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ComEd Agriculture Energy Efficiency IPA Program Impact Evaluation Report

Energy Efficiency / Demand Response Plan: Plan Year 9 (PY9)

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FINAL

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Prepared by:

Emily Merchant
Navigant Consulting, Inc.

Jamie Falk
Navigant Consulting, Inc.

www.navigant.com

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Submitted to:

ComEd
Three Lincoln Centre
Oakbrook Terrace, IL 60181

Submitted by:

Navigant Consulting, Inc.
150 N. Riverside, Suite 2100
Chicago, IL 60606

Contact:

Randy Gunn, Managing Director	Jeff Erickson, Director	Patricia Plympton, Associate Director
312.583.5714	608.497.2322	202.253.9356
Randy.Gunn@Navigant.com	Jeff.Erickson@Navigant.Com	Patricia.Plympton@navigant.com

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1. INTRODUCTION

This report presents the results of the impact evaluation of ComEd's PY9 Agriculture Energy Efficiency (AgEE) IPA Program. It presents a summary of the energy and demand impacts for the total program, as well as by the relevant measure and program structure details. The appendix presents the impact analysis methodology. PY9 covers June 1, 2016 through December 31, 2017.

2. PROGRAM DESCRIPTION

The AgEE Program achieved energy savings from residential and small commercial agriculture customers by focusing within the difficult to reach small to medium agriculture market. The primary focus of the program was on the dairy, greenhouse, aquaculture, hog, and poultry farms, as well as other agriculture operations such as urban agriculture. The program was implemented by GDS Associates (GDS). Per the AgEE's Scope of Work[1], the program included the following:

1. AgEE energy advisors reached out to small to medium agriculture customers by engaging with agriculture producers in ComEd's service territory;
2. AgEE energy advisors identified individual customer needs and energy consumption profiles to provide an initial energy audit and determine whether the best service could be provided through technical support on a specific energy consuming system or through an agriculture energy management plan (AgEMP); the decision to complete an AgEMP was primarily dependent on whether the individual farm was willing to pay for the AgEMP or willing to participate in the NRCS-EQIP program for support of the AgEMP;
3. Based on findings from the initial energy audit, the AgEE energy advisor determined the optimal program participation level and whether it made sense to leverage funding from NRCS and USDA for installing energy efficient equipment;
4. If the farmer chose to participate in the AgEE Program, the AgEE energy advisor discussed potential efficiency opportunities with the farmer and then, if needed, completed a site visit and, if needed/desired an energy assessment or an agriculture energy management plan;
5. The AgEE energy advisor discussed the findings from the energy assessment with the farmer and established a plan for implementing the projects that the farmer was interested in pursuing;
6. Based on the projects the farmer was interested in pursuing, the AgEE energy advisor leveraged their existing relationship with agriculture equipment manufacturers, dealers, suppliers, and agriculture producer associations to implement the projects.

The program had 98 participants in PY9 and distributed 160 measures as shown in Table 2-1 and Figure 2-1.

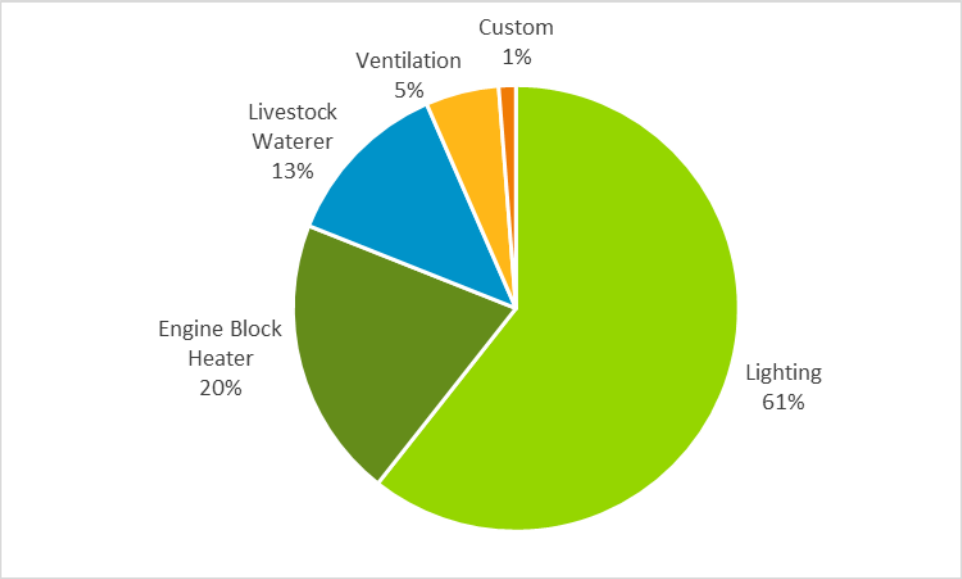
Table 2-1. PY9 Volumetric Findings Detail

Participation	Total PY9 Count
Participants	98
Total Measures	160
Number of Units	564
Number of Projects	110

Source: ComEd tracking data and Navigant team analysis.

[1] Scope of Work - Agriculture MASTER draft 160428 submitted.docx, Exhibit A: Scope of Work

Figure 2-1: Number of Measures Installed by Type



Source: ComEd tracking data and Navigant team analysis.

3. Program Savings

Table 3-1 summarizes the incremental energy and demand savings that the AgEE Program achieved in PY9. The implementation contractor did not report demand or peak demand savings, therefore the verified gross demand and peak demand savings included below are for informational purposes only.

Table 3-1. PY9 Total Annual Incremental Savings

Savings Category	Energy Savings (kWh)	Demand Savings (kW)	Peak Demand Savings (kW)
Ex Ante Gross Savings	709,289	NR	NR
Program Gross Realization Rate	99%	N/A	N/A
Verified Gross Savings	700,073	134.36	108.21
Program Net-to-Gross Ratio (NTGR)	0.90	0.90	0.90
Verified Net Savings	630,066	120.92	97.39

*NR = Not Reported, N/A = Not Applicable
Source: ComEd tracking data and Navigant team analysis.

4. Program Savings by Measure

During PY9 there were 160 measures incentivized across multiple different end use types and research categories. Lighting and engine block heater timer measures contributed the most savings. Navigant categorized the incentivized measures in PY9 across the following five end use types: custom, engine block heater, lighting, livestock waterer, and ventilation. Apart from custom end uses, all of the end uses are comprised of measures that used deemed savings numbers from Version 5.0 of the Illinois Technical Reference Manual (TRM). Table 4-1 below provides a summary of the energy savings, net-to-gross ratio (NTGR), and effective useful life (EUL) by end use type and research category.

The total verified gross energy savings in Table 4-1 are not equal to the total verified gross energy savings in Table 3-1 due to the difference between how Navigant rolled up the results at the program level and at the measure level. The measure level findings in Table 4-1 are meant to be for informational purposes only because Navigant sampled at the program level and not at the measure level. Navigant did not sample all the end use type and research category combinations in the database, therefore Navigant applied the program level realization rate to all of the end use type and research category combinations that Navigant did not sample, instead of applying a realization rate specific to that research category and end use type combination. For example, Navigant did not sample a measure under the end use type Lighting and research category LED Lamps, therefore Navigant applied the program level realization rate to those measures. Navigant did not have to use this approach for the program level roll-up because Navigant sampled measures from each of the strata.

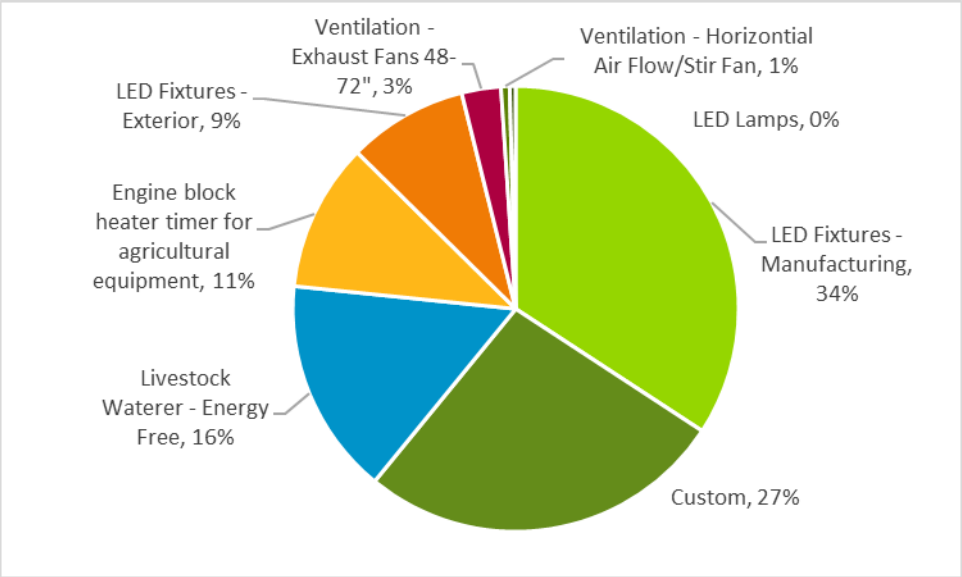
Table 4-1. PY9 Energy Savings by Measure

End Use Type	Research Category	Ex Ante Gross Savings (kWh)	Verified Gross Realization Rate	Verified Gross Savings (kWh)	NTGR *	Verified Net Savings (kWh)	Technical Measure Life	Persistence	Effective Useful Life (EUL)†
Custom	Custom	189,194	97%	182,775	0.90	164,497	N/A	N/A	13
Engine Block Heater	Engine block heater timer for agricultural equipment	76,411	100%	76,360	0.90	68,724	N/A	N/A	3
Lighting	LED Fixtures - Exterior	61,642	100%	61,626	0.90	55,464	N/A	N/A	10
Lighting	LED Fixtures - Manufacturing	242,813	99%	240,465	0.90	216,418	N/A	N/A	11
Lighting	LED Lamps	3,033	99%	2,994	0.90	2,695	N/A	N/A	11
Livestock Waterer	Livestock Waterer - Energy Free	111,533	100%	111,500	0.90	100,350	N/A	N/A	10
Ventilation	Ventilation - Exhaust Fans 48-72"	20,196	99%	19,935	0.90	17,941	N/A	N/A	7
Ventilation	Ventilation - Horizontal Air Flow/Stir Fan	4,467	100%	4,464	0.90	4,018	N/A	N/A	7
	Total ‡	709,289	99%	700,118	0.90	630,106			

* A deemed value. Source: ComEd_NTG_History_and_PY9_Recommendations_2016-02-26_Final.xlsx, which is to be found on the IL SAG web site here: http://ilsag.info/net-to-gross-framework.html.
† EUL is a combination of technical measure life and persistence.
‡ Total may not sum exactly due to rounding.
Source: ComEd tracking data and Navigant team analysis.

Figure 4-1 below provides a breakdown of the ex ante gross energy savings by research category. As shown below, LED fixtures and custom measures make up a majority of the savings in PY9.

Figure 4-1: Ex Ante Gross Energy Savings by Research Category



Source: ComEd tracking data and Navigant team analysis.

Table 4-2 summarizes the verified demand savings by measure and Table 4-3 summarizes the verified peak demand savings by measure. As mentioned previously, the implementation contractor did not report demand or peak demand savings, therefore the verified gross demand and peak demand savings included below are for informational purposes only.

Table 4-2. PY9 Demand Savings by Measure

End Use Type	Research Category	Ex Ante Gross Demand Reduction (kW)	Verified Gross Realization Rate	Verified Gross Demand Reduction (kW)	NTGR*	Verified Net Demand Reduction (kW)
Custom	Custom	NR	N/A	24.46	0.90	22.01
Engine Block Heater	Engine block heater timer for agricultural equipment	NR	N/A	0.00	0.90	0.00
Lighting	LED Fixtures - Exterior	NR	N/A	15.95	0.90	14.35
Lighting	LED Fixtures - Manufacturing	NR	N/A	52.79	0.90	47.51
Lighting	LED Lamps	NR	N/A	0.87	0.90	0.79
Livestock Waterer	Livestock Waterer - Energy Free	NR	N/A	36.75	0.90	33.08
Ventilation	Ventilation - Exhaust Fans 48-72"	NR	N/A	2.12	0.90	1.91
Ventilation	Ventilation - Horizontal Air Flow/Stir Fan	NR	N/A	1.42	0.90	1.27
	Total ‡	NR	N/A	134.36	0.90	120.92

* A deemed value. Source: ComEd_NTG_History_and_PY9_Recommendations_2016-02-26_Final.xlsx, which is to be found on the IL SAG web site here: http://ilsag.info/net-to-gross-framework.html.

‡ Total may not sum exactly due to rounding.

Source: ComEd tracking data and Navigant team analysis.

Table 4-3. PY9 Peak Demand Savings by Measure

End Use Type	Research Category	Ex Ante Gross Peak Demand Reduction (kW)	Verified Gross Realization Rate	Verified Gross Peak Demand Reduction (kW)	NTGR*	Verified Net Peak Demand Reduction (kW)
Custom	Custom	NR	N/A	24.46	0.90	22.01
Engine Block Heater	Engine block heater timer for agricultural equipment	NR	N/A	0.00	0.90	0.00
Lighting	LED Fixtures - Exterior	NR	N/A	0.00	0.90	0.00
Lighting	LED Fixtures - Manufacturing	NR	N/A	42.76	0.90	38.48
Lighting	LED Lamps	NR	N/A	0.71	0.90	0.64
Livestock Waterer	Livestock Waterer - Energy Free	NR	N/A	36.75	0.90	33.08
Ventilation	Ventilation - Exhaust Fans 48-72"	NR	N/A	2.12	0.90	1.91
Ventilation	Ventilation - Horizontal Air Flow/Stir Fan	NR	N/A	1.42	0.90	1.27
	Total ‡	NR	N/A	108.21	0.90	97.39

* A deemed value. Source: ComEd_NTG_History_and_PY9_Recommendations_2016-02-26_Final.xlsx, which is to be found on the IL SAG web site here: http://ilsag.info/net-to-gross-framework.html.

‡ Total may not sum exactly due to rounding.

Source: ComEd tracking data and Navigant team analysis.

5. Impact Analysis Findings and Recommendations

5.1 Impact Parameter Estimates

The measures incentivized through the AgEE Program in PY9 are categorized into prescriptive and custom measures. This section discusses the parameters used to calculate the gross energy savings for the prescriptive and custom measures incentivized in PY9. Approximately 73 percent of the reported

gross energy savings in PY9 were from prescriptive measures and 27 percent were from custom measures. The prescriptive measures relied on deemed savings assumptions in Version 5.0 of the Illinois TRM and the custom measures relied on custom calculations.

5.1.1 Prescriptive Measures

The prescriptive measures leveraged deemed savings assumptions in Section 4.1: Agriculture End Use and Section 4.5: Lighting End Use in Version 5.0 of the Illinois TRM. Many of the prescriptive measures that Navigant sampled in PY9 leveraged a spreadsheet called "*ComEd Ag Measure List Spreadsheet for claiming savings 3-2017.xls*." The measure list spreadsheet is a truncated excel version of the Illinois TRM for all the prescriptive measures incentivized in the PY9 AgEE Program. The per unit savings values in the measure list spreadsheet aligned with the TRM for all measures except for lighting, which is discussed in detail in the lighting section. The per unit savings values in the tracking database were slightly different than the TRM and the measure database spreadsheet, likely due to a rounding issue.

High Speed Fans
The deemed savings for high speeds fans uses the following equations below:

kWh = kWh/unit x Number of Units
kW = kW/unit x Number of Units

The deemed kWh/unit and kW/unit savings values for high speed fans in the Illinois TRM are shown in Table 5-1 below. The kWh/unit savings in the measure list spreadsheet align with the kWh/unit savings in the Illinois TRM. There was a slight discrepancy between the kWh/unit savings in the measure list spreadsheet and the tracking database. For example, Project ID 09PY00002 had a measure that involved installing 36- to 47-inch horizontal airflow flow fans and the per unit savings in the tracking database is 372.22 kWh/fan, whereas the savings in the TRM and the measure list spreadsheet are 372 kWh/fan. The reason for the discrepancy is likely a rounding error. The kW/unit savings in the measure list spreadsheet align with the kW/unit savings in the Illinois TRM. Navigant assumed that the demand savings were equal to the peak demand savings since the Illinois TRM only includes peak demand savings. This is a conservative approach since the demand savings are likely slightly higher than the peak demand savings.

Table 5-1. Per Unit Savings for High Speed Fans

Diameter of Fan (inches)	kWh/unit	kW/unit
24 to 35	372	0.118
36 to 47	625	0.198
48 to 71	1,122	0.356

Source: Version 5.0 of the Illinois TRM

Navigant calculated the EUL by using the measure life listed in the TRM, which is seven years.

Engine Block Heater Timers
The deemed savings for engine block heater timers uses the following equation below:

kWh = kWh/unit x Number of Units

The per kWh/unit is listed as 664 in both the Illinois TRM and the measure list spreadsheet. The kWh/unit in the tracking database is listed as 664.44, it is unclear why there is a minor discrepancy. An example of a project with this discrepancy is Project ID 09PY00028.

There are no peak demand savings in the Illinois TRM for this measure because engine block heater timers operate in the winter, therefore the summer peak demand savings are zero. In addition, there is not a reduction in the load due to the timer, therefore the demand savings are equal to zero.[2]

Navigant calculated the EUL by using the measure life listed in the TRM, which is three years.

Livestock Waterers
The deemed savings for livestock waterers uses the following equations below:

kWh = kWh/unit x Number of Units
kW = kW/unit x Number of Units

The kWh/unit value is listed as 1,592.85 in both the Illinois TRM and the measure list spreadsheet. The kWh/unit in the tracking database is listed as 1,593.33, it is unclear why there is a minor discrepancy. An example of a project with this discrepancy is Project ID 09PY00034.

The kW/unit value is listed as 0.525 in both the Illinois TRM and the measure list spreadsheet. Navigant assumed that the demand savings were equal to the peak demand savings since the Illinois TRM only includes peak demand savings. This is a conservative approach since the demand savings are likely slightly higher than the peak demand savings.

Navigant calculated the EUL by using the measure life listed in the TRM, which is 10 years.

Lighting
The deemed savings for lighting measures uses the following equations below:

$kWh = (Watts_{base} – Watt_{EE}) \times Fixture\ Annual\ Operating\ Hours \times WHF_e \times ISR \times 1kW/1000\ W$
$kW_{demand} = (Watts_{base} – Watt_{EE}) \times WHF_d \times ISR \times 1kW/1000\ W$
$kW_{peak\ demand} = (Watts_{base} – Watt_{EE}) \times WHF_d \times CF \times ISR \times 1kW/1000\ W$

Where:

- $Watts_{base}$ *= The wattage of the baseline fixture*
- $Watts_{EE}$ *= The wattage of the efficient fixture*
- *Fixture Annual Operating Hours = The annual hours of use for the fixture in Section 4.5 of the Illinois TRM*
- WHF_e *= The waste heat cooling energy factor in Section 4.5 of the Illinois TRM*
- WHF_d *= The waste heat cooling demand factor in Section 4.5 of the Illinois TRM*
- *CF = The coincidence factor in Section 4.5 of the Illinois TRM*
- *ISR = The in-service rate, which is equal to 1*

All of the lighting measures that Navigant sampled were installed in either the building type Manufacturing Facility or Exterior. The inputs in the measure list spreadsheet agree with the TRM, except for the waste heat cooling energy factor, waste heat cooling demand factor, and the coincidence factor for the building type Manufacturing Facility. Table 5-2 below provides a summary of the discrepancies between the lighting input values in the Illinois TRM and the measure list spreadsheet for the building type Manufacturing Facility. It is unclear why there are discrepancies.

[2] https://www.tva.gov/file_source/TVA/Site%20Content/Energy/EnergyRight%20Solutions/TVA%20TRM%202015%20Version%203.pdf

Table 5-2. Discrepancies Between Lighting Inputs in the Measure List Spreadsheet and the TRM

Source	WHF_e	WHF_d	CF
Measure List Spreadsheet	1.03	1.38	0.89
Table in Section 4.5 of Version 5.0 of the Illinois TRM	1.02	1.04	0.81

Source: Version 5.0 of Illinois TRM

Navigant calculated the EUL by taking the equipment lifetime stated in the manufacturer's specification sheets for the lighting fixtures and dividing by the deemed hours of use in the Illinois TRM for the building type. The EUL was capped at 15 years per guidance in Section 4.5.4 in the Illinois TRM.

5.1.2 Custom Measures

The custom measures incentivized in PY9 used a combination of custom spreadsheets and the GDS Dairy Energy Tool. All of the natural ventilation measures used the same spreadsheet template to calculate the savings, which showed the assumptions for each input to the calculation (e.g., kW/fan, quantity, run hours/year, annual kWh use). Examples of measures calculated in the GDS Dairy Energy Tool include vacuum pumps, plate coolers, receiver jar milk pumps, and ventilation fans. In most cases the custom measures were only supported by calculation spreadsheets and were not supported by invoices, specification sheets, or applications, making verification of the inputs difficult or impossible.

Navigant estimated the demand savings for the custom measures in one of two ways, both of which are likely conservative. When hours of use data was available, demand savings were assumed to be the annual energy savings divided by the annual hours of use. When hours of use data was not available, Navigant used a conservative approach and assumed that the demand savings were spread equally throughout the year, therefore the demand savings were equal to the energy savings divided by 8,760. With more detailed data, Navigant could make a more accurate estimate of the demand savings, but without the data available, it was not possible to be more accurate.

Navigant calculated the EUL for custom measures by using a combination of manufacturer specification sheets and reported run hours of the equipment. For example, if the manufacturer specification sheets for a ventilation fan states that the fan will run for 50,000 hours and the customer runs the fans for 5,000 hours per year then Navigant calculated the EUL as 10 years.

5.2 Other Impact Findings and Recommendations

The list below includes the findings and recommendations from Navigant's review of the sampled PY9 projects.

Finding 1: There was a slight discrepancy in the inputs in the measure list spreadsheet and the TRM for the lighting measures.

> **Recommendation 1**: Ensure consistency between the measure list spreadsheet and the TRM. If there is a reason for the discrepancy between the two data sources, state the reasoning in the project documentation.

Finding 2: There was a slight discrepancy between the reported gross energy savings per unit in the tracking database and the savings per unit values in the TRM and the measure list spreadsheet.[3]

[3] Navigant calculated the reported gross energy savings per unit by taking the reported gross energy savings and dividing by the reported units.

Recommendation 2: Ensure that savings are not rounded when they are entered into the tracking database. If there is a reason for the discrepancy between the data sources then state the reasoning in the project documentation.

Finding 3: The project files for many of the prescriptive and custom measures were lacking. At times projects would only have an application and an invoice or only a calculation spreadsheet. For example, the project files for the engine block heater timer measures initially only had a producers list and no other supporting documentation, such as invoices or specification sheets. After further investigation, Navigant determined that the reason for this was because GDS purchased the timers in advance and then distributed the timers to producers during site visits if the energy advisor determined that the farm could use them. ComEd shared the order receipt with Navigant, which confirmed the purchase of the engine block heater timers.

Recommendation 3: Best practice is to include the following information in the project files for all measures incentivized as part of the program: application, invoices, specification sheets, unlocked calculation spreadsheets with assumptions clearly marked, and any other documentation to support the savings calculations.

For situations like the engine block heater timer measure, Navigant recommendations that the implementation contractor include a note in the project files summarizing why the measure has limited documentation as compared to typical measures incentivized by the program.

Finding 4: A few of the custom measures had locked spreadsheets. Navigant obtained unlocked spreadsheets upon request, but the spreadsheets still had some restrictions.

Recommendation 4: Provide unlocked versions of the spreadsheet so that the savings calculations and assumptions are transparent.

Finding 5: Navigant verified slightly different hours of use for the custom natural ventilation measures. Navigant relied on TMY3 data to update the hours of use.

Recommendation 5: If primary data from the site contact is not accessible, rely on secondary data sources such as TMY3 data.

6. Appendix 1. Impact Analysis Methodology

This section discusses the sampling approach, impact analysis methodology, and statistical roll-up that Navigant used for the PY9 AgEE evaluation.

Sampling Approach

Due to the significant difference between the savings calculations for the custom and prescriptive measures, Navigant separated custom and prescriptive measures into their own strata. The sampling unit that Navigant used was the ComEd Account Number combined with the project type (prescriptive or custom). For example, if an account number had both custom and prescriptive projects associated with it then that account number showed up twice in Navigant's sample frame. If an account number had multiple prescriptive projects associated with it then the account number showed up once in Navigant's sample frame. Since there were so few custom projects in PY9, Navigant sampled a census of all custom projects incentivized in PY9. Navigant categorized the prescriptive projects using four strata: large, medium, small, and tiny. Navigant did not sample any projects in the tiny strata since they made up less than two percent of the reported savings in PY9. Navigant designed the sample to achieve 90 percent confidence with 10 percent precision at the program level with a two-sided confidence interval and a finite population correction factor applied. Table 6-1 below provides a summary of the population size and the sample size across each of the strata. The unit is the ComEd Account Number combined with the project type (custom or prescriptive)

Table 6-1. Sample Design

Strata	Population Size	Sample Size
Custom	3	3
Prescriptive – Large	1	1
Prescriptive – Medium	8	3
Prescriptive – Small	72	3
Prescriptive – Tiny	17	0
Total	101	10

Source: ComEd tracking data and Navigant team analysis.

Impact Analysis Methodology

Navigant conducted a desk review of the sampled projects to ensure that the savings in the tracking database were supported by the project documentation. Navigant reviewed all the available information in the project files, such as the application, invoices, and calculation spreadsheets. For the prescriptive measures, Navigant cross-checked the input values in the measure list spreadsheet with the values in the Illinois TRM to ensure that they aligned. For the custom measures, Navigant reviewed the custom analysis spreadsheets and compared the assumptions against secondary data, such as other state TRMs and research studies. Navigant defaulted to the same assumptions used by the implementation contractor, unless the project documentation or secondary data review resulted in a more accurate assumption.

Statistical Roll-up

Navigant extrapolated the findings from the sampled projects to the entire population of projects incentivized in PY9, which resulted in the values shown in Table 6-2 below. The reason why the gross energy savings realization rate is less than one is due to a slight difference between the per unit savings values in the TRM and the tracking database, detailed in Section 5, as well as minor adjustments to the inputs for a few of the custom projects. The primary change that Navigant made to the custom projects was updating the hours of use for the natural ventilation fan measures based on TMY3 data for when the outside air temperature is greater than 50 degrees Fahrenheit. The implementation contractor did not report demand or peak demand savings, therefore the verified gross demand and peak demand savings included below are for informational purposes only.

Table 6-2. Results

Savings Category	Metric	Value
Energy (kWh)	Reported Gross Energy Savings (kWh)	709,289
	Verified Gross Energy Savings (kWh)	700,073
	Gross Energy Savings Realization Rate	0.99
	Program Net-to-Gross Ratio	0.90
	Verified Net Energy Savings (kWh)	630,066
	Standard Error (kWh)	7,963
	Relative Precision	2.08
Demand (kW)	Reported Gross Demand Savings (kWh)	NR
	Verified Gross Demand Savings (kWh)	134.36
	Gross Demand Savings Realization Rate	N/A
	Program Net-to-Gross Ratio	0.90
	Verified Net Demand Savings (kWh)	120.92
	Standard Error (kWh)	N/A
	Relative Precision	N/A
Peak Demand (kW)	Reported Gross Peak Demand Savings (kWh)	NR
	Verified Gross Peak Demand Savings (kWh)	108.21
	Gross Savings Realization Rate	N/A
	Program Net-to-Gross Ratio	0.90
	Verified Net Peak Demand Savings (kWh)	97.39
	Standard Error (kWh)	N/A
	Relative Precision	N/A

Source: ComEd tracking data and Navigant team analysis.

7. Appendix 2. Impact Analysis Detail

Navigant found the following two discrepancies when reviewing the prescriptive measures incentivized in PY9:

Difference between per unit savings in the tracking database and the Illinois TRM. The per unit savings in the tracking database were off by a few decimals from the values in the TRM for a few of the measures. For example, the per unit savings for engine block heaters is listed as 664 kWh/unit in the TRM and the tracking database lists the savings as 664.44 kWh/unit.

Difference between lighting inputs in the measure list spreadsheet and the Illinois TRM. Navigant found a minor difference between the lighting input assumptions in the measure list spreadsheet and the Illinois TRM. The inputs that affected the analysis were the WHF_e, WHF_d, and CF for the building type Manufacturing Facility.

8. Appendix 3. Total Resource Cost Detail

Table 8-1, the Total Resource Cost (TRC) variable table, only includes cost-effectiveness analysis inputs available at the time of finalizing the PY9 Agriculture EE impact evaluation report. Additional required cost data (e.g., measure costs, program level incentive and non-incentive costs) are not included in this table and will be provided to evaluation later. EUL information in this table is subject to change and is not final.

Table 8-1. Total Resource Cost Savings Summary

End Use Type	Research Category	Units	Quantity	Effective Useful Life	Ex Ante Gross Savings (kWh)	Ex Ante Gross Peak Demand Reduction (kW)	Verified Gross Savings (kWh)	Verified Gross Peak Demand Reduction (kW)
Custom	Custom	Varied	7	13	189,194	NR	182,775	24.46
Engine Block Hea	Engine block heater timer for agri	Timer	115	3	76,411	NR	76,360	-
Lighting	LED Fixtures - Exterior	Fixture	72	10	61,642	NR	61,626	-
Lighting	LED Fixtures - Manufacturing	Fixture	260	11	242,813	NR	240,465	42.76
Lighting	LED Lamps	Fixture	10	11	3,033	NR	2,994	0.71
Livestock Waterer	Livestock Waterer - Energy Free	Waterer	70	10	111,533	NR	111,500	36.75
Ventilation	Ventilation - Exhaust Fans 48-72	Fan	18	7	20,196	NR	19,935	2.12
Ventilation	Ventilation - Horizontial Air Flow/S	Fan	12	7	4,467	NR	4,464	1.42

† EUL is a combination of technical measure life and persistence.
Source: ComEd tracking data and Navigant team analysis.