includes feedback regarding the reasons why some participants had decided to install the additional upgrades that exceeded the project incentive cap, as reported by the responding assessors and installers. Section 5.2.4 includes an additional discussion around these reasons.

Table D-14: Reasons Why Participants May Have Installed Additional Upgrades

(Open-ended and multiple responses allowed; n=11)

Reason for Installation of Additional Upgrades	Respondents
The incentive cap was not sufficient to complete the project	6
The energy or monetary savings justified the additional cost	4
Don't know/Refused	2

*Does not sum to 11 due to multiple response.

Table D-15 includes feedback regarding whether any participants had completed projects that did not reach the project incentive cap of $2,000, as reported by the responding assessors and installers. Section 5.2.4 includes an additional discussion around this feedback.

Table D-15: Participants' Completion of Projects that Did Not Reach the Incentive Cap (n=15)

Project Completion that Did Not Reach Incentive Cap	Respondents
Yes	10
No	3
Don't know/Refused	2

Table D-16 includes feedback regarding reasons why some projects had not reached the incentive caps, as reported by the responding assessors and installers. Section 5.2.4 includes an additional discussion around these reasons.

Table D-16: Reasons Why Participants May Have Completed Projects that Did Not Reach Incentive Cap

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

Reason for Completing Project that Did Not Reach Incentive Cap	Respondents
Did not need to install energy-efficient equipment	3
Cost prohibitive	2
Did not have enough lighting to reach cap	2
Did not want to install additional energy-efficient equipment	1
Don't know/Refused	2

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=6)

Program Improvement Suggestion	Respondents
Hire quality assessors	1
Pay installers more	1
Reduce the reimbursement time for installers	1
Ensure projects meet ESA requirements	1
Provide different lighting offerings	1
More in-person training	1
Provide customers with more information	1
Make worksheets simpler	1
Reduce amount of product offerings	1
Reduce amount of paperwork	1

*Does not sum to 6 due to multiple response.

Table D-18 includes feedback regarding equipment or model recommendations to consider including 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=10)

Equipment or Model Recommendations	Respondents
Exterior lighting	7
Exit signs	2
T12 fixtures	1
LED panels	1
UV lighting (light therapy)	1

*Does not sum to 10 due to multiple response.

Business Response to COVID-19

Respondents were asked to describe how the COVID-19 pandemic had affected their company and its operations, if at all. Respondents most often noted delays and shortages in the supply chain (ten out of fifteen) and increased cleaning and safety measures (seven out of fifteen). Table D-19 presents other ways in which the pandemic changed respondents' business operations. Only two stated the pandemic had had no impact on business operations.

Table D-19: Impacts to Business Operations Due to COVID-19*

(Open-ended and multiple responses allowed; n=15)

Changes to Operation	Respondents
Delays or shortages in the supply chain	10
Increased cleaning and safety measures	7
Lower sales or revenues	5
Workforce issues (i.e., layoffs, difficulty hiring)	4
Closed part of business	3
More remote work	3
Increased measure costs	2
Changes in operating hours	2
No impact	2
Difficulty meeting targets/deadlines	1
Decreased productivity	1
Don't know/Refused	1

*Does not sum to 15 due to multiple response.

When asked to rate how difficult it was to adhere to the relevant health and safety standards associated with the COVID-19 crisis when visiting participating customer facilities to perform program upgrades, respondents gave an average difficulty rating of 3.9 on a scale of one (1) to five (5), where one indicates "unduly difficult" and five indicates "not difficult at all."

D.2 Additional Participant Net-to-Gross Results

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

Free-Ridership (FR)

The extent of FR within the program was assessed by surveying the SBP participants 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.

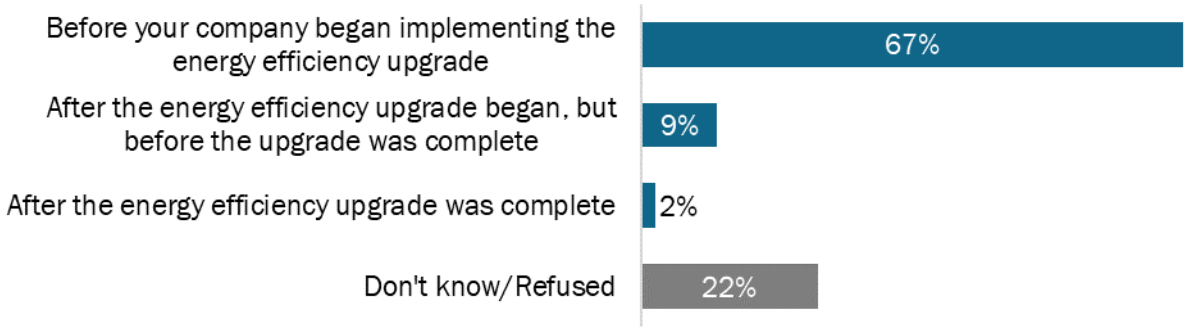
Program Awareness and Timing of Program Participation

Participants were first asked whether they had considered or had plans to implement lighting upgrades before learning they could receive energy-efficiency incentives through SBP. Three-fifths (60%) of the survey respondents had considered replacing their lights before learning about the program, while more than one-third (35%) 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 7-3). Nearly two-thirds of respondents (67%) stated they became a participant before their company began implementing the upgrade, which suggests most participants are being engaged by the program as intended. Less than one-tenth (9%) of respondents stated that they initiated their participation after the upgrade began but before completion. Few respondents (2%) stated they became a participant after their upgrade was

complete. More than one-fifth of respondents (22%) could not recall when they became program participants.

Figure 7-3: Timing of Program Participation (n=183)

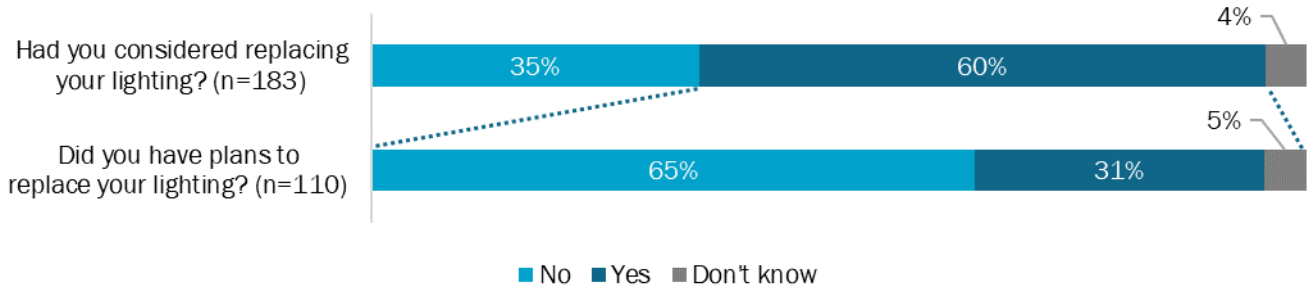


The respondents who initiated their participation after the upgrade began provided the following reasoning:

- Needed to stick to an internal schedule to complete upgrade (6 respondents)
- Time or resource constraints at your organization (4 respondents)
- Time needed to submit materials to program (4 respondents)
- Needed to complete work for an unplanned replacement for recently failed existing equipment (1 respondent)

Of the 60% of survey respondents who stated they considered replacing their lights, almost one-third (31%) already had plans to install new lighting before learning about the program, indicating potential FR (Figure 7-4). However, almost two-thirds (65%) of the respondents who considered new lighting did not plan for any installations prior to learning about the program, indicating the program had a strong influence on 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 7-4: Actions Taken Prior to Learning About the Program*

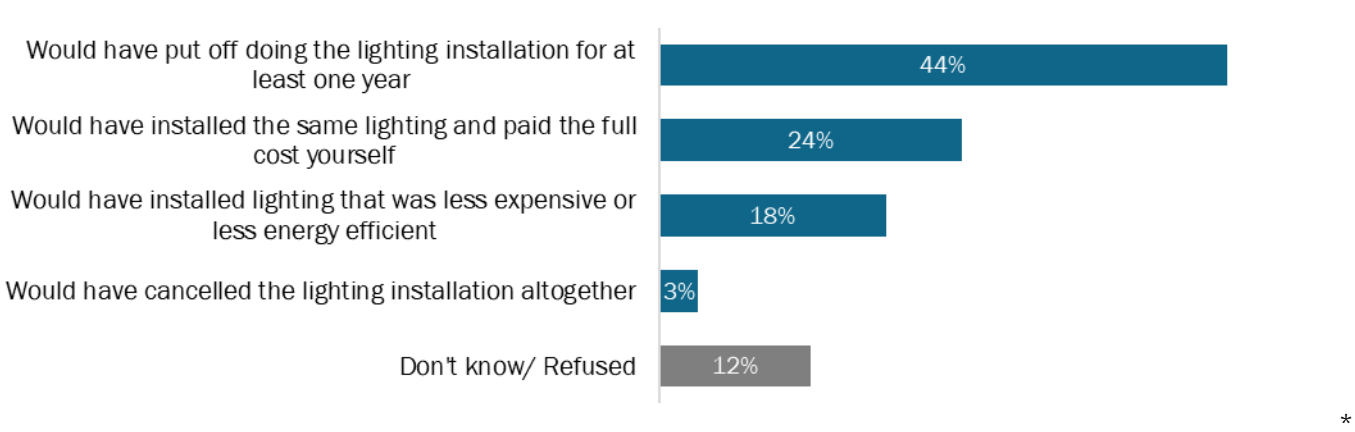


* Does not sum to 100% due to rounding.

Actions in the Absence of the Program

Participants who stated they had planned for lighting 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 7-5). Overall, their responses suggest moderate levels of FR as nearly two-thirds of respondents (65%) would have put off or cancelled the upgrades or installed less expensive or less efficient lighting without the program's support. One in four respondents (24%) would have installed the same lighting 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 7-5: Actions in Absence of Program (n=34)*



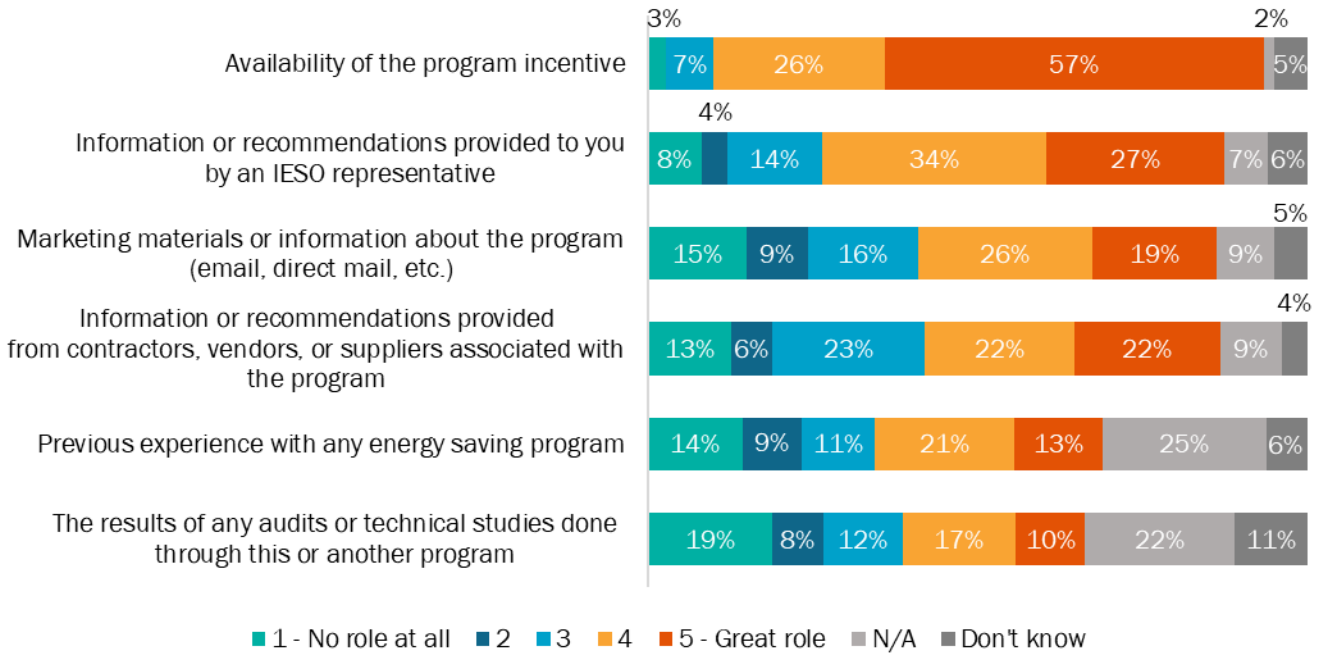
Respondents who indicated they would have installed less expensive or less energy-efficient lighting were then asked to describe how much they would have reduced the project's size, scope, or efficiency. Two of these respondents stated they would have reduced the size, scope, or efficiency by a moderate amount, and two respondents 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 provide additional context around participant intentions.

Seven of the eight respondents who stated they would have installed the same lighting 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 lighting (Figure 7-6). They rated each feature's influence on a scale from one (1) to five (5), where one indicates "no influence at all," and five indicates "it was extremely influential." The highest rated responses were the availability of incentives (83% with a rating of 4 or 5) and the information or recommendations provided by an IESO representative (61% with a rating of 4 or 5). Respondents rated the results of audits or technical studies completed through SBP or other programs as the least influential (27% with a rating of 4 or 5). This may suggest an opportunity 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 7-6: Influence of Program Features on Participation (n=183)*
(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 the energy-efficient lighting, the respondents' answers widely varied (Table D-20). The most common factors were saving money on electricity bills (59%), the lack of cost to participate in the program (28%), lighting improvements needed (16%), and saving energy/concern for the environment (12%).

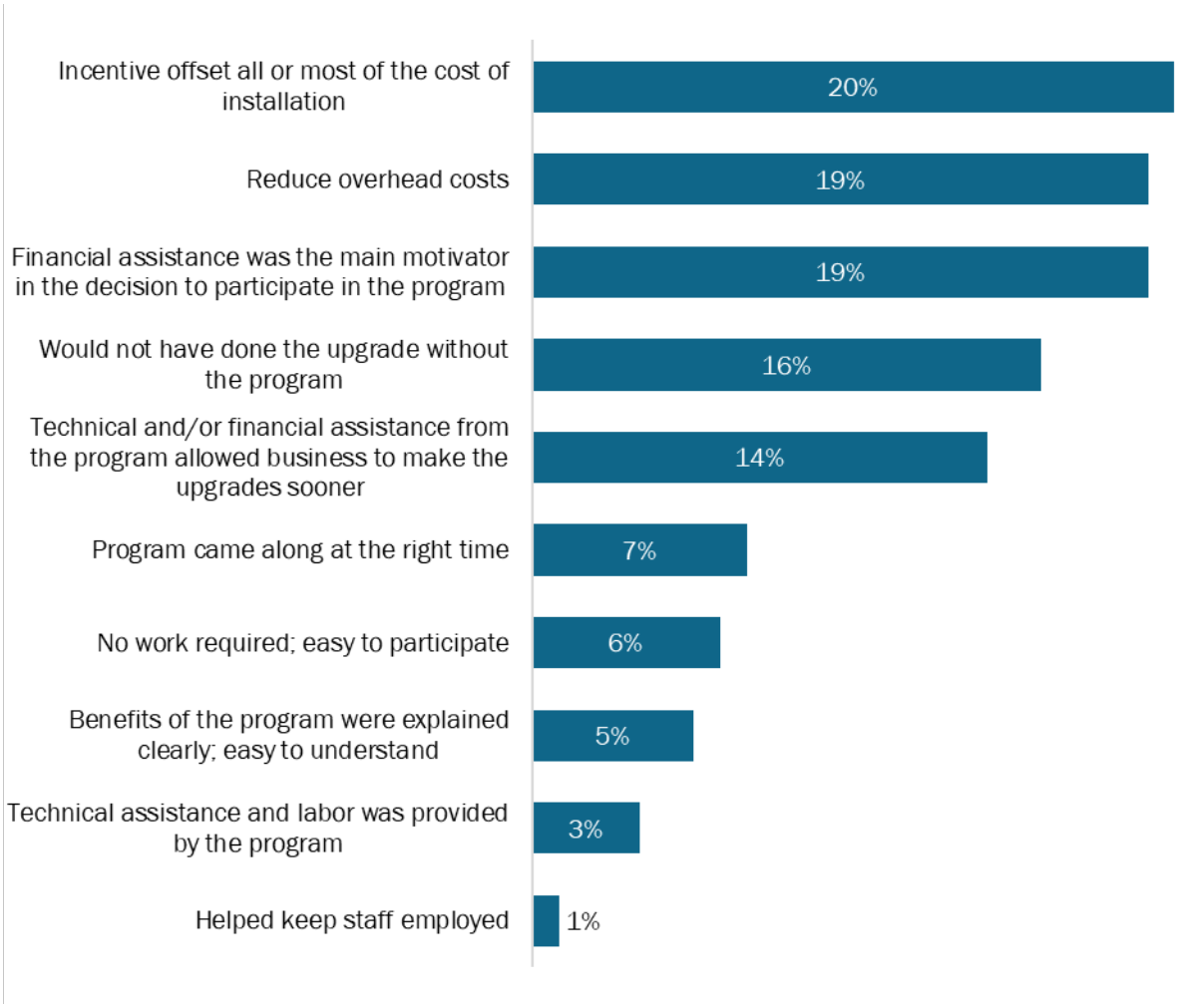
Table D-20: Other Influential Factors on Upgrade Decision
(Open-ended and multiple responses allowed; n=58)*

Other Influential Factors	Respondents
Saving money on electric bill	59%
No cost to participate	28%
Lighting improvements were needed	16%
Energy/environmental concerns	12%
Referral from a friend or colleague	7%
Eliminating a potential fire hazard	3%
Ease of participation in the program	2%
Quick delivery on installation	2%
Information on the program website	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 7-7). Of the two-thirds (66%) of those who responded, the most common responses were related to the financial incentive offsetting most or all of the installation cost (20%), reduced overhead costs (19%), and that the financial assistance was the main motivator in the decision to participate in the program (19%).

Figure 7-7: Program Impact on Decision to Install Equipment
(Open-ended and multiple responses allowed; n=35)



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

In summary, the FR results among the SBP participants indicate moderate levels of FR (13.5% FR score). In combination with the other responses shown in this section, this FR score demonstrates the program is generally reaching the participants who would not have implemented lighting 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. One in seven (14%) participants 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 (96%), followed by ENERGY STAR ® Appliances (15%) and lighting controls (8%).

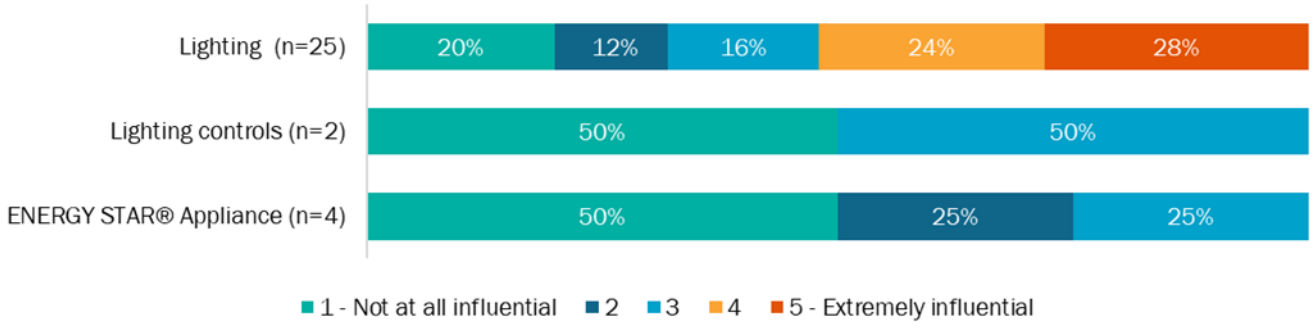
Table D-21: Types of Upgrades Installed after Program Participation
(Multiple responses allowed; n=26)*

Type of Upgrades Installed	Respondents
Lighting	96%
ENERGY STAR® Appliance	15%
Lighting Controls	8%

* Counts displayed rather than percentage due to small n.

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 (1) to five (5), 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 7-8 for each equipment type. More than two-thirds (68%) of respondents who installed non-incentivized lighting reported being influenced by SBP. Fewer respondents reported being influenced by SBP for lighting controls (50%) and ENERGY STAR appliances (25%).

Figure 7-8: Program Influence on Equipment Installed Outside the Program
(Multiple responses allowed; n=26)
(Rating on a scale from 1 to 5)



Participants who indicated they installed the program-influenced non-incentivized equipment were asked a series of follow-up questions (for example, capacity, efficiency and annual hours of operation). These detailed questions are displayed in Table D-22 and Table D-23 and were used within the NTG algorithm to attribute SO savings to each equipment installation. SO savings were driven mainly by the installation of 233 new linear LED fixture upgrades completed by 12 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	2	9			Against building
LED linear	12		233		
LED screw base	1	128		11-20	
Linear fluorescent	2		42		
Occupancy sensor	1				

D.3 Additional Participant Process Results

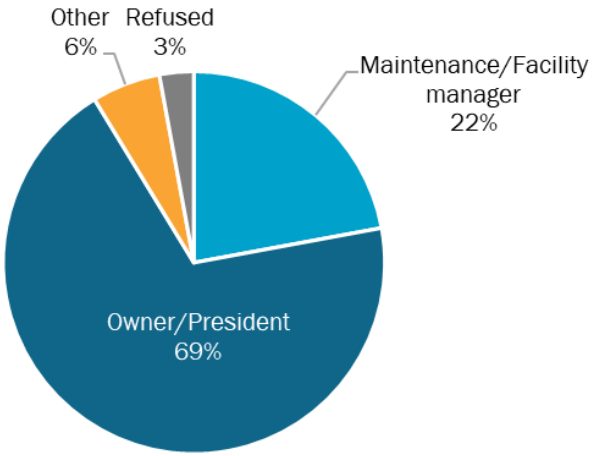
Firmographics

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

Roles and Ownership Status

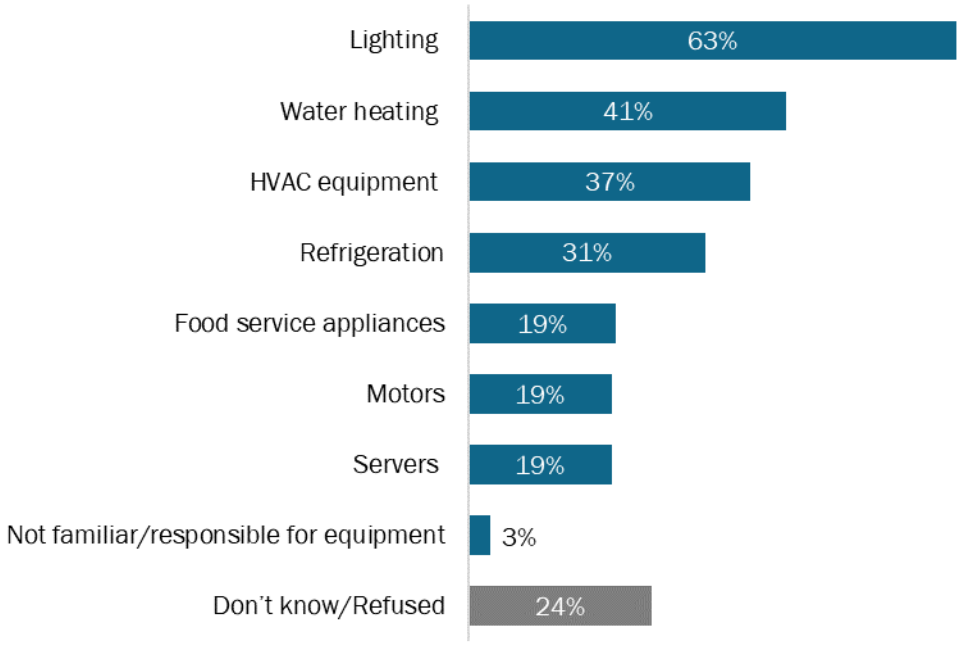
Over two-thirds of survey respondents (69%) were owners or presidents of their companies, while more than one-fifth (22%) were managers (Figure 7-9). Three-fifths (60%) were the primary employee responsible for the SBP lighting upgrades, and one-third (33%) shared the responsibility.

Figure 7-9: Role of Respondent
(Open-ended and multiple responses allowed; n=172)



Most of the survey respondents (73%) were familiar with or responsible for the maintenance of equipment at their facilities (Figure 7-10). The most common equipment types were lighting (63%), water heating (41%), and HVAC (37%).

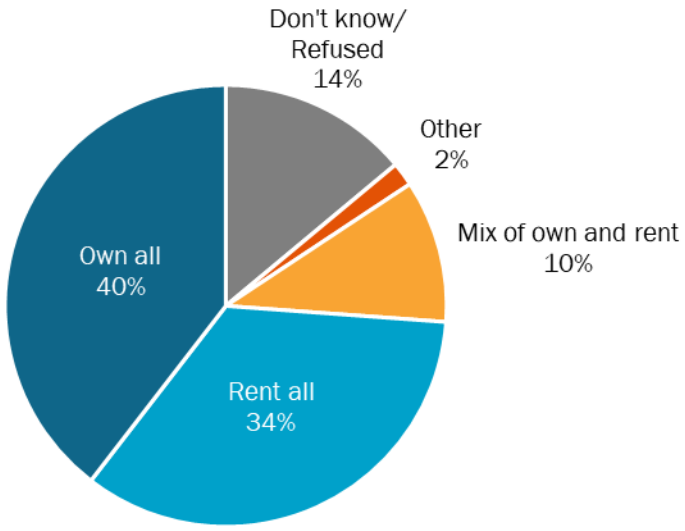
Figure 7-10: Equipment Maintenance Responsibility
(Multiple responses allowed; n=172)*



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

Two-fifths (40%) of participating companies owned the property where the program upgrades were conducted, and over one-third (34%) rented the property (Figure 7-11). One-tenth (10%) owned and rented the property(ies). Most (82%) were responsible for paying their electric utility bill.

Figure 7-11: Ownership Status
(Open-end and multiple responses allowed; n=172)



Primary Activity at Facility

The facilities served by the program were mainly in the retail and wholesale sectors (23%) (Table D-24). The next most common sectors were lodging and food service (10%), health care services (8%), and non-profits (7%). Almost eight out of ten respondents (77%) stated their company was not part of a franchise or chain.

Table D-24: Primary Activity at Facility
(Open-ended and multiple responses allowed; n=172)

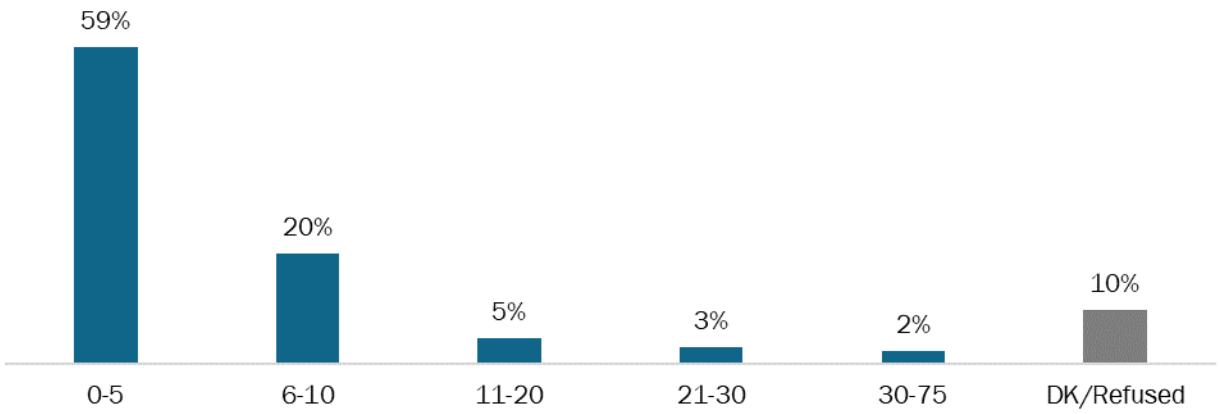
Primary Business Categories	Respondents
Retail and wholesale	23%
Lodging and food service	10%
Healthcare services	8%
Non-profit	7%
Agriculture, forestry, husbandry, mining, and extraction	6%
Manufacturing	6%
Repair, maintenance, and operations	5%
Arts, entertainment, recreation, advertising, and travel	4%
Construction	3%
Finance, insurance, real estate, and property management	3%
Educational services	2%
Government services	2%
Scientific, technical, and information services	1%
Transportation and warehousing	1%
Other services	8%
Don't Know/Refused	13%

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

Number of Employees

Participants were asked to provide the number of employees (Figure 7-12). Almost three-fifths (59%) stated they had fewer than six employees.

Figure 7-12: Number of Employees (n=172)*

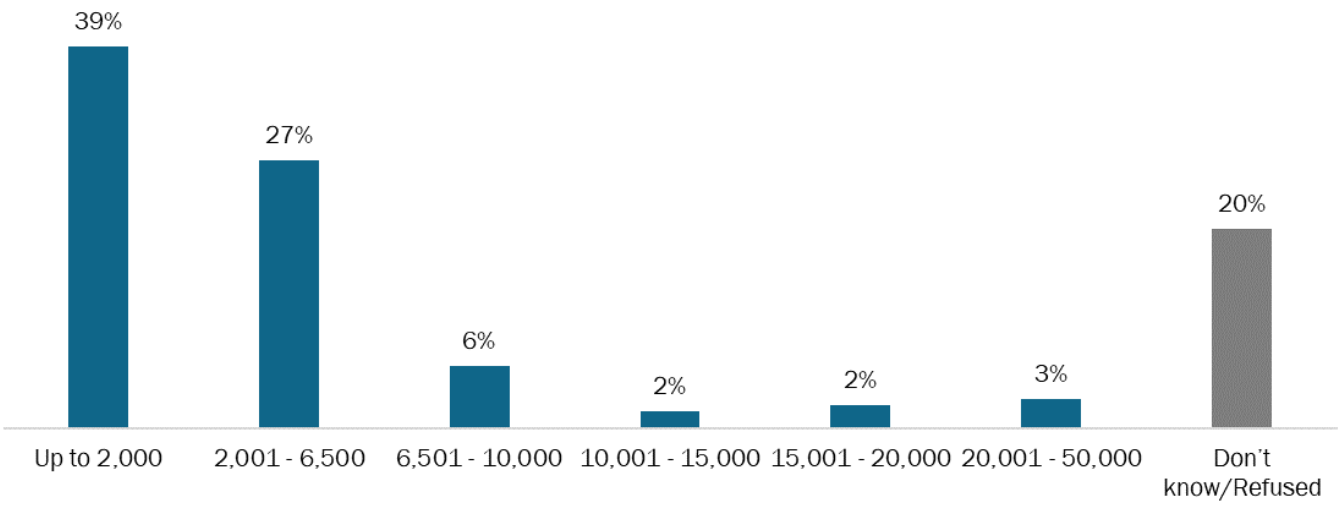


* Does not sum to 100% due to rounding.

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 of them (Figure 7-13). Two-thirds (66%) of respondents stated the total square footage of their facility(ies) was under 6,501 square feet.

Figure 7-13: Total Square Footage for All Buildings (n=172)*



*Does not sum to 100% due to rounding.

Other Program Participation

Table D-25 presents the survey respondents' participation in other business programs in 2021. Over one in six (17%) participated in the Retrofit program and less than one in 30 (2%) participated in the Refrigeration Efficiency program. Less than one in 30 (2%) participated in a program not offered by the IESO.

Table D-25: Participation in Other Business Programs in 2021
(Open-ended and multiple responses allowed, n=172)*

Other Programs	Respondents
Retrofit Program	17%
Refrigeration Efficiency Program	2%
Other non-IESO programs	2%
No other programs	70%
Don't know/Refused	10%

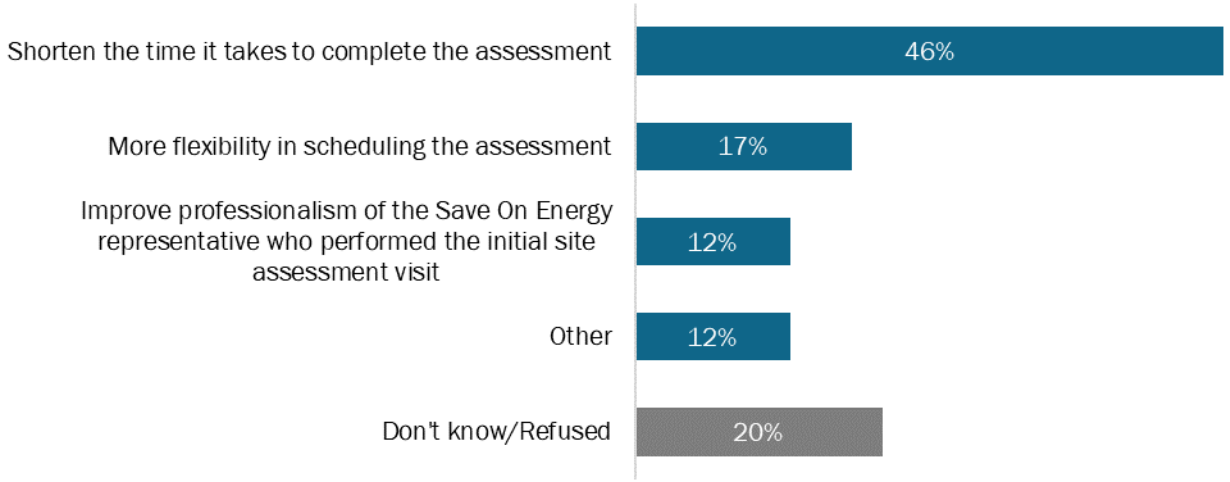
* Does not sum to 100% due to multiple response.

Site Visit Improvement Suggestions

Initial Site Assessment Visits

Figure 7-14 includes a list of initial site visit improvement suggestions, as reported by the participants. Responses included in the "other" category (12%) included improving the accuracy of the data collection by the Save on Energy representative who performed the initial site assessment visit, improving communication between Save on Energy representatives who perform the initial site assessments and those who perform the installation visit, increasing marketing and outreach prior to the initial site visit, employing local Save on Energy representatives to perform the initial site assessment visit, and for the Save on Energy representative to better explain the lighting options (each mentioned once). Section 5.3.2 includes an additional discussion around these improvement suggestions.

Figure 7-14: Suggestions to Improve the Initial Site Assessment Visit
(Open-end and multiple responses allowed; n=41)

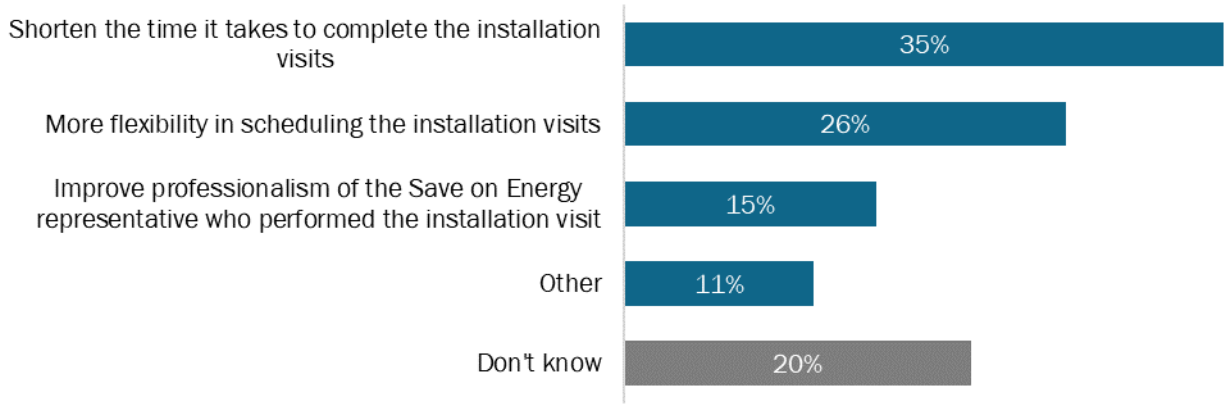


* Does not sum to 100% due to multiple responses.

Installation Visits

Figure 7-15 includes a list of instillation site visit improvement suggestions, as reported by the participants. Responses included in the "other" category (11%) included improving site clean-up (2 respondents), ensuring that Save on Energy representatives return to complete the job (1 respondent), allowing for installations in hard-to-reach places (1 respondent), and ensure the Save on Energy representative does not damage property during installation (1 respondent). Section 5.3.2 includes an additional discussion around these improvement suggestions.

Figure 7-15: Suggestions to Improve the Installation Site Visit
(Open-ended and multiple responses allowed; n=54)



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

Overall Installation Process

Table D-26 includes a full list of improvement suggestions for the installation process overall, as reported by the participants. Section 5.3.2 includes an additional discussion around these improvement suggestions.

Table D-26: Participant Suggestions on How to Improve the Installation Process Overall
(Open-ended and multiple responses allowed; n=23)*

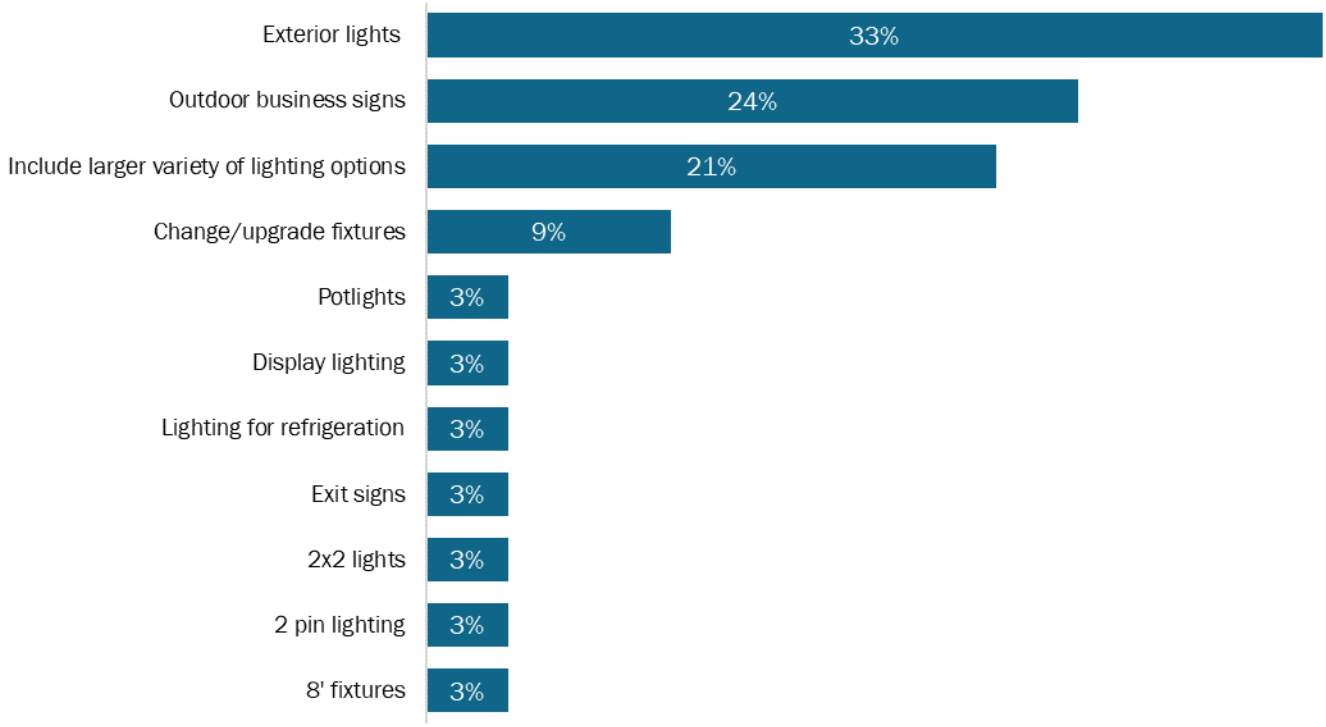
Improvement Suggestions for Overall Installation Process	Respondents
Improve communication on scheduling	26%
Transparency about the work performed and additional installation costs (e.g., lift rentals)	13%
Improve site clean up	9%
Save on Energy representative to complete the unfinished work	9%
More flexibility in scheduling	9%
Improve vetting of Save on Energy representatives	9%
Shorten the time it takes to complete the installation	9%
Improve response times	9%
Provide recommendations on other available efficiency programs	9%
Save on Energy representative to replace all lighting	4%
Improve overall customer service	4%
Complete installation in a single trip	4%
Improve professionalism of the Save on Energy representative	4%
Save on Energy representatives wear the IESO branded uniforms	4%

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

Recommended Equipment and Services

Figure 7-16 includes a full list of recommended additional lighting equipment or services for inclusion in the program in future years, as reported by the participants. Section 5.3.3 includes an additional discussion around these equipment recommendations.

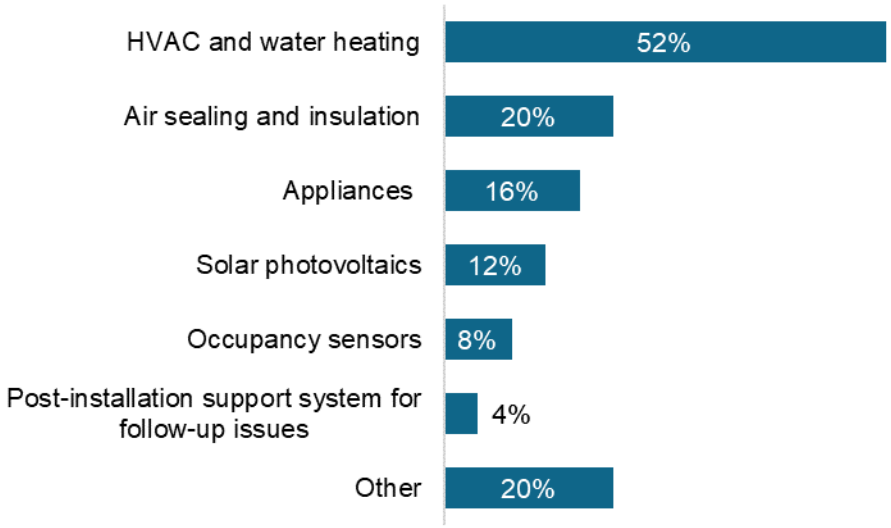
Figure 7-16: Additional Lighting Equipment Recommendations*
(Open-ended and multiple responses allowed; n=33)



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

Figure 7-17 includes a full list of recommended additional non-lighting equipment or services for inclusion in the program in future years, as reported by the participants. Section 5.3.3 includes an additional discussion around these equipment recommendations.

Figure 7-17: Additional Non-lighting Equipment and Services Recommendations*
(Open-ended and multiple responses allowed; n=25)



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

Overall Program Recommendations

Table D-27 includes a full list of overall program improvement recommendations as provided by participants. Section 5.3.3 includes an additional discussion around these overall recommendations.

Table D-27: Recommendations for Program Improvement*
(Open-ended and multiple responses allowed; n=20)

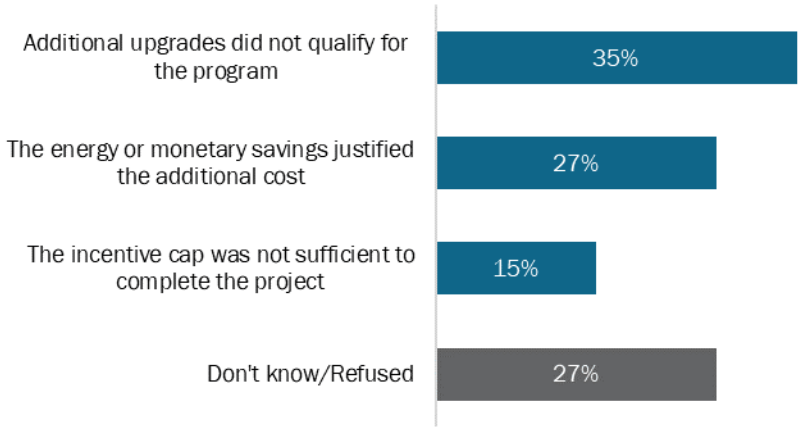
Recommendations	Respondents
Increase incentives	25%
Offer additional marketing/outreach beyond door-to-door	25%
Offer the option for businesses to purchase additional lighting at a reduced cost	15%
Allow non-program contractors to do the installation	10%
Increase the response times from Save On Energy representatives	10%
Improve the vetting process for the Save On Energy representatives who perform installations	5%
Improve the communication between the Save On Energy representatives who perform initial site assessments and those who perform the installations	5%
Increase the transparency about the work performed	5%
Offer more equipment options	5%
Improve the application process for multi-tenant buildings	5%

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

Additional Energy-Efficient Upgrades

Figure 7-18 includes a list of reasons that participants installed additional energy-efficient equipment upgrades following participation in the program. Section 5.3.5 includes an additional discussion around these additional energy-efficient upgrade decisions.

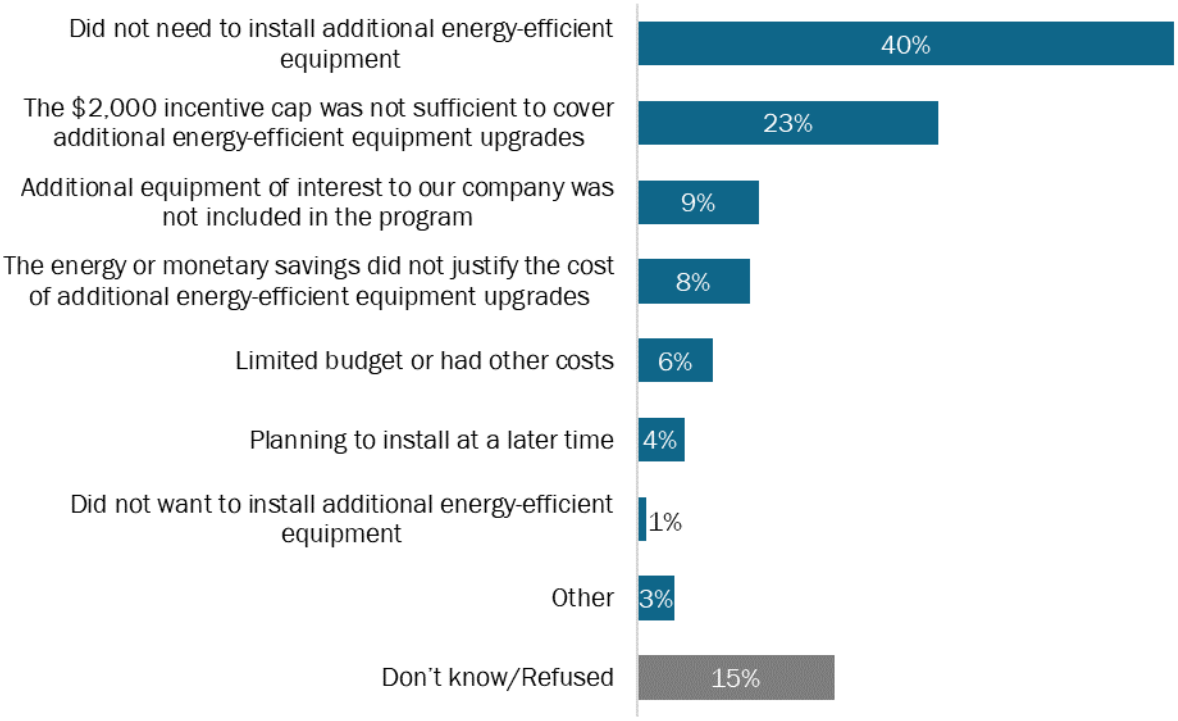
Figure 7-18: Reasons for Installing Additional Energy-Efficient Equipment Upgrades
(Open-ended and multiple responses allowed; n=26)



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

Figure 7-19 includes a list of reasons that participants did not install additional energy-efficient equipment upgrades following participation in the program. Responses included in the "other" category (5%) included the COVID-19 pandemic (2 respondents), the space was leased (1 respondent), and additional upgrades were dependent on the tenants (1 respondent). Section 5.3.5 includes an additional discussion around these additional energy-efficient upgrade decisions.

Figure 7-19: Reasons for Not Installing Additional Efficient Equipment Upgrades
(Open-ended and multiple responses allowed; n=142)

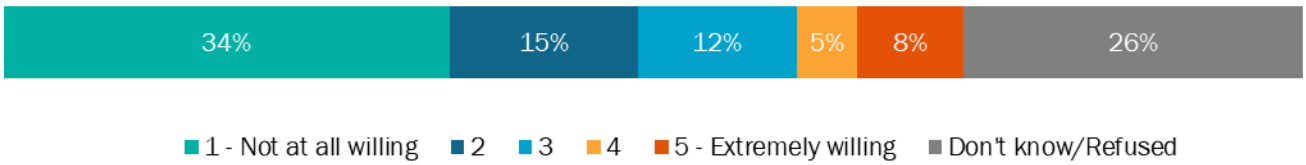


* Does not sum to 100% due to multiple responses.

ESA Fees

Participants were asked whether their company was willing to pay for ESA site visits for lighting upgrades that may require them. They rated their willingness to pay on a scale from one (1) to five (5), where one indicates "not at all willing" and five indicates "extremely willing." Relatively few respondents (13%) were willing to pay for ESA site visits (4 or 5 ratings) (Figure 7-20).

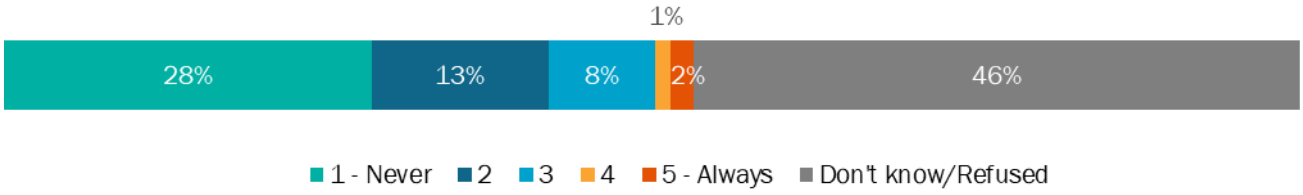
Figure 7-20: Willingness to Pay for ESA Site Visits (n=172)



Participants were asked how frequently ESA fees are incurred. They rated the frequency on a scale from one (1) to five (5), where one indicates "never" and five indicates "always." A slightly greater

percentage of respondents had never had to pay ESA fees (28% providing a 1 rating) compared to those who had paid ESA fees (24% providing a 2 to 5 rating) (Figure 7-21).

Figure 7-21. Frequency that ESA Fees are Incurred (n=172)*

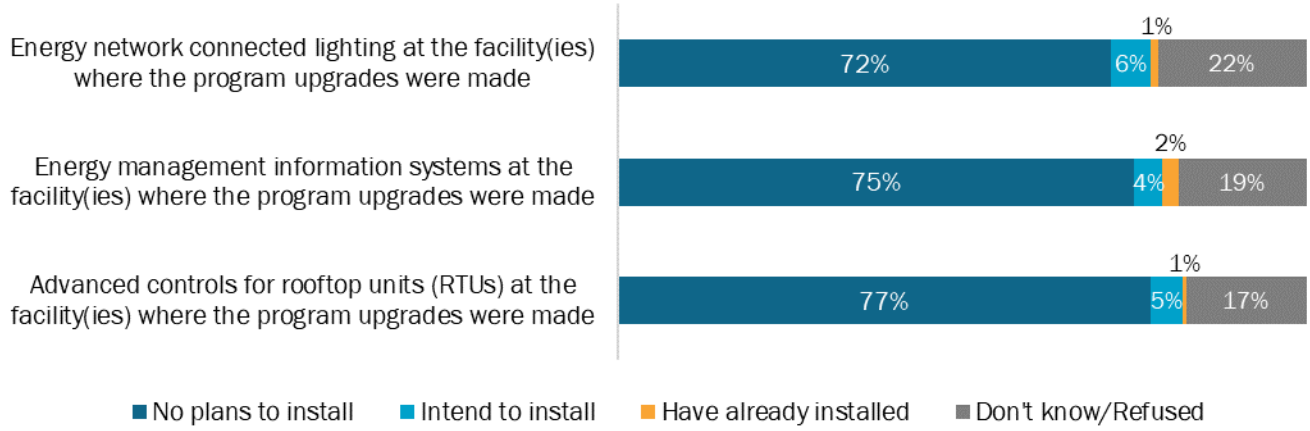


*Does not sum to 100% due to rounding.

Control Equipment

Participants were asked whether their company has installed or intended to install advanced controls for rooftop units, energy management information systems, and/or energy network-connected lighting at their facilities. Responses were similar across the technologies. Most respondents (94% each) stated they had no plans to install the technology or did not know (Figure 7-22). Few respondents (4-6%) stated they intend to install it, while the remaining respondents (1-2%) stated they already have control equipment installed.

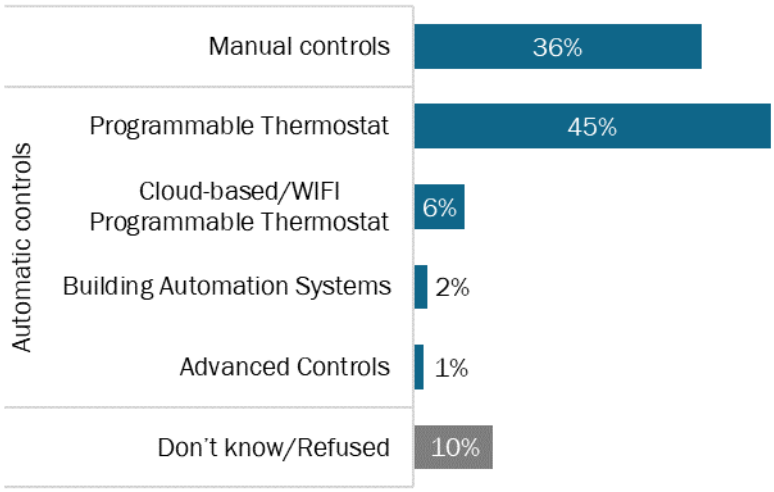
Figure 7-22: Installation of Control Equipment (n=172)*



* May not sum to 100% due to rounding.

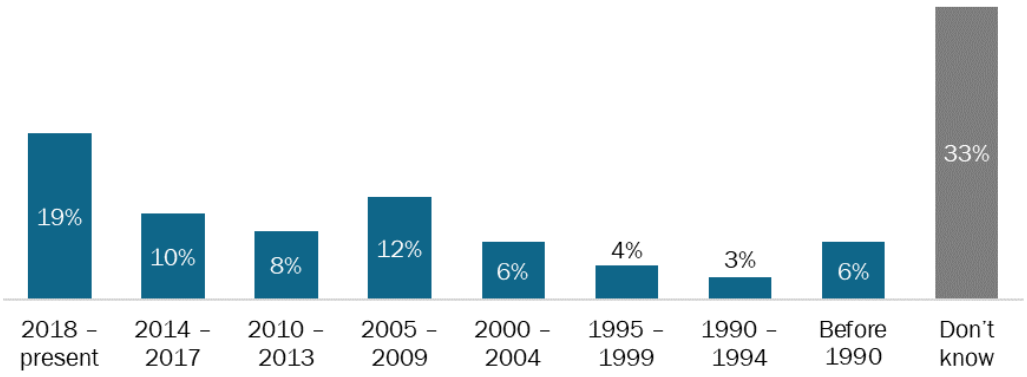
The most common type of thermostat or other system controls used with primary space heating equipment at the facilities were programmable thermostats (45%) (Figure 7-23). Manual controls (36%) were the second most common. Less frequently mentioned controls were cloud-based/WIFI programmable thermostats (6%), building automation systems (2%), and advanced controls (1%).

Figure 7-23: Types of Controls Used with Primary Space Heating Equipment (n=172)



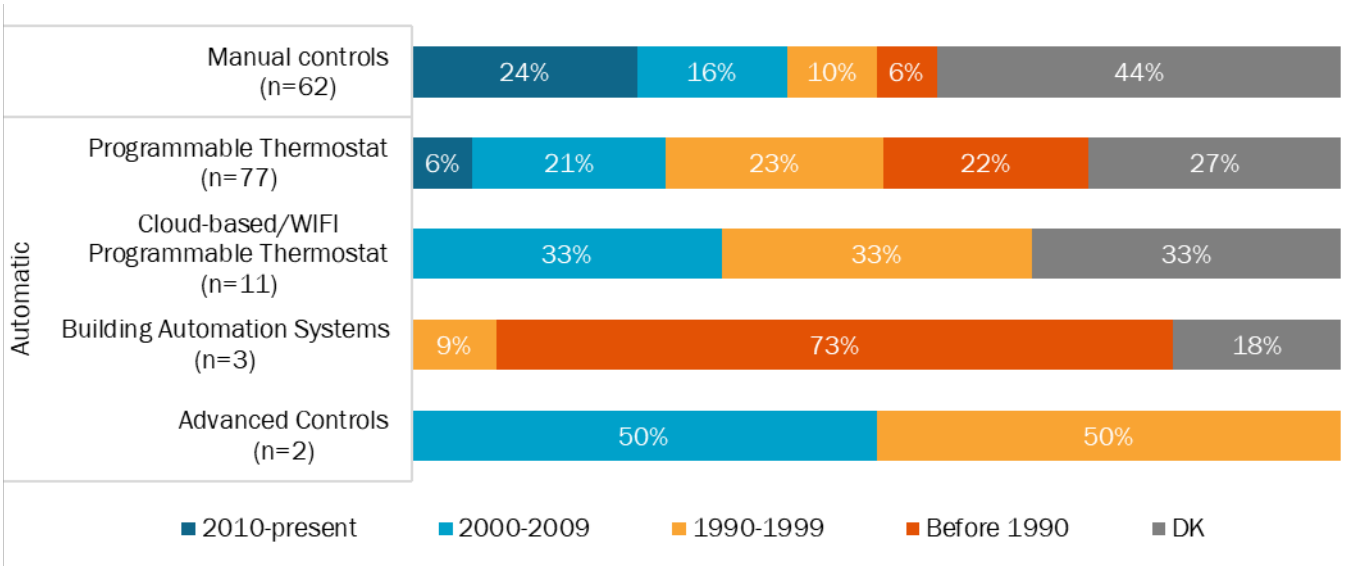
Almost one-fifth (19%) of controls were installed in the past four years, and almost two-fifths (37%) have been installed since 2010 (Figure 7-24 and Figure 7-25).

Figure 7-24: Control System Installation Year (n=155)*



* Does not sum to 100% due to rounding.

Figure 7-25: Control System Installation Year by Control Type (n=155)*

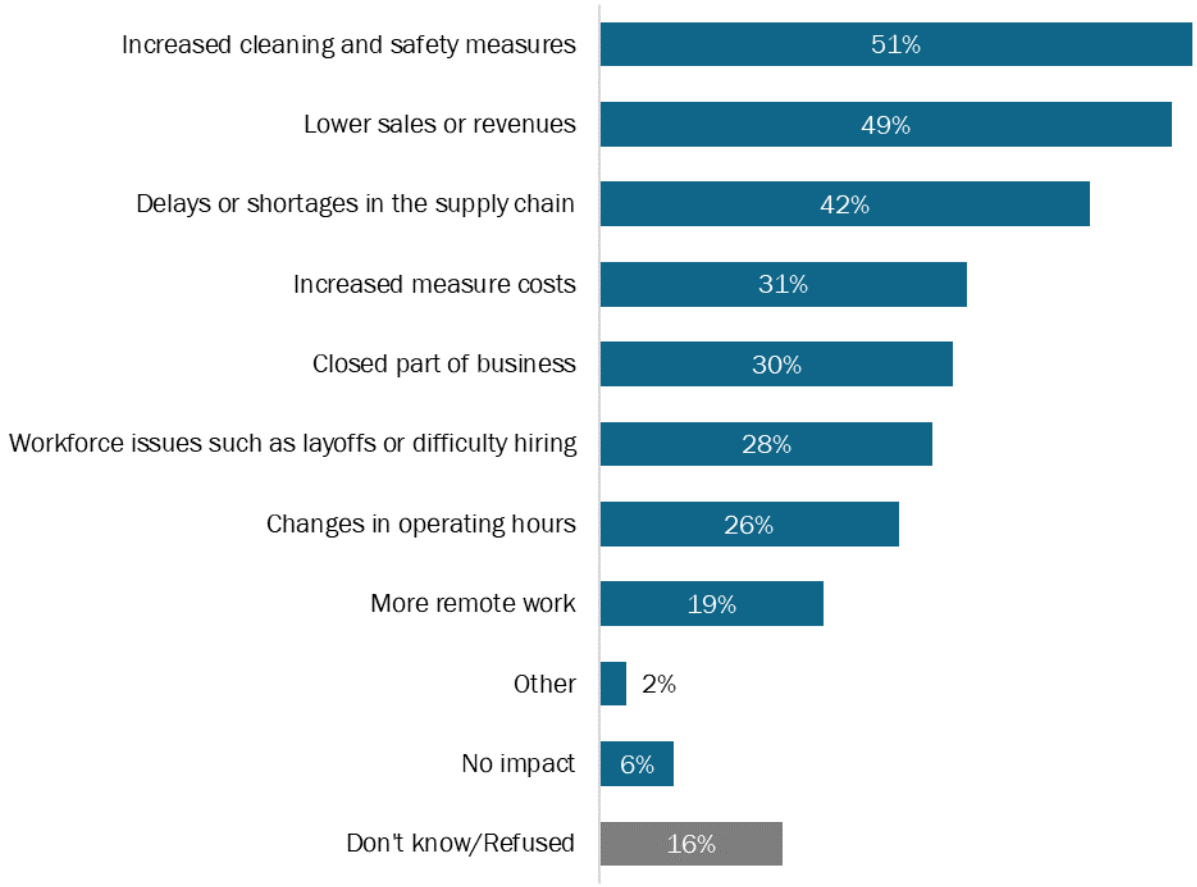


*Does not sum to 100% due to rounding.

Business Response to COVID-19

Respondents were asked about how the COVID-19 pandemic had impacted their company and its operations (Figure 7-26). Most respondents (78%) reported the COVID-19 crisis impacted their businesses. They reported various effects of the COVID-19 pandemic. The most common impacts were increased cleaning and safety measures (51%), lower sales or revenues (49%), delays or shortages in the supply chain (42%), and increased measure costs (31%). Impacts included in the "other" category (2%) include low employee morale (1 respondent), staff being able to take breaks during closures (1 respondent), saved on energy costs during business closures (1 respondent), and closed entire business (1 respondent).

Figure 7-26: Impacts to Business Operations of COVID-19
(Open-ended and multiple responses allowed; n=172)*



* 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 illustrate these shocks:

1. **What are the job impacts from new demand for EE 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 EE program?** IESO EE 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 sources of data for each research question were as follows:

1. **Demand for EE 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).
   Customers' intentions for 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

   96. Other, please specify:

   98. Don't know

   99. Refused

   J2. Do you anticipate the distribution of these electricity bill savings to be treated differently than any other earnings?
   1. Yes – More distributed to shareholders/owners
   2. Yes – More to savings
   3. Yes – More to reinvestment
   4. No

98. Don't know

99. Refused

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

1. Percent distribute [NUMERIC RESPONSE BETWEEN 0 AND 100]
2. Percent save/retain earnings [NUMERIC RESPONSE BETWEEN 0 AND 100]
3. 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.

1. SBP funding. IESO EE programs are funded by a volumetric charge on electricity bills and, volumetrically, residential customers accounted for 35 percent of consumption and non-residential customers accounted for 65 percent in 2021. The overall program budget was distributed between these two customer classes by these percentages and used as input values for the analysis.
2. 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 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 EE 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 and thus 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 EE 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 EE 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 both 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 includes only 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 above job impact types (direct, indirect, and induced) and also the type of job (total jobs vs. FTEs). These results—along with the model input shock values—are presented and discussed at a high level in Section 6.3 and in more detail in Appendix F.

Appendix F Detailed Job Impacts Inputs & 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 131 total jobs in Canada, with 116 jobs created in Ontario. Of the 131 estimated total jobs, 69 are direct jobs, 31 are indirect jobs, and another 31 are induced. In terms of FTEs, the numbers are slightly lower, with 96 FTEs created in Ontario and 108 FTEs created nationwide. Of these 108 FTEs, direct jobs account for 60 FTEs, 24 FTEs are indirect jobs, and 24 FTEs are induced jobs. In total, the SBP Program created 30.9 jobs per million dollars of investment (i.e. program budget).

Table F-1: Total Job Impacts by Type

Job Impact Type	Ontario FTE (In Person-Years)	Total FTE (In Person-Years)	Ontario Total Jobs (In Person-Years)	Total Jobs (In Person-Years)	Total Jobs per $1M Investment (In Person-Years)
Direct	56	60	65	69	16.2
Indirect	20	24	24	31	7.3
Induced	19	24	26	31	7.4
Total[1]	**96**	**108**	**116**	**131**	**30.9**

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:

1. The demand shock, representing the demand for energy-efficient products and services from SBP
2. The business reinvestment shock, representing the increased business reinvestment due to bill savings (and net of project funding)
3. 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 services. Lighting fixtures had the

highest total cost of the two product categories and accounted for $3.5 million of the overall program cost. The other product category, Electric light bulbs and tubes, had $0.4 million in total costs. The similarities of the 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 ($ Thousands)	Labour ($ Thousands)	Total Demand Shock ($ Thousands)
Lighting Fixtures	1,844	1,635	1,481
Electric Light Bulbs and Tubes	95	84	179
Subtotal	**880**	**781**	**1,661**
Office Administrative Services	-	-	451
Total			**2,112**

The second shock modelled by the IO Model was the business reinvestment shock. This shock represented the amount 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 ($18.8 million) was the net electricity bill savings (NPV = $19.1 million[9]), and the portion of project costs not covered by incentives ($0.3 million). The portion of this $18.8 million 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 77% of bill savings would be reinvested ($14.2 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 $6.0 million over 26 industries, as shown in the table.

[9] A small error with the NPV calculations was discovered after the models had been run; this represented an overall decline in the reinvestment shock of 4%. The NPV, reinvestment shock and jobs impacts resulting from the reinvestment shock presented in the report reflect the corrected values.

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

Category Description	Business Reinvestment Shock *($ Thousands)*
Accommodation and food services	1,226
Advertising, promotion, meals, entertainment, and travel	76
Arts, entertainment and recreation	488
Crop and animal production	586
Crop, animal, food, and beverage	195
Educational services	369
Finance, insurance, real estate, rental and leasing and holding companies	173
Forestry, logging, paper, and printing	173
Health care and social assistance	1,248
Machinery	195
Non-profit institutions serving households	737
Non-residential building construction	98
Other	1,963
Other aboriginal government services	98
Other activities of the construction industry	98
Other municipal government services	0
Other services (except public administration)	737
Owner occupied dwellings	151
Primary and fabricated metal	195
Professional, scientific and technical services	98
Repair construction	98
Repair, maintenance and operating and office supplies	1,128
Residential building construction	195
Retail trade	3,135
Support activities for agriculture and forestry	195
Transportation and warehousing	98
Wholesale trade	466
Total	14,219

The third model input is the household expenditure shock.[10] 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 $4.2M program budget or $1.5M.

[10] The model is actually run 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 Section F.1. Table F-4 presents 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 would result in the creation of 51 total jobs (measured in person-years) in Canada, of which 47 will be in Ontario. Of the 51 jobs, 29 were direct, eight were indirect, and 13 were induced. In terms of FTEs, the numbers are slightly lower; 38 FTEs were estimated to be created in Ontario and 41 in total across Canada. Of those 41 FTEs, 25 were direct, seven indirect and ten induced. Direct job 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	Ontario FTE (In Person-Years)	Total FTE (In Person-Years)	Ontario Total Jobs (In Person-Years)	Total Jobs (In Person-Years)
Direct	25	25	29	29
Indirect	6	7	6	8
Induced	8	10	11	13
Total	**38**	**41**	**47**	**51**

Table F-5 presents the results of the model run for the business reinvestment shock. Job impacts generated by business investment were equal to 40 direct total FTEs and 45 total direct jobs. Overall, business investments were responsible for 76 FTEs and 92 total jobs across Canada.

Table F-5: Job Impacts from Business Reinvestment Shock

Job Impact Type	Ontario FTE (In Person-Years)	Total FTE (In Person-Years)	Ontario Total Jobs (In Person-Years)	Total Jobs (In Person-Years)
Direct	36	40	42	45
Indirect	16	20	20	26
Induced	13	16	17	22
Total	**65**	**76**	**79**	**92**

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 one FTE and two total jobs across Canada due to the decreased household spending.

Table F-6: Job Impacts from Residential Funding Shock

Job Impact Type	Ontario FTE (In Person-Years)	Total FTE (In Person-Years)	Ontario Total Jobs (In Person-Years)	Total Jobs (In Person-Years)
Direct	3	3	4	4
Indirect	1	2	2	2
Induced	1	1	1	2
Total	**5**	**6**	**7**	**8**

The non-residential sector also contributes to program funding. The StatCan IO Model does not adjust production functions for all industries experiencing marginally higher electricity price changes, so this portion of the shock would be modelled 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. The total electricity demand has been increasing over time and is projected to continue increasing[11]. 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 indicates that it will provide estimates regardless of the impact size. 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 presents 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 69 estimated total direct jobs, 65 were in Ontario. A similar proportion of the indirect and induced jobs were also in Ontario; 24 of 31 indirect jobs and 26 of 31 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 96 FTEs (of all types) created in Ontario and 108 FTEs added nationwide. Almost all direct FTEs (56 of 60) were added in Ontario, representing approximately 58% of the total FTEs added in Ontario and 52% of all FTEs created across Canada. In 2021, each $1M of the program spent resulted in the creation of 30.9 total jobs compared to 29.6 jobs per $1M for the PY21 SBP. The extra 1.3 jobs per $1M observed in SBP is likely due to the significantly greater reinvestment shock (over two times larger) for customers in this program.

[11] Annual Planning Outlook – A view of Ontario's electricity system needs; 2021. IESO.

Table F-7: Total Job Impacts by Type

Job Impact Type	Ontario FTE (In Person-Years)	Total FTE (In Person-Years)	Ontario Total Jobs (In Person-Years)	Total Total Jobs (In Person-Years)	Total Jobs per $1M Investment (In Person-Years)
Direct	56	60	65	69	16.2
Indirect	20	24	24	31	7.3
Induced	19	24	26	31	7.4
Total[1]	**96**	**108**	**116**	**131**	**30.9**

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 presents the total jobs created due to program activities and energy savings in the first year versus 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 throughout the measures' EULs. Job impacts from first-year activities comprise roughly 8% of the total, with 11 out of the total of 131 person-years. Seven of these person-years come from first-year energy savings. The remaining 120 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	From First Year Activities Total Jobs (In Person-Years)	From Bill Savings After First Year Total Jobs (In Person-Years)	Total Jobs (In Person-Years)
Direct	6	63	69
Indirect	3	28	31
Induced	2	29	31
Total[1]	**11**	**120**	**131**

[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 presents 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 presents that the industry with the largest job impacts was Administrative and support, waste management and remediation services, which added 14.6 jobs. This category is large and non-specific and reflects the need to hire individuals to fill a large range of roles based on program needs (for example, 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 7.4 and 5.6 jobs, respectively.

Table F-9: Job Impacts by Industry

Output Industry Category	Ontario FTE (In Person-Years)	Total FTE (In Person-Years)	Ontario Total Jobs (In Person-Years)	Total Jobs (In Person-Years)
Administrative and support, waste management and remediation services	26.9	27.5	32.4	33.4
Non-residential building construction	14.8	14.8	16.9	16.9
Retail trade	8.8	9.7	11.7	12.9
Manufacturing	8.3	11.8	8.6	12.2
Professional, scientific and technical services	6.9	8.6	8.6	10.7
Wholesale trade	8.1	9.5	8.3	9.8
Finance, insurance, real estate, rental and leasing and holding companies	4.6	5.5	6.0	7.2
Transportation and warehousing	2.9	3.8	3.5	4.5
Accommodation and food services	2.0	2.8	3.0	4.1
Information and cultural industries	1.8	2.5	2.0	2.8
Other services (except public administration)	1.4	1.8	2.1	2.6
Government education services	1.8	1.9	2.2	2.3
Residential building construction	1.4	1.4	1.8	1.8
Engineering construction	1.5	1.5	1.6	1.6
Health care and social assistance	0.8	0.9	1.4	1.6
Repair construction	1.0	1.1	1.1	1.3
Arts, entertainment and recreation	0.4	0.6	0.8	1.1
Educational services	0.3	0.3	0.7	0.8
Other municipal government services	0.6	0.6	0.6	0.7
Other federal government services	0.6	0.6	0.7	0.7
Crop and animal production	0.2	0.3	0.4	0.7
Non-profit institutions serving households	0.4	0.5	0.6	0.7
Utilities	0.3	0.4	0.4	0.4
Government health services	0.3	0.4	0.3	0.4
Total[1]	**96**	**109**	**116**	**131**

[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 on respondents, which would be considered direct impacts. These two questions are below, with relevant illustrative verbatim responses below:

1. Did the 2021 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:
   a. *"Introduced to new customers. Allowed us to showcase new lighting benefits and equipment."*
   b. *"Increased sales, residual work after installation."*
   c. *"Interaction with more customers."*
   d. *"The program provided me with great work, and I did not need to chase people for money."*

   The program hindered the growth of my business in the following ways:
   a. *"Profit margin was low."*
   b. *"It was confusing for us and customers as materials we delivered were broken/damaged or wrong."*

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:
   a. *"3 extra [employees]."*
   b. *"Extra 3 to 4 men working on the program."*

   Negative Impacts:
   a. *"Was hoping to hire more workers to be employed, but there was not enough work being given throughout the year. The program didn't help us achieve our goal."*

Respondents indicated that the program generally resulted in slight increases in staffing overall. Participants additionally stated that the program afforded steady revenue streams during times that business would otherwise be slower, as well as increasing client touch points and business opportunities. No respondents indicated decreases in staffing due to the SBP program. Customer verbatims further support the direct job gains estimated by the model, with customers indicating that additional staff members had been hired as a result of the SBP program. One respondent indicated a desire to hire additional employees but could not due to lower-than-expected revenue from the program. In general, responses reveal the potential benefits of the program for firms. Respondents that indicated a negative effect on their business primarily stated that the biggest driver was smaller than anticipated revenue streams, which resulted in further investments in the program not being financially viable. This issue could be examined further if parts of the program were to be redesigned in order to enhance job impacts.

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 assumes of fixed technological coefficients. It does not consider 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 detail about the NEBs methodology as well as additional NEBs results. A summary of the methodology was provided in Section 3.3 and results were provided in Section 0.

G.1 Methodology

Participant Survey

The *Non-Energy Benefits Study: Phase II* assessed the NEBs from energy efficiency projects funded by the IESO over the 2017-2019 period.[12] The PY2021 evaluation applied the same methodology as the Phase II study 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 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 in order to be more representative of the sample:

- **Hybrid relative scaling priority** – in which we give priority to the relative-scaling response value. In this approach, we only consider the willingness to pay if the participant did not answer the relative scaling question.

[12] 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 we consider the lowest non-null response between the relative scaling and the willingness-to-pay questions.

As a final step we 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 $/kWh value was calculated for each individual participant, then all values were averaged.
- **Average (overall):** Refers to an overall average value where total NEB benefits ($'s) were summed across all survey participants who reported experiencing an 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

NEB	Test	PY2021 (SBP) Average (per participant)	PY2021 (SBP) Average (Overall)	Phase II (SBP & Retrofit) Average (per participant)	Phase II (SBP & Retrofit) Average (Overall)
Reduced building & equipment O&M	Hybrid (min approach) ($/kWh)	0.32	0.13	0.12	8%
Reduced building & equipment O&M	Hybrid (RS-priority) ($/kWh)	0.46	0.21	0.72	17%

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 report.

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). Among the nine assessors and installers reporting NEBs, five reported that their customers experienced reduced building and equipment O&M, five also reported customers experiencing benefits from improved lighting quality and aesthetics, and two reported that the upgrades were attractive and pleasing to customers.

Table G-2: Assessor and Installer Reported Non-Energy Benefits
(Open-ended and multiple responses allowed; n=9)*

NEB	Respondents
Reduced building & equipment O&M	5
Improved lighting quality/aesthetics	5
Attracts/pleases customers	2

Appendix H SBP Building Types and Delivery Regions

Table H-1: 2021 SBP Program Reported Building Types

Building Type Reported in SBP Database	Resource Innovations Designation
Cattle Farm	Agricultural
Agricultural Other	Agricultural
Swine Farm	Agricultural
Dairy Farm	Agricultural
Greenhouse	Agricultural
Convenience Stores	Convenience Stores
Convenience Stores	Convenience Stores
Hotels: Corridors	Hotels/Motels
Hotels/Motels: Public Spaces	Hotels/Motels
Hotels/Motels: Guest Rooms	Hotels/Motels
Office (small suite)	Office
Low Rise Office Buildings - Core	Office
Industrial Plants: Offices	Office
Schools	Others
Nursing Homes	Others
Laboratories	Others
Computer Rooms	Others
Clubhouses	Others-Entertainment
Museums	Others-Entertainment
Beauty Parlors	Others-Service
Medical Centres & Clinic	Others-Service
Barber Shops	Others-Service
Dental Offices	Others-Service
Fire Stations	Others-Service
Funeral homes	Others-Service
Places of Worship	Others-Service
Municipal Buildings - Town Halls	Others-Service
Places of Worship	Others-Service
Police Stations	Others-Service
Libraries	Others-Service
Banks	Others-Service
Full-Service Restaurants	Restaurants

Building Type Reported in SBP Database	Resource Innovations Designation
Fast Food Restaurant	Restaurants
Bars & Taverns	Restaurants
Small Retail Stores	Retail
Retailer Stores	Retail
Grocery Stores	Retail
Supermarkets	Retail
Department Stores	Retail
Retail Stores in Malls	Retail
Warehouses	Warehouses

Table H-2: 2021 SBP Geographic Regions

Postal Code First Character	Resource Innovations Geographic Region	Project Count
L	Central	869
K	Eastern	436
N	Southwestern	387
P	Northern	393
M	Toronto	240