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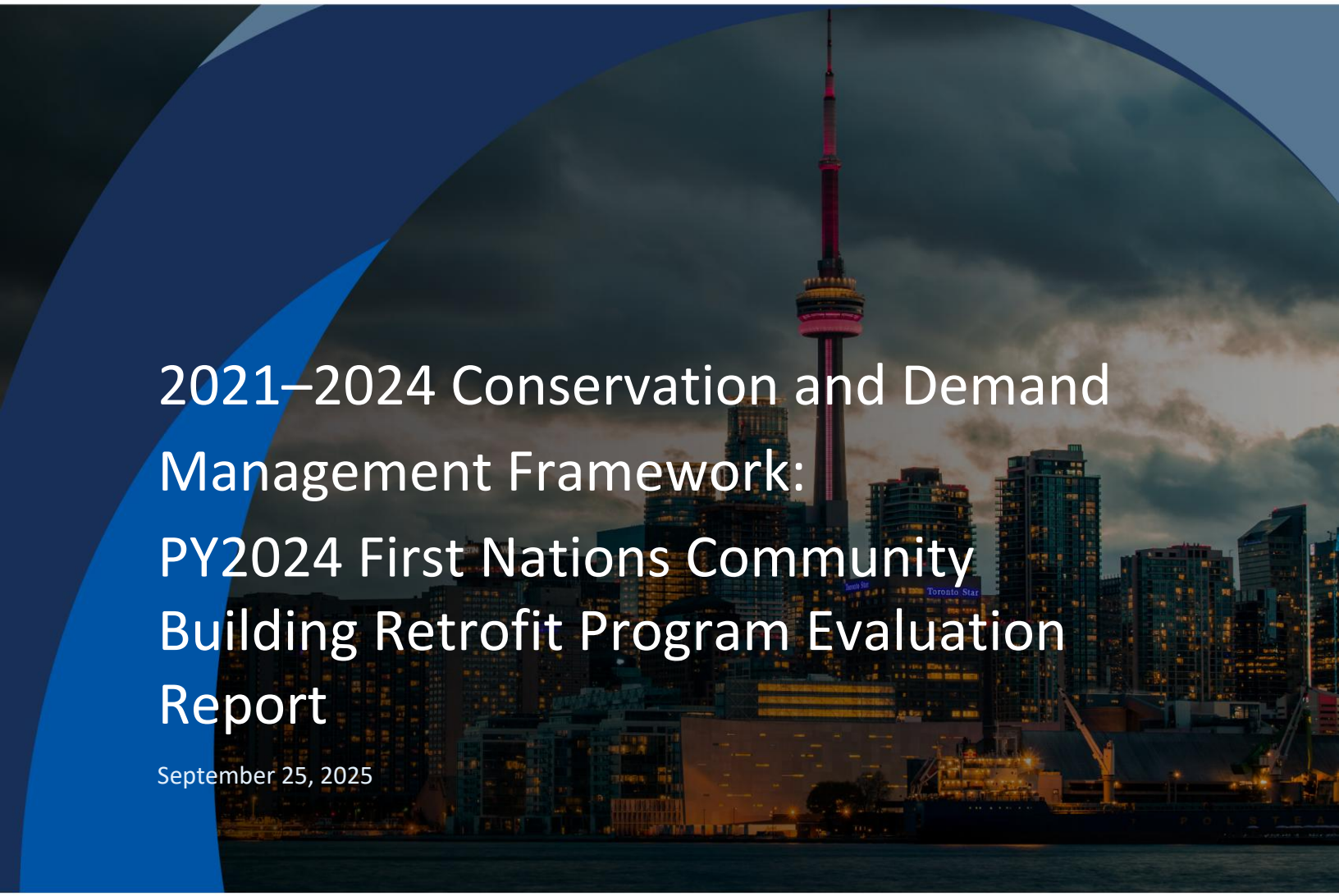

2021–2024 Conservation and Demand Management Framework: PY2024 First Nations Community Building Retrofit Program Evaluation Report

September 25, 2025

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Tables

Figures

Acronyms and Abbreviations

Acronym/Abbreviation	Definition
CDM	Conservation and demand management
EM&V	Evaluation, measurement and verification
EUL	Expected useful life
FNCBRP	First Nations Community Building Retrofit Program
GHG	Greenhouse gas
HVAC	Heating, ventilation and air conditioning
IESO	Independent Electricity System Operator
kW	Kilowatt
kWh	Kilowatt-hour
LUEC	levelized-unit energy cost
NEB	Non-energy benefit
NTG	Net-to-gross
PAC	Program Administrator Cost
PY	Program year
T&D	Transmission and distribution
TRC	Total Resource Cost
TRM	Technical Reference Manual

Executive Summary

The Independent Electricity System Operator (IESO) contracted Cadmus, in partnership with its subcontractor Econoler, to evaluate the First Nations Community Building Retrofit Program (FNCBRP) program year (PY) 2024 energy and peak demand savings[1] and program cost-effectiveness and processes. The executive summary of this report provides an overview of the program, evaluation objectives, a summary of the impact and cost-effectiveness results and the high-impact key findings and recommendations from the PY2024 evaluation.

Program Description

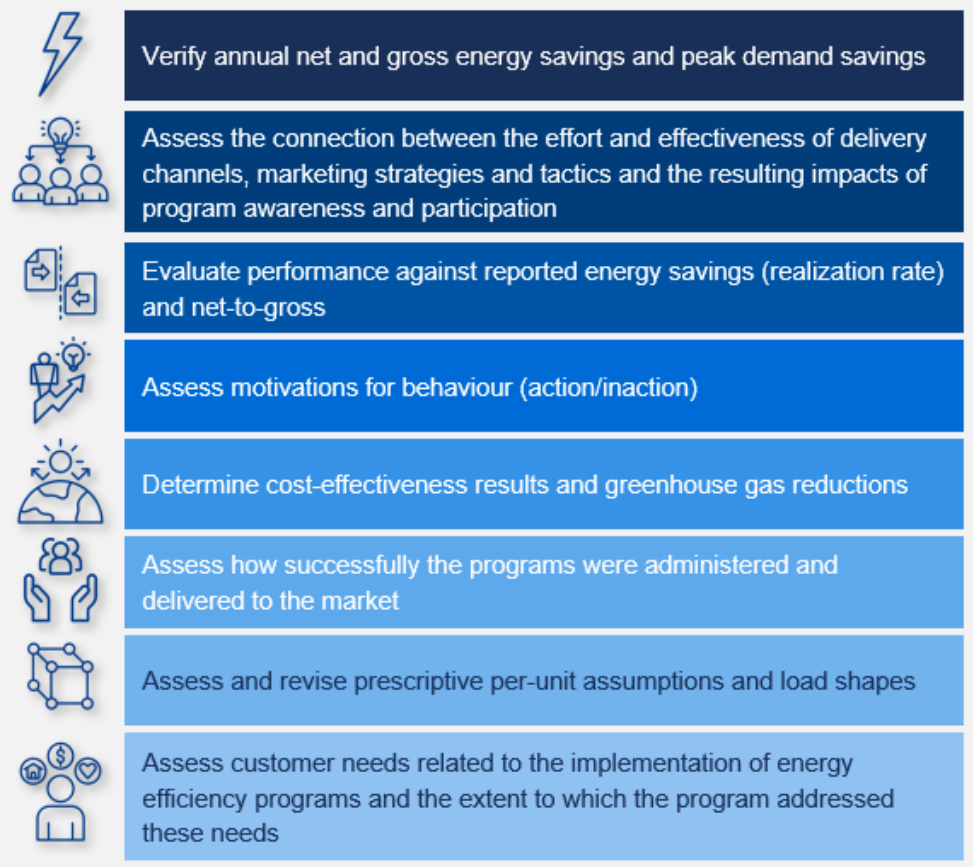
The FNCBRP provides funding and technical support to on-reserve, grid-connected First Nation communities to undertake energy efficiency projects. These projects are intended to help communities improve the energy efficiency of their band-owned commercial and institutional facilities, manage building energy use more effectively and save on energy costs. This program is delivered through either a direct-install or a community-install approach to best suit community needs and preferences. Four delivery agents implement the program on a day-to-day basis: the Oversight delivery agent, the Outreach and Coordination delivery agent, the Data Collection delivery agent and the Site Execution delivery agent.

Evaluation Objectives

Figure 1 lists the research objectives that guided the evaluation.

[1] Throughout this report, peak demand refers to summer peak demand as defined in the IESO's Evaluation, Measurement and Verification Protocol.

Figure 1. Evaluation Research Objectives



Summary of Results

This section presents a summary of the impact evaluation and cost-effectiveness results.

Impact Summary

Table 1 presents the program performance by year and total program. Overall, the FNCBRP produced total **gross verified** savings of 2,927,061 kWh and 540 kW, resulting in a 94.05% realization rate for energy savings and 88.36% for peak demand savings. For the FNCBRP, the net-to-gross (NTG) ratio is assumed to be one, therefore gross savings are equal to net savings.

Table 1. First Nations Community Building Program 2023-2024 Performance

Program Year	Reported Energy Savings (kWh)	Reported Peak Demand Savings (kW)	Energy Savings Realization Rate	Peak Demand Savings Realization Rate	Gross Verified Energy Savings (kWh)	Gross Verified Peak Demand Savings (kW)	NTG - Energy and Demand Savings	Net Verified Energy Savings (kWh)	Net Verified Peak Demand Savings (kW)
2024	2,326,310	357	94.05%	88.36%	2,187,854	316	100%	2,187,854	316
2023	771,963	239	94.05%	88.36%	739,208	224	100%	739,208	224
Total	**3,098,273**	**596**	**94.05%**	**88.36%**	**2,927,061**	**540**	**100%**	**2,927,061**	**540**

Cost-Effectiveness Summary

Table 2 shows the Program Administrator Cost (PAC) and levelized-unit energy cost (LUEC) results for PY2024.[2] To pass PAC, the program would need a ratio of 1, which is typically not expected of programs that serve disadvantaged communities. Additionally, as described in the Ministerial Directive on the 2021-2024 Conservation and Demand Management Framework,[3] support programs – such as FNCBRP – are explicitly not required to meet cost-benefit benchmarks.

Table 2. Energy Affordability Program Cost-Effectiveness Test Results

Cost-Effectiveness Test	PY2024
PAC	
PAC Costs ($)	$3,092,029
PAC Benefits ($)	$2,247,949.28
PAC Net Benefits ($)	-$844,080
PAC Net Benefit (Ratio)	0.73
LUEC	
$kWh	$0.09
$/kW	$496.39

High-Impact Key Findings and Recommendations

Below, the team presents the PY2024 high-impact key findings and recommendations. Further details and additional moderate and low-impact key findings and recommendations can be found in *Key Findings and Recommendations* near the end of the report. The IESO responses to the recommendations can be found in *Appendix B*.

(High Impact) **Key Finding #1:** Overall the reported energy savings closely match the 2024 IESO Measures and Assumptions List (MAL) for commercial lighting; however, savings reported for individual measures differ slightly from the MAL Assumptions, which led to some misalignment between the reported and verified savings.

For each measure, the 2024 IESO Measures and Assumptions List (MAL) for commercial lighting provides a range of unitary savings values, differentiated by building type. Each building type has associated hours of use and peak demand factors. However, the reported savings in the database do not always align with the 2024 MAL for commercial lighting. During desk reviews, the Cadmus team observed that the savings appear to have been calculated by the service provider based on estimated wattages and hours of operation specific to each facility, as outlined in the provided documentation (benchmark reports and installation plans). Based on these insights, the Cadmus team adjusted the

[2] As calculated in the IESO CDM Tool, overall results for PY2024 include results for all of 2024 and previous year true-ups.

[3] https://www.ieso.ca/en/Corporate-IESO/Ministerial-Directives/2021-2024-Conservation-and-Demand-Management-Framework

applicable measure quantities shown in invoices and used unitary savings values from the 2024 IESO MAL to determine the realization rates of 94.05% and 88.36% for energy and peak demand savings, respectively. Project-specific realization rates varied from 60% to 168% for energy savings and from 42% to 126% for peak demand savings. It is noted that additional information is needed in the reporting database to support matching each measure entry to the IESO MAL's commercial lighting unitary savings. Tracking measure results by building type would also improve the accuracy of the reported savings in the database.

Recommendation #1: Ensure that the "building type" field is available in the reporting database and that the service provider fills it in for each measure. This may require adjustments in the system to allow the service provider to enter multiple measures of the same type for a single community, given that each community installation encompasses multiple building types.

(High Impact) **Key Finding #2:** Considering the limited number of contractors near FNCBRP communities, program design parameters regarding prescriptive measure funding caps and the program's remote community designation constrain the program's ability to attract contractors to provide program services.

Though the Oversight delivery agent reimburses participating contractors for travel costs such as vehicle fuel and hotels for program installation work in remote communities, there is no reimbursement for travel to non-remote communities, including commuting time, which contractors have submitted as part of their quotes for both remote and non-remote projects.[4] Unfortunately, delivery agents have found that most contractors who can support the program are often located two to three hours away from participating communities. Delivery agents noted difficulties trying to recruit contractors to the program once they are told travel costs will not be reimbursed to the non-remote communities.

In addition, delivery agents noted that the prescriptive pricing and funding caps per measure—particularly lighting fixtures—are generally not considered competitive among participating contractors. This, paired with unreimbursed travel costs, causes delivery agents to struggle to find consistent, committed contractors to partner with to deliver the program.

[4] All PY2024 participating communities are non-remote by definition (i.e., they are grid connected).

Recommendation #2a: As part of the regular program review, revisit the Direct Install set costs on measures to increase the delivery agents' ability to negotiate with contractors while also working within the program's available budget and acceptable measure-level cost effectiveness thresholds.

Recommendation #2b: Consider altering the definition of remote communities to recognize travel costs when transit exceeds a reasonable threshold (such as 1-2 hours); alternatively, revise the requirement for a community to be designated as "remote" to compensate travel costs and reimburse travel costs to communities that exceed the reasonable threshold or require overnight stays by staff at nearby hotels. If adjustments are made, ensure increased compensation works within the program's available budget.

(High Impact) **Key Finding #3:** Improving contractor and participant coordination and communication may reduce project delays and result in fewer disruptions to facility operations, ultimately improving participant satisfaction.

Most interviewed participants (three of five respondents) described experiencing challenges with contractors, including lack of responsiveness and difficulty coordinating installation schedules, resulting in project delays that occasionally disrupted facility use. For example, one respondent noted that a lack of scheduling updates from their contractor made it challenging to coordinate staff and building access, which impacted building operations. Another respondent reported severe delays with their contractor, saying that the project installation process took over a year, during which they waited weeks between each scheduled installation due to contractor unresponsiveness. In addition to this causing participant frustration, one delivery agent respondent indicated that communication and project delays increased administration costs for each project, ultimately driving up total project costs for the program.

Respondents reported challenges with contractors for both Direct Install and Community Install installations. However, respondents indicated that these challenges were more disruptive to communities participating in the Community Install track, noting that the larger community buildings, such as Band Council offices and multiuse facilities, were more likely to require complex coordination and scheduling with the facilities team. As the delivery agents also affirmed, participant experiences indicated that Community Install projects are more susceptible to delays and communication challenges, especially during the contractor engagement phase.

The Direct Install track also has unique contractor challenges. One participant in the Direct Install track reported that they did not get to choose their contractor. That respondent mentioned that they did not get the opportunity to work with their preferred contractor outside the program and ended up having a negative experience with the contractor selected for their project. Though familiarity with firms is typically factored into program selection processes, Site Execution delivery agent staff noted that when additional communication challenges are introduced, such as community staff turnover, the contractor selection process can become more difficult and participant preferences become harder to track and incorporate.

Recommendation #3a: Strengthen contractor coordination, particularly for Community Install projects, by providing training to participating contractors. For example, all contractors involved in the program should receive a basic orientation on working with First Nations communities to build awareness and strengthen relationships, in addition to receiving information about specific community needs and procedures ahead of each project.

Recommendation #3b: Schedule key milestone check-ins between participants and delivery agents and ensure that these are a part of the program design. For example, this could include an introduction in the installation onboarding call between the participant, the delivery agent and the contractor conducting work to set expectations, establish primary points of contact and develop an installation schedule for the installation phase. During this onboarding, assign a clear point of contact and set expectations for regular scheduling updates to improve communication and mitigate or resolve delays. Additionally, or alternatively, implement a simple tracking system for Community Install installations to improve transparency and help keep projects moving on schedule.

(High Impact) Key Finding #4: As the program gains traction, the Site Execution delivery agent may need additional support to sufficiently meet participant needs.

Once participants have enrolled and are ready for a site visit, the project pivots from planning to execution. Three of the five respondents said that while the program's early communication was often direct and well-managed, the handoff of responsibilities to the Site Execution delivery agent and contractor staff introduced gaps that left some communities without a clear point of contact or consistent updates (particularly when contractors were introduced). This contributed to respondents' concerns about delays in project plans and supply chain delivery of measures within the installation phase.

The Site Execution delivery agent Cadmus spoke to noted that several challenges have increased as the program continues to grow. This delivery agent shared that the increased number of projects requiring day-to-day coordination (which includes scheduling the site visit, producing the project plan, finding contractors within their network or working with a community's preferred contractor, ordering materials for participants and managing contractors throughout the installation process) has required them to hire a new full-time employee to assist with administrative tasks within the projects. In addition, the increased financial strain of fronting the up-front costs of the Direct Install projects until the contractor completes the work, which can take months, will continue to be a challenge as program participation increases.

Though additional staffing has helped the Site Execution delivery agent streamline project implementation, they identified additional areas of opportunity for improvement within the program processes. For example, they expressed interest in participating in the earlier phases of the program, specifically during the initial onboarding, to help build better relationships with the First Nation communities. The Site Execution delivery agent also described areas of internal improvement in data

tracking and participant onboarding but cited limitations and timeline pressures as barriers to actualizing these improvements.

Site visits by the Site Execution delivery agent focus mainly on potential lighting measures because they indicated lighting tends to be the most cost-effective measure. Additionally, the Site Execution delivery agent's expertise is primarily focused on lighting, so its partnership with the program places lighting at the forefront of measures available. However, three of five participant respondents explicitly called out additional measures they had been hoping to receive through the program that were not included in their project plan: solar (three respondents), heat pumps (two respondents), HVAC systems (two respondents) and building envelope improvements like windows (three respondents) and insulation (two respondents). While the Oversight delivery agent has mentioned that they are working to expand measure offerings beyond lighting, this could create further barriers when trying to plan and execute a project outside of the Site Execution delivery agent's expertise.

Recommendation #4a: Discuss capacity ability and concerns with each delivery agent on an annual basis, and revise program procedures to better facilitate program processes as possible. For example, consider providing reimbursement for Direct Install track projects earlier in the project timeline, or a 50% up-front payment to installation delivery agents for the Community Install track to assist with the increased funding that the expanding number of participants each year will require.

Recommendation #4b. Provide training materials and communication protocols to equip program staff with tools to effectively coordinate site visits, communicate with participants about equipment, and maintain ongoing contractor communications as the number of program participants increases.

Recommendation #4c. Consider supporting lighting-focused delivery agents by seeking additional partners or manufacturers to increase installation of measures outside of lighting as the Community Install track expands.

Introduction

The Independent Electricity System Operator (IESO) contracted Cadmus, in partnership with its subcontractor Econoler, to evaluate the program year (PY) 2024 energy and peak demand savings, program cost-effectiveness and processes for the First Nations Community Building Retrofit Program (FNCBRP). The evaluation research objectives guided the evaluation.

Program Description

The FNCBRP provides funding and technical support to on-reserve First Nation communities to undertake energy efficiency projects. These projects are intended to help communities improve the energy efficiency of their band-owned commercial and institutional facilities, manage building energy use more effectively and save on energy costs.

The FNCBRP offers the following services at no cost to eligible participating communities:

- Up to $330,000 in funding per community for the installation of energy efficiency upgrades in on-reserve band-owned and operated commercial and institutional facilities.
- On-site energy assessments and an audit report identifying energy efficiency projects in up to 15 facilities chosen by the participant.
- A community benchmark report to compare the energy use of the community's facilities with that of other similar facilities, with the goal of prioritizing buildings for further assessment.
- Project support from Save on Energy's program delivery partner to help communities identify, engage and coordinate with installation contractors.

This program is delivered through either a direct install or a community install approach, depending on which approach best meets the community's needs and preferences. In PY2024, the program had served 56 communities, with a total of 14,013 measures installed across those communities since 2022. Most of these measures were installed in 2024 (76%), while 23% were installed in 2023.

The program is implemented by four delivery agents:

- **Oversight delivery agent:** This firm serves as the IESO's primary point of contact and is ultimately responsible for the successful implementation of the program. This delivery agent subcontracts with the other delivery agents and assists them as needed with challenges with outreach, data collection, and project execution.
- **Outreach and Coordination delivery agent**: Staff from this indigenous firm are responsible for generating interest in the program, helping applicants navigate the enrollment process and providing overall assistance with coordination with participants through the administrative parts of the program.
- **Data Collection delivery agent**: This firm, which often works with First Nations tribes, is responsible for gathering existing energy data from each participating community and processing data collected during site visits.

- **Site Execution delivery agent:** This non-local subcontracted firm manages scheduling, coordination and conducts the on-site visits in the participating First Nations communities. The Site Execution delivery agent also develops project plans using data collected through its online data collection tool. This delivery agent's responsibilities also include coordinating with a network of contractors (for direct installations) or a contractor selected by the community (for community installations) to complete work.

Evaluation Research Objectives

To address the evaluation research objectives, the Cadmus team completed the following evaluation tasks, as shown in Table 3.

Table 3. Evaluation Objectives and Tasks

Research Objectives	Audit Annual Projects	Cost-Effectiveness Analysis	Interviews with Program Staff	Participant Survey	Participant Interviews
Verify annual net and gross energy savings and peak demand savings[a]	✓			✓	
Evaluate performance against reported energy savings (realization rate) and net-to-gross (NTG)	✓			✓	
Determine cost-effectiveness results and greenhouse gas (GHG) reductions[b]		✓			
Assess and revise prescriptive per-unit assumptions and load shapes				✓	
Assess the connection between the effort and effectiveness of delivery channels, marketing strategies and tactics and the resulting impacts of program awareness and participation			✓	✓	✓
Assess motivations for behaviour (action/inaction)				✓	✓
Assess how successfully the programs were administered and delivered to the market			✓	✓	✓
Assess customer needs related to the implementation of energy efficiency programs and the extent to which the program addressed these needs				✓	✓

[a] Includes annual true-up projects, as appropriate.

[b] GHG analysis is part of the cost-effectiveness analysis.

Methodology

This section summarizes the methodology used for the impact, cost-effectiveness and process evaluations. See *Appendix D. Methodology Details* for additional methodological details.

Impact Evaluation

Through the annual impact evaluation, the Cadmus team established gross verified savings and estimated net verified energy and peak demand savings through a process following the IESO's evaluation, measurement and verification (EM&V) protocols. Table 4 lists the steps the team used to conduct the impact evaluation.

Table 4. Impact Evaluation Steps to Determine Gross Verified Savings

Step	Action
1	**Review tracking database:** Validate the accuracy of data in the participant database.
2	**Sample program population:** Perform random sampling of projects using probability proportional to size sampling within the FNCBRP.
3	**Develop EM&V review protocols:** Develop EM&V data collection and analysis protocols based on a review of sample project and measure data and the IESO substantiation workbooks.
4	**Perform desk reviews and analysis:** Analyse the sample project documentation to calculate gross verified energy and peak demand savings using methodologies outlined in the IESO substantiation worksheets.
5	**Obtain confirmations from the service provider:** If needed, ask the service provider questions about missing or unclear data.
6	**Calculate program gross verified savings:** Extrapolate realization rates from all sampled projects to the program population.
7	**Calculate net verified savings:** Apply the NTG ratio as applicable (for First Nations programs, NTG is equal to 1).

Net-to-Gross (NTG)

The Cadmus team estimated net savings—savings directly attributable to the program—by multiplying gross verified energy savings by NTG ratios. The team applied a ratio of 1.0 (100%) to the FNCBRP participants in accordance with the IESO's agreed-upon EM&V protocols for NTG ratios for First Nations programs.

Cost-Effectiveness Evaluation

The Cadmus team completed the cost-effectiveness analysis per the protocols in the IESO Cost-Effectiveness Guide for Energy Efficiency and used the IESO Cost-Effectiveness Tool to calculate results.[5] In the IESO Cost-Effectiveness Tool, the team used the 2024 Measure Assumptions List to obtain expected useful life (EUL), end-use load profile and incremental cost inputs. The team sourced first-year energy and peak demand inputs from the impact evaluation, and the IESO provided information about administrative costs and incentives. The IESO Cost-Effectiveness Tool provides results at the program

[5] IESO. January 20, 2021. *Cost-Effectiveness Guide for Energy Efficiency*. https://www.ieso.ca/-/media/Files/IESO/Document-Library/EMV/CDM_CE-TestGuide.ashx

and measure levels. The key cost-effectiveness outputs that this report presents are the Program Administrator Cost (PAC) test benefits, costs and ratio, as well as levelized unit energy cost (LUEC) by dollars per kWh and dollars per kW. The formulas and definitions for these tests and metrics are outlined in *Appendix D. Methodology Details*.

Process Evaluation

Through the process evaluation, the Cadmus team collected insights about the program's implementation effectiveness as well as participant motivations, benefits, needs and satisfaction by conducting participant and delivery agent interviews. Table 5 lists the data collection activities and audience and the mode of data collection included in this year's FNPCBR evaluation. Further details on process activity methodology can be found in *Appendix D. Methodology Details* includes further details on the methodologies used in the process evaluation.

Table 5. Process Research Activities

Activity	Audience	Target	Completed
Delivery Agent Interviews	1	1[a]	1[b]
Participant Interviews	28	5+	5

[a] The Cadmus team conducted three interviews with different delivery agents in 2024 to reflect on 2023 and earlier implementation years of the program.

[b] The team conducted one interview and received email input from the Oversight delivery agent, totaling input from two delivery agents.

Delivery Agent Interview Methodology

At the IESO's request, the Cadmus team scheduled an interview with a representative from the Site Execution delivery agent who was familiar with all aspects of the company's role in the program. The purpose of this conversation was to gather information on their program role and learn how they coordinated with other delivery agents. The Site Execution delivery agent was the only delivery agent not interviewed during the previous year's light process evaluation.[6] The team also sent via email a list of questions to the Oversight delivery agent, the prime delivery agent, to better understand program outreach and marketing, First Nation community engagement and other overarching program insights for this research.

Participant Interview Methodology

The Cadmus team received a list of 28 active FNCBRP participants. Of these, 15 had completed part of their project installation. The team prioritized reaching out to these communities first. After one round

[6] Submitted in September 2024, the previous year's process evaluation memo covered details on the program's marketing, outreach, application and onboarding processes and the benchmarking assessment, as informed by interviews with delivery agents from 2021 through 2023. By the beginning of 2025, more participants had progressed to later stages in the program; therefore, this year's evaluation focuses on the site visit, project approval and installation stages of the program.

of emails, the Cadmus team scheduled interviews with five participants. All five of these communities had projects in the Direct Install track, and two had projects in the Community Install track.

Detailed Findings

This section presents the FNCBRP PY2024 impact findings, program- and measure-level cost-effectiveness results and process findings.

Impact Evaluation

The FNCBRP produced total gross verified savings of 2,927,061 kWh and 540 kW, resulting in a 94.05% realization rate for energy savings and 88.36% for peak demand savings (Table 6). Because the FNCBRP has a deemed NTG ratio of 1 in accordance with the IESO's agreed-upon EM&V protocols for NTG ratios for First Nations programs, net verified savings for the FNCBRP are equal to gross verified savings.

Table 6. First Nations Community Building Program 2023-2024 Performance 2023-2024

Program Year	Reported Energy Savings (kWh)	Reported Peak Demand Savings (kW)	Gross Energy Savings Realization Rate	Peak Demand Savings Realization Rate	Gross Verified Energy Savings (kWh)	Gross Verified Peak Demand Savings (kW)	Energy and Demand NTG	Net Verified Energy Savings (kWh)	Net Verified Peak Demand Savings (kW)
2024	2,326,310	357	94.05%	88.36%	2,187,854	316	100%	2,187,854	316
2023	771,963	239	94.05%	88.36%	739,208	224	100%	739,208	224
Total	**3,098,273**	**596**	**94.05%**	**88.36%**	**2,927,061**	**540**	**100%**	**2,927,061**	**540**

The following sections present the detailed impact and NTG results.

Impact Findings

Due to limited participation through PY2024, the Cadmus team narrowed the scope of the desk reviews to verifying that the reported measure quantities and types recorded in the database matched those found on supporting invoices.

In PY2024, the program served 34 communities, with 307 measures (3%) installed through the Community Installation track and 9,997 measures (97%) installed through the Direct Installation track. Since less than 6% of tracked gross energy savings came from the Community Install track, the team could not calculate separate realization rates for the Community Install and Direct Install tracks. As a result, sampled projects show an overall energy savings realization rate of 94.05%, a demand realization rate of 88.36% and an installation rate of 96.03% for PY2024. At the project level, realization rates varied significantly, while installation rates remained more consistent. Understanding the causes of these discrepancies can help inform future program impact. Table 7 details the variations in realization rates and installation rates.

Table 7. Main Drivers of Realization Rates and Installation Rates

Installation rates under 100%	To confirm the installed quantities, the Cadmus team relied on the project documentation supplied by the service provider. The team compared invoices for each project to the quantities listed in the database and adjusted the evaluated quantities to match the invoices. Overall, the team found a few discrepancies given the large number

	of invoices involved in each project. For the most part, installation rates were above 95%, with only two projects showing lower installation rates of 89% and 92%. Discrepancies are attributable to minor mismatches between the quantities listed in the database and those reported on invoices.
Differences in energy savings calculation (IESO TRM)	For each measure, the IESO TRM provides a range of unitary savings values, differentiated by building type. Each building type has associated hours of use. Although the measure descriptions in the database did not align exactly with those in the IESO TRM, the Cadmus team matched each measure in the database to a corresponding TRM measure type as part of the desk reviews. For each measure of each project, the team selected the unitary savings value from the IESO TRM based on the documented measure name in the database and the corresponding building type identified in the project documentation. In contrast, the reported savings appeared to be calculated by the service provider using estimated wattages and hours of operation specific to each facility, as outlined in the provided documentation. These hours were not substantiated and did not match the hours of use listed in the IESO TRM for any building type. The Cadmus team calculated savings using the IESO TRM unitary savings and project documentation. While realization rates varied from project to project, the difference in calculations resulted in a 5.95% decrease in realized energy savings, mainly due to downward adjustments on the larger sampled projects.
Differences in summer peak demand savings factor (kW and kWh)	The Cadmus team used the same method as for energy savings to determine summer peak demand savings. However, the reported savings did not match the peak demand ratios outlined in the IESO Measures and Assumptions List (MAL) for any building type. The team calculated savings based on the IESO MAL unitary savings and project documentation, which resulted in an 11.64% decrease in realized peak demand savings.

Table 8 summarizes the total results for all sampled projects delivered through the FNCBRP.

Table 8. FNCBRP Realization Rates

Sampled Projects	Energy Savings (kWh)			Peak Demand Savings (kW)			
	Reported	Verified	Realization Rate [a]	Reported	Verified	Realization Rate	Margin of Error
9	1,733,681	1,537,532	94.05%	267	231	88.36%	17%

[a] The realization rates do not exactly correspond to the verified savings divided by the reported savings because the team calculated them by strata.

Net-to-Gross Evaluation

Since the FNCBRP had a deemed NTG ratio of 1, savings realized through the program are not subject to an NTG evaluation. The Cadmus team applied the NTG ratio of 1.0 (100%) to gross verified savings to calculate net verified savings for the overall PY2024 FNCBRP, as shown in Table 9.

Table 9. First Nations Community Building Retrofit Program PY2024 Gross and Net Verified Savings

Program Year	Gross Verified Savings - Energy (kWh)	Gross Verified Savings Demand (kW)	NTG Ratio	Net Verified Savings - Energy (kWh)	Net Verified Savings Demand (kW)
2024	2,187,854	316	1.00	2,187,854	316
2023	739,208	224	1.00	739,208	224
Total	**2,927,061**	**540**	**1.00**	**2,927,061**	**540**

Cost-Effectiveness Analysis

This section outlines the findings from the cost-effectiveness analysis, including an overview of the PAC test and the LUEC results.

Program Results

Table 10 shows the Program Administrator Cost (PAC) and levelized-unit energy cost (LUEC) results for PY2024.[7]

Table 10. First Nations Community Building Retrofit Program PY2024 Cost-Effectiveness Results

Cost-Effectiveness Test	PY2024
PAC	
Costs ($)	$3,092,029
Benefits ($)	$2,247,949.28
Net Benefits ($)	-$844,080
Net Benefit (Ratio)	0.73
LUEC	
$kWh	$0.09
$/kW	$496.39

As shown in the table, the FNCBRP achieved a PY2024 PAC ratio of 0.73 and a LUEC of $496.39 per kW and $0.09 per kWh:

- **PAC ratio of 0.73:** For every dollar spent, the program administrator earned 73 cents of benefits.
- **LUEC of $496.39 per kW:** For every kW saved, the program spent approximately $496.39.
- **LUEC of $0.09 per kWh:** For every kWh saved, the program spent approximately $0.09.

Given the prominence of lighting measures within the 2024 and 2023 measure mix, all cost-effectiveness results are driven primarily by lighting installation and incentive costs and benefits.

[7] Overall results for PY2024, which the team calculated using the IESO CDM Tool, include all of 2024 and previous year true-ups.

Process Evaluation

This section presents findings based on the 2025 interviews with delivery agents and program participants. The team gathered insights from the delivery agents on program communication, site visits, project implementation barriers and successes. The team also gathered insights from participants pertaining to program awareness and motivation to participate, communication, site visits, installed equipment, contractors and installation vendors, participation barriers and successes.

Delivery Agent Interviews

The sections below provide a brief background of the FNCBRP and insight from the program delivery agents about program communications, site visits, project implementation barriers and success. The Cadmus team completed an interview with one delivery agent, the Site Execution delivery agent, and received comprehensive email feedback from the primary delivery agent, the Oversight delivery agent.

Communication

To explore program communications, the team asked the Site Execution delivery agent about their communication with participants and contractors. The team also asked the Oversight delivery agent about communication between delivery agents.

Communication with Participants. When discussing the program communication process, the Site Execution delivery agent stressed that community trust and engagement are key to successful program operations. This delivery agent said they become involved with participants during the site visit, after buildings are selected for upgrades. The delivery agent expressed interest in participating in the earlier phases of the program, specifically with the Outreach and Coordination delivery agent during the initial onboarding, to help build better relationships with the First Nation communities.

The Site Execution delivery agent reported that they communicate with participants on an ongoing basis as issues or concerns arise during the installation phase and have the most success engaging with the community either in person or via a virtual meeting. While these are generally smooth interactions, they also noted that customers occasionally ask about buildings that were not selected during the benchmarking phase, especially if there is community staff turnover between the building selection process and the site visit., which can lead to confusion or frustration within the First Nation communities

Communication between Delivery Agents. When asked about how frequently they communicate with other delivery agents, the Site Execution delivery agent reported weekly communication with the Oversight delivery agent. The Site Execution delivery agent said that in their regular check-ins with the Oversight delivery agent, they covered topics such as goals for an achievable installation schedule, delays in the project timelines, solutions to get back on track and the program site-visit schedule for the next month. This Site Execution delivery agent also reported infrequent meetings with other delivery agents (the Outreach and Coordination delivery agent and the Data Collection delivery agent).

Communication with Contractors. When asked how frequently the Site Execution delivery agent communicates with the contractors who complete measure installations, the delivery agent reported

weekly communication or check-ins on project progress, equipment shipments and other items related to the project installation plan. The agent also said the check-ins were helpful when troubleshooting issues with contractors, such delayed equipment that arrives after the scheduled installation. To mitigate delays and better prepare both contractors and participants for equipment arrivals, the agent said the Site Execution delivery agent recently hired a new staff member to support coordination efforts. As previously noted, the agent said starting to build relationships with participants earlier in the process could further improve coordination with communities during building selection, contractor scheduling, or equipment troubleshooting challenges that arise in installations.

Site Visits

The team asked the Site Execution delivery agent about site coordination and focus as well as opportunities for program expansion.

The Site Execution delivery agent said site visits last around a day and a half, depending on the number of buildings at the site and how well the community has prepared access to the buildings. The agent also noted challenges in accessing all spaces due to confidential programming (such as healthcare or shelter services), building operating hours and coordination issues with building managers.

The Site Execution delivery agent said that during site visits they mainly focus on potential lighting measures because lighting tends to be the most cost-effective measure recommended through benchmarking reports. The agent further explained that most participants start with the Direct Install track as lighting is an easy cost-saving measure and then look at additional, non-lighting opportunities through the Community Install track using any remaining funds. The agent also explained that the Site Execution delivery agent's expertise is primarily in lighting, so its partnership with the program places lighting at the forefront of measures available to the community.

The Site Execution delivery agent also noted opportunities in the Community Install track to add measures, such as new cooling systems for an ice rink, or to focus on community needs like increasing hydro buildings or residential baseboards. The agent said that First Nation Communities often prioritize improvements that benefit children and keep them involved in community activities. The Oversight delivery agent added that participants are interested in measures such as air source heat pumps, weatherstripping, foam insulation, window and door sealing, energy-efficient window and door upgrades and heat pump hot water heaters. Though the FNCBRP does not have a definitive list of measures included in the Community Install track, they said there are parameters and qualifications that a project must meet to be accepted into the program. These may include the submission of a detailed engineering study with additional meter data, investigation of measures, a base case compared to an energy efficiency case and an M&V plan. Though some measures beyond lighting are currently in the pipeline for installation in the Community Install track, participants are not always able to gather enough information to justify all measures of interest.

According to the Site Execution delivery agent, communities often ask about additional funding or program opportunities, such as solar eligibility, during site visits. However, they said they did not currently track data on conversations about additional measures of interest, active community energy

efficiency projects, recommendations for additional programs or other energy needs during the site visit. The agent explained that these questions often help assessors learn about First Nation needs during the visit. The agent identified this as an area of improvement for themselves and the program, explaining that there may be an opportunity to create a uniform data collection process with contact information for follow-up efforts to track information about additional opportunities.

Project Implementation Barriers

The Site Execution and Oversight delivery agents both noted several barriers to project implementation. These delivery agents specifically cited financial barriers, including up-front costs, contractor travel costs and project funding caps; contractor barriers, such as project locations limiting the contractor pool and communications; and project timing. Each of these barriers is discussed in more detail below.

Financial – up-front costs: The Site Execution and Oversight agents said that the participating community must provide 50% of up-front costs for Community Install track projects before any work can start, which can cause barriers to and delays for installation. Both delivery agents reported that some communities did not participate in the program because they did not want to pay the up-front costs. The Site Execution delivery agent said this likely pushes more communities to participate in the Direct Install track and shared a relevant example. In this case, the IESO made an exception by reimbursing the participant early, which allowed the participant to pay the Site Execution delivery agent the required 50% before starting work.

For the Direct Install track, the Site Execution delivery agent noted that communities rarely go over the project funding caps, often dialing back a project's scope to keep it at no cost and within the budget. Regardless, the Site Execution delivery agent fronts project costs, such as for ordering materials. However, the Site Execution delivery agent does not get reimbursed for its costs on Direct Install projects until the contractor completes the work, which can take months. The Site Execution delivery agent noted that providing a portion of the payment when materials are shipped would alleviate some of the pressures associated with fronting project costs.

Financial – travel costs: Both delivery agents confirmed that travel costs, such as time, fuel and hotels, are not included in reimbursement costs for contractors working with communities that require travel but are not designated as remote.[8] As a result, transporting both contractors and all equipment to non-remote communities can still be challenging. Both also reported delays in getting equipment or products to communities, as well as coordinating with contractors about community availability to complete the installations in a timely manner.

Financial –set measure costs: In addition to a lack of reimbursement for travel, the Direct Install track has fixed funding caps for each lighting measure. For example, the Site Execution delivery agent said that for a 2x4 lighting panel the program will pay $198, which is intended to cover materials, inspection, installation and other labour costs. However, this agent said they often get pushback from contractors

[8] All PY2024 participating communities adhere to the non-remote definition (i.e., they are grid connected).

who do not believe the current funding is sufficient to cover these costs, with one referring to the current pricing as "from 1986."

Contractors – locational limitations: Both the Site Execution and Oversight delivery agents mentioned that the lack of nearby contractors has caused multiple challenges for program implementation and community participants. They explained that, given that Ontario is vast, contractors are often two to three hours away from participating communities.

Contractors – communication: In addition to contractor payment barriers, both delivery agents described contractor barriers at the customer level with project coordination. The Site Execution delivery agent explained that increased coordination and longer wait times, specifically within the Community Install track, may limit participants' desires to install further measures through the program. The delivery agent also mentioned that communities with high staff turnover are particularly sensitive to changes in the primary program contact, further exacerbating contractor coordination challenges.

Project timing: Similar to the 2023 evaluation memo findings, both delivery agents in 2025 emphasized the importance of flexibility when working with First Nation Communities, given variables such as holidays, deaths in the community, limited access to buildings due to confidential programming or weather-related challenges such as ice storms. While Site Execution delivery agents can push contactors in their network to prioritize projects with First Nations, the agent said it can be trickier to navigate this pressure with community-selected contractors as the Site Execution delivery agent must balance program timelines with participants' needs and existing relationships with contractors. This agent described playing a mediating role between contractors and communities when community concerns arose about contractor flexibility with First Nations scheduling or a general lack of communication.

Program Successes

The delivery agents reported a variety of program successes and positive feedback from participants about the program, including increasing trust, participation and awareness. Overall, both the Oversight and Site Execution delivery agents said that they received feedback from participating communities that members are grateful for the work being done and appreciative of having safer communities because of better street lighting and outdoor youth recreation lighting.

Building trust: Both delivery agents highlighted positive examples of building trust with First Nations communities through seeking feedback, addressing concerns and partnering with Indigenous organizations. The Site Execution delivery agent said that, in particular, this program and staff are committed to working with Indigenous contractors. During project execution, this delivery agent seeks proactive feedback from participants to address issues and travels to the community to meet in person if needed. This delivery agent recalled visiting a community contact in person when concerns arose with a contractor, which allowed the agent to help diffuse the situation and resolve the issue.

Increased participation and awareness: Both the Oversight and Site Execution delivery agents said the free upgrades were the primary motivator for participation. The Oversight delivery agent said they were able to increase the number of participating communities to double the number forecasted in 2025, increasing the number of site visits anticipated and the project spend and kWh savings to nearly double

the estimates for 2024. This delivery agent also reported success in marketing and awareness efforts, citing attendance at 13 events and the publication of an online case study video highlighting the program's work in the community.[9] The delivery agent described how these strategies and efforts have become recognized outside of the program's target audience, as some Oversight delivery agent staff were invited to participate in a panel on best practices for engaging First Nations communities in energy efficiency programs at the Association of Energy Service Professionals conference in the summer of 2024.

Participant Interviews

As more participants have progressed to later stages in the program, the Cadmus team, at the IESO's request, reached out to participants for feedback in the PY2024 evaluation regarding program awareness and motivation, communication and site visits, equipment, contractors and installation, participation barriers and successes. These findings are based on interviews with five participating community members who have completed or are currently undergoing installations in the Direct Install track and Community Install track. Table 11 breaks down the respondents by participation track.

Table 11. Respondents by Participation Track

Participation Path	Number of Respondents
Direct Install Track Only	3
Direct Install Track and Community Install Track	2
Total	**5**

Awareness and Motivation

Respondents reported learning about the program through a variety of methods:

- **Directly from the Outreach and Coordination delivery agent:** This outreach occurred via phone (one respondent), email (one respondent) and informal in-person conversations (four respondents).
- **Conferences:** Two respondents learned about the program after seeing Outreach and Coordination delivery agent staff at conferences or events for the community energy champions.[10]
- **Online:** One respondent regularly checks the Outreach and Coordination delivery agent website for new program opportunities to improve community buildings and reduce energy costs and discovered the FNCBRP program in that way.

[9] FNCBRP. 2025. "How free lighting upgrades save Wasauksing First Nation over $21,000 per year." https://www.youtube.com/watch?v=2b-KZkb2CMI&feature=youtu.be

[10] Community energy champions are a part of a separate program offered by the IESO to promote energy security with Indigenous communities and organizations through hiring designated energy champions.

Only one respondent recalled receiving any materials (a brochure), which was sent after they were already enrolled in the program. The respondent said it was not very useful for their projects, but it might be helpful for other communities considering enrolling in the program.

When asked why they applied for the program, three respondents said their primary motivation was to **save money on their energy bills and save energy**.

"This was the first time I did a program like this… [The Outreach and Coordination delivery agent representative] was really supportive, [he] walked me through steps, and anytime I had questions I could give him a call and email. He was of great assistance."

Communication and Site Visits

The Cadmus team asked respondents about their experience with program communication after they enrolled. Three of the five respondents said that while the program's early communication was often direct and well managed, the handoff of responsibilities from program staff to contractors introduced gaps that left some communities without a clear point of contact or consistent updates. This feedback was echoed by the Site Execution delivery agent, who also identified delays when communicating with contractors and reported needing to step in to help mediate community and contractor relationships. As an example of strong, early communication, one respondent explained that the benchmarking report influenced which measures the community approved and selected and that ongoing coordination with the Site Execution delivery agent helped prioritize opportunities based on expected savings.

Four of the five respondents specifically named Outreach and Coordination delivery agent employees who were helpful in guiding them through the program's different phases. Overall, respondents reported that they appreciated the one-on-one support and consistent presence of the Outreach and Coordination delivery agent.

Moving beyond early stages in the program, three of the five respondents experienced confusion or delays following the site visits. This aligns with the Site Execution delivery agent's observations that delays often result from contractor scheduling and equipment shipment issues, which the Site Execution delivery agent now attempts to mitigate through weekly contractor meetings and newly hired coordination staff (see the *Delivery Agent Interviews, Communication* section). The situation at the time of the interview (June 2025) was as follows:

- One respondent was still waiting to receive a project plan two months after their site visit and had not reviewed their report with the Outreach and Coordination delivery agent.
- Another respondent said they were confused about the program's timeline and that clearer deadlines and more regular communication would be beneficial.
- The third respondent said they were unsure about the next steps after completing an audit and had not received updates on the project status.

Overall, these respondents reported that their experiences left them unclear about their project status, the results of the assessment and what actions to take next.

Equipment

Lighting was the most commonly installed measure, with all five respondents reporting its inclusion in their project plans. All five who received Direct Install lighting upgrades generally described these projects as quick and easy to implement, with minimal disruption and clear energy savings. One respondent said the benchmarking report helped prioritize measures based on expected savings.

> *"We don't plan to spend the full $300,000 from the program unless it can be used to address other pressing issues – like roofing."*

Although respondents agreed that the lighting upgrades were a valuable entry point for the program across both tracks, four also noted that there were other opportunities to meet the community's long-term energy needs that they wished were more accessible through the program. Specifically, respondents were interested in several additional measures:

- solar (three respondents)
- heat pumps (two respondents)
- HVAC systems (two respondents)
- building envelope improvements like windows (three respondents)
- insulation (two respondents)

These interests in other measures suggest a desire to not only achieve further energy and cost savings (mentioned by three respondents)) but also increase energy resilience in their communities (two respondents).

Contractors and Installation

Respondents provided feedback about several important elements when working with contractors throughout the installation process. These comprised contractor selection, communication and project delays.

Contractor selection: One respondent said they did not get the opportunity to work with the contractor they typically work with (outside the program) and ended up having a negative experience with the contractor chosen for them. While the Site Execution delivery agent agreed that familiarity with contractors is typically factored into program selection processes, the agent explained that First Nation community contact staff turnover in this particular community made it difficult to align contractor selection with participant preference.

Communication: As the projects progressed, respondents observed a decline in communication, particularly during the installation phase. In three of the five interviews, respondents reported difficulties receiving updates and timely responses from contractors. One respondent said they waited several weeks between visits and that the process "dragged out for about a year," noting that the contractor stopped responding entirely at one point.

In addition, the two respondents who participated in both tracks emphasized the need for clear points of contact for the project during the contractor installation phase. They clarified that the contacts should be able to provide timely updates and should be familiar with First Nations facilities, including how they are managed and accessed. For example, one respondent said the measures were shipped directly to them, but they were not informed that the community would need to store the measures for the contractors during the installation. As a result, they had to quickly adapt to accommodate the unexpected shipment.

However, not all respondents reported communication challenges. Two respondents described proactive communication from their contractors, with one reporting daily progress updates that kept the project on track.

Project delays: When asked about the installation process, four respondents reported delays within their projects, typically between the major phases. These included waiting for the Site Execution delivery agent to deliver assessment reports following the site visit or for contractors to start installation after the project plan was approved. Respondents described growing frustration when timelines became vague and follow-up communication was lacking from contractors.

Respondents in both Direct Install and Community Install projects mentioned experiencing challenges with contractors. One respondent said that project delays for their Community Install project resulted in disrupted facility use, which impacted high-traffic community buildings, such as Band Council Offices and multiuse facilities. The respondent said that these buildings often require more complex coordination and scheduling for access, which can be exacerbated by delays in contractor communication.

Participation Barriers

Respondents provided feedback on other types of challenges they faced in the program, including administrative burden and access to decision makers.

Administrative burden: Two respondents reported that the data collection process can be time-consuming and difficult to complete. One also noted that the initial application and data collection for the benchmarking report were challenging because they required information about every building in the community, including hard copies of energy bills. The other respondent said that each building in their community was run by a different department. Because buildings in the community had decentralized management and some ran various confidential programming, access often required a lengthy coordination effort.

Decision-maker access: Respondents also noted that the program may face challenges in identifying decision-makers within their communities. For example, one respondent explained that the program often gets deprioritized compared with other community concerns when delivery agents approach Band Councils directly rather than first working with individual community energy managers. The same respondent said that working with people who manage each building, such as a general facilities manager, is more effective.

Program Successes

Overall, all five respondents reported positive experiences with the program, with four specifically mentioning that they went out of their way to provide positive feedback about communication with their contractor, staff or the overall process. Another respondent said it was easy to expand their existing project plan when program funding increased,[11] with the help of Outreach and Coordination delivery agent staff.

All five respondents said the updated benchmarking and site visit were sufficient to learn about the energy efficiency needs in their community-owned commercial buildings. All respondents also reported that the funding was sufficient for their respective communities, though one noted it may be a stretch for larger communities.

Other Energy Efficiency Benefits

This section provides a summary of the non-energy benefits (NEBs) and GHG reductions attributed to the FNCBRP in PY2024.

Non-Energy Benefits

PY2024 the FNCBRP contributed $1,712,450 in NEBs, including reduced financial stress, thermal comfort, reduced building and equipment operation and maintenance, improved indoor air quality, a sense of control over energy decisions and air quality.

Greenhouse Gas Reductions

As shown in Table 12, the FNCBRP saved 698.29 tonnes of GHG emissions in the first year and will displace 8,338.36 tonnes over the measures' lifetime.

Table 12. PY2024 FNCBRP Greenhouse Gas Benefits

Metric	First Year	Lifetime
GHG Reduction (tonnes)	698.29	8,338.36

[11] Four respondents reported signing up after key program design changes were made in March 2024, resulting in no further insights on decision making changes or perceptions of the program pre- and post-changes.

Key Findings and Recommendations

The following section details the Cadmus team's high, medium, and low impact key findings and recommendations for PY2024. High impact findings and recommendations focus on key performance metrics that need action that will have an immediate impact on program performance. Medium impacts also focus on key performance metrics, but in places where improvements may be less imperative. Low impact findings do not include any recommendations and are more informative for the team. The IESO responses to the recommendations can be found in *Appendix B*.

(High Impact) Key Finding #1: Overall, the reported energy savings closely match the 2024 IESO Measures and Assumptions List (MAL) for commercial lighting; however, the savings reported for individual measures differ slightly from the MAL Assumptions, which resulted in some misalignment between the reported and verified savings.

For each measure, the 2024 IESO Measures and Assumptions List (MAL) for commercial lighting provides a range of unitary savings values, differentiated by building type. Each building type has associated hours of use and peak demand factors. However, the reported savings in the database do not always align with the 2024 MAL for commercial lighting. During desk reviews, the team observed that the savings appear to have been calculated by the service provider based on estimated wattages and hours of operation specific to each facility, as outlined in the provided documentation (benchmark reports and installation plans). Based on these insights, the team adjusted the applicable measure quantities shown in invoices and used unitary savings values from the 2024 IESO MAL to determine the realization rates of 94.05% and 88.36% for energy and peak demand savings, respectively. Project-specific realization rates varied from 60% to 168% for energy savings and from 42% to 126% for peak demand savings. It is noted that additional information is needed in the reporting database to support matching each measure entry to the IESO MAL's commercial lighting unitary savings. Tracking measure results by building type would also improve the accuracy of the reported savings in the database.

Recommendation #1: Ensure that the "building type" field is available in the database and that the service provider fills it in for each measure. This may require adjustments in the system to allow the service provider to enter multiple measures of the same type for a single community, given that each community installation encompasses multiple building types.

(High Impact) **Key Finding #2:** Considering the limited number of contractors near FNCBRP communities, program design parameters regarding prescriptive measure funding caps and the program's remote community designation constrain the program's ability to attract contractors to provide program services.

Though the Oversight delivery agent reimburses participating contractors for travel costs such as vehicle fuel and hotels for program installation work in remote communities, there is no reimbursement for travel to non-remote communities, including commuting time, which contractors have submitted as part

of their quotes for both remote and non-remote projects.[12] Unfortunately, delivery agents have found that most contractors who can support the program are often located two to three hours away from participating communities. Delivery agents noted difficulties trying to recruit contractors to the program once they are told travel costs will not be reimbursed to the non-remote communities.

In addition, delivery agents noted that the prescriptive pricing and funding caps per measure—particularly lighting fixtures—are generally not considered competitive among participating contractors. This, paired with unreimbursed travel costs, causes delivery agents to struggle to find consistent, committed contractors to partner with to deliver the program.

Recommendation #2a: As part of the regular program review, revisit the Direct Install set costs on measures to increase the delivery agents' ability to negotiate with contractors while also working within the program's available budget and acceptable measure-level cost effectiveness thresholds.

Recommendation #2b: Consider altering the definition of remote communities to recognize travel costs when transit exceeds a reasonable threshold (such as 1-2 hours); alternatively, revise the requirement for a community to be designated as "remote" to compensate travel costs and reimburse travel costs to communities that exceed the reasonable threshold or require overnight stays by staff at nearby hotels. If adjustments are made, ensure increased compensation works within the program's available budget.

(High Impact) Key Finding #3: Improving contractor and participant coordination and communication may reduce project delays and result in fewer disruptions to facility operations, ultimately improving participant satisfaction.

Most interviewed participants (three of five respondents) described experiencing challenges with contractors, including lack of responsiveness and difficulty coordinating installation schedules, resulting in project delays that occasionally disrupted facility use. For example, one respondent noted that a lack of scheduling updates from their contractor made it challenging to coordinate staff and building access, which impacted building operations. Another respondent reported severe delays with their contractor, saying that the project installation process took over a year, during which they waited weeks between each scheduled installation due to contractor unresponsiveness. In addition to this causing participant frustration, one delivery agent respondent indicated that communication and project delays increased administration costs for each project, ultimately driving up total project costs for the program.

Respondents reported challenges with contractors for both Direct Install and Community Install installations. However, respondents indicated that these challenges were more disruptive to communities participating in the Community Install track, noting that the larger community buildings, such as Band Council offices and multiuse facilities, were more likely to require complex coordination and scheduling with the facilities team. As the delivery agents also affirmed, participant experiences

[12] All PY2024 participating communities are non-remote by definition (i.e., they are grid connected).

indicated that Community Install projects are more susceptible to delays and communication challenges, especially during the contractor engagement phase.

The Direct Install track also has unique contractor challenges. One participant in the Direct Install track reported that they did not get to choose their contractor. That respondent mentioned that they did not get the opportunity to work with their preferred contractor outside the program and ended up having a negative experience with the contractor selected for their project. Though familiarity with firms is typically factored into program selection processes, Site Execution delivery agent staff noted that when additional communication challenges are introduced, such as community staff turnover, the contractor selection process can become more difficult and participant preferences become harder to track and incorporate.

Recommendation #3a: Strengthen contractor coordination, particularly for Community Install projects, by providing training to participating contractors. For example, all contractors involved in the program should receive a basic orientation on working with First Nations communities to build awareness and strengthen relationships, in addition to receiving information about specific community needs and procedures ahead of each project.

Recommendation #3b: Schedule key milestone check-ins between participants and delivery agents and ensure that these are a part of the program design. For example, this could include an introduction in the installation onboarding call between the participant, the delivery agent and the contractor conducting work to set expectations, establish primary points of contact and develop an installation schedule for the installation phase. During this onboarding, assign a clear point of contact and set expectations for regular scheduling updates to improve communication and mitigate or resolve delays. Additionally, or alternatively, implement a simple tracking system for Community Install installations to improve transparency and help keep projects moving on schedule.

(High Impact) **Key Finding #4:** As the program gains traction, the Site Execution delivery agent may need additional support to sufficiently meet participant needs.

Once participants have enrolled and are ready for a site visit, the project pivots from planning to execution. Three of the five respondents said that while the program's early communication was often direct and well-managed, the handoff of responsibilities to the Site Execution delivery agent and contractor staff introduced gaps that left some communities without a clear point of contact or consistent updates (particularly when contractors were introduced). This contributed to respondents' concerns about delays in project plans and supply chain delivery of measures within the installation phase.

The Site Execution delivery agent Cadmus spoke to noted that several challenges have increased as the program continues to grow. This delivery agent shared that the increased number of projects requiring day-to-day coordination (which includes scheduling the site visit, producing the project plan, finding contractors within their network or working with a community's preferred contractor, ordering

materials for participants and managing contractors throughout the installation process) has required them to hire a new full-time employee to assist with administrative tasks within the projects. In addition, the increased financial strain of fronting the up-front costs of the Direct Install projects until the contractor completes the work, which can take months, will continue to be a challenge as program participation increases.

Though additional staffing has helped the Site Execution delivery agent streamline project implementation, they identified additional areas of opportunity for improvement within the program processes. For example, they expressed interest in participating in the earlier phases of the program, specifically during the initial onboarding, to help build better relationships with the First Nation communities. The Site Execution delivery agent also described areas of internal improvement in data tracking and participant onboarding but cited limitations and timeline pressures as barriers to actualizing these improvements.

Site visits by the Site Execution delivery agent focus mainly on potential lighting measures because they indicated lighting tends to be the most cost-effective measure. Additionally, the Site Execution delivery agent's expertise is primarily focused on lighting, so its partnership with the program places lighting at the forefront of measures available. However, three of five participant respondents explicitly called out additional measures they had been hoping to receive through the program that were not included in their project plan: solar (three respondents), heat pumps (two respondents), HVAC systems (two respondents) and building envelope improvements like windows (three respondents) and insulation (two respondents). While the Oversight delivery agent has mentioned that they are working to expand measure offerings beyond lighting, this could create further barriers when trying to plan and execute a project outside of the Site Execution delivery agent's expertise.

Recommendation #4a: Discuss capacity ability and concerns with each delivery agent on an annual basis, and revise program procedures to better facilitate program processes as possible. For example, consider providing reimbursement for Direct Install track projects earlier in the project timeline, or a 50% up-front payment to installation delivery agents for the Community Install track to assist with the increased funding that the expanding number of participants each year will require.

Recommendation #4b. Provide training materials and communication protocols to equip program staff with tools to effectively coordinate site visits, communicate with participants about equipment, and maintain ongoing contractor communications as the number of program participants increases.

Recommendation #4c. Consider supporting lighting-focused delivery agents by seeking additional partners or manufacturers to increase installation of measures outside of lighting as the Community Install track expands.

(Medium Impact) **Key Finding #5:** Interpersonal relationship building and direct outreach have been the key to success for the program, for both raising awareness and getting decision-maker buy-in.

Respondents most commonly learned about the program through direct outreach methods, such as word of mouth, emails, events and phone calls. Traditional marketing channels, such as the program website and brochures, were mentioned only once each across the five interviews. Respondents primarily cited direct outreach as a key influencer in their decision to participate. The opportunity for delivery agents to directly connect with First Nations community members also brings the opportunity to build trust, which both delivery agents noted was a key to successfully and efficiently implementing projects.

Direct relationships can be critical to the success of later stages of the program as well. Many of these projects require Band Council approval before moving forward, but it can be difficult to get the attention and buy-in of the Council if the project is supported by only one community representative and the program representative(s). One interviewed participant suggested making connections with the building or energy managers of individual buildings that are being considered for the program, before going to the Band Council. Getting support from building managers or the energy managers could result in an easier time getting Band Council approval and attention, as these projects would be supported by multiple members of the community.

Recommendation #5a: Broaden direct outreach beyond existing networks to grow program participation. The program should identify and engage First Nations communities that have not been previously engaged by Outreach and Coordination delivery agent events or programming. Tailoring outreach to those communities—through regional events for facilities managers or trusted messengers, rather than through the Band Council—could help build awareness and expand program reach.

Recommendation #5b: After connecting with one community contact to engage with the program, consider engaging with additional community members involved in building operations to help them understand why participating in the program would benefit their building before seeking approval from the Band Council. This additional support may help expedite Band Council review and approval.

(Low Impact) **Key Finding #6:** Nearly all of the PY2024 projects were completed through the Direct Install track.

In PY2024, the program served 34 communities, with 307 measures (3%) installed through the Community Installation track and 9,997 measures (97%) installed through the Direct Installation track. Since less than 6% of tracked gross energy savings came from the Community Install track, the Cadmus team was not able to calculate separate realization rates for the Community Install and Direct Install tracks. This may change in future years when more projects are completed since projects using the Community Install track may have longer completion timelines than projects completed through the Direct Install track.

Appendix A. Energy and Peak Demand Savings

Table A-1 summarizes the energy savings achieved by the First Nations Community Building Retrofit Program under the 2021-2024 Conservation and Demand Management Framework.

Table A-1. 2021-2024 CDM Framework FNCBRP Historic Savings

Evaluated Year	Verified Year	Gross Verified Energy Savings (kWh)	Gross Verified Peak Demand Savings (kW)
PY2024	PY2024	2,187,854	316
PY2024	PY2023	739,208	224
PY2024 Total		**2,927,061**	**540**
TOTAL		**2,927,061**	**540**

Appendix B. PY2024 EM&V Key Findings and Recommendations with IESO Response

Table B-1 summarizes the key findings and recommendations for PY2024, along with the IESO's initial response to those recommendations.

Table B-1. PY2024 Key Findings and Recommendations

No.	Key Findings	2024 EM&V Recommendations	Impact	IESO Response
1.	Overall, the reported energy savings closely match the 2024 IESO Measures and Assumptions List (MAL) for commercial lighting [13]; however, the savings reported for individual measures differ slightly from the MAL Assumptions, which resulted in some misalignment between reported and verified savings.	Ensure that the "building type" field is available in the database and that the service provider fills it in for each measure. This may require adjustments in the system to allow the service provider to enter multiple measures of the same type for a single community, given that each community installation encompasses multiple building types.	High	The IESO is working with the service provider to create an appropriate building type list for commercial and institutional facilities generally found in First Nation communities and this will be used moving forward.
2.	Considering the limited number of contractors near FNCBRP communities, program design parameters regarding prescriptive measure funding caps and the program's remote community designation constrain the program's ability to attract contractors to provide program services.	As part of the regular program review, revisit the Direct Install set costs on measures to increase the delivery agents' ability to negotiate with contractors while also working within the program's available budget and acceptable measure-level cost effectiveness thresholds. Consider altering the definition of remote communities to recognize travel costs when transit exceeds a reasonable threshold (such as 1-2 hours); alternatively, revise the requirement for a community to be designated as "remote" to compensate travel costs and reimburse travel costs to communities that exceed the reasonable threshold or require overnight stays by staff at nearby hotels. If adjustments are made, ensure increased compensation works within the program's available budget.	High	The IESO will review measure cost caps, and will work with the service provider to improve processes / approaches to attract more contractors to provide services.
3.	Improving contractor and participant coordination and communication may reduce project delays and result in fewer disruptions to facility operations, ultimately improving participant satisfaction.	Strengthen contractor coordination, particularly for Community Install projects, by providing training to participating contractors.	High	The IESO will work with the service provider to ensure contractor training and check-in meetings are done.

[13] The Cadmus team referenced the IESO Technical Reference Manual, January 2024 provided by the IESO as part of the program documentation. The measures installed through the FNCBRP were found in the section titled "Instant Discount Program Measures – Lighting" (pages 343 to 402).

No.	Key Findings	2024 EM&V Recommendations	Impact	IESO Response
		Schedule key milestone check-ins between participants and delivery agents and ensure that these are a part of the program design.		
4.	As the program gains traction, the Site Execution delivery agent may need additional support to sufficiently meet participant needs.	Discuss capacity ability and concerns with each delivery agent on an annual basis, and revise program procedures to better facilitate program processes as possible. Provide training materials and communication protocols to equip program staff with tools to effectively coordinate site visits, communicate with participants about equipment, and maintain ongoing contractor communications as the number of program participants increases. Consider supporting lighting-focused delivery agents by seeking additional partners or manufacturers to increase installation of measures outside of lighting as the Community Install track expands.	High	The IESO will ensure appropriate training is available, as well as review program requirements to ensure additional support is available. The IESO will review how to improve participation in the Community Install track, including beneficial electrification opportunities.
5.	Interpersonal relationship building and direct outreach have been the key to success for the program, for both raising awareness and getting decision-maker buy-in.	Broaden direct outreach beyond existing networks to grow program participation. After connecting with one community contact to engage with the program, consider engaging with additional community members involved in building operations to help them understand why participating in the program would benefit their building before seeking approval from the Band Council. This additional support may help expedite Band Council review and approval.	Medium	The IESO will work with the service provider to ensure support for direct outreach is increased.

Appendix C. Detailed Program Eligibility Requirements

Per the First Nations Community Building Retrofit Program requirements, several criteria may qualify First Nations communities and their facilities for the program.

Participant Eligibility

A Participant must:

a. be an on-reserve Band Council for an Eligible Community listed in Appendix 2;
b. have the rights and authority in respect of a Facility in order to have the Eligible Measures installed; and
c. agree to all the terms and conditions of the Participant Agreement.

Facility Eligibility

In respect of both the Direct Install Track and the Community Install Track, an eligible Facility must:

a. be located within a reserve of a First Nation that is an Eligible Community;
b. be located on Band-owned land and operated for the use and benefit of the community;
c. be connected to the IESO-controlled grid; and
d. have a primary use that is non-residential (for greater certainty, Common Areas within a residential Multi-Family Building are considered eligible Facilities).

In addition to satisfying the eligibility criteria of items (a)-(d) in the paragraph above, in respect of the Community Install Track, an eligible Facility must be:

a. a water treatment facility;
b. a waste-water treatment plant;
c. an arena;
d. street lighting; or
e. a Facility that is otherwise approved by the IESO in writing as an eligible Facility for the purposes of the Community Install Track.

Project Eligibility

A Project must:

a. be comprised of one or more Eligible Measures; and
b. be identified by the Energy Assessment and selected by the Band Council from the Site Visit Report.

Direct Install Track Measures Eligibility

An Eligible Measure must:

a. be located in a Facility;
b. not include:
    i. measures that are pilot or demonstration projects, not generally commercially available or otherwise unproven;
    ii. subject to guidance/approval by the IESO, replacement of existing equipment, which previously received funding through a program or initiative undertaken by the Government of Ontario or by the IESO under the Interim Framework or the 2021-2024 Conservation Demand Management Framework
c. have a project completion date of no later than 12 months after the Project Plan is approved; and
d. be listed in Appendix 1 of the Program Requirements.

Eligible Costs for each Direct Install means the Measure Cost set out in the Appendix 1 - Eligible Measures List of the Program Requirements.

Community Install Track Measures Eligibility

An Eligible Measure must:

a. be located in a Facility;
b. not include:
    i. measures that are pilot or demonstration projects, not generally commercially available or otherwise unproven;
    ii. replacement of existing equipment that was previously incented; or
    iii. measures which have previously received funding through a previous IESO or former Ontario Power Authority-funded program unless evidence supports the installation of measures in a different area of the Facility;
c. have a project completion date of no later than 12 months after the Project Plan is approved;
d. have savings comprising the following:
    i. Peak Demand Savings of 1 kW and/or annual Energy Savings of at least 2,000 kWh; and
    ii. projected delivery of such Peak Demand Savings and/or Energy Savings for a minimum period of 48 months from the project completion date of the Project; and
e. be subject to a Detailed Engineering Study.

Appendix D. Methodology Details

Appendix D presents the detailed methodology for impact, cost-effectiveness and process evaluation.

Impact Evaluation

Step 1. Tracking Database Review

The Cadmus team reviewed the program tracking database to verify the accuracy of the reported energy savings, participant counts, measure descriptions and incentive dates. This included reviewing the PY2024 database for missing data, unrealistic values, inconsistencies and anomalies. The team communicated all discrepancies to the IESO for review and update in the participant database to resolve all database issues before performing a sample of the population.

Step 2. Sampling

The Cadmus team selected a random sample of projects using probability proportional to size sampling from the FNCBRP database, designing the sample to achieve ±10% precision at the two-tailed 90% confidence level at the program level. The team selected the sampled projects and requested the sample project documentation from the IESO and its delivery vendors. The team evaluated and reviewed all measures with the same rigor to meet confidence and precision sample targets at the program level, evaluating a total of nine projects. Out of the nine sampled, all projects included a variety of lighting measures, and one project included the only air conditioning measure of the database.

Step 3. Develop EM&V Review Protocols

The Cadmus team reviewed the IESO TRM for each measure offered by the IESO in the FNCBRP. Once the approach was deemed appropriate and followed best practices, the team then assessed the quality of calculation assumptions and inputs by reviewing the source documentation for each calculation assumption and input. If calculation assumptions and inputs used outdated information, the team provided updated values and the associated TRM source. The team also received and reviewed sample project documentation from the IESO's delivery vendor to understand the relationship of sample measure data to savings calculation inputs from the IESO TRM. Finally, using data collected from project documentation, the team analysed savings based on the IESO TRM.

Step 4. Perform Desk Reviews and Analysis

The Cadmus team calculated gross verified energy and peak demand savings for each sampled project and measure using the sampled project documentation. The team reviewed all available project documentation for the sampled projects, including project applications, project plans, benchmark reports, invoices and site visit reports. The team also calculated savings for each measure within each sampled project based on the inputs, assumptions and calculation methodologies outlined by the associated substantiation workbook, performing the following tasks for each sampled project:

- Verified the installation and operation of equipment that received incentives
- Confirmed that installed equipment met program eligibility requirements

- Verified that the number of installed measures matched program documentation
- Verified equipment specifications through manufacturer product cut sheets and the DesignLights Consortium's Qualified Products Lists database[14]

Step 5. Obtain Confirmations from Service Provider

After the Cadmus team analysed the project documentation, a list of questions about missing or unclear data was sent to the service provider in order to confirm that no documentation was missed and that verified savings were calculated in an appropriate manner.

Step 6. Extrapolation

The Cadmus team extrapolated the results from the sampled projects to the population to determine program gross verified energy and peak demand savings, aggregating the verified savings at the project level to determine a realization rate (verified savings divided by reported savings) for the sample projects. To determine verified savings, the team applied the realization rate to the program population.

Step 7. Calculate Net Savings

The Cadmus team estimated net savings—savings directly attributable to the programs—by multiplying gross verified energy savings by the NTG ratio. The team applied an NTG of 1.0 to the participants in the FNCBRP in accordance with the IESO's EM&V protocols for agreed-upon NTG ratios for First Nations programs.

Cost-Effectiveness Analysis

Table D-1 and this section define the TRC, PAC and LUEC test components, following the guidelines established in the IESO Cost-Effectiveness Guide for Energy Efficiency.

Table D-1. TRC, PAC and LUEC Test Components

Components	TRC	PAC	LUEC
Avoided Electricity Supply-Side Resource Costs (ASC)	Benefit	Benefit	
Other Supply-Side Resource Benefits (ORB)	Benefit		
Net Participant Costs (NPC)	Cost		
Incentive Costs (IC)		Cost	Cost
Program Costs (PRC)	Cost	Cost	Cost
NEBs/Externalities	Benefit		
Tax Credits (TC)	Benefit		
Energy and Peak Demand Savings (NPV of Annualized Savings)			Benefit

[14] DesignLights Consortium. Accessed July 2024. "Search the DLC Qualified Products Lists." DLC Qualified Products Lists - DesignLights

The TRC formula is as follows:

$$TRC\frac{B}{C} = \frac{[ASC + ORB + TC + NEB] * NTG}{[(NPC * NTG) + PRC]}$$

TRC costs are defined as the following:

- Total expenses incurred by a program administrator to design and deliver conservation and demand management (CDM).
- The incremental expenses incurred by participants to implement the conservation action.

TRC benefits are defined as the following:

- The electricity system-related costs that are no longer required because of the savings achieved by CDM, including these:
  - Generation costs
  - Transmission and distribution (T&D) costs
  - Fuel costs
  - Operation and maintenance costs
- Other avoided supply-side resource costs (e.g., natural gas).
- Non-resource or non-energy benefits such as avoided GHG emissions, reduced water consumption or improved water quality and avoided health costs.

The PAC formula is as follows:

$$PAC\frac{B}{C} = \frac{[ASC] * NTG}{[PRC + (IC * NTG)]}$$

PAC costs are defined as the following:

- Total expenses incurred by a program administrator to design and deliver CDM.
- The cost of providing incentives provided to participants to entice participation in the program.

PAC benefits are defined as the following:

- The electricity system-related costs that are no longer required because of the savings achieved by CDM, including these:
  - Generation costs
  - T&D costs
  - Fuel costs
  - Operation and maintenance costs

The LUEC Metric formula is as follows:

$$LUEC\frac{C}{B} = \frac{[(IC * NTG) + PRC]}{[NPVI]}$$

LUEC costs are defined as the following:

- Total expenses incurred by a program administrator to design and deliver CDM.
- The cost of providing incentives provided to participants to entice participation in the program.

LUEC benefits are defined as the following:

- Energy savings (kWh) over the lifetime of the CDM resource
- Peak demand reduction (kW) over the lifetime of the CDM resource

Process Evaluation

The Cadmus team collected insights through conducting interviews with participants and delivery agents regarding the program's implementation effectiveness, participant motivations, benefits, needs and satisfaction. As shown in Table D-2, the team completed five interviews with participants and one with the delivery agent. The team conducted all interviews in June of 2025.

Table D-2. Online Interview Activities

Activity	Audience	Invites	Timing	Targeted Completes	Completed
Participant Interviews	Program participants, 28 contacts	15	June 2025	5+	5
Delivery Agent Interviews	Site Visit Delivery Agents, 1 contact	1	June 2025	1	1

In addition to one interview with the site visit delivery agent, the Cadmus team solicited and received email input from the Oversight delivery agent, totaling input from two delivery agents for the purposes of the evaluation.

The Cadmus team took verbatim notes during these interviews to reference during analysis. To ensure alignment and consistency while analyzing participant interviews, Cadmus used DeDoose, a specialty software for qualitative analysis, to develop a code book and analyse themes.