



# C&I Custom Impact Evaluation Report

**Energy Efficiency Plan: Plan Year 6 (PY6)  
(6/1/2016-12/31/2017)**

**Presented to  
Peoples Gas and North Shore Gas**

**FINAL**

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## 1. INTRODUCTION

This report presents the impact evaluation results of the Peoples Gas (PGL) and North Shore Gas (NSG) Program Year 6 (PY6) C&I Custom Program. For each utility, the report includes summaries of the energy impacts by relevant measure, program structure, and for the total program. The appendix contains the impact analysis methodology. PY6 covers June 1, 2016 through December 31, 2017.

## 2. PROGRAM DESCRIPTION

The Custom Rebate path provides rebates on a custom basis; these are applications that include measures not covered under the Prescriptive Rebate path. For example, burner replacement measures may fall into the Custom Rebate category. PGL and NSG can also fund Retro-Commissioning and Business New Construction projects on a \$/therm saved basis negotiated with ComEd under the Custom Rebate path.<sup>1</sup> New construction projects not participating through the joint Business New Construction program may be treated through the Custom Program. Custom rebates are based on the lesser of a buy down to a one-year payback, 50% of project cost, or \$1.00 per therm for projects over 7,500 therms saved (\$0.75 per therm for projects under 7,500 therms saved). PGL and NSG may revise eligible measures and incentives as driven by current market conditions, changes to codes and standards, technology, evaluation results, and program management knowledge. Typical market sectors for this program include larger customers in light and heavy manufacturing, steel and metal working, plastics compounding and processing, hospitals, food processing, hotels, commercial laundry and other process heating intensive businesses. The Custom Program delivery did not change from the previous year (PY5).

The PGL Custom Program had 30 participants in PY6 and completed 54 projects, including one custom new construction project, as shown in the following table.

**Table 2-1. PY6 Volumetric Summary for PGL**

Participation	C&I Custom	Custom New Construction	Total
Participants*	29	1	30
Completed Projects†	53	1	54

*Source: Peoples Gas tracking data and Navigant team analysis.*

*\* Participants are defined as unique account name*

*† Installed Projects are defined as unique project ID number*

The NSG Custom Program had seven participants in PY6 and completed seven projects, including one custom new construction project, as shown in the following table.

**Table 2-2. PY6 Volumetric Summary for NSG**

Participation	C&I Custom	Custom New Construction	Total
Participants*	6	1	7
Completed Projects†	6	1	7

*Source: North Shore Gas tracking data and Navigant team analysis.*

*\* Participants are defined as unique account name*

*† Installed Projects are defined as unique project ID number*

<sup>1</sup> The net savings for Retro-Commissioning and Business New Construction projects are tracked and reported separately under those respective program names, not in this Custom Program evaluation report.

## 3. PROGRAM SAVINGS SUMMARY

Table 3-1 summarizes the energy savings of the PGL Custom Program in PY6. The total verified net savings for the PY6 Custom Program was 1,522,969 therms from C&I custom and custom new construction projects.

**Table 3-1. PY6 Annual Energy Savings Summary for PGL**

Program Path	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTGR†	Verified Net Savings (Therms)
PGL Custom	2,118,830	97%	2,047,101	0.69	1,412,500
PGL Custom New Construction	153,565	104%	160,101	0.69	110,470
<b>PGL Total</b>	<b>2,272,396</b>	<b>97%</b>	<b>2,207,202</b>	<b>0.69</b>	<b>1,522,969</b>

Source: Peoples Gas tracking data and Navigant team analysis.

\* Realization Rate (RR) is the ratio of verified gross savings to ex ante gross savings, based on evaluation research findings.

† Net-to-Gross Ratio (NTGR) is the ratio of verified net savings to verified gross savings. The NTGR is a deemed value.

Source: PG-NSG\_GPY6\_NTG\_Values\_2016-02-29\_Final.xlsx, which is to be found on the Illinois SAG web site: <http://ilsag.info/net-to-gross-framework.html>.

Table 3-2 summarizes the energy savings of the NSG Custom Program in PY6. The total verified net savings for the PY6 Custom Program was 74,463 therms from C&I custom and custom new construction projects.

**Table 3-2. PY6 Annual Energy Savings Summary for NSG**

Program Path	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTGR†	Verified Net Savings (Therms)
NSG Custom	69,785	113%	79,079	0.69	54,565
NSG Custom New Construction	30,595	94%	28,838	0.69	19,898
<b>NSG Total</b>	<b>100,379</b>	<b>108%</b>	<b>107,917</b>	<b>0.69</b>	<b>74,463</b>

Source: North Shore Gas tracking data and Navigant team analysis.

\* Realization Rate (RR) is the ratio of verified gross savings to ex ante gross savings, based on evaluation research findings.

† Net-to-Gross Ratio (NTGR) is the ratio of verified net savings to verified gross savings. The NTGR is a deemed value.

Source: PG-NSG\_GPY6\_NTG\_Values\_2016-02-29\_Final.xlsx, which is to be found on the Illinois SAG web site: <http://ilsag.info/net-to-gross-framework.html>.

### 4. PROGRAM SAVINGS BY MEASURE

The PGL Custom Program includes results from projects at the program path level as shown in the following table. Details on sampling design for C&I custom projects are discussed in Appendix 1 in Section 6. Only one custom new construction project was completed for PGL and it was selected for verification.

**Table 4-1. PY6 Annual Energy Savings by Path for PGL**

Program Path	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTGR†	Verified Net Savings (Therms)
Certainty Strata	623,358	100%	623,358	0.69	430,117
Strata 1	498,544	99%	492,661	0.69	339,936
Strata 2	528,880	106%	560,262	0.69	386,581
Strata 3	468,048	79%	370,820	0.69	255,866
Custom New Construction	153,565	104%	160,101	0.69	110,470
<b>Total</b>	<b>2,272,396</b>	<b>97%</b>	<b>2,207,202</b>	<b>0.69</b>	<b>1,522,969</b>

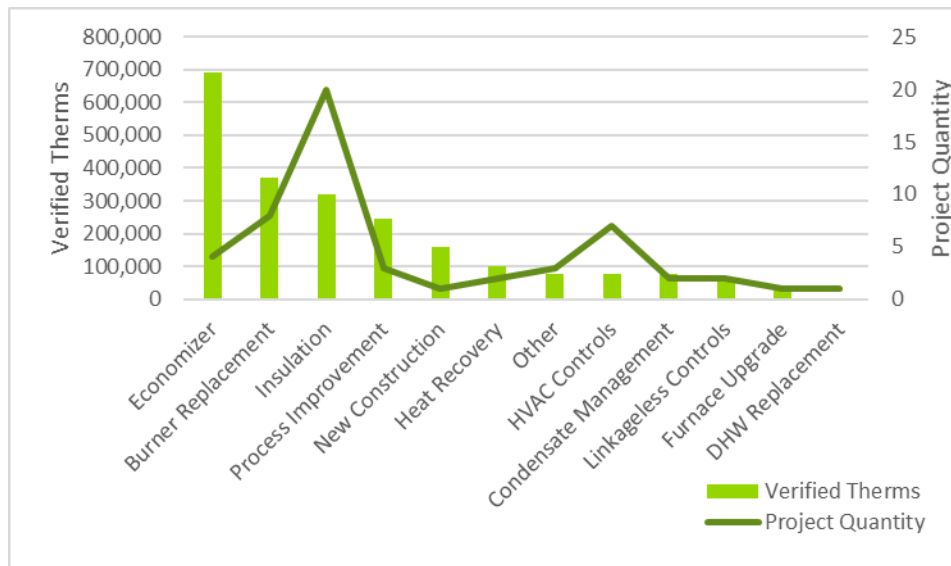
Source: Peoples Gas tracking data and Navigant team analysis.

\* Realization Rate (RR) is the ratio of verified gross savings to ex ante gross savings, based on evaluation research findings.

† Net-to-Gross Ratio (NTGR) is the ratio of verified net savings to verified gross savings. The NTGR is a deemed value. Source: PG-NSG\_GPY6\_NTG\_Values\_2016-02-29\_Final.xlsx, which is to be found on the Illinois SAG web site: <http://ilsag.info/net-to-gross-framework.html>.

Figure 4-1 shows the verified savings by the various project types received by PGL.

**Figure 4-1. Program Verified Savings by Project Type for PGL**



Source: Peoples Gas tracking data and Navigant team analysis.

The NSG C&I custom projects were all classified as Strata 3 projects, which were the smallest third of the combined of population of PGL and NSG. Since the NSG population was small and its distribution was not representative of the combined sample, a decision was made to treat the NSG Custom Program as a census sample. All six completed projects were selected for M&V. Only one custom new construction project was completed for NSG and it was selected for verification.

**Table 4-2. PY6 Annual Energy Savings by Path for NSG**

Program Path	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTGR†	Verified Net Savings (Therms)
Custom	69,785	113%	79,079	0.69	54,565
Custom New Construction	30,595	94%	28,838	0.69	19,898
<b>Total</b>	<b>100,379</b>	<b>108%</b>	<b>107,917</b>	<b>0.69</b>	<b>74,463</b>

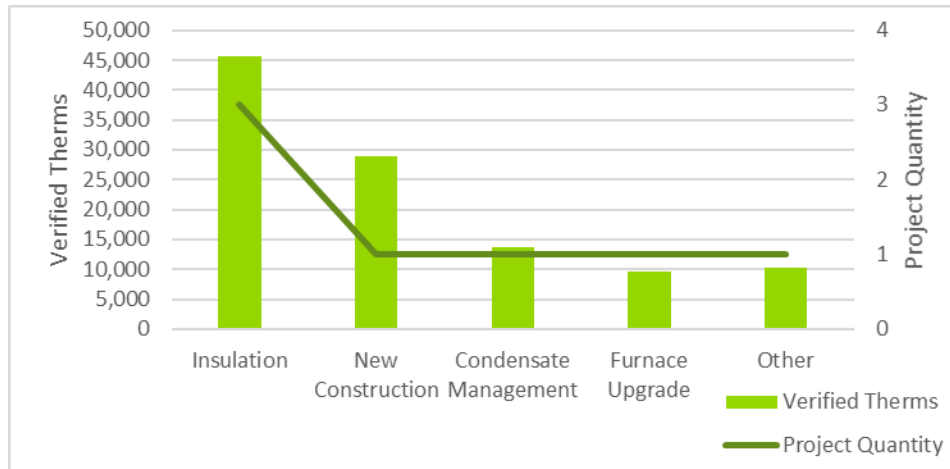
Source: North Shore Gas tracking data and Navigant team analysis.

\* Realization Rate (RR) is the ratio of verified gross savings to ex ante gross savings, based on evaluation research findings.

† Net-to-Gross Ratio (NTGR) is the ratio of verified net savings to verified gross savings. The NTGR is a deemed value. Source: PG-NSG\_GPY6\_NTG\_Values\_2016-02-29\_Final.xlsx, which is to be found on the Illinois SAG web site: <http://ilsag.info/net-to-gross-framework.html>.

Figure 4-2 shows the verified savings by the various project types received by NSG.

**Figure 4-2. Program Verified Savings by Project Type for NSG**



Source: North Shore Gas tracking data and Navigant team analysis.

The PGL Custom Program realized substantial savings from economizer and burner replacement projects, measures that had no participants in the PY6 NSG program. There were many fewer custom projects for NSG than PGL in PY6 and fewer measure types, however, both utilities achieved savings with insulation, condensate management, and furnace upgrade projects.

5. IMPACT ANALYSIS FINDINGS AND RECOMMENDATIONS

5.1 Impact Parameter Estimates

Table 5-1 shows that the unit therm savings for custom measures vary, and the overall realization rate for C&I custom projects was 97 and 113 percent for PGL and NSG programs, respectively. The PGL and NSG new construction projects had 104 percent and 94 percent realization rates, respectively. Following the table, we provide findings and recommendations, including discussion of projects with realization rates above or below 100 percent. Appendix 1 provides a description of the impact analysis methodology. Appendix 2 provides project level realization rates and a summary of adjustments to the verified savings.

Table 5-1. Verified Gross Savings Parameters

Measure	Unit Basis	Ex Ante Gross (therms/unit)	Verified Gross (therms/unit)	Realization Rate	Data Source(s)
Custom	Vary	Vary	Vary	97% (PGL) 113% (NSG)	Project File Review, Monthly Billing Data, On-Site Measurement and Verification*
Custom New Construction	Vary	Vary	Vary	104% (PGL) 94% (NSG)	Project File Review*

\* Project files and monthly billing data provided by Peoples Gas and North Shore Gas. On-site data collected by Navigant.

The following provides insight into key program findings and recommendations.

5.1.1 Custom Projects

Project 1066669 involved sealing a leaking confluence between hot and chilled water pipes. Navigant updated this project’s savings using updated leakage percentage and water temperature values provided by the project engineers and site contacts.

**Recommendation 1.** Navigant recommends that any updated data values provided by the project engineers or site contacts should be incorporated into the implementer’s final savings calculations.

Project 1066673 involved implementing an outdoor air setback control strategy at a warehouse facility. Between a file review and on-site visit, Navigant was unable to verify updated air handler unit operational data. Generally, this information includes scheduling, flow rates, damper positions and temperatures. This can be verified during post-inspections by collecting screenshots or reports of the EMS system operation.

**Recommendation 2.** Navigant recommends that the implementer provide energy management system (EMS) operational data for any applicable HVAC controls project.

Project 1745286 installed a condensate return system to improve efficiency at steel processing facility. Condensate return temperature was initially selected as 200°F, although the project pre-approval form included thermal imaging documentation of 195°F.

**Recommendation 3.** Navigant recommends that the implementer include documented or referenced values over estimated values in energy saving calculations.

Projects 1066870 and 1066877 both involved radiator control improvements. The radiator setting upgrades were only applied to specific floors of the facilities. However, the savings calculations for both



projects applied savings to the facilities entire square footage. Navigant updated the savings to reflect savings associated only with the upgraded portions of the facilities.

**Recommendation 4.** Navigant recommends that savings calculations properly reflect the portion of the facility that the project is affecting. If savings are applied to an entire facility when the project is only installed in a portion of the facility, the savings will be overestimated.

Project 1649058 involved the installation of a heat exchanger, recovering heat from an industrial process. The calculation utilized inputs like fluid temperatures and flow rates. The pre- and post-inspection documents did not offer any confirmation of these values. In another project (640389), the post-inspection data does not indicate what was being inspected or what was observed, only that that the installed equipment and quantities matched the submittal.

**Recommendation 5.** Navigant recommends that pre- and post-inspections address applicable calculation inputs, in addition to confirming the installation of the equipment. Photos of applicable equipment, nameplates, setpoints or screenshots are helpful to verify inputs and assumptions.

The evaluation team frequently uses billing data analyses to supplement the project file review. To effectively use the billing data, the installation date of the project is necessary. In several projects, this information was unavailable or not easily accessible.

**Recommendation 6.** Navigant recommends that Franklin Energy Services update the project documentation template to include a field for the installation date (e.g. using the "Date Install Complete" in Efficiency Manager tracking system, if applicable).

Project 1427116 involved the replacement of a burner on a process boiler. The calculation for this project compares the gas consumption per ton of production between boilers. To account for the uncertainty in this approach, the calculation applied a 40% uncertainty factor. If post-installation gas usage and production is provided in the project documentation, this could be used to remove the uncertainty factor from the savings equation.

**Recommendation 7.** For projects which involve production equipment and collection of sensitive production data, the program should establish an agreement with the customer before project completion to provide the needed information for savings verification.

Several of the reviewed projects involved technologies or scopes of work that were unclear while others used assumptions that were unclearly documented. The calculation template Franklin Energy Services used has a Brief Project Description section but its level of detail is not consistent and has led to confusion between the implementation and evaluation teams, which required follow up clarifications.

**Recommendation 8.** Navigant recommends that the Brief Project Description section in the calculation template should be expanded to allow for greater detail and better documentation of assumptions.

Projects 1176880 and 1196196 involved pipe insulation calculations which were used to validate the trade allies' values. In those calculations, only a sample of the line items were calculated.

**Recommendation 9.** Navigant recommends calculating all heat loss values and line items in the pipe insulation projects.

**Recommendation 10.** If a trade ally's calculation is used to estimate ex ante savings, the calculation should be clearly defined and reproducible, or it should be a functional Excel document that can be directly verified.

Project 2336519 received a realization rate 167 percent due to an adjustment to the average outside air temperature assumption. The assumed value of 65°F was updated to 52°F, when filtered Typical Meteorological Year 3 (TMY3) weather data for that location was used.

**Recommendation 11.** The assumptions involved in ex ante savings calculations should be supported with references, when possible.

In projects 1176880, 1066669, and 1196196, the boiler efficiency terms were updated to reflect the heating system efficiency increase from previous economizer projects (832315, 441944, and 444873, respectively). In Project 1645716, a boiler efficiency term was added to the calculation. The value of this term was referenced to a previous project at this location (1268244).

**Recommendation 12.** Navigant recommends that past project documentation be leveraged to support assumptions in subsequent projects at a given location. If assumptions are intentionally in disagreement with past projects, a justification should be provided.

### **5.1.2 Custom New Construction Projects**

The custom new construction project information was not included in the final Custom Program tracking data Navigant received on January 30, 2018. Instead, it was provided separately on April 6, 2018, resulting in a delay in the analysis.

**Recommendation 13.** Navigant recommends that custom new construction project information should be tracked in the same data link as the C&I Custom projects.

The ex ante savings calculation for custom new construction project 640389 used inputs that did not match the documentation included in the project, specifically the combustion information on the baseline and the proposed boilers.

**Recommendation 14.** Navigant recommends that calculations inputs and the project documentation agree.

## 6. APPENDIX 1. IMPACT ANALYSIS METHODOLOGY

The PY6 evaluation involved retrospective adjustments to ex ante gross savings on custom measure variables of all projects installed in PY6. Franklin Energy Services provided documentation of project applications and savings. Navigant verified project eligibility and savings based on engineering review, billing data review, and on-site measurement and verification (M&V) of a sample of program measures.

C&I custom and custom new construction projects were sampled separately. Navigant designed the sample size for C&I custom projects to provide a 90/10 confidence and relative precision level for program-level gross savings verification. Only two custom new construction projects were completed in PY6, one each for PGL and NSG, and both projects were selected for verification (a census sample). Navigant calculated PY6 verified net impact savings using the approved net-to-gross ratios (NTGRs) deemed through Illinois Energy Efficiency Stakeholder Advisory Group (SAG) consensus.<sup>2</sup> Navigant’s PY6 process evaluation was limited to interviews with the program implementer to learn of any program changes, and to collect project data to conduct the M&V research.

The evaluation team conducted site-specific research on a sample of C&I custom projects to verify project savings. The PGL custom program was treated as a stratified sample. One very large project was designated as a certainty stratum (“C”) – a project whose size required that it be sampled. The remaining projects were randomly selected through a stratified sample design at the tracking record level using the population gross therm savings determined from program tracking data. Strata were defined by project size, based on gross energy savings boundaries that placed about one-third of program-level savings into each stratum. An additional stratum was created to accommodate the custom new construction project that was received in GPY6. Table 6-1 shows a profile of the sample selection.

**Table 6-1. Profile of Gross Impact Sample for PGL Custom Projects**

Program	Population Summary			Sample Summary		
	Sampling Strata	Number of Projects (N)	Ex Ante Gross Savings (Therms)	n	Ex Ante Gross Savings (Therms)	Sampled % of Population (% Therms)
PGL C&I Custom	C	1	623,358	1	623,358	100%
	1	4	498,544	4	498,544	100%
	2	12	528,880	7	330,902	63%
	3	36	468,048	5	58,524	13%
	Custom NC	1	153,565	1	153,565	100%
<b>TOTAL</b>		<b>54</b>	<b>2,272,396</b>	<b>18</b>	<b>1,664,894</b>	<b>73%</b>

Source: Navigant analysis

\* “C” refers to certainty stratum, which includes projects whose size required them to be sampled.

Since the NSG Custom Program had only seven projects whose distribution was not representative of the combined sample, it was treated as a census sample with the custom new construction project being reported separately.

<sup>2</sup> The Net-to-Gross Ratio (NTGR) used for calculating verified net savings is deemed prospectively through a consensus process managed by the Illinois Energy Efficiency Stakeholder Advisory Group (SAG). Deemed NTGRs (as well historical verified gross Realization Rates) are available at: <http://www.ilsag.info/net-to-gross-framework.html>

**Table 6-2. Profile of Gross Impact Sample for NSG Custom Projects**

Population Summary				Sample Summary		
Program	Sampling Strata	Number of Projects (N)	Ex Ante Gross Savings (Therms)	n	Ex Ante Gross Savings (Therms)	Sampled % of Population (% Therms)
NSG C&I Custom	Custom	6	69,785	6	69,785	100%
	Custom New Construction	1	30,595	1	30,595	100%
<b>TOTAL</b>		<b>7</b>	<b>100,379</b>	<b>7</b>	<b>100,379</b>	<b>100%</b>

Source: Navigant analysis

### Engineering Review of Project Files

For each selected project, an in-depth application review is performed to assess the engineering methods, parameters and assumptions used to generate all ex ante impact estimates. For each measure in the sampled project, engineers estimated ex post gross savings based on their review of documentation and engineering analysis.

To support this review, the implementation contractor provided project documentation in electronic format for each sampled project. Documentation included some or all scanned files of hardcopy application forms and supporting documentation from the applicant (invoices, measure specification sheets, and vendor proposals), pre-inspection reports and photos (when required), post inspection reports and photos (when conducted), and calculation spreadsheets.

**Table 6-3. PGL Gross Therm Realization Rates and Relative Precision at 90% Confidence Level**

Program	Strata	Relative Precision +or-%	Mean RR	Standard Error
PGL C&I Custom	C*	0.00%	100%	0.00
	1	0.00%	99%	0.00
	2	11.27%	106%	0.06
	3	32.27%	79%	0.12
	Custom New Construction	0.00%	103%	0.00
Custom Total RR (90/10)		5.23%	97%	0.03

\* "C" refers to certainty stratum, which includes projects whose size required them to be sampled.

## 7. APPENDIX 2. IMPACT ANALYSIS SUPPLEMENTAL INFORMATION

Table 7-1 and Table 7-2 provide a summary of the sample selection and M&V approach.

**Table 7-1. Profile of PY6 PGL Custom Gross Impact Sample**

Project ID	Ex Ante Gross Savings (therms)	Strata	M&V Approach	Measure
832315	623,358	C*	File Review	Economizer
1427116	191,128	1	File Review	Burner Replacement
1649058	129,113	1	File Review	Process Improvement
1176880	92,404	1	File Review	Insulation
1911638	85,899	1	File Review	Heat Recovery
1268244	74,071	2	On-Site	Process Improvement
1426857	63,604	2	On-Site	Burner Replacement
1745286	44,915	2	File Review	Condensate Management
1645716	38,260	2	File Review	Process Improvement
1066669	37,689	2	On-Site	Other
1697141	36,899	2	On-Site	HVAC Controls
444878	35,463	2	File Review	Economizer
1743785	24,766	3	File Review	Burner Replacement
1273115	13,173	3	File Review	Insulation
1066870	8,990	3	File Review	HVAC Controls
1066877	8,331	3	File Review	HVAC Controls
1071009	3,264	3	File Review	Insulation
1091072	153,565	Custom NC	File Review	New Construction

Source: Evaluation analysis of programs data.

\* "C" refers to certainty strata, which includes projects whose size required them to be sampled.

**Table 7-2. Profile of PY6 NSG Custom Gross Impact Sample**

Project ID	Ex Ante Gross Savings (therms)	Strata	M&V Approach	Measure
2336519	15,734	Census	File Review	Insulation
1196196	14,497	Census	File Review	Insulation
1016186	13,677	Census	File Review	Condensate Management
1573640	13,296	Census	File Review	Destratification
1126379	8,875	Census	File Review	Heat Recovery
1593135	3,706	Census	File Review	Insulation
640389	30,595	Custom NC	File Review	New Construction

Source: Evaluation analysis of programs data.

Table 7-3 and Table 7-4 provide a summary of M&V results and adjustments for the samples.

**Table 7-3. PY6 PGL Summary of Sample M&V Results**

Project ID	Measure Description	Gross Realization Rate	Summary of Adjustment
832315	Economizer	100%	OK
1427116	Burner Replacement	100%	OK
1649058	Process Improvement	96%	Adjusted hours of operation to match the GOS report for this site.
1176880	Insulation	99%	Updated the boiler efficiency to reflect past projects for this site. Calculated all measures instead of a sample.
1911638	Heat Recovery	100%	OK
1268244	Process Improvement	81%	The fatty acid feed rate was adjusted to an average of measured values.
1426857	Burner Replacement	101%	Excess O <sub>2</sub> % and outlet temperatures were updated based on project documentation.
1745286	Condensate Management	95%	Condensate temperature updated based on pre-inspection.
1645716	Process Improvement	121%	Added heating system efficiency term based on past projects. Calculation updated to use $\Delta$ enthalpy to circumvent the assumption of a constant specific heat.
1066669	Other	170%	Leakage percentage updated based on communication with TA. Water temperatures updated based on communication with customer. Boiler efficiency updated based on past project.
1697141	HVAC Controls	102%	OA% and OA CFM were updated based on communication with the customer.
444878	Economizer	99%	Updated boiler part-load performance based on product documentation.
1743785	Burner Replacement	95%	Removed savings due to reduced cycling, per pre-inspection documentation.
1273115	Insulation	100%	OK
1066870	HVAC Controls	15%	Calculation updated to reflect that project involved 12% of the of the building's floorspace.
1066877	HVAC Controls	62%	Calculation updated to reflect that project involved 62% of the of the building's floorspace.
1071009	Insulation	100%	OK
1091072	New Construction	104%	Updated calculation approach to IL TRM algorithm and code baseline

Source: Evaluation analysis of programs data.

**Table 7-4. PY6 NSG Summary of Sample M&V Results**

Project ID	Measure Description	Gross Realization Rate	Summary of Adjustment
2336519	Insulation	167%	Updated the ambient temperature assumption to reflect TMY3 data
1196196	Insulation	103%	Calculated al line items instead of a sample and updated the boiler efficiency to reflect the results of a past project (444873) at this location
1016186	Condensate Management	100%	OK
1573640	Furnace Upgrade	73%	Updated the existing heating setpoint assumption to reflect the thermostat setpoint, instead of the discharge air temperature, and updated the destratification calculation to use IL TRM assumptions
1126379	Other	115%	Added heating system efficiency to the calculation, update the balance point temperatures for consistency, and changed unoccupied humidity control to reflect project description.
1593135	Insulation	113%	Updated the heat loss values to account for wind (exterior location) and 10% of the piping was assumed to be in vertical orientation, to reflect the post-inspection documentation.
640389	New Construction	94%	Updated boiler efficiency to be consistent throughout calculation

Source: Evaluation analysis of programs data.

## 8. APPENDIX 3. PROGRAM-SPECIFIC INPUTS FOR THE ILLINOIS TRC

Table 8-1 and Table 8-2, the Total Resource Cost (TRC) variable tables, only include cost-effectiveness analysis inputs available at the time of finalizing the PY6 Custom Program impact evaluation report. Additional required cost data (e.g., measure costs, program level incentive and non-incentive costs) are not included in the tables and will be provided to evaluation later. Detail in the TRC tables (e.g., EULs), other than final PY6 savings and program data, are subject to change and are not final.

**Table 8-1. TRC Inputs for PGL**

Project Type	Units	Quantity	Effective Useful Life (years)	Ex Ante Gross Savings (Therms)	Verified Gross Savings (Therms)	Verified Net Savings (Therms)
Economizer	Project	4	15	700,067	693,603	478,586
Burner Replacement	Project	8	21	388,892	371,107	256,064
Insulation	Project	20	15	358,957	320,225	220,955
Process Improvement	Project	3	13	241,445	246,587	170,145
New Construction	Project	1	17	153,565	160,101	110,470
Heat Recovery	Project	2	13	107,354	101,884	70,300
Other	Project	3	13	82,945	75,780	52,288
HVAC Controls	Project	7	15	82,812	75,464	52,070
Condensate Management	Project	2	20	72,409	76,706	52,927
Linkageless Controls	Project	1	16	55,707	56,304	38,850
Furnace Upgrade	Project	1	17	26,462	28,032	19,342
DHW Replacement	Project	1	20	1,780	1,410	973

Source: Peoples Gas tracking data and Navigant team analysis.

**Table 8-2. TRC Inputs for NSG**

Project Type	Units	Quantity	Effective Useful Life (years)	Ex Ante Gross Savings (Therms)	Verified Gross Savings (Therms)	Verified Net Savings (Therms)
Insulation	Project	3	15	33,937	45,538	31,421
New Construction	Project	1	17	30,595	28,838	19,898
Condensate Management	Project	1	20	13,677	13,657	9,424
Furnace Upgrade	Project	1	17	13,296	9,656	6,662
Other	Project	1	13	8,875	10,228	7,057

Source: North Shore Gas tracking data and Navigant team analysis.