



2017 Program Evaluation: Niagara Peninsula Energy Inc. Hotel/Motel Pilot

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1 Acronyms and Abbreviations

CDM	= Conservation and demand management
CFF	= Conservation first framework
EUL	= Effective useful life
FR	= Free-ridership
kW	= Kilowatt
kWh	= Kilowatt-hour
IESO	= Independent Electricity System Operator
LDC	= Local distribution company
MAL	= Measures and assumptions list
M&V	= Measurement and verification
NPEI	= Niagara Peninsula Energy Inc.
NTG	= Net-to-gross
NTGR	= Net-to-gross ratio
PAC	= Program administrator cost
SO	= Spillover
TRC	= Total resource cost
TRM	= Technical reference manual

2 Executive Summary

2.1 Pilot Description

The NPEI Hotel/Motel pilot (marketed as The Energy Concierge Program) was created to help achieve energy savings in the hotel/motel sector. The Hotel/Motel pilot provided upgrade recommendations, guidance in making project implementation decisions, and full cost recovery incentives. The pilot made use of existing provincial electricity conservation demand management (CDM) and natural gas demand side management (DSM) measures available to the sector, and was enhanced by additional measures applicable to the sector.

All projects received additional services from the pilot that are not available under the Retrofit program, including project identification through an audit and an energy management plan, business case assistance with hotel management, implementation support (e.g. working with contractors), and support with the assessment of financing options (e.g. alternative financing, available incentives, etc.).

2.2 Background, Goals, and Objectives

The Independent Electricity System Operator (IESO) retained Nexant, Inc., to conduct an evaluation of its Business Programs for the 2017 evaluation cycle. The evaluation team also includes NMR Group, Inc. This report provides the results of the impact and process evaluation of the Hotel/Motel Pilot delivered by Niagara Peninsula Energy Inc. (NPEI) for the 2017 program year. The goal and objectives of the 2017 evaluation include:

- Verify energy and summer peak demand savings with a high degree of confidence, taking into account;
 - All measures implemented as part of the program;
 - Spillover savings and local program-enabled savings;
- Review and evaluate key program elements;
- Conduct annual cost-effectiveness analyses; and
- Report and attribute savings due to the pilot.

2.3 Observations and Recommendations

This section provides a summary of the impact and process evaluation results and observations for the NPEI Hotel/Motel pilot for the 2017 program year.

2.3.1 Impact Evaluation

The Hotel/Motel pilot reported savings from eight measures at four sites. This evaluation included all eight measures in the impact and process samples. The tracking data provided by NPEI contains list of measures with their status and associated savings.

In NPEI’s April 30th 2017 Final Hotel/Motel pilot report, it reported a total of 105 measures in their pipeline, specifically:

- 22 measures completed. Out of the 22 completed measures, 13 measures had their savings attributed to the Retrofit program, 1 measure had split savings between the Hotel/Motel pilot and the Retrofit program, and the remaining 7 measures were attributed to the pilot;
- 9 measures in construction phase;
- 12 measures in design phase;
- 59 measures have been identified as opportunities; and
- 3 measures have been closed.

For 2017 evaluation, Nexant only considered measures that were marked as complete and had attributable savings through the Hotel/Motel pilot. The Hotel/Motel pilot savings are summarized in Table 2-1 below.

Table 2-1: Pilot Savings Results

Savings Type	Gross Reported Savings	Realization Rate	Gross Verified Savings	Net To Gross Ratio	Net Verified First Year Savings	Net Verified 2020 Savings
Energy (MWh)	71.6	91.9%	65.8	0.90	59.0	42.6
Summer Peak Demand (MW)	0.011	116.9%	0.013	0.90	0.012	0.007

The following observations and recommendations are based on the eight measures included in the pilot:

- Four out of the eight completed measures were identified as “demonstration projects” where the pilot covered the full cost of those measures. Two of the demonstration projects did not report any savings.

Recommendation: To make the cost effectiveness of the pilot more attractive for continued implementation in the future, it is recommended that program staff strive to convert as many incentivized measures as possible into energy and summer peak demand savings the pilot can claim.

- Generally, the project documentation provided by the pilot was sufficient enough for a rigorous evaluation review. However, some measures were missing some data/information that was later requested from NPEI.

Recommendation: It is important that pilot implementers and administrators collect and store all data and calculations relevant to supporting claimed savings estimates and be able to provide them to IESO in a timely manner to allow for use in the evaluation.

2.3.2 Net-to-Gross

The key observations from the 2017 pilot impact evaluation pertaining to net-to-gross include the following:

Participant feedback indicates relatively low free-ridership (10.3%), as responses show that the Hotel/Motel pilot helped customers' complete projects they would have had to cancel, delay, or reduce in size or scope.

- When asked what they would have done if they had never learned they could receive incentives from the pilot, one respondent indicated they would have cancelled the upgrade altogether, one said they would have put off doing the upgrade for at least one year, and the remaining one respondent said they would have scaled back on the size or extent of the upgrade by a moderate amount.
- The availability of pilot incentives and the results of any audits or technical studies done through this or another program influenced two of the three respondents' decisions to perform the energy efficient upgrades. Recommendations provided by an NPEI representative were influential for all three respondents.
- The participant survey did not find evidence of spillover.

Recommendation: Overall, the NTG results of the pilot were positive. If the pilot were to be continued in future program years, pilot staff should continue to work to identify and target customers who are most in need of the pilot's support, and who would not be able to install the equipment without the incentive.

2.3.3 Process Evaluation

The process evaluation involved interviews with pilot staff, installation contractors, and participants. The key observations are as follows:

-
- The two primary objectives of the pilot: to test a comprehensive electricity, natural gas, and water (steam) type program for the hotel / motel sector in NPEI's service territory, and to establish, maintain, and enhance a relationship with the customer regarding energy efficiency beyond the pilot, were both successful.
 - The pilot delivery agent (PDA) staff found the partnership with OHRMA to be highly valuable because of the support OHRMA played in reviewing pilot materials and promoting the pilot to their hotel and motel membership using language and tactics that they knew these members would understand. Additionally, this partnership has created a pipeline of interest in energy upgrades that was not present prior to the pilot. However, pilot staff indicated there were several barriers associated with the hotel and motel sector, including seasonality, lack of capital, lack of customer awareness, expertise, and technical knowledge, inertia from the facility managers to do the upgrades, and unstable or complicated ownership structures.

Recommendation: *If the pilot were to return as a local or province-wide program in future years, the evaluation team would recommend that any program consider utilizing the measure mix offered through this pilot. It is also recommended that any future program revisit the pilot's lessons learned, find ways to utilize the case studies created by the pilot, and in order to more effectively address the numerous barriers in this industry, to leverage the relationships built with the pilot's contractors and ORHMA.*

- NPEI staff reported that that the “one window” approach that they developed with Enbridge Gas was one of the aspects of the pilot that they heard customers say was most useful to them—a combination of gas and electric savings was influential in making the case to participate for some customers.

Recommendation: *If the pilot were to return as a local or province-wide program in future years, the evaluation team would recommend that any program consider continuing to include the “one window” approach to not only simplify the application process for customers but to provide customers dual fuel savings opportunities.*

- One participant suggested that the stipulation in the contract requiring an 18-month implementation window of energy saving measures be removed, or the timeline extended. This participant felt the timeline was too stringent for their operations. This concern was echoed by an installation contractor that noted that his business was somewhat reluctant to get involved in the hotel/motel industry due to the relatively short business cycle.

Recommendation: *If the pilot were to return as a local or province-wide program in future years, the evaluation team would recommend program staff carefully review the*

requirements associated with project completion to ensure participants have adequate time to complete all the work.

3 Evaluation Goals and Objectives

The goals and objectives of the 2017 evaluation of the NPEI Hotel/Motel pilot are as follows:

- Verify energy and demand savings with a high degree of confidence, taking into account;
 - Measure-specific characteristics and data;
 - Spillover savings and pilot-enabled savings;
- Review and evaluate key pilot elements;
- Conduct annual cost-effectiveness analyses; and
- Report and attribute savings due to the pilot.

To estimate gross verified energy and summer peak-demand savings, the evaluation team conducted desk reviews of project documentation, followed by telephone or on-site survey for all completed projects in 2017 in the pilot. To estimate the direct influence of the pilot in generating energy savings, the evaluation team conducted attribution surveys to calculate the rates of free-ridership and spillover. This information was used to calculate a net-to-gross ratio, which was then applied to the gross verified savings to calculate the net savings.

4 Pilot Description

The NPEI Hotel/Motel pilot (marketed as The Energy Concierge Program) was created to help achieve energy savings in the hotel/motel sector, traditionally a difficult sector to reach. The pilot was delivered by NPEI with the assistance of ICF International (pilot delivery agent (PDA)) and in collaboration with Enbridge Gas Distribution (Enbridge) and the Ontario Restaurant Hotel & Motel Association (ORHMA).

NPEI's collaboration with the ORHMA allowed Hotel/Motel Pilot staff to collect market characterization data to better inform the pilot, as well as receive direct feedback from the ORHMA and its members on program materials and reports. Additionally, NPEI's collaboration with Enbridge Gas ensured a "one-stop shop" for energy efficiency opportunities and to streamline applications and approvals for incentives. However, due to a variety of participant specific barriers, no significant gas projects were completed within the pilot timeframe.

The Hotel/Motel pilot provided upgrade recommendations, guidance in making project implementation decisions, and full cost recovery incentives. The pilot made use of existing provincial electricity conservation demand management (CDM) and natural gas demand side management (DSM) measures available to the sector, and was enhanced by additional measures applicable to the sector. These measures included:

- Packaged Terminal Air Conditioner (PTAC) replaced with Packaged Terminal Heat Pumps (PTHPs)
- Audits addressing recommissioning, building automation system (BAS), make-up air unit (MUAU) systems, and associated optimization and improvements measures.
- Energy assessment and associated measures, such as variable frequency drives, demand control ventilation, and operational improvements.

When applicable, measures identified in the pilot were passed on to the Retrofit program for incentives. However, some identified measures were retained in the pilot as demonstration projects, and therefore received "enhanced incentives" directly from the pilot. One particular measure received incentives from both the Retrofit program and the pilot's enhanced incentives.

Furthermore, all projects received additional services from the pilot that are not available under the Retrofit program, including project identification through an audit and an energy management plan, business case assistance with hotel management, implementation support (e.g. working with contractors), and support with the assessment of financing options (e.g. alternative financing, available incentives, etc.).

The PDA provided support as the project manager. The PDA's project management role included investigating upgrade opportunities, and serving as the liaison between the participants, Implementation team, and NPEI and Enbridge Gas. The PDA partnered with the Ontario Restaurant, Hotel and Motel Association (OHRMA) to market the pilot to their hotel and motel membership. OHRMA served as an advisor throughout the delivery of the pilot.

The documentation provided by NPEI for each measure in the pilot included tracking database entries and project files. The tracking database listed fields such as project details, reported savings, and incentive amount. Project documents included savings calculations, post-installation M&V reports conducted by NPEI contractors, as well as the pilot's proposal and final report developed by the PDA.

5 Methodology

The sections below describe the methodologies used to complete the impact and process-related components of the evaluation.

5.1 Impact Evaluation Methodology

5.1.1 Project Reviews and Evaluation

The Hotel/Motel pilot reported savings from eight measures, which were completed at four hotels/motels. To meet 90/10 confidence and precision statistical requirements in sampling, this evaluation included all measures.

The Nexant team reviewed all project documentation provided by the IESO and NPEI and conducted data collection and analysis activities for all measures in this pilot. Seven measures were verified via desk review and site visits. One hotel owner was not cooperative with allowing the Nexant team to visit the property, so the eighth measure was verified with only a desk review.

Desk reviews consisted of reviewing project documentation available in the pilot's database such as pilot applications, verification reports, and any other documentation available to IESO. The site visits expanded upon the work conducted for the desk reviews by also including an on-site review of the measures, which involved verifying nameplate information, measure quantities, operational hours, and conducting an in-person interview with the site contact person.

Once the data had been collected, Nexant created hourly savings load shapes based on observed measure parameters. These load shapes were then used to derive verified annual energy savings and summer peak demand savings.

5.1.2 Net-to-Gross (NTG) Methodology

To calculate net savings, the team evaluated the portion of gross verified savings that were specifically attributable to the pilot. Net savings were determined by multiplying the gross verified savings by the net-to-gross (NTG) ratio, as shown in Equation 5-1.

Equation 5-1: Net Savings

$$\text{Savings Net} = \text{Savings verified} \times \text{NTG}$$

Where:

Savings net = Net savings impact (kW or kWh)

Savings verified = Gross verified energy savings (kW or kWh)

NTG = Net-to-gross ratio

To estimate the direct influence of the Hotel/Motel pilot in generating net energy savings, the evaluation team implemented an attribution survey to calculate the free-ridership (FR) and spillover (SO) rates, assessed as percentages of total reported savings. Free-ridership is the program savings attributable to free-riders (program participants who would have implemented a program measure or practice in the absence of the program). Spillover refers to additional reductions in energy consumption and demand that are due to program influences beyond those directly associated with program participation.¹ The NTG ratio is defined by Equation 5-2, where FR is the free-ridership percentage and SO is the spillover percentage:

Equation 5-2: Net-to-Gross Ratio

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

5.2 Process Evaluation Methodology

The process evaluation focused on the design, implementation, and delivery of the Hotel/Motel pilot. Program processes were evaluated through interviews with pertinent pilot actors including pilot staff at NPEI, pilot project manager, and pilot participants (Table 5-1). For each population, a unique interview guide was developed to ensure responses produce comparable data and allow the evaluation team to draw meaningful conclusions.

Table 5-1: Process Evaluation Primary Data Sources

Respondent Type	Methodology	Targeted	Completed
NPEI Staff	Phone	1	1
Pilot project manager	Phone	1	1
Pilot Participants	Phone	5	3

¹ Free-ridership and spillover definitions are sourced from p.3 of Chapter 21: Estimating Net Savings – Common Practices of the Uniform Methods Project. Web: www.nrel.gov/docs/fy17osti/68578.pdf.

6 Participation

The Hotel/Motel pilot reported savings from eight measures at four sites. This evaluation included all eight measures in the impact and process samples. The tracking data provided by NPEI contains list of measures with their status and associated savings. For 2017 evaluation, Nexant only considered measures that were marked as completed and had claimed savings through the pilot.

In NPEI's April 30th 2017 Final Hotel/Motel pilot report, it reported a total of 105 measures in their pipeline, specifically:

- 22 measures completed;
- 9 measures in construction phase;
- 12 measures in design phase;
- 59 measures have been identified as opportunities; and
- 3 measures have been closed.

Out of the 22 completed measures, 13 measures had their savings attributed to the Retrofit program, 1 measure had split savings between the Hotel/Motel pilot and the Retrofit program, and the remaining 7 measures were attributed to the pilot².

² One project received a "top up" incentive from the pilot in addition to its Retrofit incentive.

7 Impact Evaluation Results

7.1 Energy Savings

The program level savings are summarized in Table 7-1 below.

Table 7-1: Program Level Savings Results

Savings Type	Gross Reported Savings	Realization Rate	Gross Verified Savings	Net To Gross Ratio	Net Verified First Year Savings	Net Verified 2020 Savings
Energy (MWh)	71.6	91.9%	65.8	0.90	59.0	42.6
Summer Peak Demand (MW)	0.011	116.9%	0.013	0.90	0.012	0.007

Two measures did not have any reported savings, and hence, these measures were not verified. One completed measure was also incentivized through both the pilot and Retrofit programs. More specifically, in addition to receiving a Retrofit program incentive, the measure received a supplementary “top up” incentive from the pilot program. To be as fair as possible to both programs, it was decided to split the verified savings between the two programs proportionally by the incentive provided by each program. The pilot paid \$12,502 and the Retrofit program paid \$2,854. Therefore, the pilot only claimed 81% of the savings for this measure.

One measure made up 78% of the gross verified summer peak demand savings, so its results had a significant influence on the pilot's summer peak demand realization rate. The summer peak demand realization rate for this measure was verified to be 798%. The primary reason this measure's verified savings were found to be more than the reported savings was because the reported savings were calculated based on the old peak demand definition.

When measures were found to be implemented and operating, measure level realization rates for both summer peak demand and energy savings were found to be around 100%, indicating that savings estimate input parameters, such as operating hours and equipment loading, generally aligned between reported and verified savings estimates.

7.2 Lifetime Savings

Each measure in the program was given an effective useful life (EUL) based on the IESO's Measures and Assumptions List (MAL)³ or, if the measure was not available in the MAL, the California Database for Energy Efficiency Resources.⁴ Table 7-2 displays the estimated savings at both 2017 and 2020. The expected persistence in condenser cleaning and training measures, which both have EULs of 3 years, led to a lower net verified savings in 2020 than in 2017 (first year).

Table 7-2: Net Verified Savings Persistence

Savings	Net Verified First Year Savings	Net Verified Savings at 2020
Energy (MWh)	59.0	42.6
Summer Peak Demand (MW)	0.012	0.007

7.3 Net-To-Gross

Net-to-Gross (NTG) observations for the NPEI Hotel/Motel pilot are presented in the following subsections. This information was collected as part of the participant survey.

7.3.1 Net Savings

There were three responses received for the net-to-gross (NTG) survey. The results from these surveys are presented in Table 7-3.

Table 7-3: Net-to-Gross Survey Results

NTG Assignment	Sample size	Savings Weighted FR*	Energy SO*	Demand SO*	Energy Savings Weighted NTG* %	Demand Savings Weighted NTG* %	Energy Relative Precision at 90% Confidence Level	Demand Relative Precision at 90% Confidence Level
Province-wide	3	10.3%	0.0%	0.0%	89.7%	89.7%	5.73%	4.08%

7.3.2 Free-Ridership

To provide context for the decision making by participants to participate in the pilot, the pilot included enabling factors, besides enhanced incentives, such as:

³ IESO Prescriptive Measures and Assumptions List, October 2015, <http://www.ieso.ca/-/media/files/ieso/document-library/conservation/measures-and-assumptions/ieso-prescriptive-measures-assumptions-list-october-2015.pdf?la=en>

⁴ California Public Utilities Commission, California Database for Energy Efficiency Resources, version 2014, <http://www.deeresources.com/>

-
- Energy audits
 - Energy management plans, including the business case for measure implementation
 - “One window approach”
 - Identifying products, vendors, and contractors
 - Completing Retrofit applications
 - Marketing materials including case studies

The evaluation team assessed the extent of free-ridership within the pilot by asking participants a series of questions about when they learned about the pilot, what they would have done in the absence of the pilot, and how influential the pilot was on the participant’s decision to do the energy-efficient upgrades. Their feedback is presented below.

The team first asked the respondents when they had learned that they were eligible to receive energy efficiency incentives through the NPEI Hotel/Motel pilot. Two of the three interviewed participants stated they learned about the pilot before they started planning the upgrades. The remaining respondent said they had already started planning the upgrade when they learned about the pilot, but they had not yet started implementing the upgrades. These findings are suggestive of low free-ridership since the respondents had not completed any of the work before learning about the program.

The evaluation team next asked respondents what they would have done in the absence of the pilot. These findings are also suggestive of relatively low free-ridership since two of the three respondents would either not have done the project (one respondent) or would have been delayed in doing so by at least a year (one respondent) had they not learned about the pilot. There is some evidence of free-ridership, however, given that one respondent indicated they would have done the work anyway—the impact on overall free-ridership is minimal, though, as this respondent also reported that they would have had to scale back on the size or extent of the upgrade by a moderate amount in order to complete the project if the pilot had not been available.

Finally, the evaluation team asked the three respondents to rate how pilot features, such as the availability of the program incentive, information provided by representatives and contractors, and marketing, influenced their decision to do the energy efficient equipment upgrades (Table 7-4). They rated these pilot features using a scale of 1 to 5, where 1 means “no influence at all” and 5 means “great influence” on their decision to do the energy-efficient upgrades.

Table 7-4 Influence of Pilot Features on Participation (n=3)

(Rating of 4 or 5 on a scale of 1 to 5)

Pilot Feature	Influence of Pilot on Decision to do Upgrades		
	Respondent 1	Respondent 2	Respondent 3
Availability of the pilot incentive	4	5	1
Recommendations provided to you by an NPEI representative	4	4	4
The results of any audits or technical studies done through this or another program provided by IESO or NPEI	3	5	4
Information or recommendations provided from contractors or vendors or suppliers associated with the pilot	N/A	3	4
Marketing materials provided by NPEI about the pilot (email, direct mail, etc.)	N/A	4	N/A
Previous experience with any energy saving program	N/A	N/A	5

Two out of three respondents indicated that the pilot incentive was very influential on their decision to do the energy efficient upgrades. Both respondents also reported that recommendations from NPEI representatives were influential on their decision-making; one of these respondents also mentioned that results of audits, studies, and marketing materials provided by the pilot were also important influencers. These findings indicate low levels of free-ridership for these two respondents given the importance of many of the pilot’s features on the respondent’s decision to do the work.

The third respondent indicated that the incentive was not at all influential on their decision to do the energy-efficient upgrades; however, many other pilot features were very influential on this respondent’s decision-making, including recommendations from pilot representatives and vendors, results of audits and studies, and previous experience with other energy savings programs. This feedback indicates that that this respondent, like the other two respondents, has low levels of free-ridership given the importance of many of the pilot’s features on the respondent’s decision to do the work.

Information or recommendations provided from contractors, vendors, or suppliers were less influential (only one respondent rated it as influential), however, this may be due to the nature of how the pilot was structured as the PDA worked closely with the participants to help identify eligible upgrades during initial site assessments, which in turn suggests less of a role for the contractors and vendors in this capacity.

Similarly, marketing materials or messaging provided by NPEI was mentioned as important to one respondent but not applicable to two of the three respondents. This may also be due to the nature of the pilot’s design—an intensive marketing campaign was not needed since the pilot worked closely with ORHMA to reach out to their customer network.

7.3.3 Spillover

The participant survey did not find evidence of spillover.

7.4 Cost Effectiveness

The evaluation team conducted a cost effectiveness analysis for the pilot. This analysis was completed in accordance with the IESO requirements as set forth in the *IESO CDM Cost Effectiveness Test Guide*⁵ and using IESO's *CDM Energy Efficiency Cost Effectiveness Tool*. The energy and summer peak demand savings results from the impact evaluation were inputs into the IESO Cost Effectiveness Tool as well as budget information supplied from IESO. Cost effectiveness results are presented in Table 7-5. The pilot did not pass the Total Resource Cost (TRC) test and the Program Administrator Cost (PAC) test with both benefits lower than their respective costs.

A primary driver of the low TRC and PAC ratios is the pilot covering not only measures' implementation cost, but also most of the costs associated with identifying opportunities at the various participating facilities. For instance, the pilot covered the full cost of two building commission measures, and no savings were claimed for these measures. The cost of these measures accounted for 37% of the total pilot incentive. To make the cost effectiveness of the program more attractive for continued implementation in the future, it is recommended that program staff strive to convert as many incentivized measures as possible into energy and summer peak demand savings the program can claim.

Table 7-5: Cost Effectiveness Results

Cost Effectiveness Test	Value
Total Resource Cost (TRC)	
TRC Costs (\$)	774,809
TRC Benefits (\$)	42,112
TRC Net Benefits (\$)	-732,697
TRC Net Benefit (Ratio)	0.05
Program Administrator Cost (PAC)	
PAC Costs (\$)	786,651
PAC Benefits (\$)	36,619
PAC Net Benefits (\$)	-750,032
PAC Net Benefit (Ratio)	0.05

⁵ *Conservation & Demand Management Energy Efficiency Cost Effectiveness Guide*, Independent Electricity System Operator, March 2015, <http://www.ieso.ca/-/media/files/ieso/document-library/conservation/ldc-toolkit/cdm-ee-cost-effectiveness-test-guide-v2-20150326.pdf?la=en>

Cost Effectiveness Test	Value
Levelized Unit Energy Cost (LUEC)	
\$/kWh	1.74
\$/kW	9,544.25

8 Process Evaluation Results

The sections below describe the process evaluation results.

8.1 Pilot Staff and Contractor Perspectives

The evaluation team conducted an in-depth interview with staff at NPEI who administered the pilot as well as staff at the PDA who implemented the pilot. The team also interviewed contractors involved with the pilot. Feedback from these interviews is summarized below.

8.1.1 Pilot Roles

NPEI staff oversaw the design and administration of the pilot, and provided guidance and oversight to the pilot project manager. Though NPEI spearheaded the pilot, they reached out to Enbridge Gas to develop a partnership as one of the goals of the pilot was to provide both gas and electric offerings to hotel/motel customers. NPEI and the PDA referred to the pilot as being a “one window” approach, where customers could receive incentives and support for both gas and electric measures from the same pilot. NPEI staff noted that this was the first time they had tried this “one window” approach.

The PDA staff indicated that Enbridge coordinated with them on the initial customer facility audits as well as the recommissioning studies. They provided input on energy management plans that the PDA designed for customers to ensure that gas savings opportunities were represented. They also reviewed the case studies and draft and final reports developed by the PDA. NPEI staff reported that for the first several months of the pilot, Enbridge was in a state of internal reorganization which made it challenging for them to fully engage with the pilot in its early stages; they indicated that this changed, though, in the latter half of the pilot when it became possible for Enbridge to turn their focus more fully to the pilot.

The PDA performed many different tasks in their role of pilot project manager. They ensured that the pilot stayed on track, addressed any issues with IESO or the PDA as needed, and secured the pilot’s contractors to source equipment. The PDA was responsible for recruiting participants, investigating customer facilities to identify energy saving opportunities, and quantifying the savings associated with those opportunities. To help ensure participation, the PDA described the potential energy savings to customers as well as the financial benefits and non-energy benefits (NEBs) of participation in the pilot. They also helped customers design energy management plans. Finally, the PDA performed M&V at the completion of projects, helped generate case studies showcasing participant experiences, and wrote mid-term and final reports on behalf of the LDCs.

The installation contractors' roles and responsibilities were to implement the program on the ground. These contractors conducted site visits, installed equipment, and gathered and reported data.

8.1.2 Partnership with ORHMA

In order to help market the pilot within the NPEI service territory, the PDA subcontracted with the Ontario Restaurant, Hotel and Motel Association (ORHMA). ORHMA's primary function was their ability to leverage their hotel and motel membership and generate interest in the pilot.

ORHMA had also assisted pilot staff with a survey of hotel and motel members regarding the pilot to gather additional market information to better inform the pilot. It identified the key barriers and opportunities that hotels and motels face in the province. This survey was instructive to the PDA staff in the early stages of the pilot as they sought to better understand the challenges faced by the hotel/motel market in Ontario.

ORHMA served as an advisor throughout the delivery of the pilot. They helped review the mid-term report that the PDA generated on behalf of the LDCs. They also reviewed the case studies that the PDA had developed and helped circulate them to some of their hotel and motel membership to get feedback on whether the content would resonate with other hotels and motels.

8.1.3 Implementation Barriers

Pilot staff indicated there were several barriers associated with the hotel and motel sector, including seasonality, lack of capital, lack of customer awareness, expertise, and technical knowledge, inertia from the facility managers to do the upgrades, and unstable or complicated ownership structures.

Pilot staff said that one other major challenge was convincing two large hotels to try retro-commissioning; both were skeptical about the energy savings given past experiences. To encourage these customers to move forward with the retro-commissioning work, the PDA provided a no-cost demonstration to help them understand the savings opportunity. One of these projects was later documented in one of the case studies.

Installation contractors were also asked their perspectives on barriers, noting that it was difficult to reach the owners as energy managers pose barriers. However, once owners were informed of the energy saving opportunities available, acceptance and buy-in to move forward with installation of energy efficient measures resulted.

8.1.4 Success of the Pilot to Date

Both NPEI and the PDA staff thought that the pilot was successful overall. They reported that partnerships with Enbridge Gas and OHRMA contributed to the success of the pilot in significant ways:

-
- The partnership with Enbridge Gas, which included some financial contributions from Enbridge towards energy audits, allowed for potentially more cost savings as a result of both fuels being considered under cost savings projections.
 - NPEI staff reported that the “one window” approach that they developed with Enbridge Gas was one of the aspects of the pilot that they heard customers say was most useful to them—a combination of gas and electric savings was influential in making the case to participate for some customers.
 - The PDA staff found the partnership with OHRMA to be highly valuable because of the support OHRMA played in reviewing pilot materials and promoting the pilot to their hotel and motel membership using language and tactics that they knew these members would understand. Additionally, this partnership has created a pipeline of interest in energy upgrades that was not present prior to the pilot.
 - Despite the challenges of convincing participants of the value of doing retro-commissioning work as mentioned above, it was valuable to bring this type of work and the potential savings associated with it to the attention of pilot participants.

Additionally, the pilot was benefited by the PDA’s measurement and verification services which helped project and document energy savings of pilot measures. They also developed strong relationships with installation contractors, which in turn lead to the successful installation of pilot upgrades.

Pilot staff considered the case studies that were developed to be very successful as well. They highlighted key pilot success stories and were distributed to hotel and motel members of ORHMA. The messaging included the quantification of non-energy benefits and demonstrating savings from installed measures and re-commissioning activities.

NPEI staff also thought that the pilot was instrumental in encouraging a number of Retrofit Program projects to be completed. They reported that many of the projects that the pilot customers applied to the Retrofit Program for either would not have occurred or would have been far less efficient if it had not been for their experience with the pilot.

Finally, pilot staff felt that PTACs were successfully integrated into the pilot; they indicated that the custom application process typically associated with this equipment can be a barrier to entry for this customer segment. Staff said they have encouraged that PTACs be included in future iterations of the Retrofit Program’s engineered worksheets.

8.2 Participant Perspectives

The evaluation team was able to connect with three of the five participating hotel / motels - one owner and two facilities/engineering managers. These three represent 89% of the total pilot savings.

8.2.1 Firmographics

The three facilities interviewed represent a wide range of characteristics as shown in Table 8-1 below.

Table 8-1: NPEI Hotel / Motel Pilot Participant Survey Firmographics

Metric	Results
Part of chain or franchise?	1 yes, 2 no
Number of employees	15 – 4,400
Facility Size	60,000 – 2.5 million square feet

8.2.2 Pilot Outreach and Marketing

All three responding participants stated NPEI was the primary source of them hearing about the Hotel / Motel pilot.

8.2.3 Participant Motives and Decision Making

As the dual fuel electric and natural gas combined offering was a key feature of this pilot, participants were asked how influential this specific program component was on their decision to participate. One respondent said that while he appreciated the information about both fuels, he did not end up implementing measures that showed significant gas savings therefore rated that program component as having no influence. Another participant also felt appreciative of the information but said that gas savings did not specifically apply to the options selected, and therefore felt neutral about the influence of the dual fuel component. The third participant rated the influence of the dual fuel component as a 4 on a 1 to 5 scale where 1 indicates “no influence” and 5 indicates “great influence”.

The pilot was instrumental in encouraging at least one participant to further consider retro-commissioning work, as one participant said that the Hotel/Motel pilot encouraged them to look into retro-commissioning of make-up air units at their facility, and that they would not have thought to look into it if the pilot hadn't brought it to their attention. Regarding energy efficiency upgrades in general, one participant stated that they are operational for 24 hours a day which makes it difficult to create “off time” to implement upgrades. Another participant reported that cost was their main barrier. This participant agreed with the following given statements “The benefits from the energy savings do not outweigh the cost of the upgrades”, “I can't afford to make any further upgrades at my facility”, and “I don't have time to research equipment upgrades for my company”.

8.2.4 Participant Satisfaction

The evaluation team asked participants to rate their satisfaction with several aspects of the pilot on a scale of 1 to 5 where 1 indicated “not at all satisfied” and 5 indicated “completely satisfied.” Two of three respondents offered responses to the indices of satisfaction shown in Table 8-2 below.

Table 8-2 Participant Satisfaction (n=2)
(Rating on a scale of 1-5)

Pilot Aspects	Respondent 1	Respondent 2
The time it took to receive the incentive	NA	3
The quality of work done by the contractor who installed the equipment	5	5
The dollar amount of the incentive	5	4
The interactions with representatives from the local utility	5	5
The content and presentation of any technical study or report	5	4
The performance of the efficient equipment	NA	NA
The energy savings achieved from the equipment upgrade	NA	4
The dual fuel collaboration of electric and gas utilities through this pilot	NA	NA
The pilot overall	5	4

Respondents provided high satisfaction ratings (4 or 5 scores) for most program components. One participant stated “not applicable” to categories related to equipment performance and energy savings as this participant felt it was too soon to assess these components. Both respondents stated they would be extremely likely to recommend the pilot to others.

Only one participant responded with a suggestion regarding improving the pilot. This participant stated the agreement contract had a stipulation requiring an 18-month implementation window of energy saving measures. This participant felt the timeline was too stringent for their operations and recommended lengthening the installation timeline. This concern was echoed by an installation contractor that noted that his business was somewhat reluctant to get involved in the hotel/motel industry due to the relatively short business cycle.

9 Key Observations and Recommendations

The sections below describe the key observations and recommendations from the evaluation of the Hotel/Motel pilot.

9.1 Impact Evaluation

9.1.1 Impact Key Observations

Only four hotels/motels were reported to have completed projects, and have attributable savings to the program. The evaluation team offers the following observations and recommendations for the reference of the pilot's implementers and administrators:

- Four out of the eight completed measures were identified as “demonstration projects” where the pilot covered the full cost of those measures. Two of the demonstration projects did not report any savings.

Recommendation: *To make the cost effectiveness of the program more attractive for continued implementation in the future, it is recommended that program staff strive to convert as many incentivized measures as possible into energy and peak demand savings the program can claim.*

- Generally, the project documentation provided by the pilot was sufficient enough for a rigorous evaluation review. However, some projects were missing some data/information that was later requested from NPEI.

Recommendation: *It is important that program implementers and administrators collect and store all data and calculations relevant to supporting claimed savings estimates and be able to provide them to IESO in a timely manner to allow for use in the evaluation.*

9.1.2 Net-to-Gross Key Observations

The key net-to-gross observations from the 2017 pilot impact evaluation are as follows:

Participant feedback indicates relatively low free-ridership (10.3%), as responses show that the pilot helped customers complete projects they would have had to cancel, delay, or reduce in size or scope.

- When asked what they would have done if they had never learned they could receive incentives from the pilot, one respondent indicated they would have cancelled the upgrade altogether, one said they would have put off doing the upgrade for at least one

year, and the remaining respondent said they would have scaled back on the size or extent of the upgrade by a moderate amount.

- The availability of program incentives and the results of any audits or technical studies done through this or another program influenced two of the three respondents' decisions to perform the energy efficient upgrades. Recommendations provided by an NPEI representative were influential for all three respondents.
- The participant survey did not find evidence of spillover.

Recommendation: Overall, the NTG results of the pilot were positive. If the pilot were to be continued in future program years, pilot staff should continue to work to identify and target customers who are most in need of the pilot's support, and who would not be able to install the equipment without the incentive.

9.2 Process Evaluation

- The main objective of the pilot was to test a comprehensive electricity, natural gas, and water (steam) type program for the hotel / motel sector in NPEI's service territory. The pilot was successful at identifying cost saving measures and implementing them at a variety of hotel/motel types and sizes.

Another important objective of the pilot was to establish a relationship with the customer regarding energy efficiency and to maintain and enhance that relationship beyond the pilot. The pilot staff thought that the pilot's activities created more awareness of and interest in energy efficiency upgrades in this sector due to both the energy and cost savings and also the non-energy benefits of efficiently operating equipment.

Recommendation: If the pilot were to return as a local or province-wide program in future years, the evaluation team would recommend that any program consider utilizing the measure mix offered through this pilot. It is also recommended that any future program revisit the pilot's lessons learned, find ways to utilize the case studies created by the pilot, and in order to more effectively address the numerous barriers in this industry, to leverage the relationships built with the pilot's contractors and ORHMA.

- One participant suggested that the timeline associated with project completion was too strict. This participant stated the agreement contract had a stipulation requiring an 18-month implementation window of energy saving measures. This participant felt the timeline was too stringent for their operations and recommended lengthening the installation timeline. Similarly, one installation contractor said that they were reticent to get involved with projects in this industry because the comparatively short business cycle.

Recommendation: *If the pilot were to return as a local or province-wide program in future years, the evaluation team would recommend program staff carefully review the requirements associated with project completion to ensure participants have adequate time to complete all the work.*

- NPEI staff reported that that the “one window” approach that was developed in partnership with Enbridge Gas was one of the aspects of the pilot that they heard customers say they appreciated the most. This approach simplified the application process, providing one point of contact for customers and ensured that only one application would need to be submitted for both gas and electric upgrades. One of the three participants interviewed said their decision to participate was influenced by the dual fuel offerings provided by the pilot, and even though the other two participants interviewed did not make gas-related upgrades, both said they appreciated that both fuels were assessed in their decision-making process and that the application process was straightforward.

Recommendation: *If the pilot were to return as a local or province-wide program in future years, the evaluation team would recommend that any program consider continuing to include the “one window” approach to not only simplify the application process for customers but to provide customers dual fuel savings opportunities.*

- Pilot staff thought that PTACs were successfully integrated into the pilot; they indicated that the custom application process typically associated with this equipment can be a barrier to entry for this customer segment. Staff said they have encouraged that PTACs be included in future iterations of the Retrofit Program’s engineered worksheets.

Recommendation: *The evaluation team recommends that the IESO consider ways in which the application process for PTACs within the Retrofit Program could be further simplified or streamlined for customers.*



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