

**Smart Ideas for Your Business
Data Centers Efficiency Program
PY7 Evaluation Report**

FINAL

**Energy Efficiency/Demand Response Plan:
Plan Year 7
(6/1/2014-5/31/2015)**

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E. Executive Summary

This report presents a summary of the findings and results from the comprehensive impact and limited process evaluation of Commonwealth Edison Company’s (ComEd) program year seven (PY7)¹ Data Centers Efficiency program. ComEd’s Smart Ideas for Your Business suite of energy efficiency programs includes a Data Centers Efficiency program which provides incentives to both new and existing data centers for implementing program-eligible energy efficiency measures. The program pays an incentive of \$0.07/kWh saved for eligible projects, up to a maximum of 100 percent of the total project cost and 100 percent of the incremental project cost. The primary objectives of this evaluation are to quantify gross and net impacts, identify impact-related program strengths and weaknesses and identify ways to improve the program.

E.1 Program Savings

Table E-1 summarizes the electricity savings from the Data Centers Efficiency program.

Table E-1. PY7 Total Program Electric Savings

Savings Category	Energy Savings (MWh)	Peak Demand Savings (MW)
Ex-ante Gross Savings	14,544	1.685
Verified Gross Savings	13,749	1.565
Verified Net Savings	6,599	0.751

Source: ComEd tracking data and Evaluation team analysis.

Based on the gross impact sample of eight projects in PY7, the evaluation results yielded an energy gross realization rate of 0.95 and a peak demand gross realization rate of 0.93. The relative precision for the gross impact results at one-tailed 90 percent confidence level is ± 1 percent for the energy realization rate and ± 0 percent for the peak-demand realization rate. To calculate net savings, the evaluation team used a deemed net-to-gross ratio (NTGR) of 0.48 in accordance with the Illinois Stakeholder Advisory Group (SAG)-approved values. The deemed net-to-gross ratio (NTGR) of 0.48 for energy and demand savings is based on the PY5 NTG analysis.

Overall, the program team succeeded in ensuring the installation and proper operation of all the implemented measures. The program team continues to collect site-specific pre- and post-metered data for all projects, which enables accurate estimation of ex-ante savings. In general, the program team successfully collected site specific pre- and post-measurement and verification (M&V) data using acceptable methods based on industry practices. The M&V data provided by the program team was useful for the evaluation and allowed the evaluation team to complete the analysis for five of the eight projects in the sample using a desk review procedure. For these five projects, the evaluation team

¹ The PY7 program year began June 1, 2014 and ended May 31, 2015.

conducted a telephone interview with the site contact to verify the installation of the equipment, validate the data provided by the program team and facilitate the collection of missing data needed to complete the review.

E.2. Results Summary

The following table summarizes the key metrics from PY7.

Table E-2. PY7 Results Summary

Participation	Units	PY7
Net Savings	MWh	6,599
Net Demand Reduction	MW	0.75
Gross Savings	MWh	13,749
Gross Demand Reduction	MW	1.56
Program Realization Rate	%	0.95
Program Demand Realization Rate	%	0.93
Program NTG Ratio †	#	0.48
Program Demand NTG Ratio †	#	0.48*
Projects Completed	#	14

Source: ComEd tracking data and Evaluation team analysis.

† Source: Final Consensus NTG Values for PY7, found on the IL SAG website here: <http://ilsag.info/net-to-gross-framework.html>

*The SAG workbook recommended a single NTGR of 0.48 for both kWh and kW for the PY7 evaluation. The PY5 evaluated values were very similar (0.48 for kWh and 0.49 for kW). Therefore, this evaluation uses the single SAG-approved NTG value of 0.48 for both kWh and kW.

E.3. Impact Estimate Parameters for Future Use

The evaluation team conducted NTG research on the PY7 participants. Those parameters are eligible for deeming for future program years. Table E-3 below includes the evaluation team’s recommended NTGRs and spillover parameters for future use.

Table E-3. PY7 NTG Results for Future Use

Input Parameters	Value	Data Source
Energy Savings NTGR	0.68	PY7 Evaluation Research
Peak Demand Savings NTGR	0.68	PY7 Evaluation Research
Spillover	0	PY7 Evaluation Research

Source: Evaluation team analysis

E.4. Key Findings and Recommendations

The PY7 Data Centers Efficiency program gross energy impact realization rate of 0.95 and demand realization rate of 0.93 are above average for a program that involves custom calculation methods based

on site-specific M&V and analysis of complex and/or emerging technologies. These PY7 evaluation results indicate the program operates well and deploys technically competent staff to address an array of impact estimation and program design challenges. The implementation team has followed the recommendations from previous evaluation reports and has backed the savings estimates with solid M&V practices. Consequently, the key findings and recommendations for the Data Centers Efficiency program, listed below, are limited.

Gross Verification

Finding 1. Two of the eight projects in the gross sample had ex-ante savings normalized for changes in IT load. With the exception of two projects, 18457 and 24242, the evaluation agrees with the normalizing approaches taken by the implementation team. Project 18457 involved aisle containment, which enabled a reduction in Computer Room Air Handler (CRAH) fan speeds. The program team claimed that changes in IT loads would directly affect the fan speeds, but the correlations between changes in CRAH fan speed and IT load were very poor. The evaluation team adjusted baseline power to account for the reduction in cooling demand based on the lowered load during the post M&V period, resulting in reduced ex-post savings for Project 24243.

Recommendation 1. The evaluation team recommends that the implementation team should normalize the savings for changes in IT load. Also, a clear correlation between measure power and energy usage should be established before normalizing the IT load to typical operating conditions.

Finding 2. During face-to-face meetings, implementers and evaluators agreed that the implementation team would use the nameplate Power Factor (PF) values in their calculations. The implementation team is currently implementing this recommendation. However, for Project 26814, the PF values used for the ECM motors were not realistic and were higher than the expected value.

Recommendation 2. Evaluation team recommends that the going forward PF of 0.92 be used for CRAC units with ECM's in cases where nameplate data or measurement is not available. The value of 0.92 is based on the metering at two facilities is consistent with the nameplate specifications.

Finding 3. For one of the strata 1 projects (18457), the ex-post analysis excluded the first three weeks of the post M&V CRAH power data since the data for the first few weeks was not consistent with the rest of the data.

Recommendation 3. The evaluation team recommends that the implementation team closely review the metered data and make sure that the collected data represents normal operation. If there are any outliers in the data, the implementation team should exclude these data points from the analysis.

Net-to-Gross Ratio Research

Finding 4. The evaluation research findings NTG ratio for future use is 0.68 for kWh and 0.68 for kW. Although improved from the values in PY6, these values still indicate significant free ridership.

Recommendation 4. ComEd should consider adopting procedures to limit or exclude known free riders by conducting screening for high free ridership on a project-by-project basis. In cases where it is found, the program implementer should continue and expand their current pre-approval process to provide more explicit consideration and re-formulation of projects already planned for completion by the customer. The NTGRs for the Data Centers program have fluctuated between 0.43 and 0.68 since the program began, and are in line with similar programs offered elsewhere in the U.S. However, the PY7 NTGR of 0.68 suggests that significant free ridership is still present and there is still some room for improvement. ComEd should consider a more aggressive approach for program screening and approval.

1 Introduction

1.1 Program Description

The ComEd Smart Ideas for Your Business program provides incentives for business customers who upgrade their facilities with energy efficient equipment. This incentive program is available to all eligible, nonpublic, commercial and industrial customers in ComEd’s service territory. ComEd’s Smart Ideas for Your Business suite of energy efficiency programs includes a Data Centers Efficiency program. This program provides incentives to both new and existing data centers for implementing qualified energy efficiency measures.

The Data Centers Efficiency program pays an incentive of \$0.07/kWh saved for eligible projects. The program also provides an early commitment incentive option to the customers. The early commitment option provides incentive-funding certainty upon approval of an application. To qualify for this option, projects must reduce energy consumption by a minimum of 500,000 kWh. For qualifying early commitment projects, the program pays an incentive of \$0.06/kWh saved. The program pays incentives after the implementation team verifies that projects are successfully completed and are not subject to change based on actual verified kWh savings. Incentives cannot exceed 100 percent of the total project cost and 100 percent of the incremental project cost.

1.2 Evaluation Objectives

The evaluation team identified the following key researchable questions for PY7:

1.2.1 Impact Questions

1. Estimate the gross impacts from the program.
2. Identify opportunities for improvement to program impact calculations and estimates.
3. Estimate the net impacts from the program.
4. Provide up-front evaluation input for large or complex projects before the program finalizes applications and pays incentives.

1.2.2 Process Questions

1. Describe program strengths and weaknesses.
2. Identify ways to improve the program.

2 Evaluation Approach

Program Year 7 (PY7) represents the third full-scale year of implementation for the Data Centers Efficiency program. For the PY7 impact evaluation, the evaluation team developed gross program impact results based on on-site data collection and associated measurement and verification (M&V) analysis for three projects and thorough engineering desk reviews supported with telephone interviews for five projects. Self-reported data from surveys for twelve projects informed net-to-gross ratio (NTGR) results for future use. For NTG purposes, the evaluation team aimed for a census of fourteen projects but was unable to complete telephone surveys for two projects. The evaluation team then multiplied the verified gross savings estimates by the NTGR to determine the verified net energy and peak demand savings. The PY7 process evaluation was constrained to feedback from the PY7 participants on the program’s strengths and weaknesses.

2.1 Overview of Data Collection Activities

The core data collection activities included on-site audits and detailed M&V analysis in support of gross impact analysis, and telephone surveys in support of NTG and Process analysis. Table 2-1 summarizes the data collection activities.

Table 2-1. Primary Data Collection Activities

What	Who	Target Completes	Completes Achieved	When	Comments
Onsite (M&V)	Participants	3	3	July – October 2015	Sampled projects from Stratum 1 and 2
Desk Reviews	Participants	5	5	August – October 2015	Sampled projects from Stratum 2 and 3. Reviews include engineer conducted telephone interviews
Telephone Survey	Participants	Census (14 participants)	12	September – October 2015	Data collection supporting NTG research and process analysis.
Telephone Survey	Technical Service Providers	Census (5 TSPs)	4	September – October 2015	Data collection supporting NTG research.

2.2 Verified Savings Parameters

The following table, Table 2-2, presents the parameters that the evaluation team used in the verified gross and net savings calculations and shows deemed parameters examined through evaluation activities.

Table 2-2. Verified Savings Parameter Data Sources

Gross Savings Input Parameters	Data Source	Deemed or Evaluated?
Gross Energy Savings Realization Rate	PY7 Analysis	Evaluated
Gross Peak Demand Savings Realization Rate	PY7 Analysis	Evaluated
NTG Ratio	SAG†	Deemed†
Net Energy Savings	PY7 Analysis	Evaluated
Net Peak Demand Savings	PY7 Analysis	Evaluated

† Source: Final Consensus NTG Values for PY7, found on the IL SAG website at <http://ilsag.info/net-to-gross-framework.html>.

2.2.1 Verified Gross Program Savings Analysis Approach

The objective of the gross program savings evaluation is to verify the veracity and accuracy of the PY7 ex-ante gross savings estimates in the Data Centers Efficiency program tracking system. The PY7 evaluation activities included on-site M&V analysis for three projects and desk reviews for five projects. The evaluation team evaluated the savings reported for the completed PY7 projects using the methods outlined below.

The evaluation team performed on-site audits for the two strata 1 projects and one of the three strata 2 projects (totaling three projects). On-site data collection included verification of measure installation, functioning system and planned system operation, and specific details of any variation between the ex-ante and ex post verifications. On-site audits also entailed collection of customer-stored data to support downstream M&V calculations. To calibrate the site-specific analyses, the evaluation team used measurement data obtained from the sites, including spot measurements, run-time hour data logging, and post-installation interval metering. When available, the evaluation team obtained customer-supplied data from energy management systems (EMS) or supervisory control and data acquisition (SCADA) systems.

For the smaller projects (strata 2 and 3), engineering desk reviews were performed to calculate the ex-post impacts. Each of the desk reviews involved a review of project documentation provided by the program, an engineering review of the algorithms and an audit of ex-ante calculation models used by the program to estimate energy and peak demand savings. The engineering audit of program calculations determined if the inputs for the program calculations were reasonable and acceptable or if they needed any revisions based on evaluation findings. In addition to the desk reviews, the evaluation team completed telephone interviews with the site contacts for each site and used this information to verify the savings estimates. In addition, evaluation obtained post-installation operating data for some projects from the site contact. The evaluation team used this information to inform evaluated savings calculations.

The evaluation team performed engineering calculations to derive evaluated gross kWh and kW savings based on data collected during the on-site visit or the desk review process. The engineering reviews also included a preliminary judgment to identify those assumptions with higher uncertainty or potential to influence the program savings estimates. Data obtained from the sampled sites served to verify measure installation, determine installed measure characteristics, assess operating hours and relevant modes of

operation, identify the characteristics of the replaced equipment, support the selection of baseline conditions and perform ex post savings calculations. The peak kW savings calculation methodology was consistent with PJM requirements² for each project. In the final step, the evaluation team discussed project-level results with the implementation teams and ComEd’s program staff to ensure that both the evaluation team and the implementation team agreed on the project scope and details.

The EM&V team then estimated verified gross savings for each sample site and, using sample weights, extrapolated from the sample to the population to calculate verified gross savings for the population. Section 2.4 describes additional details on the sampling approaches.

NOTE: The ex-ante analysis did not report the winter PJM peak-demand values, and the evaluation team did not calculate them. Some of the projects will require metering during the winter peak period in order for the evaluation team to estimate the winter PJM peak-demand savings. If the evaluation team estimates the savings for the winter PJM peak-demand savings, those savings will be provided via separate document.

2.2.2 Verified Net Program Savings Analysis Approach

The primary objective of the net savings analysis was to determine the program's net effect on customers' electricity usage. After the evaluation team assessed gross program impacts, they derived net program impacts by estimating a NTGR that quantifies the percentage of the gross program impacts. The Illinois Stakeholder Advisory Group (SAG) determined NTG values be deemed prospectively and used to calculate verified net savings for this program. The table below shows the deemed NTG values and the PY7 verified net savings. Refer to the Appendix Section 7.1.1.1 (Table 7-1) for complete details on the NTG research results, which provide values for future use.

Table 2-3. Verified Net Savings Parameters

Input Parameters	Value	Deemed or Evaluated?
Energy Savings NTGR	0.48	Deemed (derived from PY5 evaluation results)
Peak Demand Savings NTGR	0.48	Deemed (derived from PY5 kWh evaluation results)*

Source: Final Consensus NTG Values for PY7, found on the IL SAG website at <http://ilsag.info/net-to-gross-framework.html>.

* The SAG workbook recommended a single NTGR of 0.48 for both kWh and kW for the PY7 evaluation. The PY5 evaluated values were very similar (0.48 for kWh and 0.49 for kW). Therefore, this evaluation uses the single SAG-approved NTG value of 0.48 for both kWh and kW.

Verified net energy and coincident peak demand savings were calculated by multiplying the verified gross savings estimates by the deemed NTGR. In PY7, the NTGR values used to calculate the verified net savings are based on NTGR research conducted in PY5. The NTGR evaluation results from PY5 for kWh is 0.48 and kW is 0.49. However, the SAG workbook recommended a single NTGR of 0.48 for the PY7 evaluation. This evaluation uses a NTG value of 0.48 for both kWh and kW. The SAG approved and documented this NTGR method.³

² PJM defines the coincident summer peak period as 1:00-5:00 PM Central Prevailing Time on non-holiday weekdays, during the months of June through August.

³ Source: Final Consensus NTG Values for PY7, found on the IL SAG website at <http://ilsag.info/net-to-gross-framework.html>.

2.3 Process Evaluation

The participating customer surveys previously discussed are also the primary data source for the process evaluation component. The evaluation team based their findings on the feedback they received on the strengths and weaknesses of the program.

2.4 Sampling

2.4.1 Profile of Population

The table below presents the three sampling strata used in the evaluation of the Data Centers Efficiency program. This was based on a total of 14 tracking records with 11 unique customers. Table 2-4 presents the number of records by stratum, along with the claimed ex-ante gross MWh and kW.

Table 2-4. PY7 Program Participation by Sampling Strata

Sampling Stratum	Ex-ante MWh Impact Claimed	Ex-ante MW Impact Claimed	Tracking Records
1	8,453	1.137	2
2	3,771	0.345	3
3	2,320	0.204	9
TOTAL	14,544	1.685	14

Source: Evaluation Team analysis

2.4.2 Gross Impact (M&V) Sample

Consistent with the evaluation plan, the evaluation team used a stratified random sampling approach to select the gross impact sample of eight projects. The evaluation team sorted projects based upon the level of ex-ante kWh savings and placed the projects in three strata.

Table 2-5 provides a profile of the gross impact M&V sample for the Data Centers Efficiency program in comparison with the program population. Shown below is the resulting sample that was drawn that consists of eight projects. These projects make up 12.9 million kWh of the ex-ante impact claim, which represents 89 percent of the ex-ante impact claim for the program population. Also shown are the ex-ante based kWh sample weights for each of the three stratum. Note that stratum 1 projects account for approximately 65 percent of total sample kWh.

Table 2-5. PY7 Gross Impact Sample by Strata

Sampling Strata	Population Summary			Completed Interviews		
	Number of Tracking Records (N)	Ex-ante MWh Impact Claimed	MWh Weights	Number of Tracking Records (n)	Ex-ante MWh	Sampled % of Population MWh
1	2	8,453	0.58	2	8,453	100%
2	3	3,771	0.26	3	3,771	100%
3	9	2,320	0.16	3	683	29%
TOTAL	14	14,544	-	8	12,908	89%

Source: Evaluation Team analysis

2.4.3 Telephone Survey Sample

Per the evaluation plan, the target for the participant surveys was a census attempt of all participants in the Data Center Efficiency program in PY7. Data from these surveys were in support of the net-to-gross component of the evaluation and the process evaluation component.

Participating Customer Survey Sample

Table 2-6 summarizes the participating customer telephone interviews completed in support of the PY7 NTG research and process evaluation efforts. The completed interviews represent 13.7 million kWh or 94 percent of the ex-ante impact claim for the total program population. Appendix Section 7.1.1.1 presents prospective NTG results stemming from these 12 completed interviews. However, the evaluation team removed one survey from the preliminary results due to the potential for biased reporting. The decision-maker in question now works for the implementer, and has a potential conflict of interest with the program. For these reasons, the evaluation team has excluded the sample point. The evaluation team attempted to reach out multiple times to other actors that were involved with the project to verify the decision maker reports for this project but was unable to reach anyone at the participating facility.

Table 2-6. PY7 Telephone Survey Sample by Strata

Sampling Strata	Population Summary			Completed Interviews		
	Number of Tracking Records (N)	Ex-ante MWh Impact Claimed	MWh Weights	Number of Tracking Records (n)	Ex-ante MWh	Sampled % of Population MWh
1	2	8,453	0.58	2	8,453	100%
2	3	3,771	0.26	3	3,771	100%
3	9	2,320	0.16	7	1,470	63%
TOTAL	14	14,544	-	12	13,694	94%

Source: Evaluation Team analysis

3 Gross Impact Evaluation

The evaluation team reviewed ComEd’s tracking data extract to determine reported PY7 ex-ante gross savings. The evaluation team developed the verified gross program impacts for the evaluation of the Data Centers Efficiency program based on on-site-informed M&V analysis for three projects and engineering desk reviews for five projects.

3.1 Tracking System Review

ComEd provided the evaluation team with direct access to their on-line tracking system and data for evaluation purposes. The on-line system was easy to work with and provided viewing access to the project tracking data and downloading rights to project documentation in electronic format for each project. This documentation was complete and greatly facilitated the evaluation efforts.

3.2 Gross Program Impact Parameter Estimates

The evaluation team conducted research to validate the gross program impact parameters that the TRM did not specify, and the results informed the ex-post gross impact estimates. The verified gross impact results for PY7 are in Table 3-1 below.

Table 3-1. Verified Gross Savings Parameters

Gross Savings Input Parameters	Value	Deemed or Evaluated?
Energy Savings Realization Rate	0.95	Evaluated
Peak Summer Demand Savings Realization Rate	0.93	Evaluated

Source: Evaluation Team analysis.

There are two basic statistical methods for combining individual gross realization rates from the sample projects into an estimate of verified gross kWh savings for the population when stratified random sampling is used. These two methods are referred to as “separate” and “combined” ratio estimation.⁴ In the case of a separate ratio estimator, a separate gross kWh savings realization rate is calculated for each stratum and then combined. In the case of a combined ratio estimator, evaluation completes a single gross kWh savings-realization rate calculation without first calculating separate gross realization rates by stratum.

The evaluation team used the separate ratio estimation technique to estimate verified gross impacts for the Data Centers Efficiency program. The separate ratio estimation technique follows the steps outlined

⁴ A full discussion and comparison of separate vs. combined ratio estimation can be found in [Sampling Techniques](#), Cochran, 1977, pp. 164-169.

in the California Evaluation Framework⁵, which identifies best practices in program evaluation. The evaluation team matched these steps to the stratified random sampling method that they used to create the sample for the program. The evaluation team used the standard error to estimate the error bound around the estimate of verified gross impacts.

3.3 Verified Gross Program Impact Results

Based on the gross impact sample size of eight projects in PY7, the evaluation results yielded gross energy realization rate of 0.95 and a gross demand realization rate of 0.93, resulting in a total program verified gross savings of 13,749 MWh and 1.56 MW as shown in Table 3-2. The table also presents savings by strata.

Overall, the program team did an excellent job of ensuring the installation and operation of all of the implemented measures. The program team collected site-specific pre- and post-metered data for all projects, which enabled accurate estimation of ex-ante savings. In general, the program team successfully collected site-specific pre- and post-M&V data using acceptable methods based on industry practices. Since the evaluators did not collect M&V data for desk review projects, the program-collected M&V data was very valuable in calculating evaluation-based savings for the sampled projects.

Table 3-2. PY7 Verified Gross Impact Savings Estimates by Measure Type

	Sample Size	Energy Savings (MWh)	Peak Demand Savings (MW)	Summer PJM Peak Demand Savings (MW)
Strata 1				
Ex-Ante Gross Savings		8,453	1.14	1.14
Verified Gross Realization Rate	2	96%	92%	92%
Verified Gross Savings		8,131	1.05	1.05
Strata 2				
Ex-Ante Gross Savings		3,771	0.34	0.34
Verified Gross Realization Rate	3	90%	93%	93%
Verified Gross Savings		3,377	0.32	0.32
Strata 3				
Ex-Ante Gross Savings		2,320	0.20	0.20
Verified Gross Realization Rate	3	97%	96%	96%
Verified Gross Savings		2,240	0.20	0.20
Total				
Ex-Ante Gross Savings		14,544	1.69	1.69
Verified Gross Realization Rate	8	95%	93%	93%
Verified Gross Savings		13,749	1.56	1.56

Source: Evaluation Team analysis.

⁵ Tec Market Works, "The California Evaluation Framework," Prepared for the California Energy Commission, June 2004. Available at <http://www.calmac.org>

The PY7 gross energy realization rate of 0.95 and the demand realization rate of 0.93 are above average for a Data Centers Efficiency program that typically involves custom calculations methods based on site specific M&V activities and analysis of complex and/or emerging technologies. This shows that the program is running smoothly and that solid M&V practices back it up.

The PY7 gross energy realization rate of 0.95 is consistent with the PY6 gross energy realization rate of 0.97. Figure 3-1 shows the comparison between the realization rate and the sample size for the last three program years. Note that PY5 is the first year for the Data Center program and sample size for that program year is only four projects.

Figure 3-1. Gross Realization Rates for PY5, PY6 and PY7

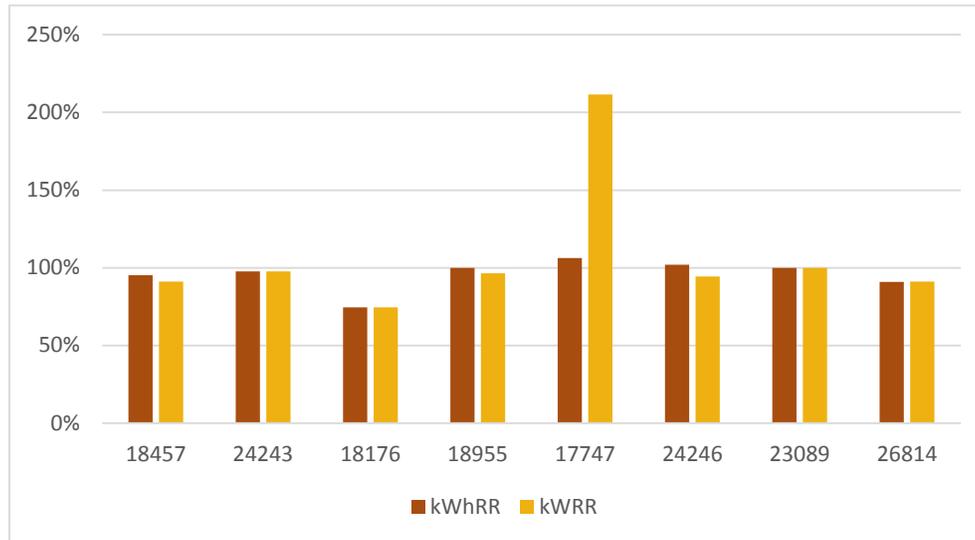


The PY7 demand realization rate of 0.93 is consistent with the PY6 value of 0.92. Two of the PY7 projects (18176 and 17747) had ex-post demand savings estimates that differed substantially from the ex-ante savings estimates. For the remaining six projects, the gross demand realization rate was close to one. The section below lists key observations and reasons for adjustment of savings for the two identified projects.

Figure 3-2 below shows a comparison of the energy and demand realization rates for every site, broken down by strata. The PY7 energy-savings realization rate results ranged from 0.75 to 1.06, which resulted in a program level realization rate of 0.95. Other than one project with a gross realization rate of 0.75, realization rates for the remaining seven projects were close to one. This shows appropriate in-program due diligence for savings estimation and is supported by M&V data.

The demand-savings realization rates for the eight projects in the gross sample ranged from 0.75 to 2.12. Other than these two points, the demand realization rates for the remaining projects were close to one. Project 17747 was a new construction project where Phase I was completed in PY6. The program team estimated ex-ante savings for this project by subtracting the Phase I savings from the total project savings. This approach is acceptable for the energy savings component, but the demand savings should have been estimated using the total operating power from 1 PM to 5 PM Central Prevailing Time afternoon period for the months of June through August. This adjustment resulted in a gross demand realization rate of 212 percent for this project.

Figure 3-2. Energy and Demand Realization Rates



Source: Evaluation Team analysis

Table 3-3 summarizes the results for each project. Some key observations from the site-specific evaluation results include the following:

- Project #18176: The evaluated savings differed from the ex-ante savings for two reasons; the largest difference was a change in power factors of the CRAH fans, and the second reason was due to IT-load normalization findings. The savings for the ex-ante calculations used an average power factor of around 0.99 for the CRAH fans during both the pre- and post-retrofit analysis. These power factors were not within the acceptable range of CRAH fans, so the evaluation team revised them to 0.79 for the pre-retrofit case based on previous engineering judgment. The evaluation team performed spot measurements for the post-retrofit case and then adjusted the average power factor for the post-retrofit case to 0.925. The small change to the IT-normalization was a result of matching the IT-load time period to the chiller kW metered time period to more accurately represent the IT loading during the metered period.
- Project #24243: The ex-post analysis found a correlation between the IT load and the cooling demand. The evaluation team normalized the baseline power to account for the change in IT load found in the post-retrofit case.
- Project #18457: In this case, about half of the discrepancy between the ex-ante and ex-post savings was due to the evaluation team not normalizing the data based on the post-retrofit meter data. The evaluation team reviewed the CRAH fan speed and the IT load and could not find a correlation between the two. In addition to this, the evaluation team removed several weeks of the post-M&V CRAH power data, as this data appeared to be inconsistent with the remaining data, possibly due to the system stabilizing after the retrofit. The evaluation team also reviewed chiller pre- and post-metered data and identified slight differences in the ex-ante economizer assumptions. The evaluation team revised the chiller savings to consider the operation across different temperature ranges.

- Project #18955: For this project, the evaluation team modified only the demand savings. The ex-ante savings calculated an average annualized efficiency (kW/ton) which was used to calculate demand while the evaluation team used a peak efficiency during summer peak periods to calculate the demand.
- Project #17747: This is a new construction data center project where Phase I was completed in PY6. The program team estimated the ex-ante savings for this project by subtracting the Phase I savings from the total project savings. This approach is acceptable for the energy savings, but the demand savings component should have estimated total operating power from 1 PM to 5 PM afternoon period for the months of June through August. This adjustment resulted in a gross demand realization rate of 212 percent for this project.
- Project #24246: The evaluation team used a simplified method to calculate chiller unit efficiency (kW/ton) for both the pre- and post-retrofit units using a minimum unit SCOP. This differed from the ex-ante approach, which attempted to adjust for OAT but the curves used to adjust this were for air-cooled DX units.
- Project #26814: The ex-ante calculations used a power factor of 0.98 in the pre- and post-retrofit calculations. Although this would be a reasonable value for units with VFDs, a more reasonable number would be 0.925 for ECM motors. The nominal PF for these motors was actually 0.90. Additionally, the evaluation team found the fan speed to be approximately 42 percent, up from 41 percent used in the ex-ante calculations.

Table 3-3. Gross Impact Realization Rate Results for the Selected Sample

Sampled Application ID	Sample-Based Ex-ante MWh Impact Claimed	Sample-Based Ex-ante kW Impact Claimed	Sampling Strata	Ex-ante-Based MWh Gross Impact Weights by Strata	Sample-Based Evaluation Verified Gross MWh Impact	Sample-Based Evaluation Verified Gross kW Impact	Application - Specific Evaluation Verified Gross MWh Realization Rate	Application - Specific Evaluation Verified Gross kW Realization Rate	Sample-Based Evaluation Verified Gross MWh Realization Rate	Sample-Based Evaluation Verified Gross kW Realization Rate
18457	5,145	759	1	0.61	4,899	680.20	0.95	0.90	0.96	0.92
24243	3,309	378	1	0.39	3,232	369.00	0.98	0.98		
18176	1,800	206	2	0.48	1,343	153.30	0.75	0.75	0.90	0.93
18955	976	111	2	0.26	976	107.40	1.00	0.96		
17747	995	28	2	0.26	1,058	59.00	1.06	2.12		
24246	47	11	3	0.07	41	8.20	0.87	0.75	0.96	0.94
23089	370	42	3	0.54	370	42.30	1.00	1.00		
26814	266	30	3	0.39	241	27.60	0.91	0.91		
TOTAL	12,908	1,565	-	-	12,162	1,447	-	-	0.94	0.93

Source: Evaluation Team analysis

4 Net Impact Evaluation

The Illinois Stakeholder Advisory Group (SAG) ⁶ prospectively deemed the NTG values for the Data Center program and used the deemed values to calculate verified net savings. The tables below show the deemed NTG values and the resulting PY7 verified net savings. Section 7.1 of the Appendix provides complete details on the PY7 NTG research and is for future use.

Table 4-1. Verified Net Savings Parameters

Input Parameters	Value	Deemed or Evaluated?
Energy Savings NTGR	0.48	Deemed (derived from PY5 evaluation results)
Peak Demand Savings NTGR	0.48	Deemed (derived from PY5 kWh evaluation results)*

*Source: Final Consensus NTG Values for PY7, found on the IL SAG website at <http://ilsag.info/net-to-gross-framework.html>.
The NTGR evaluation results from PY5 for kWh is 0.48 and kW is 0.49. However, the SAG workbook recommended a single NTGR of 0.48 for the PY7 evaluation. Therefore, this evaluation uses a NTG value of 0.48 for both kWh and kW.

Evaluation Verified Net Program Impact Results

Net program impacts were derived by multiplying PY7 evaluation research findings gross program savings by the deemed PY7 NTGR for energy (kWh) and demand (kW). Table 4-2 provides the program-level evaluation-verified net impact results for the PY7 Data Center Efficiency program.

Table 4-2. PY7 Verified Net Impact Savings Estimates

Savings Source	Sample Size	Energy Savings (MWh)	90/10 Significance	Peak Demand Savings (MW)	90/10 Significance
Ex-ante PY7 Gross Savings	14	14,544	-	1.69	-
Realization Rate	8	0.95	Yes	0.93	Yes
Verified Gross Savings	8	13,749	Yes	1.56	Yes
Free Ridership	*	0.52	*	0.52	*
Spillover	*	0	*	0	*
NTG	*	0.48	*	0.48	*
Verified Net Savings	*	6,599	*	0.75	*

Source: Evaluation Team analysis and Final Consensus NTG Values for PY7, found on the IL SAG website at <http://ilsag.info/net-to-gross-framework.html>

*Deemed value

⁶ Source: Final Consensus NTG Values for PY7, found on the IL SAG website at <http://ilsag.info/net-to-gross-framework.html>

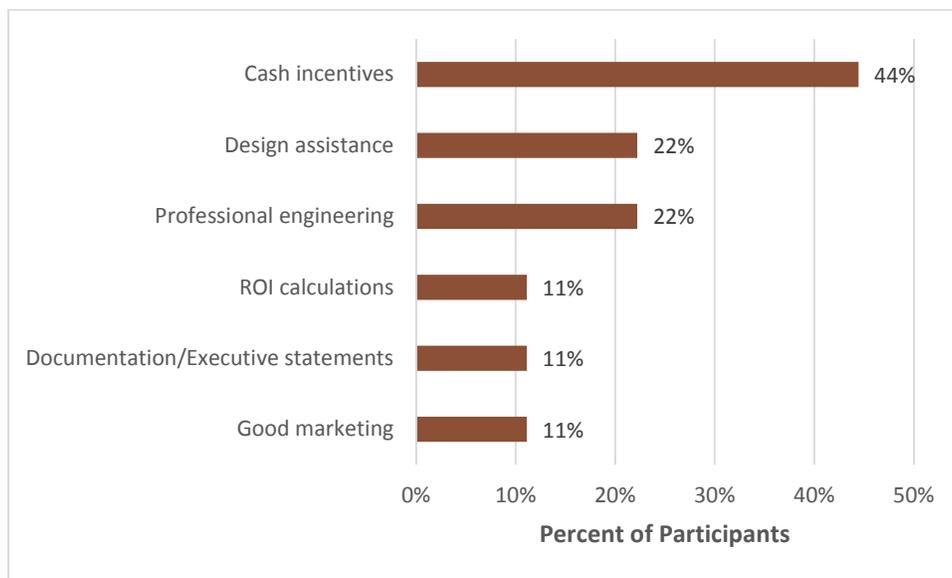
5 Process Evaluation

The participating customer surveys previously discussed are also the primary data source for this process evaluation component. The evaluation team based their findings on the feedback they received on the strengths and weaknesses of the program.

5.1 Program Strengths

With respect to the program’s strengths, participants most commonly reported appreciation for the program cash incentives (44 percent), followed by the design assistance provided (22 percent), and the technical engineering assistance (22 percent). Other strengths mentioned included assistance with return on investment (ROI) calculations, documentation and executive statements, and good marketing, as shown in Figure 5-1.

Figure 5-1. Participant Perspectives on Program Strengths

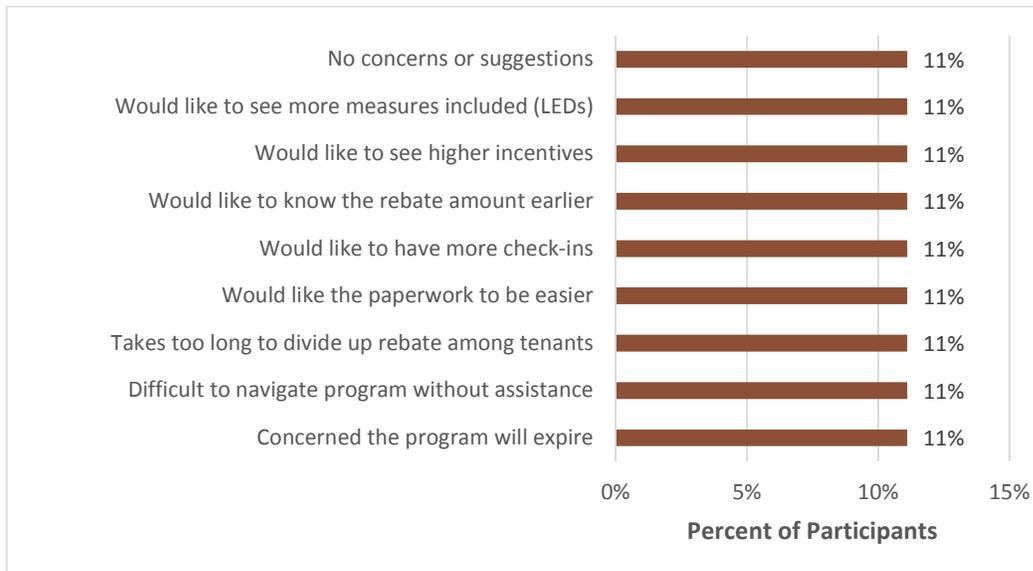


Source: Evaluation Team analysis

5.2 Program Weaknesses

The surveys also asked participating customers to provide feedback on the program’s weaknesses and potential areas of improvement. Every participant had a unique suggestion, as reported in Figure 5-2. Topics covered included measures addressed, rebate-related concerns, program facilitation assistance, and paperwork concerns.

Figure 5-2. Participant Perspectives of the Program Concerns or Suggestions



Source: Evaluation Team analysis

Similar to last year, one participant was unaware of the “Early Commitment” incentive requirement:

“Could be faster on how much the rebate would be. We knew we would get something, but it was hard to determine what the baseline is going to be. Didn’t know the rebate amount until the decisions were made.”

Another participant mentioned the paperwork was burdensome:

“Most significant would be to better streamline paperwork and application. Need to provide a lot of information when entering into the program.”

One participant mentioned the program is difficult to navigate without assistance:

“The overview of the program didn’t pertain to me until the vendor visited. I had an application but I didn’t have a clear path on how to use it properly.”

Other concerns or suggestions that were mentioned in the participant surveys include higher incentives, more check-ins, including more measures such as LEDs, and concern about the program expiring.

6 Findings and Recommendations

The PY7 Data Centers Efficiency program gross energy impact realization rate of 0.95 and demand realization rate of 0.93 are above average for a program that involves custom calculation methods based on site specific M&V, and analysis of complex and/or emerging technologies. These PY7 evaluation results reflect a program that is well run and technically competent in addressing an array of impact estimation and program design challenges. Based on these findings, the program appears to be well positioned to use strong M&V practices in the future.

This section summarizes the key impact and process findings and recommendations.

Verified Gross Impacts and Realization Rate

Finding 1. Two of the eight projects in the gross sample had ex-ante savings normalized for changes in IT load. With the exception of two projects, 18457 and 24242, the evaluation agrees with the normalizing approaches taken by the implementation team. Project 18457 involved aisle containment, which enabled a reduction in CRAH fan speeds. The program team claimed that changes in IT loads would directly affect the fan speeds, but the correlations between changes in CRAH fan speed and IT load were very poor. The evaluation team adjusted baseline power to account for the reduction in cooling demand based on the lowered load during the post M&V period, resulting in reduced ex-post savings for Project 24243.

Recommendation 1. The evaluation team recommends that the implementation team should normalize the savings for changes in IT load. Also, the program should establish a clear correlation between measure power and energy usage before normalizing the IT load to typical operating conditions.

Finding 2. During face-to-face meetings, implementers and evaluators agreed that the implementation team would use the nameplate Power Factor (PF) values in their calculations. The implementation team is currently implementing this recommendation. However, for Project 26814, the PF values used for the ECM motors were not realistic and were higher than the expected value.

Recommendation 2. The evaluation team recommends that the going forward PF of 0.92 be used for CRAC units with ECM's in cases where nameplate data or measurement is not available. The value of 0.92 is based on the metering at two facilities is consistent with the nameplate specifications.

Finding 3. For one of the strata 1 projects (18457), the ex-post analysis excluded the first three weeks of the post M&V CRAH power data since the data for the first few weeks was not consistent with the rest of the data.

Recommendation 3. The evaluation team recommends that the implementation team closely review the metered data and make sure that the collected data represents normal operation. If there are any outliers in the data, the implementation team should excluded these data points from the analysis.

Net-to-Gross Ratio for Future Use

Finding 4. The evaluation research findings NTG ratio for future use is 0.68 for kWh and 0.68 for kW. Although improved from the values in PY6, these values still indicate significant free ridership.

Recommendation 4. ComEd should consider adopting procedures to limit or exclude known free riders by conducting screening for high free ridership on a project-by-project basis. In cases where it is found, the program implementer should continue and expand their current pre-approval process to provide more explicit consideration and re-formulation of projects already planned for completion by the customer. The NTGRs for the Data Centers program have fluctuated between 0.43 and 0.68 since the program began, and are in line with similar programs offered elsewhere in the U.S. However, the PY7 NTGR of 0.68 suggests that significant free ridership is still present and there is still some room for improvement. The program warrants a more aggressive screening and approval approach.

Better Marketing of the Early Commitment Option

Finding 5. One customer was unaware of the early commitment option and made the suggestion to provide earlier certainty about funding.

Recommendation 5. The program should consider informing customers and/or trade allies about the early commitment option. Currently, the evaluation team understands there are not many projects signing up for this offer. However, the implementation team should consider a better marketing strategy (e.g., more frequent emails) if this option is being continued in future program years.

7 Appendix

7.1 Evaluation Research Impact Approaches and Findings

7.1.1 Evaluation Research Net Impact Findings for Future Use

7.1.1.1 NTG research methods in PY7 consisted of telephone surveys of participating customer and technical service providers and analysis of results. Research for both groups used a self-report survey-based method in which participants and technical service providers answered a series of questions designed to assess the influence of program and non-program factors on their decisions to implement and offer energy efficient data center measures, respectively. The participating customer survey researched participants' awareness of the installed measures prior to their participation in the program, and their previous use of those measures outside the program. Free Ridership

The program's Net-to-Gross Ratio is equal to one minus the free ridership rate plus the spillover rate. The evaluation team calculated the free ridership rate using a self-report method, which relies on the results of surveys with PY7 participants. The calculation of both the free ridership rate and each project's net-to-gross ratio (NTGR) is a multi-step process. The evaluation team used responses from the telephone survey to calculate a timing and selection score, a program influence score and a no-program score for each project. These three scores can take values of 0 to 10 where a lower score indicates a higher level of free ridership. The calculation then averages those three scores to come up with a project-level net-to-gross ratio.

Completed telephone surveys for 12 projects support the PY7 net-to-gross calculation. Of these, eight overlap with the eight gross M&V sample points. However, one survey was been removed from the preliminary results due to the potential for biased reporting. The decision-maker in question now works for the implementer, and has a potential conflict of interest with the program. For these reasons, the evaluation team excluded the sample point. The evaluation team attempted to reach out multiple times to other actors that were involved with the project to verify the decision maker reports for this project but was unable to reach anyone at the participating facility. Table 7-1 shows the PY7 project-specific and stratum level NTGRs.

Table 7-1. PY7 NTGR Results for the Data Centers Sample

Project ID*	Sampling Stratum	Project Specific NTGR	Sample-Based Verified kWh NTGR	Sample-Based Verified kW NTGR
PY7 – 01**	1	0.77		
PY7 – 02**	1	***		
PY7 – 03**	2	0.67	0.68	0.68
PY7 – 04**	2	0.73		
PY7 – 05**	2	0.50		
PY7 – 06	3	0.74		
PY7 – 07	3	0.63		
PY7 – 08**	3	0.10		
PY7 – 09	3	0.74	0.67	0.67
PY7 – 10**	3	0.68		
PY7 – 11	3	0.74		
PY7 – 12**	3	0.83		
TOTAL	NA	NA	0.68	0.68

Source: Evaluation Team analysis

* Actual Project IDs are not provided to protect customer confidentiality

**Overlaps with gross impact sample

***Decision-maker now works for program implementer so there is conflict of interest. The evaluation team has removed this sample point from the analysis frame because they could not be independently verified.

The evaluation team used a ratio estimation technique to estimate the program-level NTGR, based on the steps outlined in the California Evaluation Framework. The evaluation team used the standard error to estimate the error bound around the estimate of the verified evaluation NTGR. The program level kWh and kW NTGR, along with confidence intervals and precision estimates, is shown in Table 7-2 (kWh impacts) and in Table 7-3 (kW impacts).

Information regarding participant spillover was also collected, but ultimately did not support a finding of any spillover. Therefore, a quantification of spillover was not included in the calculation of NTGR for PY7.

Table 7-2. kWh NTG Ratio and Relative Precision at 90% Confidence Level

Sampling Strata	Relative Precision ± %	Low	Mean	High
1&2	6%	0.64	0.68	0.72
3	4%	0.65	0.67	0.70
Total PY7	5%	0.65	0.68	0.72

Source: Evaluation Team analysis

Table 7-3. kW NTG Ratio and Relative Precision at 90% Confidence Level

Sampling Strata	Relative Precision ± %	Low	Mean	High
1&2	7%	0.64	0.68	0.73
3	0%	0.67	0.67	0.67
Total PY7	6%	0.64	0.68	0.72

Source: Evaluation Team analysis

Observations regarding PY7 NTGR findings. Overall, the program influence has improved since PY6 based on the evaluation research findings PY7 kWh NTGR of 0.68, compared to the PY6 kWh NTGR of 0.61. Results do not vary much by strata. The NTGR value for stratum 1 (large sized projects) and stratum 2 (medium sized projects) combined is 0.68, and 0.67 for stratum 3 (small sized projects).

The evaluation team found significant free ridership (above 40 percent) in one out of 12 evaluated projects. The project with substantial free ridership had low program influence⁷ and low no-program⁸ scores.

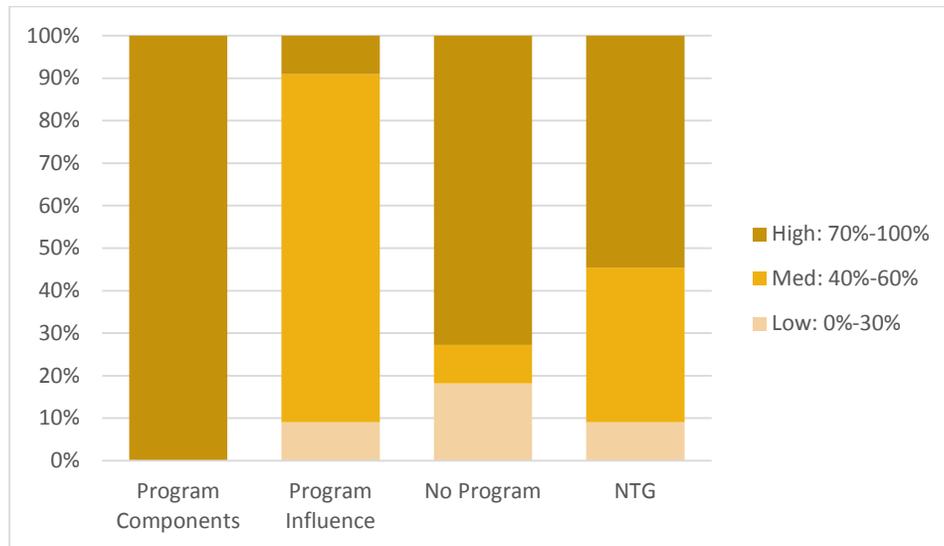
The PY7 projects with the lowest no-program scores tended to have lower NTG ratios, while those with higher no-program scores had NTG ratios that were among the highest. As noted in Footnote 8, a no-program score includes participants that would have taken action on their own in the absence of the program. This drives lower NTG values. For example, all projects with no-program scores of three or lower had NTG ratios that were at or below 0.50. The average NTGR across these projects was 0.30. In contrast, the projects with higher NTGRs (those having a NTGR greater than 0.70) had No-Program scores of seven or greater.

As shown in Figure 7-1, the correlation between the program influence and program components scores and resulting NTGR was not as significant as the correlation with the no-program score and the resulting NTGR.

⁷ A Program Influence score reflects the degree of influence the program had on the customer’s decision to install the specified measures.

⁸ A No-Program score captures the likelihood of various actions the customer might have taken at this time and in the future if the program had not been available.

Figure 7-1. NTG Component Scores

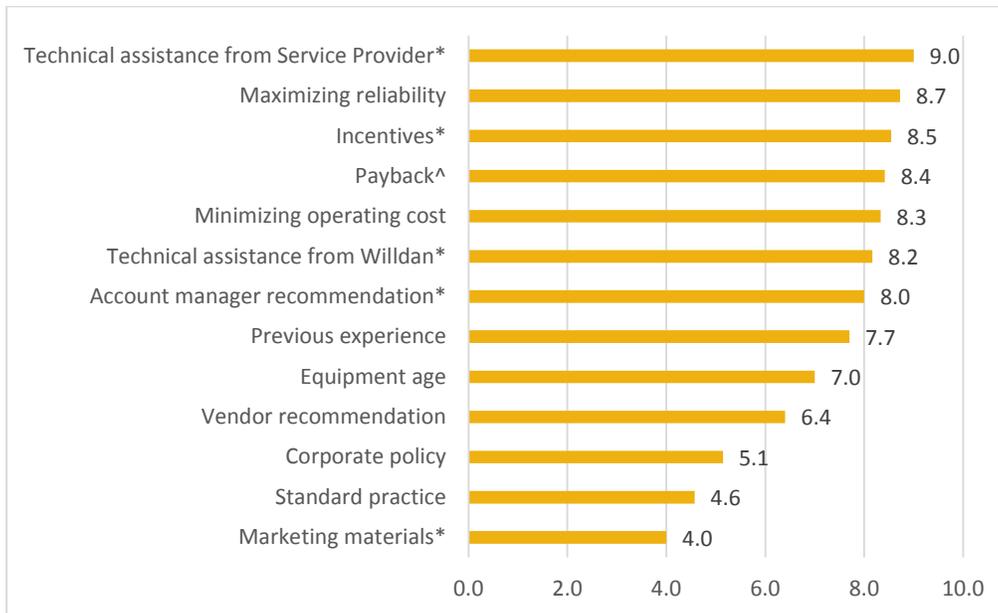


Source: Evaluation Team analysis

Figure 7-1 provides a breakdown of each of the three scores used to calculate the NTGR based on the distribution of values reported for each project. In cases with low NTG ratios, a number of different reasons drove these results. In both of the projects with low NTGRs, the customer reported that they would have installed the same equipment (or very similar) at the same time in the absence of the program, resulting in a low no-program score. Further, these PY7 participants were asked to divide 10 points between the importance of the program versus the most important of the non-program factors in their decision to implement the measure, they both rated the non-program factors higher than or equal to the program factors, resulting in a medium to low program influence score.

Further, Figure 7-2 presents the average scores for each program components score component in the telephone survey. Similar to last year, the top two project influences reported by participants are the technical assistance from the firm that conducted the ComEd sponsored study (9.0) and the objective of maximizing facility reliability (five 9s) (8.7). A few notable differences from last year include: increases in the average ratings given to the incentives (which went from an average of 6.9 in PY6 to 8.5 in PY7), the technical assistance from Willdan (which went from an average of 5.6 in PY6 to 8.2 in PY7), and the account manager recommendation (which went from an average of 4.1 in PY6 to 8.0 in PY7).

Figure 7-2. Average Ratings of Program Components Elements



Source: Evaluation Team analysis

* Program related elements

^ Payback can be a program or a non-program related element depending on whether the incentive helped the participant meet their payback requirements or not.

More than one-third of PY7 participants (36 percent) were colocation⁹ data centers. The evaluation team found no significant difference in NTG between colocation and non-colocation sites.

7.1.1.2 Procedures to Reduce Free Ridership

Without a doubt, the high technology nonresidential market is extremely challenging to address and to influence behavior. Customers in this sector are generally more knowledgeable, sophisticated and motivated to adopt best practices in all areas, including energy using behaviors compared to other non-residential sectors. As a result, a certain amount of free ridership will be found in this market. Despite these challenges, there are a number of different strategies available to ComEd to adjust program design elements and implementation procedures in order to reduce free ridership. These recommendations are as follows:

Recommendation: Adopt procedures to limit or exclude known free riders.

The best way to accomplish this is to conduct screening for high free ridership on a project-by-project basis. In cases where the program implementer finds free ridership, the program implementer should continue and expand their current practice of “upselling” the customer to an energy efficiency project that the

⁹ Colocation data centers are multi-tenant facilities which host the physical space for multiple customer’s data center needs. In addition to the space, these facilities generally supply the cooling, power, bandwidth, and physical security for a business’s data center needs. The renter will typically provide the servers and networking equipment needed.

customer was not already planning to do on their own. The NTG ratios indicate that significant free ridership is still present and warrant this more aggressive approach. One way to assess the rate of free ridership on a given project is to examine the key reasons behind the project **before** the incentive is approved. For example:

- Has the project already been included in the capital or operating budget?
- Is the measure one that the company or other comparable companies in the same industry/segment routinely install as a standard practice? Is the measure installed in other locations, without co-funding by incentives? Is the measure potentially incentivized?
- Is the project being done, in part, to comply with regulatory mandates (such as environmental regulations)?
- Are the project economics already compelling without incentives? Is the rebate large enough to make a difference in whether or not the project is implemented?
- Is the company in a market segment that is ahead of the curve on energy efficiency technology installations? Is it part of a national chain that already has a corporate policy to install the proposed technology?
- Does the proposed measure have substantial non-energy benefits? Is it largely being considered for non-energy reasons (such as improved quality or increased production)?

Prior to approving the incentive, a brief interview of these issues by the implementer can help assess the likely degree of free ridership and may be able to decide if the project should be excluded or substantially re-scoped to a higher efficiency level.

Recommendation: Make changes to the incentive design

Tier incentives by technology class, such as end-use, to enhance promotion of technologies that are not as well accepted versus those that are already established. Under this approach, the incentive level for less widely adopted and emerging technologies would be higher, while the incentive level for more widely adopted measures would be lower. However, this added complexity may come at a cost of lower participation.

Offer bonuses to incent desirable behavior, such as installation of multiple measures or installation by a first-time participant.

7.2 Spillover

The evaluation team also investigated spillover effects in the PY7 evaluation based on responses to a battery of spillover questions in the telephone survey. The evidence of spillover for the program is presented in Table 7-4 below. These results ultimately did not support any quantification of spillover savings.

Table 7-4. Evidence of Spillover in PY7

Spillover Question	Evidence of Spillover
Since your participation in the ComEd program, did you implement any additional energy efficiency measures at this facility that did NOT receive incentives through any utility or government program?	Of the 10 surveyed customers that responded to this question, 2 said "Yes" (20%). However, both are planning on applying for incentives for these measures.
What type of energy efficiency measure was installed without an incentive?	N/A
On a scale of 0 to 10, where 0 means "not at all significant" and 10 means "extremely significant," how significant was your experience in the ComEd program in your decision to implement this energy efficiency measures?	N/A
If you had not participated in the ComEd program, how likely is it that your organization would still have implemented this measure? Use a 0 to 10, scale where 0 means you definitely would NOT have implemented this measure and 10 means you definitely WOULD have implemented this measure?	N/A
Why did you purchase this energy efficiency measure without the financial assistance available through the ComEd's program?	N/A

Source: Evaluation Team analysis

These findings suggest that there are no spillover effects for PY7. While participating customers are installing other energy efficiency improvements, they plan to apply for rebates for these improvements.

7.3 Net-to-Gross Scoring Algorithm

Table 7-5. Basic Net-to-Gross Scoring Algorithm for the PY7 Data Centers Program

Scoring Element	Calculation
<p>Program Components score. The maximum score (on a scale of 0 to 10 where 0 equals not at all influential and 10 equals very influential) among the self-reported influence level the program had for:</p> <ul style="list-style-type: none"> A. Availability of the program incentive B. Technical assistance from utility or program staff C. Recommendation from utility or program staff D. Information from utility or program marketing materials E. Endorsement or recommendation by a utility account rep F. Recommendation from vendor or Technical Service Provider¹⁰. 	Maximum of A, B, C, D, E, and F
<p>Program Influence score. “If you were given a TOTAL of 10 points that reflect the importance in your decision to implement the efficient Data Center project, and you had to divide those 10 points between: 1) the program and 2) other factors, how many points would you give to the importance of the PROGRAM?”</p>	Points awarded to the program Divide by 2 if the customer learned about the program AFTER deciding to implement the measure that was installed
<p>No-Program score. “Using a likelihood scale from 0 to 10, where 0 is “Not at all likely” and 10 is “Extremely likely”, if the utility program had not been available, what is the likelihood that you would have installed exactly the same equipment?” Adjustments to the “likelihood score” are made for timing: “Without the program, when do you think you would have installed this equipment?” Free ridership diminishes as the timing of the installation without the program moves further into the future.</p>	Interpolate between No Program Likelihood Score and 10 where “At the same time” or within 6 months equals No Program score, and 48 months later equals 10 (no free ridership)
Project-level Free ridership (ranges from 0.00 to 1.00)	1 – Sum of scores (Program Components, Program Influence, No-Program)/30 ¹¹
PY7 Project level Net-to-Gross Ratio (ranges from 0.00 to 1.00)	1 – Project level Free ridership
Apply score to other end-uses within the same project?	If yes, assign score to other end-uses of the same project
Apply score to other projects of the same end-use?	If yes, assign score to same end-use of the additional projects

¹⁰ Only applicable for sites that indicated a vendor influence score greater than maximum of the other program element scores or those sites that had a study performed by a Technical Service Provider.

¹¹ There are exceptions to the general framework, notably: (1) when the decision-maker indicates absolute certainty of installing the same project in the program’s absence by assigning a probability a 10 out of a possible 10 points. In such cases, the evaluation team eliminates the Program Components Score from the calculation. (2) when the decision-maker provides inconsistent responses to certain critical questions, and they decline to resolve the inconsistency during the interview, the inconsistent responses and associated scores are thrown out; (3) when survey responses overall are inconsistent with the “story” behind the project, the evaluation team reserves the right to throw out that specific sample point.

7.4 Survey Instruments

7.4.1 Participant

ComEd Smart Ideas for Your Business Program PY7 – NTG Data Center Professional Interview Guide

Before we begin, I want to emphasize that this survey will only be about the energy efficient measures you installed through the Smart Ideas for Your Business Program in the data center at <ADDRESS>. [IF NECESSARY, READ PROJECT DESCRIPTION: <PROJDESC>]

Our records show that <COMPANY> received an incentive from ComEd for making changes to improve the energy efficiency of your data center (if new construction: for building an energy efficient data center) during <PROG YEAR>. [MENTION THE PROJECT DETAILS, INCLUDING MEASURE NAME(S) AND QUANTITIES, INSTALLATION DATES, AND INCENTIVE AMOUNTS HERE.] Does that sound right?

- 1 Yes
- 2 No

The purpose of this survey is to learn about your company’s participation in ComEd’s program, specifically to learn the role of the program in your company’s decision to install energy efficient equipment as versus other factors that you had to consider. During this interview, this will be your opportunity to provide feedback directly to the program on any areas that you would like to see improved upon going forward, as well as any related suggestions for improvements. This survey will take between 30 and 45 minutes. Is now a good time?

NET-TO-GROSS MODULE

VENDOR INFORMATION

First, I would like to get some information on the firms that may have helped you with the design or implementation of this energy efficiency project.

- V1 Did you work with a contractor or vendor that helped you with the choice of this equipment?
 - 1 Yes
 - 2 No

If V1=1 THEN ASK:

V1a. What was the name of the firm(s) that helped you with your equipment choice?

Answer:

[IF <NEW CONSTRUCTION>=1, THEN ASK. ELSE SKIP TO V3.]

- V2 Did you also use a DESIGN or CONSULTING firm?
 - 1 Yes
 - 2 No

If V2=1 THEN ASK:

V2a. What is the name of the DESIGN or CONSULTING firm(s) that you used?

Answer:

V3 [IF NEEDED] What was the name of the firm that conducted the ComEd sponsored study that you received?

Answer:

NET-TO-GROSS BATTERY

(LOOP THROUGH A2aa THROUGH N24 UP TO 3 TIMES, ONCE FOR EACH MEASURE)

I'd now like to ask a few questions about the Data Center Project that went through the program.

A2aa. First, I want to confirm that the measures that you installed through the program [READ appropriate category *which has been checked before the interview.*]:

- 1 Replaced existing equipment
- 2 Was added to control or work directly with existing equipment
- 3 Was part of a new construction project
- 4 Other - **Answer:**

N00 In deciding to do a project of this type, there are usually a number of reasons why it may be undertaken. In your own words, can you tell me why you decided to implement the Data Center Project?

Answer:

N1 When did you first learn about the Smart Ideas for Your Business Program? Was it BEFORE or AFTER you first began to THINK about implementing the Data Center Project?

- 1 Before
- 2 After
- 3 Other - **Answer:**

N1b Where did the idea for the Data Center Project come from? [IF NEEDED: Did your company develop the idea, was it suggested by a vendor or consultant or the program Service Provider, was it the result of an audit, was it part of a larger expansion or remodeling effort?]

Answer:

NN1bb Did you learn about the Smart Ideas for Your Business Program BEFORE or AFTER you DECIDED to implement the Data Center Project?

- 1 Before
- 2 After
- 3 Other - **Answer:**

N1c What role, if any, did firm that conducted the ComEd sponsored study play in the decision to implement the Data Center Project?

Answer:

N1d. Were there any other firms or individuals involved in the decision to implement the Data Center Project? If so, who were they?

Answer:

Next, I'm going to ask you to rate the importance of the Smart Ideas for Your Business Program as well as other factors that might have influenced your decision to implement the Data Center Project. Think of the degree of importance as being shown on a scale with equally spaced units from 0 to 10, where 0 means not at all important and 10 means extremely important. Now using this scale please rate the importance of each of the following factors in your decision to implement the measure at the time that you did. (If needed: How important in your DECISION to implement the project was...)

N3a. The age or condition of the old equipment **0 to 10 rating:**

N3b. Availability of the incentive from the Smart Ideas for Your Business Program **0 to 10 rating:**

N3bb. Why do you give it this rating? **Answer:**

N3c. Technical assistance you received from Willdan field staff **0 to 10 rating:**

N3cc. Why do you give it this rating? **Answer:**

N3d. Recommendation from an equipment vendor or contractor that helped you with the choice of the equipment (See answer to V1A for vendor or contractor used) **0 to 10 rating:**

N3e. Previous experience with this type of equipment **0 to 10 rating:**

N3f. Information from the Smart Ideas for Your Business Program or ComEd marketing materials **0 to 10 rating:**

N3ff. Why do you give it this rating? **Answer:**

N3g. A recommendation from a design or consulting engineer (See answer to V2A for design or consulting engineer used) **0 to 10 rating:**

N3i. [if study received] Technical assistance you received from the firm that conducted the ComEd sponsored study (See answer to V3 for SP used) **0 to 10 rating:**

N3ii. Why do you give it this rating? **Answer:**

N3j. Standard practice in your business/industry **0 to 10 rating:**

N3k. Endorsement or recommendation by your ComEd account manager **0 to 10 rating:**

N3kk. Why do you give it this rating? **Answer:**

N3l. Corporate policy or guidelines **0 to 10 rating:**

N3m. Payback on the investment **0 to 10 rating:**

N3n. Objective of minimizing operating cost **0 to 10 rating:**

N3o. Objective of maximizing facility reliability (5 9s) **0 to 10 rating:**

N3p. Were there any other factors we haven't discussed that were influential in your decision to implement the Data Center Project?

Answer:

[ASK N3ooIF N3o=00]

N3pp. Using the same zero to 10 scale, how would you rate the influence of this factor?

0 to 10 rating:

Thinking about this differently, I would like you to compare the importance of the Smart Ideas for Your Business Program with the importance of other factors in implementing the Data Center Project.

[READ IF (N3A, N3D, N3E, N3G, N3J, N3L, N3M, N3N, N3O, OR N3P) = 8,9,10; ELSE SKIP TO N3Q]

You just told me that the following factors were important:

[READ IN ONLY ITEMS WHERE THEY GAVE A RATING OF 8 or higher]

Program and Non-program factors

- (N3A) Age or condition of old equipment,
- (N3B) Availability of the incentive from the Smart Ideas for Your Business Program
- (N3C) Technical assistance you received from Willdan field staff
- (N3D) Equipment Vendor recommendation
- (N3E) Previous experience with this measure
- (N3G) Recommendation from a design or consulting engineer
- (N3I) [if study received] Technical assistance you received from the firm that conducted the ComEd sponsored study
- (N3J) Standard practice in your business/industry
- (N3K) Endorsement or recommendation by your ComEd account manager
- (N3L) Corporate policy or guidelines
- (N3M) Payback on investment
- (N3N) Objective of minimizing operating cost
- (N3O) Objective of maximizing facility reliability (5 9s)
- (N3P) Other factor

N3Q If you were given a TOTAL of 10 points to divide between the importance of the program and the

importance of non-program factors, in your decision to implement the Data Center Project how many points would you give to the importance of the Smart Ideas for Your Business Program?

Answer:

N3R And how many points would you give to other non-program factors? [NOTE: the total of N3r and N3s should total 10 points.]

Answer:

CONSISTENCY CHECK ON PROGRAM IMPORTANCE SCORE

[ASK IF (N3Q>6 AND ALL OF (N3b, N3c, N3f, N3i, AND N3k) = 0,1,2,3), ELSE SKIP TO N4aa]

N4 You just gave <N3Q RESPONSE> points to the importance of the program, I would interpret that to mean that the program was quite important to your decision to install this equipment. Earlier, when I asked about the importance of individual elements of the program I recorded some answers that would imply that they were not that important to you. Just to make sure I have recorded this properly, I have a couple questions to ask you.

N4a When I asked you about the importance of the availability of the Incentive from the Smart Ideas for Your Business Program , you gave a rating of ...<N3B RESPONSE> ... out of ten, indicating that the program incentive was not that important to you. Can you tell me why the incentive was not that important?

Answer:

N4b When I asked you about the importance of the technical assistance you received from Willdan field staff, you gave a rating of ...<N3C RESPONSE> ... out of ten, indicating that the technical assistance was not that important to you. Can you tell me why the information provided was not that important?

Answer:

N4d When I asked you about the importance of Information from the Smart Ideas for Your Business Program or ComEd marketing materials , you gave a rating of ...<N3F RESPONSE> ... out of ten, indicating that this information from the program or utility marketing materials was not that important to you. Can you tell me why this information was not that important?

Answer:

N4e When I asked you about the importance of the technical assistance you received from your Program Service Provider, you gave a rating of <N3I RESPONSE> ... out of ten, indicating that this technical assistance was not that important to you. Can you tell me why this technical assistance was not that important?

Answer:

[ASK IF N3Q<=3 AND ANY ONE OF (N3b, N3c, N3f, N3i, AND N3k)=8,9,10 ELSE SKIP TO N5]

N4aa You just gave <N3Q RESPONSE> points to the importance of the program. I would interpret that

to mean that the program was not very important to your decision to install this equipment. Earlier, when I asked about the importance of individual elements of the program I recorded some answers that would imply that they were very important to you. Just to make sure I understand, would you explain why the program was not very important in your decision to install this equipment? **Answer:**

Now I would like you to think about the action you would have taken with regard to the implementation of this Data Center Project if the ComEd Smart Ideas for Your Business Program had not been available.

N5 Using a likelihood scale from 0 to 10, where 0 is “Not at all likely” and 10 is “Extremely likely”, if the ComEd Smart Ideas for Your Business Program had not been available, what is the likelihood that you would have installed exactly the same measures/made the same adjustments? **Answer:**

[ASK IF N5>0, ELSE SKIP TO N8]

N7 Without the program, when do you think you would have installed this equipment? [READ]

- 1 At the same time
- 2 Earlier
- 3 Later
- 4 Never

[ASK IF N7=3]

N7a. How much later would you have implemented the Data Center Project? Would you say...

- 1 Within 6 months
- 2 more than 6 months and up to 1 year later
- 3 more than 1 year and up to 2 years later
- 4 more than 2 years and up to 3 years later
- 5 more than 3 years and up to 4 years later
- 6 more than 4 or more years later

[ASK N7b IF N7a=6]

N7b. Why do you think it would have been more than 4 years later? **Answer:**

CONSISTENCY CHECKS

[ASK N5a-d IF N3b=8,9,10 AND N5=7,8,9,10]

N5a When you answered ...<N3B RESPONSE> ... for the question about the influence of the incentive, I would interpret that to mean that the incentive was quite important to your decision to implement the Data Center Project. Then, when you answered <N5 RESPONSE> for how likely you would be to install the same equipment without the incentive, it sounds like the incentive was not very important in your installation decision.

I want to check to see if I am misunderstanding your answers or if the questions may have been unclear. Will you explain the role the incentive played in your decision to install this efficient

equipment? **Answer:**

N5b Would you like for me to change your score on the importance of the incentive that you gave a rating of <N3B RESPONSE> or change your rating on the likelihood you would implement the Data Center Project without the incentive which you gave a rating of <N5 RESPONSE> and/or we can change both if you wish?

- 1 Change importance of incentive rating
- 2 Change likelihood to install the same equipment rating
- 3 Change both
- 4 No, don't change

[ASK IF N5b=1,3]

N5c How important was... availability of the PROGRAM incentive? (IF NEEDED: in your DECISION to implement the Data Center Project) 0 to 10 likelihood rating:

[ASK IF N5b=2,3]

N5d If the utility program had not been available, what is the likelihood that you would have implemented the Data Center Project? 0 to 10 likelihood rating:

[ASK IF N3]>7]

N6 In an earlier question, you rated the importance of STANDARD PRACTICE in your industry very highly in your decision making. Could you please rate the importance of the PROGRAM, relative to this standard industry practice, in influencing your decision to implement the Data Center Project? Would you say the program was much more important, somewhat more important, equally important, somewhat less important, or much less important than the standard practice or policy?

- 1 Much more important
- 2 Somewhat more important
- 3 Equally important
- 4 Somewhat less important
- 5 Much less important

PAYBACK BATTERY [ASK N8-N10e IF N3M=6,7,8,9,10]

I'd like to find out more about the payback criteria <COMPANY> uses for its investments.

N8 What financial calculations does <COMPANY> make before proceeding with installation of energy efficiency projects like this one? **Answer:**

N9 What is the payback cut-off point <COMPANY> uses (in months) before deciding to proceed with an investment? Would you say...

- 1 0 to 6 months
- 2 7 months to 1 year
- 3 more than 1 year up to 2 years

- 4 more than 2 years up to 3 years
- 5 more than 3 years up to 5 years
- 6 Over 5 years
- 7 Not applicable

N9a. Would your answers regarding your company’s financial calculations and cut-off points for energy efficiency projects be the same for the next 2 measures <MEASURE_{x2}>, „MEASURE_{x3}> that I will be asking you about shortly?

- 1 Yes
- 2 No

N10a What was the estimated payback period for the Data Center Project, in months, WITH the incentive from the <PROGRAM>?

Answer:

N10b And what was the estimated payback period for the Data Center Project, in months, WITHOUT the incentive from the ComEd Program?

Answer:

CONSISTENCY CHECK

[ASK IF the project payback is met even without the incentive]

N10c Excluding the incentive, the Data Center Project met <COMPANY>’s financial criteria. Would you have gone ahead with it even without the incentive?

Answer:

[ASK IF the project payback is met only with the incentive yet they indicate low incentive importance in decision making.]

N10d The incentive seemed to make the difference between meeting your financial criteria and not meeting them, but you are saying that the incentive didn’t have much effect on your decision, why is that? **Answer:**

[ASK IF the project payback didn’t cause the measure to meet the financial criteria AND N3b=8,9,10]

N10e. The incentive didn’t cause the Data Center Project to meet <COMPANY>’s financial criteria, but you said that the incentive had an impact on the decision to implement the Data Center Project. Why did it have an impact? **Answer:**

[ASK ALL]

N10aa Did the incentive play an important role in moving the Data Center Project within the acceptable payback cutoff point?

- 1 Yes
- 2 No
- 88 Refused
- 99 Don't know

CORPORATE POLICY BATTERY [ASK N11-N17 IF N3L=6,7,8,9,10]

N11 Does your organization have a corporate environmental policy to reduce environmental emissions or energy use? Some examples would be to "buy green" or use sustainable approaches to business investments.

Answer:

[ASK N12-N17 IF N11=YES]

N12 What specific corporate policy, if any, influenced your decision to implement the Data Center Project through the ComEd's Smart Ideas for Your Business Program?

Answer:

N13 Did that policy cause you to adopt energy efficient measures at this facility before participating in ComEd's Smart Ideas for Your Business Program?

Answer:

N14 Had that policy caused you to adopt energy efficient measures at other facilities before participating in ComEd's Smart Ideas for Your Business Program?

Answer:

[ASK IF N13=YES OR N14=YES]

N15 Did you receive an incentive for a previous installation of energy saving equipment in your Data Center(s)?

Answer:

[ASK IF N15=YES]

N16 To the best of your ability, please describe....

- a. the amount of incentive received
- b. the approximate timing
- c. the name of the program that provided the incentive

[ASK IF N13=YES OR N14=YES]

N17 If I understand you correctly, you said that <COMPANY>'s corporate policy has caused you to install energy efficient measures previously at this and/or other facilities. I want to make sure I fully understand how this corporate policy influenced your decision versus the ComEd Smart Ideas for Your Business Program. Can you please clarify that?

Answer:

STANDARD PRACTICE BATTERY [ASK N18-N22 IF N3i=6,7,8,9,10]

N18 Approximately, how long has use of energy efficient measures in Data Centers been standard practice in your industry?

Answer:

N19 Does <COMPANY> ever deviate from the standard practice for energy efficient measures in their Data Centers?

Answer:

[ASK IF N19=YES]

N19a Please describe the conditions under which <COMPANY> deviates from this standard practice?

Answer:

N20 How did this standard practice influence your decision to implement the Data Center Project through ComEd's Smart Ideas for Your Business Program?

Answer:

N20a Could you please rate the importance of ComEd's Smart Ideas for Your Business Program, versus this standard industry practice in influencing your decision to implement the Data Center Project? Would you say ComEd's Smart Ideas for Your Business Program was...

- 1 Much more important
- 2 Somewhat more important
- 3 Equally important
- 4 Somewhat less important
- 5 Much less important

N21 What industry group or trade organization do you look to establish standard practice for your industry?

Answer:

N22 How do you and other firms in your industry receive information on updates in standard practice?

Answer:

DESIGN ASSISTANCE

N23 Who provided the most assistance in the design or specification of the Data Center Project you implemented through ComEd's Smart Ideas for Your Business Program?

Answer:

N24 Please describe the type of assistance that they provided.

Answer:

[END NTG MEASURE 1-3 LOOP]

ADDITIONAL PROJECTS

[ASK IF MSAME=1]

Our records show that <COMPANY> also received an incentive from Smart Ideas for your Business

ComEd for <NSAME> other measures in the data center [READ LIST OF MEASURES].

N26 Was it a single decision to complete all of those Data Center projects for which you received an incentive from Smart Ideas for your Business or did each project go through its own decision process?

- 1 Single Decision
- 2 Each project went through its own decision process
- 77 Other, specify
- 88 Refused
- 99 Don't know

[ASK IF FSAME=1]

Our records show that <COMPANY> also received an incentive from Smart Ideas for your Business for a <FDESC> project at <ADDRESS>.

N27 Was the decision making process for the <FDESC> project the same as for the data centers project we have been talking about?

- 1 Same decision making process
- 2 Different decision making process
- 77 Other, specify
- 88 Refused
- 99 Don't know

Spillover Questions

Thank you for discussing the new data center measures that you installed through the Smart Ideas for your Business program. Next, I would like to discuss any energy efficient equipment you might have installed OUTSIDE of the program.

SP1 Since receiving a rebate for the project(s) we just discussed, did you implement any ADDITIONAL energy efficiency measures at this facility or at your other facilities within ComEd's service territory that did NOT receive incentives through any utility or government program? **Answer:**

SP1a. Do you plan to apply for incentives for these energy efficiency measure(s) through a utility or government program in the future?

- 1 Yes
- 2 No

SP1b. Which program(s) do you plan to apply to for incentives for these measures?

77 Record VERBATIM

SP1c. Approximately when do you plan to apply for incentives through these programs?

77 Record VERBATIM

[ASK SP2-SP7i IF SP1=yes, ELSE SKIP TO S0]

SP2 What measures did you implement?

Answer:

[LOOP FOR EACH MEASURE MENTIONED]

SP5 I have a few questions about the measure that you installed. (If needed, read back measure.)

- a. Can you briefly explain why you decided to install this energy efficiency measure(s) on your own, rather than going through a utility or government incentive program?
- b. Why did you not install this measure through the ComEd Program?
- c. How many of this measure did you install?
- d. Please describe the SIZE, TYPE, and OTHER ATTRIBUTES of this measure.
- e. Please describe the EFFICIENCY of this measure.

SP5f. Was this measure specifically recommended by a program related audit, report or program technical specialist?

Answer:

SP5g. How significant was your experience in the ComEd Program in your decision to implement this Measure, using a scale of 0 to 10, where 0 is not at all significant and 10 is extremely significant? **0 to 10 rating:**

SP5h. Can you explain specifically how your experience with the Smart Ideas for your Business program influenced your decision to install this additional high efficiency measure(s)?

Answer:

SP5i. If you had not participated in the Smart Ideas for your Business program, how likely is it that your organization would still have implemented this measure, using a 0 to 10, scale where 0 means you definitely WOULD NOT have implemented this measure and 10 means you definitely WOULD have implemented this measure? [SCALE 0-10; 88=Refused; 99=Don't Know] **0 to 10 rating:**

[END LOOP FOR EACH MEASURE MENTIONED]

Process Questions

I'd now like to ask you a few general questions about your participation in the Smart Ideas for Your Business program.

P1 What do you believe the Program's primary strengths are?

Answer:

P2 What concerns do you have about the Program?

Answer:

P3 Do you have any suggestions for ways to improve the program?

Answer:

END: That concludes the survey. On behalf of ComEd, thank you very much for your time.

7.4.2 Technical Service Providers

Technical Services Provider NTG Survey Instrument – for ComEd Custom Programs – Data Center version – PY7

Introduction

AA1 Hello, this is ____ from Itron calling on behalf of ComEd. THIS IS NOT A SALES CALL. I am calling about your firm's recent involvement conducting a technical assessment study sponsored by ComEd for ...<%CUSTOMER>'s... through ... the ComEd Smart Ideas for Your Business PROGRAM ... on approximately...<%STUDY_DATE>... Our records indicate that ...<%CONTACT>... would be the person most knowledgeable about this. Is he/she available?

- 1 Yes AA5
- 2 No AA2
- 88 Refused Thank and Terminate
- 99 Don't know Thank and Terminate

AA2 Who would be the person most knowledgeable about your firm's involvement conducting a technical assessment study sponsored by ComEd for ...<%CUSTOMER>'s... through ... the ComEd Smart Ideas for Your Business PROGRAM ... on approximately...<%STUDY_DATE>?

- 1 Record name AA3
- 88 Refused Thank and Terminate
- 99 Don't know Thank and Terminate

AA3 May I speak with him/her?

- 1 Yes AA4
- 2 No (not available right now) SCHEDULE APPOINTMENT

AA4 Hello, this is ____ from Itron calling on behalf of ComEd...THIS IS NOT A SALES CALL. I was told that you are the person most knowledgeable about your firm's involvement conducting a technical assessment study sponsored by ComEd for ...<%CUSTOMER>'s... through ... the ComEd Smart Ideas for Your Business PROGRAM ... on approximately...<%STUDY_DATE>. __Is this correct?

- 1 Yes A2
- 2 No, there is someone else (RECORD NAME AND ASK TO BE TRANSFERRED) AA5
- 3 No and I don't know who to refer you to Thank and Terminate
- 88 Refused Thank and Terminate
- 99 Don't know Thank and Terminate

AA5 Am I speaking with ..<%BETTER_CONTACT> ...the representative of your company that worked with ...<%CUSTOMER>... during the time that your firm conducted a technical assessment study sponsored by ComEd? This study was conducted on approximately... <%STUDY_DATE>.

- 1 Yes A2
- 2 Yes, but we need to make an appointment. Reschedule appt.

- 3 No but I will give you to the correct person. AA4
- 88 Refused Thank and Terminate
- 99 Don't know Thank and Terminate

Before we start, I would like to inform you that for quality control purposes, this call may be monitored by my supervisor. For the sake of expediency, we will be recording this interview.

A1 <%CUSTOMER>... has indicated that your firm conducted a technical assessment study sponsored by ComEd in which you recommended that they install <MEASURE>. ___Is this correct?...

- 1 Yes A2
- 2 No Thank and Terminate
- 88 Refused Thank and Terminate
- 99 Don't know Thank and Terminate

[READ] For the sake of expediency, during the balance of the interview, we will be referring to the <%PROGRAM> as the PROGRAM and we will be referring to the installation of ... <%MEASURE> as the MEASURE. I will repeat this from time to time during the interview as your organization may have installed more than one measure through more than one program.

I am going to ask you to rate the importance of the ComEd Smart Ideas for Your Business in influencing your decision to recommend this <%MEASURE> to ...<%CUSTOMER>.. Think of the degree of importance as being shown on a scale with equally spaced units from 0 to 10, where 0 means not at all important and 10 means very important, so that an importance rating of 8 shows twice as much influence as a rating of 4.

V3 Using this 0 to 10 likelihood scale where 0 is NOT AT ALL LIKELY and 10 is EXTREMELY LIKELY, if the ComEd Smart Ideas for Your Business PROGRAM, including incentives as well as program services and information, had not been available, what is the likelihood that you would have recommended this specific <%MEASURE> to ...<%CUSTOMER>?

- # Record 0 to 10 score (_____) V4
- 88 Refused V4
- 99 Don't know V4

V4 Approximately, in what percent of sales situations did you recommend this <%MEASURE> before you became involved with the ComEd Smart Ideas for Your Business PROGRAM?

- % Record PERCENTAGE V5
- 88 Refused V5
- 99 Don't know V5

V5 And approximately in what percent of sales situations do you recommend this <%MEASURE> now that you have worked with the ComEd Smart Ideas for Your Business PROGRAM?

- % Record PERCENTAGE V6a
- 88 Refused V6a

99 Don't know V6a

V6a In what other ways has the ComEd Smart Ideas for Your Business PROGRAM influenced your recommendation that a customer install this <%MEASURE>?

- 1 Record FIRST mention V6aa
- 2 Record SECOND mention V6aa
- 3 Record THIRD mention V6aa
- 4 No other way V7a
- 88 Refused v7a
- 99 Don't know V7a

IF V6a not '.' THEN ASK, ELSE V6ab

V6aa Using a 0 to 10 scale, how important was <%FIRST_MENTION> in your recommendation that a customer install this <%MEASURE>?

- # Record 0 to 10 score (_____) V6b
- 88 Refused V6b
- 99 Don't know V6b

IF V6a not '.' THEN ASK, ELSE V6ac

V6ab Using a 0 to 10 scale, how important was <% SECOND_MENTION> in your recommendation that a customer install this <%MEASURE>?

- # Record 0 to 10 score (_____) V6b
- 88 Refused V6b
- 99 Don't know V6b

IF V6a not '.', THEN ASK, ELSE V7a

V6ac Using a 0 to 10 scale, how important was <% THIRD_MENTION> in your recommendation that a customer install this <%MEASURE>?

- # Record 0 to 10 score (_____) V6b
- 88 Refused V6b
- 99 Don't know V6b

V7b And how important was the information provided by the ComEd website in your recommendation that a customer install this MEASURE?

- # Record 0 to 10 score (_____) V7c
- 88 Refused V7c
- 99 Don't know V7c

V7c And how important was your firm's past participation in an incentive or audit program sponsored by ComEd in your recommendation that a customer install this MEASURE?

- # Record 0 to 10 score (_____) V8
- 88 Refused V8
- 99 Don't know V8

IF VENDOR ALSO STOCKS AND SELLS PROGRAM QUALIFYING <%MEASURE> THEN ASK. ELSE SKIP TO V9.

V8 Approximately, what percentage of your sales over the last 12 months of this...<%MEASURE > installed in ComEd 's service territory are energy efficient models...that qualify for incentives from the program?

- % Record PERCENTAGE V9
- 88 Refused V9
- 99 Don't know V9

V9 In what percent of sales situations do you encourage your customers in ComEd 's service territory to purchase this program qualifying ...<%MEASURE >...?

- % Record PERCENTAGE V9a
- 88 Refused V10
- 99 Don't know V10

IF V9 < 100% THEN ASK. ELSE V10.

V9a In what situations do you NOT encourage your customers to purchase this program qualifying ...<%MEASURE >...? And why is that?

- 77 RECORD VERBATIM V10
- 88 Refused V10
- 99 Don't know V10

V10 Of those installations of ...<%MEASURE >... in ComEd 's service territory that qualify for incentives, approximately what percentage do not receive the incentive?

- % Record PERCENTAGE V11
- 88 Refused V12
- 99 Don't know V12

IF V10 >> 0;

V11 Why do you think they do not receive the incentive?

- 77 RECORD VERBATIM V12
- 88 Refused V12
- 99 Don't know V12

V12 Do you also sell ...<%MEASURE> in areas where customers do not have access to incentives for energy efficient equipment?

- 1 Yes V13
- 2 No V14
- 88 Refused V14
- 99 Don't know V14

IF VENDOR ALSO STOCKS AND SELLS PROGRAM QUALIFYING <%MEASURE> THEN ASK. ELSE SKIP TO V15.

V13 About what percent of your sales of program-qualifying...<%MEASURE > ... are represented by

these areas where incentives are not offered?

- % Record PERCENTAGE V14
- 88 Refused V14
- 99 Don't know V14

V14 Have you changed your stocking practices for <%MEASURE> as a result of ComEd 's Program?
 [IF NEEDED: BY STOCKING PRACTICES, I MEAN THE TYPES OF EQUIPMENT YOU SUPPLY AND
 SELL IN ComEd 's SERVICE TERRITORY.]

- 1 Yes V15
- 2 No V15
- 88 Refused V15
- 99 Don't know V15

IF V12=1

V15 Do you promote energy efficient equipment, such as <%MEASURE>, equally in areas with and
 without incentives??

- 1 Yes V16
- 2 No V16
- 88 Refused V16
- 99 Don't know V16

V16 Do you know of any other vendors that worked with ...<%CUSTOMER>... during their
 implementation and/or installation of ...<%MEASURE>, for example engineers or designers?

- 1 Yes V16a
- 2 No V17
- 88 Refused V17
- 99 Don't know V17

V16a Do you have their business name?

- 77 RECORD Business name and contact's name and phone number(s) V17
- 88 Refused V17
- 99 Don't know V17

V17 [IF NEEDED] And finally, for verification purposes only, may I please have your first name?

- 77 RECORD VERBATIM END

END Those are all the questions I have for you today. Thank you very much for your time.

END OF SURVEY