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# PROGRAM YEAR 2018 REVIEW REPORT

CONSERVATION FIRST FRAMEWORK INDUSTRIAL AND ENERGY  
PERFORMANCE PROGRAMS

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## ABBREVIATIONS

BMG	Behind-the-meter Generation
CE	Cost Effectiveness
CFF	Conservation First Framework
CHP	Combined Heat and Power
EE	Energy Efficiency
EM	Energy Manager
EM&V	Evaluation, Measurement and Verification
EPP	Energy Performance Program
EUL	Effective Useful Life
IAP	Industrial Accelerator Program
IAP CI	Industrial Accelerator Program: Capital Incentives
IESO	Independent Electricity System Operator
kW	Kilowatt
kWh	Kilowatt hour
LC	Levelized Cost
LDC	Local Distribution Company
M	Million
M&T	Monitoring and Targeting
M&V	Measurement and Verification
MW	Megawatt
MWh	Megawatt Hour
NTG	Net-to-Gross
O&M	Operation and Maintenance
PAC	Program Administrator Cost
PSUP	Process and Systems Upgrades Program
PY	Program Year
P&S	Process and Systems
RR	Realization Rate
TRC	Total Resource Cost

# FOREWORD


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This report provides an overall summary of the energy and demand savings achieved and cost effectiveness results by Independent Electricity System Operator (IESO) four funded industrial energy efficiency programs and the Energy Performance Program (EPP) in 2018 under the Conservation First Framework (CFF). It is intended for all parties interested in understanding the achievements of the 2018 industrial energy efficiency programs in Ontario. Note, only projects completed by December 31, 2018 have been included in this report. Given that projects pre-approved prior to May 1, 2019 have until December 31, 2020<sup>1</sup> to complete, the IESO will be providing addendums to this 2018 report over the succeeding years as 2018 initiated projects which have not been included in this report are completed.


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<sup>1</sup> The Industrial Accelerator Program (IAP) has until December 31, 2022 to complete their projects.

PY2018



## IESO Industrial and EPP Review At-A-Glance



**4**

Programs Reviewed

**219**


Projects Reported

**98,870 MWh**

First-Year Net Energy Savings

**1**

Program Reviewed




**72**

Facilities Reported

**9,670 MWh**

First-Year Net Energy Savings




**1.46**

Total Resource Cost Ratio

Industrial Portfolio

**1.04**

Energy Performance Program



**93%**


Savings Persistence to 2020

**99.6%**

Energy Realization Rate\*

**81%**

Net to Gross Ratio\*



**100%**

Savings Persistence to 2020

**100%**

Energy Realization Rate\*

**75%**

Net to Gross Ratio\*

\*Portfolio-level realization rate and NTG ratio are for illustrative purposes only. Each program received its own ratios that were applied to their populations.

Industrial programs incentivize equipment measures, engineering studies and Energy Manager services for commercial and industrial facilities in Ontario. EPP provides a performance-based approach to incenting energy efficiency improvements for multi-site commercial customers. This report contains gross and net energy and demand impacts and cost-effectiveness results for the following CFF programs:

- ▶ Process and Systems Upgrades Program (PSUP),
- ▶ Industrial Accelerator Program (IAP),
- ▶ Energy Manager Non-Incented measures (EM)
- ▶ Monitoring and Targeting (M&T), and
- ▶ Energy Performance Program (EPP).

PSUP is LDC administered and offered to companies connected to Ontario's distribution system. The program provides financial support for the implementation of energy efficiency projects and system optimization projects for facilities that are intrinsically complex and capital-intensive.

IAP is offered to companies connected directly to Ontario's transmission system. This program provides incentives through three program streams: Capital Incentives (referred to interchangeably as IAP Process & Systems), Retrofit, and Energy Manager.

The Energy Manager program is offered to both sets of customers noted above. The program subsidizes the salary of a trained energy manager to work directly with participating facilities to find energy savings, identify smart energy investments, secure financial incentives, and unleash competitive advantage.

The Monitoring and Targeting program encourages industrial distribution customers to install or upgrade M&T systems to relate a facility's energy consumption data to the weather, production schedule, or other measures in such a way as to provide a better understanding of how energy is being used.

Throughout this report, PSUP, IAP, EM, and M&T are referred to as the "industrial portfolio".

Finally, the Energy Performance Program provides a performance-based whole-building approach to incenting energy efficiency improvements for multi-site customers that span multiple LDCs in the province.

## **1.1 IMPACT METHODOLOGY AND GOALS**

The Conservation First Framework was discontinued effective March 21, 2019 by ministerial directive. A new framework for provincially delivered energy efficiency programs began April 1, 2019. The new framework is centrally delivered by the IESO on a province-wide basis and will focus primarily on business and industrial programs through December 31, 2020. This report focuses on an orderly and cost effective impact review of the performance of the industrial portfolio and EPP in PY2018. This simplified approach

to review will reduce the costs associated with program delivery to continue to deliver a valuable and cost effective system resource that helps customers better manage their energy costs.

Approaches used to conduct this simplified CFF wind down review included a review of projects reported, an adjustment to reported savings to calculate gross and net savings based on historical realization rates and net to gross ratios, and a cost effectiveness analysis. The methodology is explained in more detail in Chapter 2.

In abbreviated form, goals of this simplified CFF wind down review include:

- ▶ Adjust reported energy and summer peak demand savings by program to estimate gross and net savings
- ▶ Review the overall effectiveness and comprehensiveness of key program elements
- ▶ Analyze the cost-effectiveness of each program

## 1.2 IMPACT RESULTS SUMMARY

In reviewing the CFF industrial portfolio and EPP for PY2018, 291 projects in total were reported. The industrial portfolio accounted for 219 projects, while EPP had 72. **Total industrial portfolio gross estimated energy savings in PY2018 are 122,729 MWh, or 99.6% of total reported savings.** For EPP, total gross estimated energy savings in PY2018 are 12,894 MWh, or 100.0% of total reported savings. Savings persistence is an important component of CFF, and 93% of first-year savings achieved in the industrial portfolio in PY2018 persist through 2020. 100% of the savings for EPP persist through 2020. This is typical of industrial and commercial sector measures that tend to have relatively long measure effective useful lives (EUL).

**Net estimated energy savings for the industrial portfolio are 98,870 MWh, or 81% of gross estimated savings due to low levels of free-ridership across the programs in previous analyses.** Historically, there has been no spillover attributed to the programs across the portfolio. **EPP achieved 9,670 MWh of net estimated energy savings, 75% of gross estimated savings.**

Energy savings from the review of the industrial portfolio and EPP in PY2018 is summarized in Figure 1 and Table 1 below. The results in Figure 1 and Table 1 and throughout the remainder of this report include projects that were reported during PY2018 and went into service starting in 2018. Projects that went into service in 2017 and before under the CFF but were not included in previous evaluations as the technical review process had not been completed in time are referred to as “true up” projects. Savings results for true up projects can be found in Appendix A: Portfolio Results Summary Table.



Figure 1: PY2018 Reported, Gross Estimated, and Net Estimated Savings by Program (MWh)

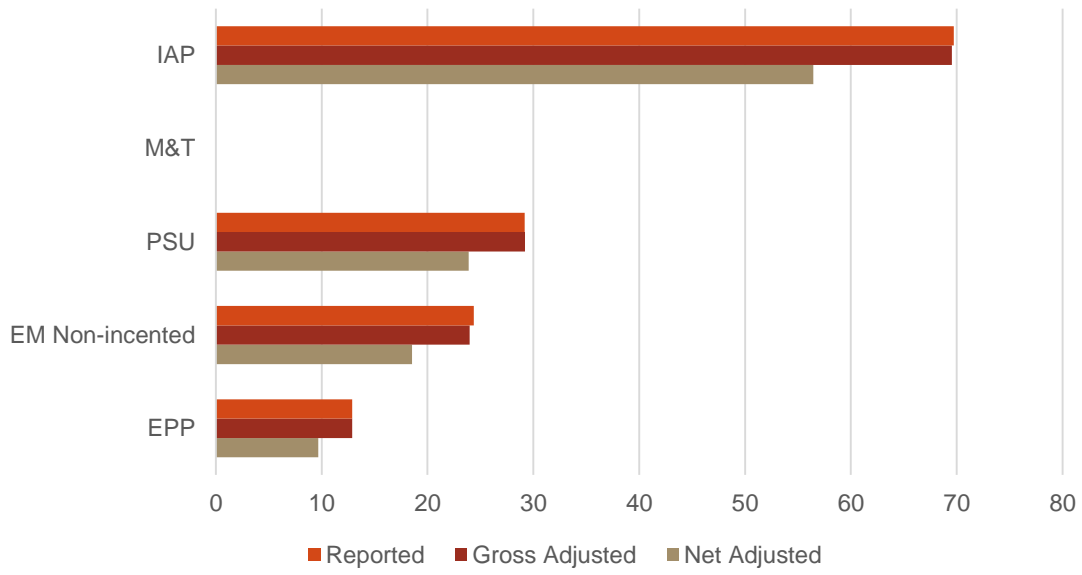


Table 1: Impact Review Results Summary

Program	# of Projects Reported	Energy RR <sup>2</sup>	Gross Estimated Energy Savings (MWh)	Demand RR	Gross Estimated Summer Peak Demand Savings (MW)	NTG Ratio <sup>3</sup>	Net Estimated Energy Savings (MWh)	Net Estimated Summer Peak Demand Savings (MW)	Persistence of Savings in 2020
Process & Systems Upgrades (PSU)	10	100.1%	29,200	107.7%	3.48	82%	23,886	2.82	100%
Energy Manager Non-Incented (EM)	144	98.4%	23,992	108.5%	3.86	77%	18,522	3.09	83%
Monitoring & Targeting (M&T)	0	-	-	-	-	-	-	-	-
IAP Initiative	65	99.7%	69,537	103.0%	2.44	81%	56,462	1.99	94%
Industrial Portfolio Total	219	99.6%	122,729	106.8%	9.78	81%	98,870	7.90	93%
Energy Performance Program (EPP)	72	100.0%	12,894	n/a	-	75%	9,670	0	100%
<b>GRAND TOTAL</b>	<b>291</b>	<b>99.6%</b>	<b>135,623</b>	<b>106.8%</b>	<b>9.78</b>	<b>80%</b>	<b>108,540</b>	<b>7.90</b>	<b>94%</b>

The industrial portfolio and EPP were cost-effective in PY 2018 according to both Total Resource Cost (TRC) and Program Administrator Cost (PAC) tests, when using a benefit-cost threshold of 1.0. The cost effectiveness of the industrial portfolio is supported by the Energy Manager Program and IAP Initiative that have TRC ratios of 1.76 and 1.75, respectively. The IAP Initiative accounts for 54% of the industrial portfolio's total TRC benefits in net present value terms, largely due to the large energy savings projects in the IAP Capital Incentive projects. PSUP has the lowest TRC ratio at 1.03, due to the cost of increased natural gas consumption by the CHP units prevalent in the program.

<sup>2</sup> Realization Rate (RR) is the gross estimated savings divided by the reported savings.

<sup>3</sup> Net to Gross (NTG) Ratio is the result of historical net to gross analyses that defined the total change in energy consumption attributable to each program. NTG ratio is defined as 100% - freeridership + spillover.

Table 2 below includes select cost-effectiveness results for the industrial portfolio and EPP. While these results indicate an overall cost-effective set of programs, variance in the timing of costs incurred and savings achieved can impact the precision of these cost tests.

*Table 2: PY2018 Cost Effectiveness Results*

Program	Total Resource Cost (TRC) Ratio	Program Administrator Cost (PAC) Ratio	Levelized Delivery Cost (LC) \$/kWh
PSUP	1.03	2.82	0.03
EM	1.76	3.72	0.02
M&T	-	-	-
IAP	1.75	3.96	0.02
PORTFOLIO TOTAL	1.46	3.53	0.02
EPP	1.04	3.26	0.01
<b>GRAND TOTAL</b>	<b>1.43</b>	<b>3.52</b>	<b>0.02</b>

## 2.1 REPORTED SAVINGS

IESO's Program Year (PY) 2018 industrial program portfolio comprises the programs and initiatives shown in Table 3 below. This table includes projects in-service starting in calendar year 2018 meaning:

- a) they have at least one quarter (3 months) of measurement and verification (M&V) data available (PSUP, IAP).

OR

- b) they have been through the technical review process for the program and are not otherwise on hold for administrative reasons (Energy Manager non-incented, M&T, EPP).

Table 3 below shows reported savings and program contributions to the industrial portfolio and EPP in PY2018.

*Table 3: PY2018 Reported Savings*

Program	PSUP	IAP Initiative	Energy Manager	EPP	Annual Total
2018 Projects Reported	10	65	144	72	291
2018 Reported Energy Savings (MWh)	29,171	69,725	24,382	12,894	136,172

## 2.2 ESTIMATED GROSS SAVINGS

EcoMetric estimated the reported savings provided by the technical reviewer for all measures in the PY2018 review using historical adjustment factors to calculate gross savings. For all PY2018 measures, a weighted average realization rate for energy and demand savings was calculated from historical rates from PY2015 through PY2017. As EPP began in PY2017, the PY2017 realization rate was applied to PY2018 measures.

## 2.3 ESTIMATED NET SAVINGS

EcoMetric also estimated the gross savings for all measures in the PY2018 review using historical adjustment factors to calculate net savings. For all PY2018 measures, a weighted average net to gross ratio (NTGR) for energy and demand savings was calculated from historical ratios from PY2015 through PY2017. As EPP began in PY2017, the PY2017 NTGR was applied to PY2018 measures.

## 2.4 SUMMER PEAK DEMAND ANALYSIS

EcoMetric estimated reported gross and net summer peak demand savings using the same methodology as used with energy savings summarized in Sections 2.2 and 2.3. Summer peak demand periods as defined by the IESO are summarized in Table 4.

Table 4: IESO EM&V Protocol Peak Period Definitions

Definition Source	Months	Days and Hours	Calculation of Demand Savings
EM&V Protocols: Standard Peak Calculation	Summer: Jun-Aug	Weekdays 1pm-7pm	Average over entire peak period
	Winter: Jan-Dec	Weekdays 6pm-8pm	
EM&V Protocols: Alternative Peak Protocols for Weather- Dependent Measures	Summer: Jun-Aug	Weekdays 1pm-7pm	Weighted average of the top hour in each of 3 months per IESO weights
	Winter: Jan-Dec	Weekdays 6pm-8pm	

## 2.5 COST-EFFECTIVENESS ANALYSIS

The IESO Conservation and Demand Management (CDM) Cost-Effectiveness tool was used to estimate measure-level costs and benefits, which were then aggregated to program- and portfolio-level cost effectiveness. Program administrative costs were provided to EcoMetric by IESO. Other key inputs for the cost effectiveness analysis include lifetime estimated electric energy and demand savings, gas savings where applicable, measure lives, and energy savings load shapes.

This section contains the PY2018 energy and demand savings results for the individual programs in the industrial portfolio, as well as the Energy Performance Program.

### 3.1 PROCESS AND SYSTEMS UPGRADES PROGRAM (PSUP) RESULTS

The Process & Systems Upgrades Program (PSUP) provides financial support for the implementation of energy efficiency projects and system optimization projects for facilities that are intrinsically complex and capital-intensive. Twenty-eight industrial customers completed PSUP projects in PY2018. Ten of these projects have been invoiced to the IESO by the LDCs and are included in this report. Completing the invoicing process for a project is a requirement for savings to be reported.<sup>4</sup>

#### 3.1.1 PSUP GROSS ESTIMATED SAVINGS

In PY2018, a total of 10 PSUP projects have met the reporting requirements. **Gross estimated energy savings were a total 29,200 MWh or 100.1% of reported savings.** Total gross summer peak demand savings for PSUP reached 3.47 MW in PY2018. Measurement and Verification and technical review activities designed for the program have historically resulted in highly accurate estimates of energy savings. As is common in industrial sector projects, 100% of the first year savings achieved in PSUP persist through 2020. **Seven of the ten PSUP projects implemented in PY2018 are behind-the-meter Combined Heat and Power (CHP) projects, accounting for 93% of the program energy savings.**

Table 5: PY2018 PSUP Gross Estimated Savings Results

Program Year	# of Measures Reported	Realization Rate %	Gross Estimated Energy Savings (MWh)	Gross Estimated Summer Peak Demand Savings (MW)	Persistence of Savings in 2020
2018	10	100.1%	29,200	3.47	100%

#### 3.1.2 PSUP NET ESTIMATED SAVINGS

**Total net estimated energy savings for PSUP projects in PY2018 is 23,886 MWh, 81.8% of gross estimated savings.** Net summer peak demand savings for PSUP total 2.82 MW. Table 6 summarizes the net adjustment results for PSUP in PY2018.

<sup>4</sup> Projects completed and technically reviewed in PY2018 but did not get invoiced will be reported in the PY2019 results once invoiced.

Table 6: PY2018 PSUP Net Estimated Savings Results

Program Year	# of Measures Reported	NTGR (%)	Net Estimated Energy Savings (MWh)	Net Estimated Summer Peak Demand Savings (MW)
2018	10	81.8%	23,886	2.82

Historically, free-ridership in the PSUP has been low, especially for the larger BMG projects in which past interviews revealed that the decision-making is more likely to be made independent of IESO/LDC program incentives. While the energy cost reductions and program benefits were viewed favourably by the BMG project interviewees, these large projects were, on average, more likely to be implemented without program incentives. In the past three years of NTG analysis, no spillover has been attributed to PSUP. Past interviews have revealed that customers do plan on completing additional projects through PSUP or other IESO programs, but they expect to receive program incentives for the projects. While this cannot be counted as spillover for PSUP, it shows the value that PSUP plays in encouraging continued project activity for its customers.

### 3.1.3 PSUP COST EFFECTIVENESS RESULTS

As shown in Table 7, PSUP is cost effective in PY2018 from both the TRC and PAC test perspectives using a benefit/cost threshold of 1.0.

Table 7: PY2018 PSUP Cost Effectiveness Results

TRC Benefits	TRC Costs	TRC Ratio	PAC Benefits	PAC Costs	PAC Ratio	LC \$/kWh
\$19,975,215	\$19,357,465	<b>1.03</b>	\$21,486,615	\$7,606,395	<b>2.82</b>	\$0.03

The total present value of avoided natural gas benefits for PSUP BMG projects implemented in PY2018 is **-\$5M**. BMG CHP projects, which made up the majority of the program’s energy savings, resulted in net increased natural gas consumption and the high cost of supply for the gas outweighed the avoided cost of electricity generated by the units. As such, “avoided natural gas benefits” were actually negative, representing the additional costs incurred to power the CHP units with natural gas. Net natural gas consumption calculations relied on estimates by the technical reviewers of the CHP unit’s annual consumption of gas and the volume of gas avoided by the baseline unit the CHP system is replacing—usually boilers. Out of the seven CHP projects implemented in PY2018, only one unit resulted in a net decrease in natural gas consumption.

## 3.2 ENERGY MANAGER NON-INCENTED MEASURES (EM) RESULTS

The Energy Manager program subsidizes the salary of a trained energy manager to work directly with participating facilities to find energy savings, identify smart energy investments, secure financial incentives, and unleash competitive advantage. Energy managers can identify capital improvements that are eligible for incentive payments through PSUP, IAP Retrofit, or IAP Capital Incentives. Savings from these projects accrue to, and are evaluated in, the program that incents the improvement. Non-incented Energy Manager projects from commercial LDC accounts, industrial LDC accounts, and transmission-connected accounts were evaluated together. The gross and net estimated savings values presented in this section of the report focus on LDC accounts. Savings associated with transmission-connected accounts (IAP EM) are discussed in Section 3.3.

### 3.2.1 EM GROSS ESTIMATED SAVINGS

Table 8 shows gross estimated energy savings for the LDC Energy Manager non-incented measures in PY2018. **Overall the measures achieved 23,992 MWh in gross energy savings in PY2018—98.4% of reported savings.** Gross summer peak demand savings totaled 3.86 MW. **About 83% of these savings persist through 2020.** The Energy Manager program has historically had the lowest persistence rate of the industrial portfolio due to the high number of operational and maintenance (O&M) and behavioural measures completed through the program. To calculate persistence, EcoMetric relied on the measure life assumptions supplied by the Energy Managers and technical reviewers.

Table 8: PY2018 EM Non-Incented Gross Estimated Savings Results

Program Year	# of Measures Reported	Realization Rate %	Gross Estimated Energy Savings (MWh)	Gross Estimated Summer Peak Demand Savings (MW)	Persistence of Savings in 2020
2018	144	98.4%	23,992	3.86	83%

### 3.2.2 EM NET ESTIMATED SAVINGS

Table 9 summarizes the EM non-incented net savings below. **The program-level NTG for the EM non-incented measures in PY2018 was 77.2%, totaling 18,522 MWh net first year energy savings and 3.09 MW net peak demand savings.**



Table 9: PY2018 EM Non-Incented Net Estimated Savings Results

Program Year	# of Measures Reported	NTGR (%)	Net Estimated Energy Savings (MWh)	Net Estimated Summer Peak Demand Savings (MW)
2018	144	77.2%	18,522	3.09

Energy managers have found to be key players in project identification, analysis, and documentation. The program has also proven to encourage participants to complete additional projects, although no spillover has been historically attributed to the program as participants expect to receive incentives through the IESO's other program offerings.

### 3.2.3 EM COST EFFECTIVENESS RESULTS

As shown in Table 10, the EM program is cost effective in PY2018 from both the TRC and PAC test perspectives using a benefit/cost threshold of 1.0. The EM program had the highest TRC and PAC ratios in the industrial portfolio as EMs continue to find cost effective energy saving measures at their facilities. On the cost side, the salaries paid to the Energy Managers are included as administrative costs.

Table 10: PY2018 EM Non-Incented Cost Effectiveness Results

TRC Benefits	TRC Costs	TRC Ratio	PAC Benefits	PAC Costs	PAC Ratio	LC \$/kWh
\$12,184,917	\$6,926,957	<b>1.76</b>	\$10,595,580	\$2,850,820	<b>3.72</b>	\$0.02

## 3.3 INDUSTRIAL ACCELERATOR PROGRAM (IAP) RESULTS

### 3.3.1 IAP DESCRIPTION AND REVIEW APPROACH

The Industrial Accelerator Program is administered directly by the IESO, offered to transmission-connected customers, and provides incentives through three program tracks: Capital Incentives (referred to interchangeably as IAP Process & Systems and IAP CI), Retrofit, and Energy Manager. Program delivery for each of these tracks closely mimics the respective LDC-administered programs. For clarity, savings from IAP Retrofit and IAP EM are not included with Save on Energy Retrofit or Save on Energy EM programs.

Between the three tracks, 65 IAP projects were completed in 2018. While the IAP Retrofit and IAP Energy Manager initiatives account for the largest number of projects, these projects are typically smaller in size and comprise a smaller portion of the IAP savings. The IAP Capital Incentives initiative, with just 7 projects, is responsible for the majority (78%) of the IAP reported energy savings included in this report. Thirty-three IAP Energy Manager non-incented measures with 2018 in-service dates were included. The IAP

Retrofit program had 25 projects with 2018 in-service dates ready for review. The IAP Retrofit program, consisting of smaller projects, accounted for just 9% of PY2018 IAP reported energy savings.

### 3.3.2 IAP GROSS ESTIMATED SAVINGS

Table 11 shows gross estimated savings for the IAP Capital Incentives, Retrofit, and Energy Manager Non-Incented measures. All energy realization rates are very close to 100%, resulting in an overall energy realization rate of 99.7% for the entire Initiative. Total gross estimated energy savings are 69,537 MWh—79% of which are from the IAP CI track. The entire IAP Initiative also achieved 2.44 MW of gross estimated summer peak demand savings in PY2018. Overall, the IAP Initiative accounts for 57% of the total gross estimated energy savings achieved by the industrial portfolio in PY2018.

Table 11: PY2018 IAP Gross Estimated Savings Results

Program/ Implementation Year	# of Projects Reported	Realization Rate (%)	Gross Estimated Energy Savings (MWh)	Gross Estimated Summer Peak Demand Savings (MW)	Persistence of Savings in 2020
IAP Capital Incentives	7	100.0%	54,644	0.58	100%
IAP Retrofit	25	98.0%	6,047	0.78	100%
IAP Energy Manager Non-Incented	33	98.0%	8,846	1.01	51%
<b>GRAND TOTAL</b>	<b>65</b>	<b>99.7%</b>	<b>69,537</b>	<b>2.44</b>	<b>94%</b>

More than 93% of the first year energy savings achieved by the IAP Initiative persist through 2020. The IAP Energy Manager program has the lowest persistence rate in the Initiative, due to a higher number of O&M and behavioural measures with lower effective lives. All savings achieved by the IAP Capital Incentive and Retrofit tracks persist to 2020.

### 3.3.3 IAP NET ESTIMATED SAVINGS

The overall NTG ratio for the IAP Initiative was 81.2%, as shown in Table 12. Total net estimated savings for the IAP Initiative was 56,462 MWh in PY2018. Historically, IAP projects have demonstrated low levels of free-ridership and no attributed spillover. The IAP Capital Incentives had the highest NTG ratio (81.8%), followed by IAP Retrofit (81.6%) and IAP Energy Manager non-incented (77.2%).

Table 12: PY2018 IAP Net Estimated Savings Results

Program/ Implementation Year	# of Projects Reported	NTGR (%)	Net Estimated Energy Savings (MWh)	Net Estimated Summer Peak Demand Savings (MW)
IAP Capital Incentives	7	81.8%	44,698	0.47
IAP Retrofit	25	81.6%	4,934	0.67
IAP Energy Manager Non-Incented	33	77.2%	6,829	0.86
<b>GRAND TOTAL</b>	<b>65</b>	<b>81.2%</b>	<b>56,462</b>	<b>1.99</b>

### 3.3.4 IAP COST EFFECTIVENESS RESULTS

As shown in Table 13, the IAP Initiative is highly cost effective in PY2018 from the TRC and PAC test perspectives using a benefit/cost threshold of 1.0. The Initiative's strong TRC and PAC ratios relative to the rest of the PY2018 Industrial Portfolio show that the program continues to maximize savings for the lowest costs. The cost effectiveness of the program is supported by the lifetime savings achieved by the large projects in the IAP CI track which typically have the longest effective useful lives. The TRC benefits achieved by the IAP Initiative in PY2018 account for more than 54% of the total TRC benefits for the industrial portfolio.

Table 13: PY2018 IAP Cost-Effectiveness Results

TRC Benefits	TRC Costs	TRC Ratio	PAC Benefits	PAC Costs	PAC Ratio	LC \$/kWh
\$37,286,027	\$21,345,722	<b>1.75</b>	\$43,717,888	\$11,031,180	<b>3.96</b>	\$0.02

### 3.4 MONITORING & TARGETING (M&T) PROGRAM RESULTS

The Monitoring and Targeting (M&T) Program encourages industrial distribution customers to install or upgrade M&T systems to relate a facility's energy consumption data to the weather, production schedule, or other measures in such a way as to provide a better understanding of how energy is being used. M&T systems are expected to identify signs of avoidable energy waste or other opportunities to reduce consumption. Project eligibility is partly contingent on achieving a savings goal within 24 months of installation and sustaining these savings for the terms of the participant agreement, five years from the date the M&T system is installed.

Monitoring & Targeting had no projects in service starting in 2018 and ready for review, therefore no estimated impacts from the M&T program are included in this report. The two-year implementation schedule of M&T projects described above leads to a somewhat longer technical review phase.

### 3.5 ENERGY PERFORMANCE PROGRAM (EPP) RESULTS

The Energy Performance Program for Multi-Site Customers (EPP) provides a performance-based whole-building approach to incenting energy efficiency improvements which gives multi-site customers with greater flexibility in measure selection. The program was designed to reduce the administrative burden and challenges for multi-site customers in participating in Save on Energy programs across multiple LDC service areas. Energy savings are rewarded at the same rate for both capital and non-capital efficiency measures, which are calculated at the whole-building level.

The PY2018 review population included 72 facilities, representing all facilities that were technically reviewed in time for reporting. The population ready for review consisted of two types of buildings, schools and grocery stores. There were 14 school facilities with the remainder of facilities being grocery stores.

#### 3.5.1 EPP GROSS ESTIMATED SAVINGS RESULTS

Estimated savings from the PY2018 review of the EPP program is summarized in Table 14 below.

Table 14: PY2018 EPP Impact Results Summary

# of facilities Reported	72
Energy Realization Rate	100.03%
Gross Estimated Energy Savings (MWh)	12,894
Demand RR	n/a
Gross Estimated Summer Peak Demand Savings (MW)	-
NTG Ratio	75.0%
Net Estimated Energy Savings (MWh)	9,671
Net Estimated Summer Peak Demand Savings (MW)	-
Persistence of Savings in 2020	100%

Total gross estimated energy savings for EPP are 12,894 MWh. Net estimated energy savings are 9,671 MWh, or 75% of gross savings. Savings persistence is an important component of the CFF, and 100% of first-year PY2018 savings persist through 2020. Summer peak demand savings were not required to be tracked or verified by the program design. As such, no demand savings are reported in this report. The average first-year gross estimated energy savings per facility is 179.08 MWh for the 72

facilities reviewed in PY2018. The highest performing facility achieved 619.23 MWh of gross energy savings while the lowest achieved -88.50 MWh. In PY2018, there were nine facilities that showed increased consumption in their first performance year in the program.<sup>5</sup>

### 3.5.2 EPP NET ESTIMATED SAVINGS RESULTS

Total net estimated energy savings for EPP projects included in PY2018 is 9,671 MWh, 75% of gross estimated savings. Historically, interview responses suggested that while the EPP enabled participants to expand the scope and depth of the energy efficiency projects being implemented, at least some portion of these changes would have been made even if they did not participate in EPP.

### 3.5.3 EPP COST EFFECTIVENESS RESULTS

The EPP program was cost-effective in 2018 according to both TRC and PAC tests, when using a benefit-cost threshold of 1.0. The PAC ratio is 3.26, while the TRC ratio is 1.04. Levelized costs are low for the program at 0.01 \$/kWh. The TRC and PAC ratios are likely to improve in future program years, as the EPP program is relatively young and administrative costs are borne earlier in the program's life cycle. As the review team looked at facilities in their first performance year, many had not completed capital measures such as lighting retrofits that demonstrate better savings persistence and lifetime benefits. When these facilities complete more capital measures in an effort to reach the program savings threshold by the end of year two, the program lifetime benefits and CE ratios are expected to improve. The 39 facilities that began the program in PY2017 and were in their second year of performance in PY2018 are not included in this cost effectiveness analysis as their second year of performance had not been technically reviewed in time.<sup>6</sup> The addition of the savings achieved by these facilities will improve the CE ratios for EPP in PY2018.

Table 15: PY2018 EPP Cost Effectiveness Results

TRC Costs	TRC Benefits	TRC Ratio	PAC Costs	PAC Benefits	PAC Ratio	LC \$/kWh
\$3,201,930.61	\$3,339,460	<b>1.04</b>	\$890,758	\$2,903,879	<b>3.26</b>	\$0.01

In the absence of cost data from program participants, a robust analysis of similar projects completed in similar jurisdictions was leveraged to estimate incremental project costs at each facility in the population.

<sup>5</sup> Increased consumption at facilities was counted as negative savings in the total program estimated savings.

<sup>6</sup> The technical review process for the second P4P period of these facilities had not been completed in time to be included in this report. Second year estimated savings for these facilities will be included in the PY2019 report.

## APPENDIX A: PORTFOLIO RESULTS SUMMARY TABLE

Program/ Implementation Year	Projects Reported	Energy RR	Gross Estimated Energy Savings (MWh)	Demand RR	Gross Estimated Summer Peak Demand Savings (MW)	NTG Ratio	Net Estimated Energy Savings (MWh)	Net Estimated Summer Peak Demand Savings (MW)	Persistence of Savings in 2020
<b>Process &amp; Systems Upgrades (PSUP)</b>									
2018	10	100.1%	29,200	107.7%	3.47	81.8%	23,886	2.82	100%
2017 True Ups <sup>6</sup>	11	107.2%	27,980	142.2%	8.15	94.8%	26,522	7.65	100%
2016 True Ups	3	116.6%	1,675	96.6%	0.19	79.0%	1,323	0.15	100%
<b>Total PSUP</b>	<b>24</b>	<b>103.8%</b>	<b>58,855</b>	<b>129.1%</b>	<b>11.81</b>	<b>87.9%</b>	<b>51,731</b>	<b>10.63</b>	<b>100%</b>
<b>Energy Manager Non-Inceted (EM)</b>									
2018	144	98.4%	23,992	108.5%	3.86	77.2%	18,522	3.09	83%
2017 True Ups	89	94.3%	8,625	111.1%	0.48	71.6%	6,174	0.35	34%
<b>Total EM</b>	<b>233</b>	<b>97.3%</b>	<b>32,617</b>	<b>108.8%</b>	<b>4.34</b>	<b>75.7%</b>	<b>24,696</b>	<b>3.44</b>	<b>70%</b>
<b>IAP Initiative</b>									
2018	65	99.7%	69,537	103.0%	2.44	81.2%	56,462	1.99	94%
2017 True Ups	34	98.8%	21,378	105.6%	2.24	80.0%	17,104	1.82	80%
2016 True Ups	4	100.7%	1,950	99.9%	0.03	81.1%	1,582	0.02	100%
2015 True Ups	1	104.5%	50	99.9%	0.01	77.0%	39	0.01	100%
<b>Total IAP</b>	<b>104</b>	<b>99.5%</b>	<b>92,915</b>	<b>104.2%</b>	<b>4.71</b>	<b>80.9%</b>	<b>75,187</b>	<b>3.83</b>	<b>91%</b>
<b>Energy Performance Program</b>									
2018	72	100.0%	12,894	n/a	-	75.0%	9,670	-	100%
<b>GRAND TOTAL</b>	<b>433</b>	<b>100.4%</b>	<b>197,281</b>	<b>118.1%</b>	<b>20.87</b>	<b>81.8%</b>	<b>161,285</b>	<b>17.9</b>	<b>91%</b>

<sup>7</sup> True up projects went into service in 2017 and before under the CFF but were not included in previous evaluations as the technical review process had not been completed in time for reporting.