IMPACT AND PROCESS EVALUATION REPORT

INTERIM FRAMEWORK PROCESS AND SYSTEMS UPGRADES PROGRAM PY2019

Date:	13 November 2020
Prepared for:	Independent Electricity System Operator (IESO)
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ACKNOWLEDGEMENTS

The evaluation team would like to thank Nik Schruder, Jessei Kanagarajan, Alice Herrera, Jimmy Lu, Gavin Zheng, and Nam Nguyen at the Independent Electricity System Operator (IESO) for their assistance in coordinating this evaluation effort. With their support and guidance, the evaluation team was able to complete their activities as efficiently and successfully as possible.

The evaluation team would also like to thank all the staff at the program implementers and contractors that the evaluation team interviewed. Their insights have been invaluable to the evaluation team's efforts to improve the Conservation Programs and have produced high quality data that will serve Ontario conservation efforts for years to come.

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1. EXECUTIVE SUMMARY

1.1 EVALUATION GOALS AND OBJECTIVES

This report documents the findings from the process evaluation conducted for the Process & Systems Upgrades program (PSUP) in Program Year (PY) 2019. PSUP provides incentives to industrial facilities for the implementation of energy efficiency or system optimization projects that are complex and capital-intensive. The evaluation team conducted a targeted process evaluation of this program to examine the:

- Program transition from the local distribution company to the IESO implementation
- Program changes and processes
- Participant and contractor experience, including customers' future upgrade plans
- Interest in the pay-for-performance payout structure

In April 2019, the IESO began to centrally deliver all energy efficiency programs in Ontario by implementing a new Interim Framework (IF) following a directive from the Minister of Energy, Northern Development and Mines.[1] The IF replaced the Conservation First Framework (CFF) with an updated portfolio of Save on Energy Programs and is in effect from 1 April 2019 through 31 December 2020.

Note that the findings discussed in the subsequent sections of this report address only the subset of the objectives referenced above due to not having all data collection activities completed. The evaluation team is waiting until enough participants have moved through the project installation stage to reach out to them and their contractors to gather additional feedback. This additional feedback will be reported in the next iteration of the report for PY2020.

1.2 EVALUATION RESULTS

1.2.1 IMPACT EVALUATION RESULTS

The EcoMetric team will include the impacts of the PY2019 PSUP projects in the PY2020 evaluation report. At the time of impact evaluation sampling, one PSUP project was in service. As such, the evaluation team will conduct a thorough impact evaluation in PY2020 when the population of projects is more robust.

1.2.2 PROCESS EVALUATION RESULTS

Several completed data collection activities informed the PY2019 process evaluation. In-depth interviews were completed with IESO program leads, IESO marketing staff, IESO technical review staff, and third-party technical review staff. Semi-structured interviews were also conducted with

1 http://www.ieso.ca/-/media/Files/IESO/Document-Library/ministerial-directives/2019/Directive-Interim-Framework.pdf?la=en

PSUP contractors who installed equipment for participants. Process evaluation data will be collected in two waves: the first in PY2019 and the second wave in PY2020.

Key findings and recommendations from the interviews with program staff, technical reviewers, and the initial contractor survey results are summarized in Section 1.3.

1.3 KEY FINDINGS AND RECOMMENDATIONS

This section summarizes the key findings and recommendations from the PY2019 PSUP program process evaluation. All findings and recommendations are summarized in Section 7.

Finding 1: Generally, internal program processes are working efficiently at moving projects through the pipeline. The current IESO program team structure is efficient with limited-to-no duplication of efforts in terms of managing the application, review, and approval processes. The IESO and Technical Reviewer communication is frequent and targeted. The project tracking method, although basic, fits program needs. Additionally, program application changes are reducing contracting timelines.

Finding 2: External communication about certain stages of project development represent pain points. There appears to be a disconnect between program staff and participants' contractors regarding engineering study requirements, M&V plans, and program changes. Preliminary results from the surveyed contractors indicate that a notable proportion of contactors have a low to moderate level of satisfaction with the technical review process and the M&V plan process. Though it is expected that negotiating the M&V plans would be the most contentious part of the process, some contractors also felt that requirements of engineering studies and the application itself could have also been communicated in a clearer way. Please note, though IESO's current practice is to communicate directly with customers, the contractors are key stakeholders in ensuring these projects' progress. Contractors are also the primary drivers of high program participation rates in many other industrial programs.

Recommendation 1: Communicate more clearly the program requirements and changes at each critical stage: the engineering study, application, and the M&V plan. Consider proactive and regular outreach to participating contractors (webinars) to clarify program requirements. Although the IESO program team primarily communicates directly with the customer, engaging the contractors proactively could alleviate barriers to project completion.

Recommendation 2: Continue to monitor contractor feedback on engineering study requirements, M&V plans, and program changes in future contractor surveys to assess whether this remains a pattern.

Finding 3: COVID-19 shutdowns appear to be affecting project development and implementation in PY2020, which might impact program "contracted" savings targets given the already tight IF deadlines.[2]

Recommendation 3: Investigate what other industrial programs are doing to mitigate the effects and risks from COVID-19 shutdowns to help determine how to adapt going forward. For example, program administrators like Efficiency Maine, MassCEC, Silicon Valley Power, and Eversource are extending deadlines for C&I customers. MassCEC's ACES program is loosening interim milestone deadlines but holding the final project installation deadline of next summer for battery installations. Another approach for administrators that found C&I project pipelines drying up due to COVID-19 was to increase incentives – Eversource and United Illuminating in Connecticut are trying this method. The utilities are not widely advertising many of these changes, but they may cooperate with customers who were planning projects.

[2]Although this evaluation report is for PY2019, the surveys with customers and contractors were conducted during the COVID-19 pandemic and derived early insights for PY2020.

2. INTRODUCTION

2.1 EVALUATION GOALS AND OBJECTIVES

The Independent Electricity System Operator (IESO) retained EcoMetric Consulting, LLC, to evaluate the 2019-2020 Interim Framework (IF) Industrial Programs administered in Ontario. The Industrial Programs incentivize equipment measures, engineering studies, and energy management services for commercial and industrial facilities in Ontario.

This report contains the findings from the process evaluation conducted for the Process & Systems Upgrades program (PSUP) in Program Year (PY) 2019. The PSUP provides financial support for the implementation of energy efficiency projects and system optimization projects for facilities that are intrinsically complex and capital-intensive.

A targeted process evaluation of the PSUP Interim Framework (IF) program was conducted in PY2019 to address five specific objectives:

- Examine the effect of the PSUP transition from the local distribution company (LDC) to the IESO implementation model.
- Assess effectiveness of program changes and processes.
- Assess participant and contractor experience.
- Document interest in the pay-for-performance payout structure and customers' future upgrade plans.
- Derive early insights for PY2020 during the COVID-19 pandemic.

In April 2019, the IESO began to centrally delivery all energy efficiency programs in Ontario by implementing a new Interim Framework (IF) following a directive from the Minister of Energy, Northern Development and Mines. The IF replaced the Conservation First Framework (CFF) with an updated portfolio of Save on Energy Programs and is in effect from 1 April 2019 through 31 December 2020.

Note that the findings discussed in the subsequent sections of this report do not address the participant experience referenced above due to not all data collection activities being complete at the time it was written. The evaluation team is waiting until enough participants have moved through the project installation stage to reach out to them and gather relevant feedback. Reporting on the participant experience will be included in the PY2020 evaluation report.

2.2 PROGRAM DESCRIPTION

PSUP provides financial support for the implementation of energy efficiency projects and system-optimization projects to facilities that are intrinsically complex and capital intensive. In response to prior customer feedback, the IESO made several changes to the program in the IF to streamline and simplify the offering. Those changes include the following:

- The program application now contains a single point for customer sign-off.

- Incentives based on actual savings.
- The measurement and verification (M&V) period is shorter: one year for smaller projects and four years for larger projects.
- The total incentive available for the project includes engineering study funding (as opposed to full study funding as a separate incentive). Studies are still fully funded (50% up front and 50% upon project application).
- The program no longer incentivizes Gas-driven Combined Heat and Power (CHP).

Note that zero PSUP projects in-service starting in PY2019 were ready for impact evaluation and reporting. Thereby, in this report, only process evaluation findings are reported. The impact findings will be detailed in the PY2020 report.

3. METHODOLOGY

This section of the report outlines methodologies used in the PY2019 evaluation of PSUP.

3.1 IMPACT EVALUATION METHODOLOGY

The impact evaluation of PSUP will be conducted throughout 2020 and 2021, and the results will be summarized in the PY2020 and PY2021 evaluation reports.

3.2 PROCESS EVALUATION METHODOLOGY

Several completed data collection activities informed the current process evaluation. These activities are summarized in Table 3.1. Process evaluation data will be collected in two waves: the first in PY2019 and the second wave in PY2020. The PY2020 report will document findings from the pending data collection activities, including 1) the program participant survey and 2) the Wave 2 contractor survey.[3] The results in this report include only the first wave of data collection.

Table 3.1 | PSUP Process Interview and Survey Counts

Interview/Survey Group	Method	Population	Target Sample	Description of Contacts
PSUP Staff	In-depth Interview (IDI)	7-15	5	IESO program leads, marketing staff, & technical reviewer, as well as implementer (technical reviewer) staff
PSUP Contractors	Semi-structured interview	30-40 contractors associated with ~40 projects (But only 17 started work)	Wave 1 = 7 of 17 completed the survey Wave 2 Target = 8 (Wave 2 pending)	Contractors who installed the equipment for the participants (Waiting until more contractors start the project to proceed with Wave 2)
PSUP Participant Survey (joint with NTG)	Mixed-mode survey (Online and over the phone)	40* (Only 1 project in-service)	TBD[4]	Participants (Waiting until projects are in-service to collect appropriate NTG and process information)

* The PSUP pipeline includes 44 active projects at 40 organizations, as of April 2020.

[3] Due to the relatively low participation in the program in its first year in the IF, the evaluation team will conduct a second wave of contractor surveys in future evaluation years when the population of participants is more robust. As the impacts of the COVID-19 pandemic on PY2020 participation are still not known, the second wave may be conducted in the PY2021 evaluation.

[4] Participant sample will be determined in the PY2020 evaluation. Once the effects of the COVID-19 pandemic on the PSUP project pipeline are known, the evaluation team will decide when to conduct the second wave of process data collection and determine the participant sample population.

3.2.1 PROGRAM DOCUMENT AND DATA REVIEW

Program documents associated with the redesign and the transition were reviewed, including the business case, the revised rules document, any other revised documents (such as the application and customer agreement), fact sheets, training provided to contractors and customers (if applicable), and any other relevant documents. This activity confirmed our knowledge of and identified any changes to, program processes and rules, and guided application tracker database analysis and interview guide development.

A strategic review of the application tracker was conducted to ascertain if changes made to the contracting in the IF shortened the application process.

3.2.2 IN-DEPTH AND SEMI-STRUCTURED INTERVIEWS

Program actors and participants' contractors were interviewed to gain insight into the program delivery efficiency and challenges.

- **In-depth Interviews** – Interviewed IESO program team and the technical reviewers involved with the delivery of PSUP. In-depth interviews are either unstructured or semi-structured interviews that use open-ended questions and probe to elicit detailed responses for qualitative analysis. These interviews were conducted to ask program staff about implementation challenges, reasons for program changes, and what processes they use to manage participants, report, or track results, conduct inspections, approve project selection and allocate incentives.
- **Contractor semi-structured interviews** – Interviewed contractors listed on project applications. Contractors were asked both closed- and open-ended questions to gather feedback on the PSUP processes, the transition, and suggestions for improvement.

3.2.3 PARTICIPANT SURVEY

Participant surveys are actively being pursued in two waves, as noted previously. This survey combines process and NTG questions. The survey will be fielded when at least some of the projects are in-service; none are in-service as of July 2020. There are about 40 projects or participants in the pipeline. The sample will include both transmission- and distribution-connected participants. To address process evaluation objectives, participants will be asked about:

- Transition experience from LDC to IESO program implementation model
- Familiarity with program changes
- Suggestions for improvement
- Satisfaction with PSUP and reasons for dissatisfaction, if any
- Interest in pay-for-performance payout model or incentives
- Facility upgrade plans over the next 5-10 years

3.3 JOB IMPACTS METHODOLOGY

An estimate of direct job impacts for PSUP in PY2019 has been provided and the cumulative results will be included in the PY2021 Impact Evaluation Report. Direct jobs can be attributed to the program for those in the market that receive funds from the program and participants that co-pay for them (e.g., installation contractor labor and inspection labor). Direct jobs also include those involved on the administrative side—the implementation contractors, evaluators, and the IESO itself. Job impacts were estimated using primary data gathered through interviews with IESO program staff, technical reviewer staff, and contractors in PY2019. An annual update of the job impacts will be provided in each impact evaluation report for every program year, which will include primary data from participant surveys.

Cumulative impact on jobs in Ontario at the program level will be reported in PY2021. However, data collection instruments were designed during the PY2019 evaluation, and the data will be collected annually. Indirect jobs account for the economic impact of the program to account for the "ripple effects" that occur as directly impacted market actors turn around and spend money they receive from programs to create new jobs themselves. Market actors were interviewed and asked them to describe the types of indirect jobs that were created by the program. Indirect job impacts of PSUP will be quantified and reported in the PY2021 evaluation.

EcoMetric will use the Statistics Canada (StatCan) Input-Output model to estimate direct and indirect job impacts of PSUP in PY2020-21 to align with job impacts analyses currently being conducted for the IESO's business and low income programs. The methodology of the job impacts analysis will be adjusted to leverage the StatCan model and will be outlined in future evaluation reports.

4. IMPACT EVALUATION

The PSUP population is low due to the transition from the CFF to the IF. The timing of the IF beginning in March 2019 did not allow for sufficient time for projects to complete. The majority of PSUP projects currently in development are not ready for evaluation so projects implemented in PY2019 will be evaluated and summarized in the PY2020 evaluation report. PSUP projects tend to be larger and more complex than those of other Save on Energy programs, so the project timelines are often longer to get projects ready for evaluation.

5. PROCESS EVALUATION

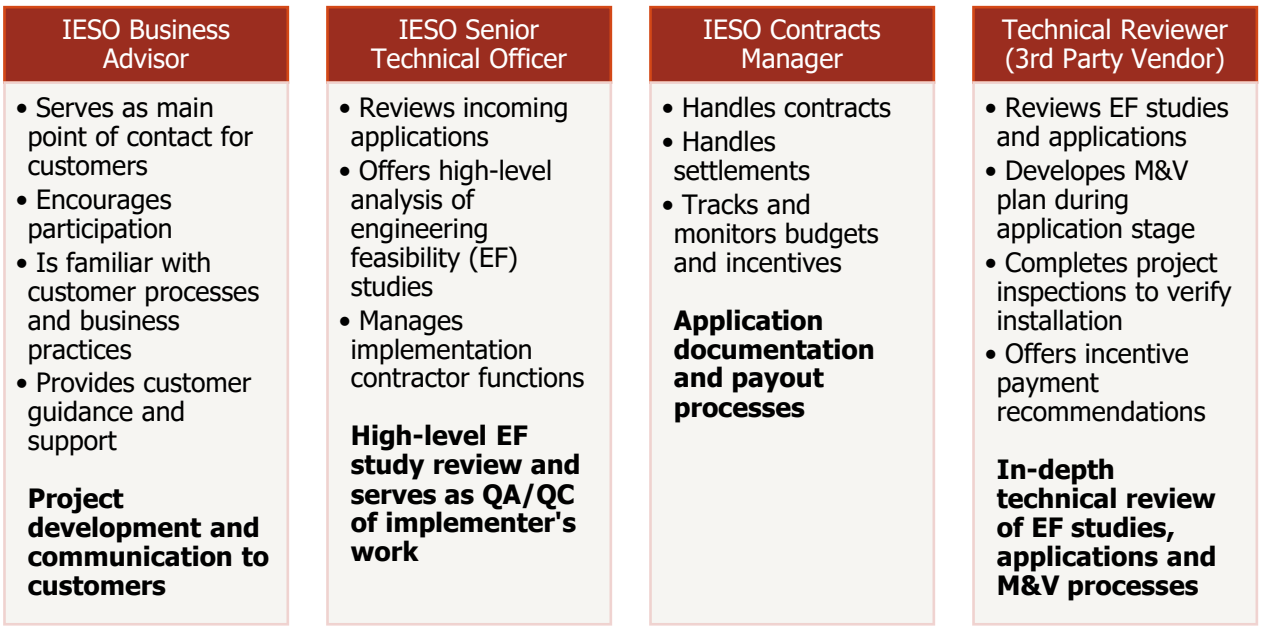
This section describes program processes in the IF documents and summarizes feedback from IESO, implementation and program delivery staff, and participants' contractors. This section also highlights preliminary findings from the contractor survey. The Wave 1 contractor survey effort resulted in seven responses, one of which was from an individual who had worked on multiple PSUP projects. As a result, this individual's response reflects various experiences.

5.1 PSUP SPECIFIC FINDINGS

5.1.1 STAFF STRUCTURE AND ROLES

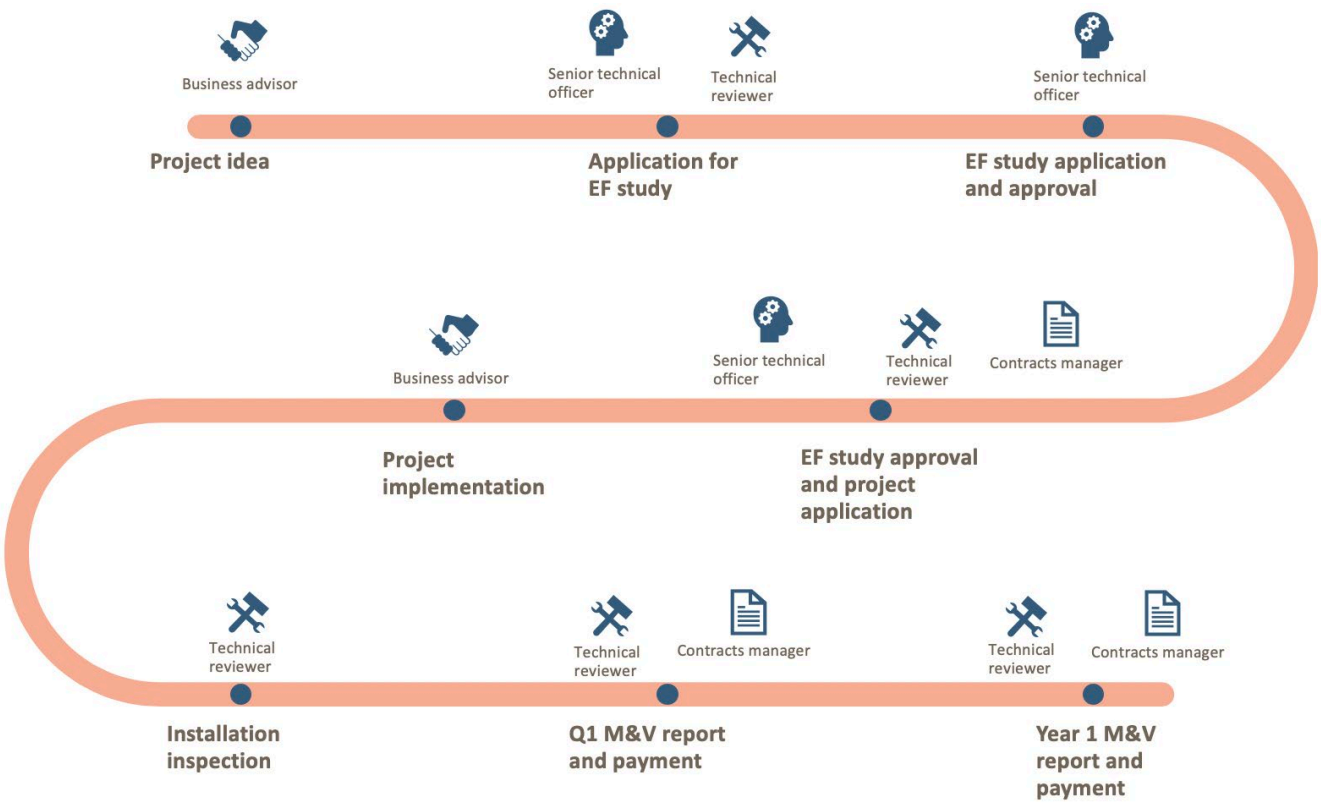
The current IESO program staff structure in the Interim Framework is efficient with limited-to-no redundancies in terms of managing the application, review, and approval processes, and IESO and technical reviewer staff can keep relevant parties in the loop about issues and questions that come up regarding projects. Figure 5.1 shows a summary of the different roles the IESO program staff and technical reviewer (third party vendor) play and shows these groups' primary role in the application, implementation, and incentive payout processes.

Figure 5.1 | PSUP Delivery Staff Allocation of Responsibilities



Each team member has a different role in the project lifecycle (see Figure 5.2), ensuring that customers experience a streamlined process that avoids overlapping responsibilities.

Figure 5.2 | Interim Framework PSUP Project Process Flow



Note: The business advisor deals with a range of customer issues, including offering guidance, customer support, and application review, as well as ensuring problems are resolved, and this team member often serves as the single point of contact between the customer and IESO.

5.1.2 TEAM COMMUNICATION

IESO program staff and technical reviewer communications are frequent and targeted, ensuring that customer issues, project statuses, and other matters are managed effectively. The technical reviewers meet with IESO program staff quarterly. During these meetings, they present results from the current quarter and compare progress against the previous quarter. Additionally, this meeting covers progress towards program goals, budget status, and specific project insights. More frequent biweekly meetings also take place to discuss issues that might come up with particular projects, eligibility rules, new technologies, and other problems that require more targeted discussion. Ad hoc phone calls and emails are also prevalent between staff and technical reviewers.

The technical reviewer's tracking method is basic and currently fits program needs, but the technical reviewer and IESO staff could enhance it in the future. The technical reviewer maintains a SharePoint database with project information. A summary spreadsheet draws information from this database to provide a pipeline dashboard. The summary is updated daily and provides IESO staff with visibility into project progress. The dashboard is not sophisticated. However, it serves its essential purpose of tracking project statuses, and additional time and funding would be required to make a more robust tracking system. Although IESO program staff can access the current dashboard, a more sophisticated cloud-based solution with an automated back end could allow for more natural version control, enhanced QA/QC on data points and formulas, and more robust data visualization.

5.1.3 CUSTOMER COMMUNICATION

Most of the customer contact in the Interim Framework flows directly from the IESO business advisor to the customer. As noted above, this advisor is the main point of contact for customers. The technical reviewer sometimes contacts customers directly to ask questions about the application, missing data, or assumptions. Still, the technical reviewer invites IESO's business advisor to the call or notifies the advisor in advance. Under the previous LDC-delivered framework, the technical reviewer had more direct communication with the customers.

Additionally, under the previous framework, IESO had the most connections to and visibility into transmission-connected customers while the LDCs had direct relationships with distribution-connected customer. Under the IF, IESO started to develop relationships with distribution-connected customers. The effectiveness of IESO's communication, especially with distribution-connected customers, will be further assessed, pending the results of the participant survey.

In contrast to the IESO program staff feedback, **three of the eight surveyed contractors expressed concerns over communication from IESO,** specifically about the engineering study requirements and program changes. One contractor commented that IESO requested additional information for the engineering feasibility study that was beyond the study scope. The contractor attributed that confusion to miscommunication. Regarding changes to the application under the IF, one contractor indicated IESO did not successfully communicate changes to these documents to the market.

5.1.4 PROGRAM REDESIGN

It is too early to tell how program changes are being received by customers as per interviewed program staff. The evaluation team will investigate this topic when interviewing program participants. Three contractors surveyed provided insights into how they received program changes, which we noted in the preceding section.

The IESO program staff interviewed expects PSUP changes to benefit customers focused on achieving efficiencies and to streamline program processes. The following reasons for introducing program changes were provided by the program staff:

1. **Added terms and conditions to the application to shorten the project contracting time –** When a customer fills out the application now, they are also signing the contract – that is, agreeing to the terms and conditions of the program. Combining the application with the program terms and conditions avoids the back-and-forth involved with having these documents as separate items. This change has the potential to cut down on 3 to 4 weeks of project-development time. Looking at the Conservation First Framework (CFF) Application and Contract Tracker files, based on the data available in the "Application Submitted" and "Contract Date" fields, the average time between application submittal and contract creation time was around 7 to 8 months for projects submitted between 2016 and 2019. Looking at the 2019 PSUP Tracker files, based on the "Application Create Date" and "Contract Date" fields, the average time between application submittal and contract creation was around 4 to 5 months. This cursory analysis suggests that the **project contracting time is shortening**, but it is also notable that there were fewer data points for the PSUP projects than CFF projects.

2. **Redesigned project workbook to streamline the application process –** The new application process features a single workbook for all project stages. Program staff report that this change in the application process will shorten the back-and-forth between IESO and the customer. The staff also notes experiencing initial challenges with making sure that applicants understand the change. The program staff indicated there might be **confusion over which portions of the workbook** participants should fill out for a particular project. The evaluation team will investigate this topic when interviewing program participants.
3. **Changed incentive structure to reward high performing customers –** The program staff reports that moving from a measure-based to a performance-based metric for incentives will benefit customers. This change will ensure that IESO rewards customers for better-than-modeled performance. Under the previous framework, if performance exceeded expectations, the customer did not receive additional compensation. The staff also notes that this change will likely be a benefit to customers as long as they have a solid understanding of project baselines and how the upgrades will perform.
4. **Streamlined how IESO compensates EF study costs between distribution- and transmission-connected customers –** Under the IF, IESO pays 50% of engineering study costs upfront, and pays the remainder if the study leads to an actual project. However, the study incentive applies to the total incentive cap available for the project. Under the prior framework, the IESO treated engineering study costs separate from the overall project incentive. For transmission customers, this change will likely not be an issue as they were operating under that structure before. However, **distribution-connected customers will have to adapt to this change** since previously, their engineering study incentive was separate from the total project incentive.

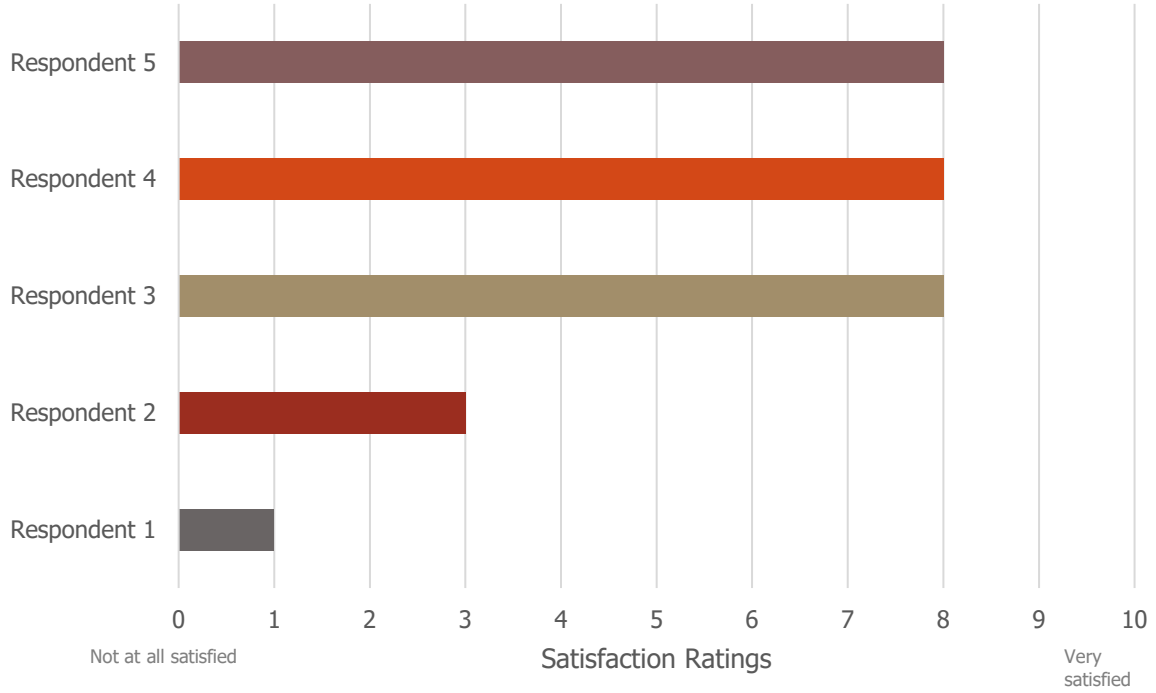
IESO program staff and technical reviewer staff also commented on the following potential challenges of program changes:

1. **The IF's new budget is smaller and its timeline shorter, which is a challenge, especially now given the COVID-19 pandemic.** Given the reduced budget and shortened timelines, program staff reflected that this change created increased competition for incentive dollars and may result in faster project timelines for more viable projects. However, it may also discourage participation since many projects in the industrial sector can take a long time to install and commission.[5] Additionally, the ongoing Covid-19 pandemic is delaying project implementation and will extend project timelines. At least one contractor reflected that projects stalled due to the COVID-19 restrictions in the spring. It is unclear how the program is addressing COVID-19 uncertainty or to what extent that will affect customer competition for funding. The team will analyze this topic further through the participant survey.
2. The application process changes appear to streamline customer participation, but confusion and some dissatisfaction surround the new process. As mentioned above, the time between application submission and contract creation has decreased significantly, indicating that application changes are streamlining the process. Nevertheless, program staff noted that there appears to be confusion regarding the changes made to the application or with customers having difficulty in adjusting to the

[5] Also note that the PSUP requires more documentation than other IESO programs due to the custom nature of industrial process efficiency. It can be difficult for customers to provide all of the necessary technical documentation required for the initial review. This often adds to increased back-and-forth communication between IESO and the customer, extending project timelines.

changes since they were accustomed to the previous framework. Communications about the application process changes appeared to be an issue for one contractor who indicated that IESO did not communicate the changes successfully to them. Additionally, Figure 5.3 shows how the surveyed contractors rated their satisfaction with the application process. Of the contractors that responded, three rated their satisfaction with the application process moderately to high, and two gave low satisfaction ratings.

Figure 5.3 | PSUP Contractor Satisfaction with Application Process, n=7*



*Two respondents did not answer.

Lastly, as noted previously, IESO is now addressing the energy efficiency needs of distribution-connected customers in addition to transmission-connected customers. One IESO staff noted that a challenge for IESO program staff will be gaining visibility into the business practices and consumption patterns of these distribution-connected customers. However, an IESO staff member noted that this challenge may not be significant as facilities that apply for PSUP are typically large and sophisticated and likely have robust data on process and energy usage. This topic will be further investigated, to the extent possible, during the participant survey to assess whether participants struggle in the initial stages of participation or during the time when business advisors are trying to gain visibility into customer's operation and consumption patterns.

5.1.5 ENGINEERING FEASIBILITY STUDY PROCESS

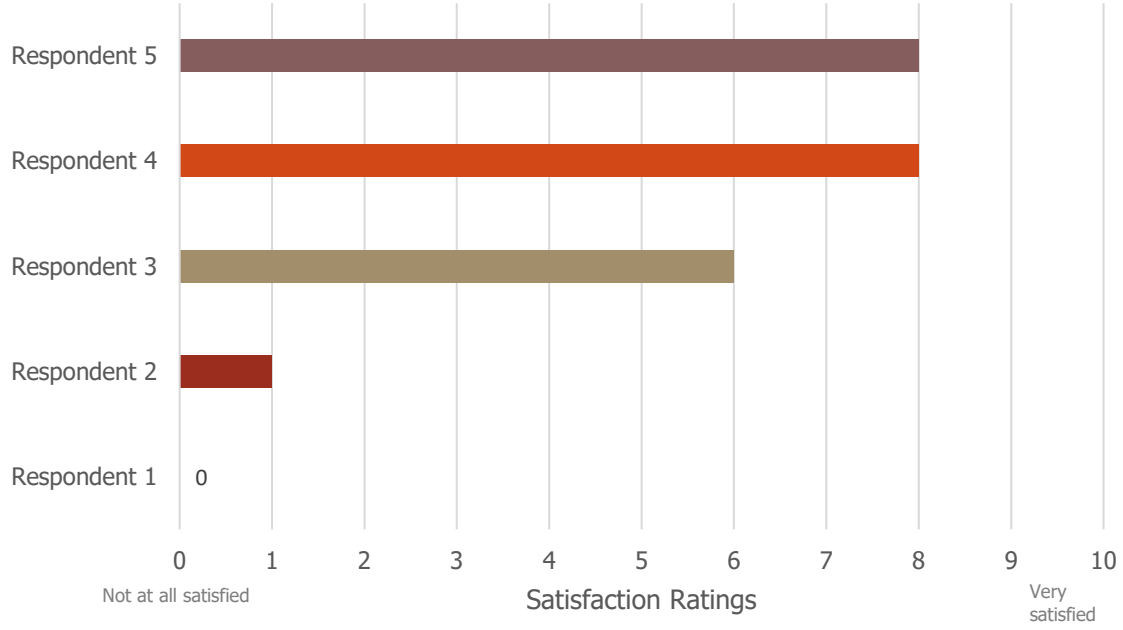
The engineering study phase examines project eligibility and viability, ensuring that realistic projects with achievable savings enter the program. Customers can complete their engineering studies or apply for IESO funding for the study. Program staff members review the studies and consult customers on project eligibility. Lighting, demand response (DR), and gas-driven CHP are not eligible for funding. Additionally, if the payback before the incentives is less than a year, the project is ineligible.

Contractors are clear on the engineering study requirements. Of the contractors surveyed, all but one indicated that the conditions of the engineering study were clear to them.

Once the engineering study is complete, IESO staff and the technical reviewer will do a technical review to verify the assumptions and methodology and to analyze the risks and certainty of savings. The technical reviewer will produce a summary of the resulting recommendations, a scorecard that summarizes vital information, and notes on risks and metrics. If the project looks viable, the customer can then turn the engineering study results into a project application.

Preliminary results from the surveyed contractors indicate that a notable proportion of contractors have a low level of satisfaction with the technical review process. Figure 5.4 shows that three respondents ranked the technical review process lower than a seven. Only two were moderately to highly satisfied, and two others have not had their engineering study reviewed at the time of the survey.

Figure 5.4 | PSUP Contractor Satisfaction with IESO Technical Review Process, n=7*



*Two respondents indicated N/A – “engineering study not reviewed yet”.

A few contractors provided more detail as to why they were not very satisfied with the technical review process. One indicated that they were asked for additional information out of the scope of the engineering study and attributed that to miscommunication between IESO and’s technical reviewer and the contractor. Another indicated that they were unsatisfied with the communication from the technical reviewer; this particular contractor was displeased with the turnaround time for the technical review of the engineering study to happen. At least three contractors expressed doubts about the technical reviewers’ ability to understand the project from an engineering perspective. Another contractor expressed displeasure with the technical review process, mainly regarding the length of time it took.

5.1.6 M&V AND BASELINE

The customer typically calculates baseline values during the engineering study phase. The program staff noted that pre-project metering is required and that this is a straightforward process. But some customers need changes in baseline values or use consultants that experience challenges with calculating the baseline. Overall, the baseline requirements for the engineering study help IESO have visibility into how these values are calculated, thus increasing its confidence in the projected savings values.

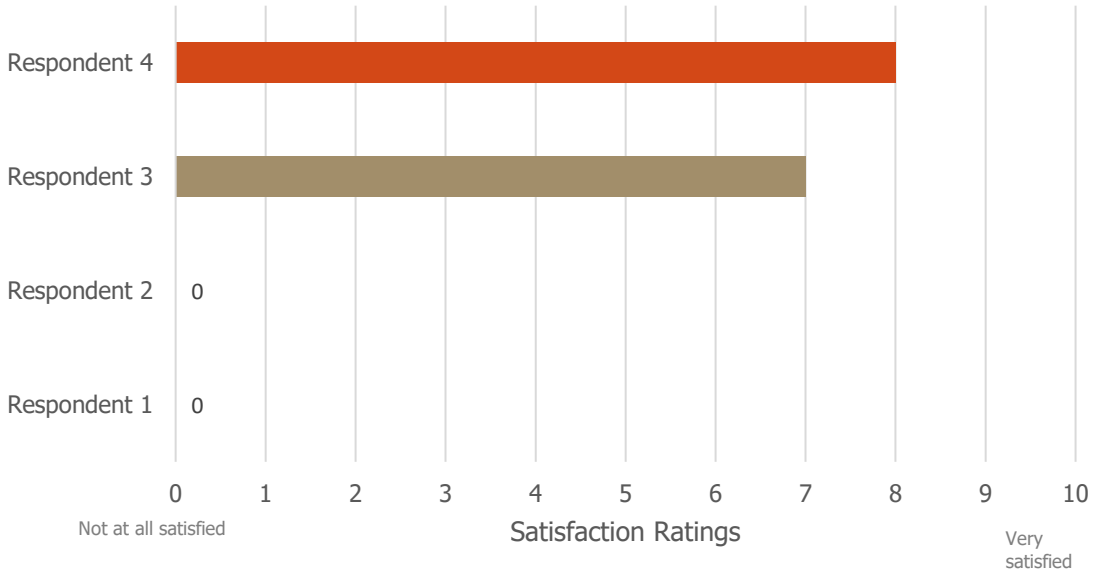
Contractors, on the whole, have a good grasp on documenting baseline values; however, some expressed challenges, such as the inability to measure seasonal data due to the length of time required for baseline measurement. Another contractor expressed issues with the data acquired during the baseline measurement period, indicating that the data quality suffered from poorly calibrated sensors.

The program staff and implementation contractor see the M&V plan development as a collaborative process, designed to ensure that customers receive incentives based on the actual performance of the project. The implementation contractor sets up the M&V plan in the application stage, but the customer and IESO must agree on it. There can be a fair amount of back-and-forth between the parties involved to agree on the M&V plan in some instances. M&V plans follow the IPMVP protocols. Once the customer project finishes, the implementation contractor does a site visit to confirm the installation and verify the data collection. The contractor also asks for two weeks of data right after the customer installed the equipment to assess performance. The implementation contractor submits an M&V report after the first quarter of operation and then again after a full year of service. IESO bases payments to the customer on the M&V reports.

The surveyed contractors expressed mixed satisfaction with the M&V plan process. Two contractors indicated that they were not at all satisfied with the M&V plan process, and another two noted moderate to high satisfaction (Figure 5.5). Two reported that the M&V plan requirements were not clear to them. One reflected that IESO did not clearly communicate changes to the M&V process. Another explained that the process was very time consuming, and that was a barrier to a project.

The small number of contractor responses does not provide enough data to reach conclusions about how contractors received the M&V plan on the whole, but the team will monitor this question when we can contact more contractors.

Figure 5.5 | PSUP Contractor Satisfaction with M&V Process Requirements, n=7*



*Two respondents indicated “Don’t know,” and one gave no response.

6. JOB IMPACTS ANALYSIS

The efforts to administer, implement, and participate in PSUP result in direct and indirect job impacts in Ontario. Direct jobs can be attributed to the program for those in the market that receive funds from the program and participants that co-pay for them (e.g., installation contractor labor and inspection labor). Direct jobs also include those involved on the administrative side—the implementation contractors, evaluators, and the IESO itself. Indirect jobs account for the economic impact of the program to account for the "ripple effects" that occur as directly impacted market actors turn around and spend money they receive from programs to create new jobs themselves.

Through the in-depth interviews with IESO program staff, technical reviewers, and contractors, these market actors were asked how many full-time employees (FTEs) had worked on and are attributable to PSUP activities. These job impacts are classified as direct jobs. Table 6.1 summarizes their responses.

Table 6.1 | PY2019 PSUP Job Impacts

Market Actor	FTEs attributable to PSUP in PY2019*	FTEs attributable to PSUP in PY2020 and PY2021
IESO Program Staff	4	4
Technical Review Staff	7	7
Contractors**	Average/organization = 3.5 Total = 126	Average/organization = 1.9 Total = 68.4
Total	**137**	**79.4**

*FTEs were averaged from each group of market actors interviewed.

** Total represents the average contractor FTE response multiplied by 36 participating organizations with active projects as of March 25, 2020.

PSUP generated a total of 137 FTEs in PY2019. IESO and technical review staff had four and seven FTEs working on PSUP in PY2019, respectively. Multiple people were interviewed at the IESO and technical review firm, so the evaluation team averaged their responses for organization-wide FTEs. PSUP contractors interviewed had an average of 3.5 FTEs at their organizations attributable to the PSUP in PY2019, totaling 137 for the program in PY2019 at the 40 organizations. As no interviews or surveys were conducted with PSUP participants in PY2019, their job impacts will be estimated in PY2020 and included in the cumulative total for the program following the PY2021 evaluation.

PSUP contractors were also asked how recent program changes affected the FTEs at their organization attributable to the program. The two contractors that answered said that the changes to the application process resulted in a decrease in FTEs. Both contractors indicated that removing CHPs from PSUP also resulted in a reduction in FTEs at their organizations. One contractor said the

removal of CHPs resulted in an 80% loss of FTEs at their organization attributable to PSUP as it was a significant source of work for them.

There was not a significant increase in the expected average FTEs attributable to PSUP in PY2020 and PY2021. IESO and technical review staff expected the FTEs to remain the same as PY2019. The contractors interviewed expected there to be 1.6 fewer FTEs attributable to PSUP in PY2020 and PY2021 as their PY2019 projects wind down. However, the number of FTEs due to PSUP in PY2020 is expected to increase as more applications are approved and energy efficiency projects are implemented.

These job impact numbers are preliminary and are expected to increase throughout future program years—especially from the participating organizations. PSUP also creates indirect job impacts by providing work and funding for manufacturers, energy modelers, BAS system service technicians, contractors, engineers, and inspectors. Market actors were asked about the types of indirect job impacts created by the PSUP. Estimating indirect job impacts from PSUP will require more surveys, and a larger population of market actors needs to be available for research. EcoMetric anticipates being able to provide a more accurate job impact estimate in the PY2021 annual report when the total participation, savings impacts, and cumulative direct job impacts of PSUP are known.

EcoMetric will use the Statistics Canada (StatCan) Input-Output model to estimate direct and indirect job impacts of PSUP in PY2020-21 to align with job impacts analyses currently being conducted for the IESO's business and low-income programs.

7. FINDINGS AND RECOMMENDATIONS

Table 7.1 | PSUP Evaluation Findings and Recommendations

Finding Number	Finding	Recommendation Number	Recommendation	Actionable Audience
1	Generally, internal program processes are working efficiently at moving projects through the pipeline. The current IESO program team structure is efficient with limited-to-no duplication of efforts in terms of managing the application, review, and approval processes. The IESO and Technical Reviewer communication is frequent and targeted. The project tracking method, although basic, fits program needs. Additionally, program application changes are reducing contracting timelines.	-	No recommendation	-

Finding Number	Finding	Recommendation Number	Recommendation	Actionable Audience
2	External communication about certain stages of project development represent pain points. There appears to be a disconnect between program staff and participants' contractors regarding engineering study requirements, M&V plans, and program changes. Preliminary results from the surveyed contractors indicate that a notable proportion of contactors have a low to moderate level of satisfaction with the technical review process and the M&V plan process. Though it is expected that negotiating the M&V plans would be the most contentious part of the process, some contractors also felt that requirements of engineering studies and the application itself could have also been communicated in a clearer way. Please note, though IESO's current practice is to communicate directly with customers, the contractors are key stakeholders in ensuring these projects' progress. Contractors are also the primary drivers of high program participation rates in many other industrial programs.	1	Communicate more clearly the program requirements and changes at each critical stage: the engineering study, application, and the M&V plan. Consider proactive and regular outreach to participating contractors (webinars) to clarify program requirements. Although the IESO program team primarily communicates directly with the customer, engaging the contractors proactively could alleviate barriers to project completion.	IESO, Technical Reviewers, EM&V Team, and Evaluation Contractors

Finding Number	Finding	Recommendation Number	Recommendation	Actionable Audience
2	See Finding #2	2	Continue to monitor contractor feedback on engineering study requirements, M&V plans, and program changes in future contractor surveys to assess whether this remains a pattern.	IESO, Technical Reviewers, EM&V Team, and Evaluation Contractors
3	COVID-19 shutdowns appear to be affecting project development and implementation in PY2020, which might impact program "contracted" savings targets given the already tight IF deadlines.	3	Investigate what other industrial programs are doing to mitigate the effects and risks from COVID-19 shutdowns to help you determine how to adapt going forward. For example, program administrators like Efficiency Maine, MassCEC, Silicon Valley Power, and Eversource are extending deadlines for their C&I customers. MassCEC's ACES program is loosening interim milestone deadlines but holding the final project installation deadline of next summer for battery installations. Another approach for utilities that found C&I project pipelines were drying up due to COVID-19 was to increase incentives – Eversource and UI are trying this method. It should be noted that many of these changes are not widely advertised but are based on individual discussions with customers who were already planning projects.	IESO