

**Commercial & Industrial (C&I) Custom  
Rebate Program  
GPY2 Evaluation Report**

**Final**

**Energy Efficiency Plan:  
Gas Plan Year 2  
(6/1/2012-5/31/2013)**

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

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## E. Executive Summary

This report presents a summary of the findings and results from the impact and process evaluation of the GPY2 Peoples Gas and North Shore Gas (PGL/NSG)<sup>1</sup> Commercial & Industrial Custom Rebate (C&I Custom) program. The C&I Custom program provides C&I customers with rebate incentives for the installation of natural gas-related energy improvements that are not specified for a prescriptive rebate under the C&I Prescriptive Rebate program. The C&I Custom program is targeted to active customers of Peoples Gas and North Shore Gas (“the Companies”). These customers are served under rates S.C. No. 2 and S.C. No. 3 (NSG) and S.C. No. 4 (PG).

The C&I Custom program provides a mechanism for a range of customers in various market sectors to install a wide variety of natural gas savings technologies. To enable as many customers as possible to participate in any one year, the program caps each customer’s initial maximum rebate at \$100,000 per custom project per year and \$250,000 per customer per program year.<sup>2</sup> The program may waive the maximum rebate limitation based on projects in the program’s queue.

No significant program design changes were introduced into the program in GPY2. The GPY2 evaluation for the C&I Custom program repeated the previous year’s evaluation activities, with some additions to the process and impact evaluations. In addition to participating customer free ridership and spillover, the scope of this year’s evaluation included quantification of spillover impacts from participant and non-participant trade allies.

### E.1. Program Savings

Table E-1 summarizes the natural gas savings from the C&I Custom program.

**Table E-1. GPY2 Total Program Natural Gas Savings**

| Savings Category †              | Peoples Gas<br>Energy Savings (Therms) | North Shore Gas<br>Energy Savings (Therms) |
|---------------------------------|--|--|
| Ex Ante Gross Savings           | 2,596,304                              | 306,772                                    |
| Ex Ante Net Savings             | 1,765,487                              | 208,605                                    |
| Research Findings Gross Savings | 2,108,877                              | 249,179                                    |
| Research Findings Net Savings   | 1,644,924                              | 194,360                                    |

Source: Utility tracking data and Navigant analysis; † See the Glossary in the Appendix for definitions

<sup>1</sup> The GPY2 program year began June 1, 2012 and ended May 31, 2013.

<sup>2</sup> Based on one of the following calculations: (i) \$1.00 per therm saved in the first year; (ii) buy down to one-year payback; (iii) full incremental project cost or 50% of total project cost (source: *Integrus EEP Operating Plan*).

## E.2. Program Savings

Table E-2 and Table E-3 summarize the program savings by measure category.

**Table E-2. Peoples Gas GPY2 Results by Measure Category**

| Category   | Sample    | Energy Savings (Therms) | 90/10 Significance? |
|--|-----------|-------------------------|---------------------|
| <b>Boiler/Burner Retrofit &amp; Replacement/Controls</b> |           |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA        | 1,556,548               | NA                  |
| <b>Demand Control Ventilation</b>                        |           |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA        | 376,156                 | NA                  |
| <b>Pipe/Tank/Roof/Valve Insulation</b>                   |           |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA        | 363,536                 | NA                  |
| <b>Process/Steam/Heat Recovery System</b>                |           |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA        | 293,411                 | NA                  |
| <b>RTO/Ozone Laundry System</b>                          |           |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA        | 6,651                   | NA                  |
| <b>Peoples Gas GPY2 Total</b>                            |           |                         |                     |
| Ex-Ante GPY2 Gross Savings                               |           | 2,596,304               |                     |
| Research Findings Gross Realization Rate‡                | 20        | 0.81                    | No (90/13)          |
| <b>Research Findings Gross Savings‡</b>                  |           | <b>2,108,877</b>        | <b>No</b>           |
| Spillover (Participating Customer, PSO) ‡                | 40        | 0.001                   | Yes                 |
| Spillover (Participating TA, TSO) ‡                      | 5         | 0.02                    |                     |
| Spillover (Non-Participating TA, TNSO) ‡                 | 5         | 0.00                    | NA                  |
| Free ridership (Participating Customer) ‡                | 40        | 0.24                    | Yes                 |
| <b>Spillover Total (PSO + TSO + TNSO) ‡</b>              | <b>NA</b> | <b>0.02</b>             |                     |
| <b>Free ridership (Evaluation Reporting) ‡</b>           | <b>NA</b> | <b>0.24</b>             | <b>Yes</b>          |
| <b>Net-to-Gross Ratio (NTGR)‡</b>                        | <b>NA</b> | <b>0.78</b>             |                     |
| <b>Research Findings Net Savings ‡</b>                   | <b>NA</b> | <b>1,644,924</b>        | <b>No</b>           |

Source: Utility tracking data and Navigant analysis.

‡ Based on evaluation research on a sample drawn from a population that combined Peoples Gas and North Shore Gas.

Evaluation Reporting: NTGR = 1-Participating Customer Free-ridership +PSO+TSO+TNSO

Note: Gross realization rate is rounded to two digits. Direct application may produce rounding differences.

**Table E-3. North Shore Gas GPY2 Results by Measure Category**

| Category   | Sample    | Energy Savings (Therms) | 90/10 Significance? |
|--|-----------|-------------------------|---------------------|
| <b>Boiler/Burner Retrofit &amp; Replacement/Controls</b> |           |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA        | 148,662                 | NA                  |
| <b>Pipe/Tank/Roof/Valve Insulation</b>                   |           |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA        | 73,711                  | NA                  |
| <b>Process/Steam/Heat Recovery System</b>                |           |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA        | 77,069                  | NA                  |
| <b>RTO/Ozone Laundry System</b>                          |           |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA        | 7,330                   | NA                  |
| <b>North Shore Gas GPY2 Total</b>                        |           |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA        | 306,772                 |                     |
| Research Findings Gross Realization Rate‡                | 20        | 0.81                    | No (90/13)          |
| <b>Research Findings Gross Savings‡</b>                  |           | <b>249,179</b>          | <b>No</b>           |
| Spillover (Participating Customer, PSO) ‡                | 40        | 0.001                   | Yes                 |
| Spillover (Participating TA, TSO) ‡                      | 5         | 0.02                    |                     |
| Spillover (Non-Participating TA, TNSO) ‡                 | 5         | 0.00                    | NA                  |
| Free ridership (Participating Customer) ‡                | 40        | 0.24                    | Yes                 |
| <b>Spillover Total (PSO + TSO + TNSO) ‡</b>              | <b>NA</b> | <b>0.02</b>             |                     |
| <b>Free ridership (Evaluation Reporting) ‡</b>           | <b>NA</b> | <b>0.24</b>             | <b>Yes</b>          |
| <b>Net-to-Gross Ratio (NTGR)‡</b>                        | <b>NA</b> | <b>0.78</b>             |                     |
| <b>Research Findings Net Savings ‡</b>                   | <b>NA</b> | <b>194,360</b>          | <b>No</b>           |

Source: Utility tracking data and Navigant analysis.

‡ Based on evaluation research on a sample drawn from a population that combined Peoples Gas and North Shore Gas.

Evaluation Reporting:  $NTGR = 1 - \text{Participating Customer Free-ridership} + PSO + TSO + TNSO$

Note: Gross realization rate is rounded to two digits. Direct application may produce rounding differences.

### E.3. Impact Estimate Parameters

In the course of estimating research finding gross and net savings, the evaluation team used a variety of parameters in its calculations. Some of these parameters were derived based on Evaluation, Monitoring and Verification (EM&V) engineering analysis or through evaluation research from participant and trade ally self-reporting surveys. The key parameters used in the analysis are shown in Table E-4.

**Table E-4. Impact Estimate Parameters**

| Parameter                                      | Data Source             | Deemed or Evaluated? |
|--|-------------------------|----------------------|
| Number of measures installed                   | Program Tracking System | Evaluated            |
| Research Finding Gross Realization Rate        | Evaluation Research     | Evaluated            |
| Research Finding Gross Savings                 | Evaluation Research     | Evaluated            |
| Research Findings Net-to-gross Ratio (NTGR)    | Evaluation Research     | Evaluated            |
| <i>Spillover (Participating Customer, PSO)</i> | Evaluation Research     | Evaluated            |
| <i>Spillover (Participating TA, TSO)</i>       | Evaluation Research     | Evaluated            |
| <i>Spillover (Non-Participant TA TNSO)</i>     | Evaluation Research     | Evaluated            |
| <i>Free ridership (Participating Customer)</i> | Evaluation Research     | Evaluated            |

Source: Utility tracking data and Navigant analysis

#### **E.4. Impact Estimate Parameters For Future Use**

The evaluation-researched NTG value may be eligible for deeming for future program years. Details are provided in the Table E-5 below. Additional details are included in Section 4 of this report.

**Table E-5. Impact Estimate Parameters for Future Use**

| Parameter                              | Value | Data Source                       |
|--|-------|-----------------------------------|
| Net-to-gross Ratio (NTGR)              | 0.78  | Participant & Trade Ally Survey   |
| Participant Free-ridership             | 0.24  | Customer Participant Survey       |
| Participant Spillover                  | 0.001 | Customer Participant Survey       |
| Participating Trade Ally Spillover     | 0.02  | Participating Trade Ally Survey   |
| Non-Participating Trade Ally Spillover | 0.00  | Trade Ally Non-Participant Survey |

Source: Utility tracking data and Navigant analysis of survey responses.

An estimate of free-ridership incorporating interview responses from participating trade allies was made by Navigant in the course of conducting GPY2 evaluation research. The participating trade ally free-ridership score is Navigant’s analysis of their responses to questions asked to estimate “If the program had not existed, approximately what percentage of the rebated measures would your customers have purchased?” The free-ridership estimate from PGL and NSG participating trade allies was a research effort and was not used in GPY2 for evaluation reporting of verified net savings results. The approach presented in Appendix 7.2.2 may be considered for future use.



#### E.4. Participation Information

As shown in Table E-6, the C&I Custom program participation increased in GPY2 for both Peoples Gas and North Shore Gas. Peoples Gas implemented 89 projects (compared to 29 projects in GPY1)<sup>3</sup>. North Shore Gas implemented 10 projects (compared to 3 projects in GPY1). Measures installed in GPY2 included boiler replacements and retrofits, burner upgrades, controls, steam pipe insulation and tank insulation, demand controlled ventilation, and heat recovery systems.

**Table E-6. GPY2 Primary Participation Detail**

| Participation         | Peoples Gas | North Shore Gas |
|-----------------------|-------------|-----------------|
| Installed Measures    | 101         | 10              |
| Projects              | 89          | 10              |
| Business Participants | 73          | 10              |

Source: Utility tracking data and Navigant analysis.

#### E.5. Conclusions and Recommendations

The following provides insight into key program findings and recommendations

##### Program Savings Goals Attainment

**Finding 1.** The Peoples Gas GPY2 program achieved evaluation research findings net savings of 1,644,924 Therms, which is 68 percent of the program’s revised net savings goal of 2,415,500 therms<sup>4</sup>. Compared to GPY1, the Peoples Gas program increased net energy savings by more than 850 percent. The North Shore Gas GPY2 program achieved evaluation research findings net savings of 194,360 Therms which is 40 percent of the program’s revised net savings goal of 489,289 therms.<sup>5</sup> Compared to GPY1, the North Shore Gas program increased energy savings by more than 620 percent. Boiler and burner retrofits and replacements, and demand control ventilation measures were a significant factor in the savings increase of both programs in GPY2. An expansion of savings of this magnitude in one year is an exemplary achievement. The goals suggest further expansion is possible.

**Recommendation 1.** To achieve program savings goals, the program IC staff should continue to identify opportunities and encourage program trade allies and contractors to market the program incentives offerings and options available to customers. The implementation contractor should continue to target high potential / low participating segments of the marketplace including controls type projects that have potential for high savings. An

<sup>3</sup> The Peoples Gas projects excludes project #85581 which was moved to GPY3 as a work in progress status. This move was determined after a meeting between Navigant and Franklin Energy Services on November 22, 2013.

<sup>4</sup> The Peoples Gas program GPY2 net savings exceeded the initial Compliance Filing GPY2 goal of 1,185,600 Therms by 39 percent. The program revised net savings goal of 2,415,500 Therms was due to transfers from other underperforming programs. See *Integritys EE Compliance Filing June 1, 2011-May 31, 2014 (Docket 10-0564)*

<sup>5</sup> The North Shore Gas program GPY2 net savings was below the initial Compliance Filing GPY2 goal of 228,000 Therms by 15 percent. See *Integritys EE Compliance Filing June 1, 2011-May 31, 2014 (Docket 10-0564)*

effort should be considered to identify the technology successes of GPY2 that have wide applicability, and build marketing initiatives and case studies around them. For example, the demand control ventilation projects performed well in our evaluation sample.

### Net-to-Gross Ratio

**Finding 2.** The NTG ratio found in this evaluation is 0.78, derived from evaluation estimates of participant free ridership and spillover, and participating and non-participating trade ally spillover. The GPY2 NTGR is a substantial increase over the GPY1 NTG ratio of 0.68, which did not include spillover and was based on a more limited sample.

**Recommendation 2.** As approved in the SAG meeting, the NTG ratio found in this evaluation should be applied to both GPY2 and GPY3. In order to further increase the NTG, the IC should proactively market to an expanded base of customers with the technology successes of GPY2. Providing technical assistance and maintaining relationships with past participants will help the program influence future efficiency projects.

### Verified Gross Realization Rates

**Finding 3.** The evaluation on-site verification and engineering reviews on a sample of 20 projects from the population of 99 projects triggered adjustments to the sample projects and the program savings. The GPY2 Peoples Gas and North Shore Gas Custom programs verified gross realization rate was 0.81.

**Recommendation 3.** The Parallel Path baseline early review process initiated in GPY2 should be implemented more effectively to minimize evaluation adjustments to assumptions at the end of the program year. In particular, baseline determination and equipment efficiencies were a source of large evaluation adjustments. The IC should continue the process of the developing impact statements at the application phase of the project, which should include questions regarding customer capital planning (i.e. was the project part of regularly scheduled maintenance?), planned efficiencies in the absence of the program (i.e. would the customer have installed the same efficiency equipment without the availability of the program incentive?), and based on the preponderance of evidence, does the customer need to or are they planning to replace the equipment within the near future (e.g. within 4 years)?

### Savings Estimates

**Finding 4.** As noted in the report findings, 13 out of the 20 sampled projects from the on-site and engineering file reviews produced a gross savings realization rates below 1.00, resulting in a reduction of ex ante 487,425 therms for PGL and 57,593 therms for NSG compared to the research finding gross energy savings.

**Recommendation 4.** The IC should consider reassessing due diligence procedures employed to gather project documentation and inspections prior to a project final approval. The IC should ensure projects savings assumptions and estimates adequately reflect the projects' documentation and the baseline conditions of the equipment.

### Evaluation Coordination

**Finding 5.** The implementation contractor provided a great deal of support throughout the survey process. Navigant's targeted sample size for both the participant customer and trade allies and non-participant trade allies required a great deal of coordination between

all parties. Support was provided to Navigant by reaching out to potential survey participants and encouraging them to complete the survey. Navigant believes the efforts put forth by the IC increased the overall success rate of evaluation data collection on a difficult subset of respondents. Despite success reaching customers and calls made to trade allies by the IC, Navigant was unable interview the targeted number of trade allies due to non-response. Year-end evaluation activities coincide with the start of the heating season for trade allies, and this may be a factor in the low trade ally response rates.

**Recommendation 5.** The implementation contractor and Navigant should continue to work collaboratively prior to the end of each program year through the Parallel Path review process to identify issues that can affect gross realization rates. This may include allowing the evaluation team to contact the customer to verify key assumptions. Additionally, the IC should continue to engage Navigant’s engineering team during the program year when questions arise around particular projects that may be new to the program (e.g. kiln door seal replacements). The IC should collaborate with the evaluation team to find ways to improve trade ally interview response rates, such identifying trade allies that may be interviewed during the evaluated program year as projects are completed.

### **Program Participation**

**Finding 6a.** Overall, PGL and NSG C&I Custom program participation increased significantly in GPY2 compared to the previous year. Comparing year to year volumetric results from GPY1 and GPY2, Peoples Gas implemented 89 projects (increase of 207%) and increased program participation from 28 in GPY1 to 73 in GPY2 (increase of 161%). North Shore Gas has increased program participation and projects from 3 to 10 (increase of 233%). The multifamily sector accounted for the bulk of the total number of installed projects and participation for Peoples Gas (37%) but the university/college sector provided the most savings (26%). The manufacturing sector accounted for the bulk of the savings and the measures for North Shore Gas.

**Finding 6b.** Overall, participants indicated strong satisfaction with the program, with 83 percent indicating they were very satisfied with the program.

**Recommendation 6.** The program should continue to identify opportunities that remove any bottlenecks within the application process and improve the overall program delivery to further increase customer participation. Consider improving customer understanding of program legal requirements and understanding of program policies and timelines.

### **Trade Ally Satisfaction and Other Participation.**

**Finding 7.** Participant trade allies were generally very satisfied with the program, as four of the five respondents (80%) gave a score of five, and one respondent gave a score of 2 on a scale of 0-5. The population of non-participant trade allies provided to Navigant contained both residential and non-residential trade allies. Of the 243 non-participants, approximately 18% of the contacts provided did not qualify for the survey. The provided population contained distributors, manufacturers, manufacturer representatives, and residential sector contacts.

**Recommendation 7.** The IC should continue to market the program to participating trade allies but also encourage non-participating trade allies to actively pursue and submit projects to the program. The IC should develop a commercial and industrial specific list of non-participating trade allies that would qualify for the program. By identifying

potential trade allies, the IC will be better able to target new contractors to further increase program participation and savings.

**Finding 8.** From the non-participating (NP) trade ally survey results, NP trade allies continue to find the application process cumbersome and indicated that there is lack of coordination among utilities to improve communication to the trade allies.<sup>6</sup>

**Recommendation 8.** The IC should revisit the concerns and recommendations raised by non-participant trade allies as elaborated in Table 5-1, to improve on the dissemination of information to both program trade allies and those potential trade allies working with other utilities.

Overall, the GPY2 Peoples Gas and North Shore Gas C&I Custom programs grew from a solid foundation built in GPY1 to substantially expand the resulting impacts. Both the Peoples Gas and North Shore Gas programs increased participation year-over-year, but did not achieve their revised savings target in GPY2; although the programs increased their savings significantly compared to GPY1. The evaluation EM&V activities applied adjustments to a sample of the tracking system projects' ex ante savings, causing a drop in the gross realization of savings from 1.02 in GPY1 to 0.81 in GPY2 for both Peoples Gas and North Shore Gas. In GPY2, the program-level research finding Net-to-Gross Ratio of 0.78 was a major increase from the GPY1 value of 0.68.

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<sup>6</sup> This statement reflects the views of the non-participating trade allies, not evaluation.

## 1. Introduction

### 1.1 Program Description

The Commercial & Industrial Custom Rebate (C&I Custom) program provides customers with rebate incentives for the installation of natural gas-related energy improvements that are not specified for a prescriptive rebate under the C&I Prescriptive Rebate program. The C&I Custom program is targeted to active customers of Peoples Gas and North Shore Gas (“the Companies”). These customers are served under rates S.C. No. 2 and S.C. No. 3 (NSG) and S.C. No. 4 (PG).

The C&I Custom program provides a mechanism for a range of customers in various market sectors to install a wide variety of natural gas savings technologies. Typical market sectors for this program may 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. Large centrally-heated buildings are also target sectors for this program.

Eligible projects receive calculated incentives aimed at improving the financial viability of the energy efficiency improvements. Custom rebates are individually determined and analyzed using the Companies’ benefit-cost model to ensure that they pass the TRC test. Any measure that is pre-qualified (assessed for cost-effectiveness prior to being installed) must produce a TRC test result of at least 1.0 or better. To enable as many customers as possible to participate in any one year, the program caps each customer’s initial maximum rebate at \$100,000 per custom project per year and \$250,000 per customer per program year.<sup>7</sup> The program may waive the maximum rebate limitation based on projects in the program’s queue.

The GPY2 evaluation for the C&I Custom program repeated the previous year’s evaluation activities, with some additions to the process and impact evaluations to reflect the GPY1 experience and improve the program’s overall net savings estimation. The objectives of the GPY2 C&I Custom program evaluation are to: (1) estimate gross and net savings impacts, with the aim to validate the Companies’ program claimed savings and to adjust estimates of savings to improve their accuracy; (2) determine process-related program strengths and weaknesses and identify ways which the program can be improved to achieve cost-effective savings while maintaining high levels of customer satisfaction, and (3) provide preliminary, early feedback on baseline assumptions for some projects. In addition to participant free ridership, the Net-to-Gross impact analysis included participant spillover assessment, and input from participant trade allies on spillover, as well as non-participant trade ally spillover. The process evaluation effort included deeper examination of trade ally involvement in the program. The evaluation interviewed participating and non-participating trade allies to examine their influence, challenges and satisfaction with the C&I Custom program.

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<sup>7</sup> Based on one of the following calculations: (i) \$1.00 per therm saved in the first year; (ii) buy down to one-year payback; (iii) full incremental project cost or 50% of total project cost (source: *Integritys EEP Operating Plan*).

## **1.2 Evaluation Objectives**

The Evaluation Team identified the following key researchable questions for GPY2:

### **1.2.1 Impact Questions**

1. What are the gross impacts from this program, based on analyzing a sample of projects through site-specific interviews, documentation review, and on-site measurement and verification?
2. What are the net impacts from this program? What is the level of free ridership associated with this program and how can it be reduced? What is the level of spillover associated with this program and how can it be increased?
3. Did the program meet its energy saving goals? If not, why not?
4. Are the assumptions and calculations in compliance with standard engineering practice? If not, what changes are required?
5. Are the proper baselines being assumed? Is the program capturing early replacement of equipment? How can the evaluation efforts provide input to upfront review of a limited number of large projects before the application is finalized by the program?

### **1.2.2 Process Questions**

1. Has the program been successful in recruiting additional participants? In what ways can the program increase customer participation? Are customers satisfied with the program?
2. Has the program been successful in recruiting additional trade allies? Are trade allies satisfied with the program? In what ways can the program increase trade ally participation?
3. How has the program changed its marketing and outreach strategies since GPY1?

## 2. Evaluation Approach

This evaluation of the C&I Custom program reflects the second full year of program operation. The sections below describe the data that were collected, the method of collection, and the method for analyzing the data to answer the impact and process questions. The GPY2 impact evaluation involved verification of claimed gross savings from a sample of selected projects, through on-site data collection and engineering review of the algorithms and assumptions used by the program, customers or trade allies to calculate energy savings. This review was followed up with a telephone survey with a sample of participants and trade allies to aid the program net-to-gross estimation. Participant and trade ally surveys were conducted to determine the program level of free ridership and spillover for the GPY2 net to gross research estimation. The process evaluation focused on customer and trade ally program satisfaction, and identification of barriers to participation, with a targeted effort to follow up on the GPY1<sup>8</sup> recommendations and update the conclusions from the GPY1 Verification, Due Diligence and Tracking System memo. The process evaluation also reviewed barriers to program recruitment and ways in which program recruitment and enrollment could be increased for both customers and trade allies.

### 2.1 Primary Data Collection

#### 2.1.1 Overview of Data Collection Activities

The core data collection activities included the following list:

1. Quantitative telephone survey with participant decision makers of a sample of participants selected from the program population.
2. Interviews with participating and non-participating trade allies.
3. Review of secondary sources including internal manuals and the program tracking database.

Program tracking data was requested from Franklin Energy, including:

- » Contact information for participating customers, participant and non-participant trade allies, including name, address, and telephone number.
- » Date of participation.
- » Number and type of measures installed.
- » Tracked gross savings estimates (Franklin tracked ex ante net savings).

Table 2-1 below summarizes the surveys and other primary data sources used to answer the impact and process questions noted earlier. The proposed sample sizes and approximate timing of each activity is also presented.

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<sup>8</sup> PG & NSG CI Custom GPY1 EMV Final Report

**Table 2-1. Core Data Collection Activities**

| N                        | What                    | Who                             | Target Completes | Completes Achieved <sup>9</sup> | When                   | Comments  |
|--------------------------|-------------------------|---------------------------------|------------------|---------------------------------|------------------------|---|
| <i>Impact Assessment</i> |                         |                                 |                  |                                 |                        |   |
| 1                        | Measure Savings Review  | Program Tracking System         | all              | all                             | July-Sept 2013         | Source of information for verified gross analysis                           |
|                          | Engineering File Review | Completed Projects              | ~20              | 20 <sup>10</sup>                | July-October 2013      | Source of information for verified gross analysis                           |
|                          | On-site Verification    | Completed Projects/Participants | ~10              | 10                              | July-October 2013      | Source of information for verified gross analysis                           |
| 2                        | Telephone Survey        | Participant Customers           | census           | 40                              | September-October 2013 | Data collection supporting NTG and process analysis in the same instrument. |
| 3                        | Telephone Survey        | Participant Trade Allies        | 10               | 5                               | September-October 2013 | Data collection supporting NTG and process analysis in the same instrument. |
| 4                        | Telephone Survey        | Non-Participant Trade Allies    | 10               | 5                               | September-October 2013 | Data collection supporting NTG and process analysis.                        |

### 2.1.2 Verified Savings Parameters

#### Gross Impact sampling

A sample of 20 projects targeting a 90/10 level of confidence and relative precision for program-level verified savings was drawn from a program tracking database population of 99 projects for Peoples Gas and North Shore Gas. Projects were stratified at tracking record level using the population ex ante gross therms savings. Strata were defined by project size, based on ex-ante gross energy savings boundaries that placed about one-third of program-level savings into each stratum. Stratum 1 consisted of large projects with project-level ex-ante savings greater than 78,000 Therms, stratum 3

<sup>9</sup> Reasonable attempts were made to contact additional participants and non-participants to meet the targeted samples, but they either did not respond to the request for an interview or they refused the interview.

<sup>10</sup> Excludes project #85581 that was moved to GPY3.



consisted of small projects with ex-ante gross energy savings less than 36,000 Therms, and stratum 2 consisted of the medium sized projects in between. A profile of the sample selection is shown below in Table 2-2.

**Table 2-2. Profile of GPY2 Gross Impact Sample by Strata**

| Population Summary |                       |                                       |                | Sample    |                  |                         |
|--------------------|-----------------------|---------------------------------------|----------------|-----------|------------------|-------------------------|
| Sampling Strata    | Number of Project (N) | Ex Ante Claimed Gross Savings, Therms | Therms Weights | n         | Ex Ante Therms   | Sampled % of Population |
| 1                  | 8                     | 948,759                               | 0.33           | 6         | 721,444          | 76%                     |
| 2                  | 18                    | 989,052                               | 0.34           | 9         | 480,172          | 49%                     |
| 3                  | 73                    | 965,265                               | 0.33           | 5         | 147,484          | 15%                     |
| <b>TOTAL</b>       | <b>99</b>             | <b>2,903,076</b>                      | <b>1.00</b>    | <b>20</b> | <b>1,349,100</b> | <b>46%</b>              |

Source: Utility tracking data and Navigant analysis.

The overall sample of 20 projects accounts for 1,349,100 Therms of ex ante gross savings (46% of gross savings impact claim from Peoples Gas and North Shore Gas Custom program populations). Of the 20 sample points selected, 18 were from Peoples Gas territory, accounting for 90% of the total sample ex ante gross therms. The two projects from North Shore Gas account for 10% of the total sample ex ante gross therms. Navigant reviewed the sample to verify that there is an accurate representation by measure technology and business type within the overall sample. Table 2-3 provides the sampling selection by measure category.

**Table 2-3. Profile of GPY2 Gross Impact Sample by Measure Category**

| Population Summary                            |                       |                                 |                | Sample                |                                |                       |                                |
|---|-----------------------|---------------------------------|----------------|-----------------------|--------------------------------|-----------------------|--------------------------------|
| End Use Type                                  | Number of Project (N) | Ex Ante Gross Savings, (Therms) | Therms Weights | Number of Project (n) | Ex Ante Gross Savings (Therms) | Sample Therms Weights | Sampled Therms % of Population |
| Boiler/Burner Retrofit & Replacement/Controls | 61                    | 1,705,211                       | 59%            | 12                    | 879,223                        | 65%                   | 52%                            |
| Demand Control Ventilation                    | 12                    | 376,156                         | 13%            | 5                     | 244,818                        | 18%                   | 65%                            |
| Pipe/Tank/Roof/Valve Insulation               | 15                    | 437,248                         | 15%            | 2                     | 150,047                        | 11%                   | 34%                            |
| Process/Steam/Heat Recovery System            | 7                     | 370,480                         | 13%            | 1                     | 75,013                         | 6%                    | 20%                            |
| RTO/Ozone Laundry System                      | 4                     | 13,981                          | <1%            | 0                     | 0                              | 0%                    | 0%                             |
| <b>TOTAL</b>                                  | <b>99</b>             | <b>2,903,076</b>                | <b>100%</b>    | <b>20</b>             | <b>1,349,100</b>               | <b>100%</b>           | <b>46%</b>                     |

Source: Utility tracking data and Navigant analysis.

On-site measurement and verification (M&V) was conducted for 10 out of the 20 selected sites, based on random selection. The onsite M&V projects included measures such as boiler retrofit and replacements, burner upgrades, insulation on steam piping and pipe fittings, demand control

ventilation measures in kitchens and parking garages. The engineering review of the algorithms used by the program to calculate energy savings and the assumptions that feed into those algorithms were assessed and the savings verification approach were classified into one of two categories, 1) reasonable and acceptable, or 2) needs revision based on evaluation research findings.

### Net Impact Sampling

Program net impact parameters involved conducting an attempted census survey of all 99 participating project contacts to support net to gross ratio estimation. A sample of 10 participant trade allies and 10 non-participant trade allies were also targeted for completed interviews. Sampling for the NTG analysis was designed to achieve a 90/10 confidence and precision level. In order to achieve the designed confidence and precision on the participant trade ally sample, Navigant attempted to conduct a census of the contractors that generated the largest portion of program savings. Contractors that contribute a smaller proportion of the savings were also sampled in order to achieve a balanced perspective. The verified gross and net savings parameter data sources are provided in Table 2-4.

**Table 2-4. Research Findings Gross and Net Savings Parameter Data Sources**

| Parameter   | Data Source                                    | Deemed or Evaluated? |
|---|--|----------------------|
| Number of measures installed                            | Program Tracking and Evaluation Research       | Evaluated            |
| Research Finding Gross Realization Rate                 | Evaluation Research                            | Evaluated            |
| Research Finding Gross Savings                          | Evaluation Research                            | Evaluated            |
| Research Findings Net-to-gross Ratio (NTGR)             | Evaluation Research                            | Evaluated            |
| Boiler/Burner Replacement and Upgrade Savings           | Evaluation Research                            | Evaluated            |
| Boiler/Burner and Other Heating Control Systems Savings | Evaluation Research                            | Evaluated            |
| Demand Control Ventilation Savings                      | Evaluation Research                            | Evaluated            |
| Pipe/Tank/Roof/Valve Insulation Savings                 | Evaluation Research                            | Evaluated            |
| Process/Steam/Heat Recovery System Savings              | Evaluation Research                            | Evaluated            |
| RTO/Ozone Laundry System Savings                        | Evaluation Research                            | Evaluated            |
| Onsite M&V Project Sample                               | Projects documentation/<br>Evaluation Research | Evaluated            |
| Desk Review Engineering Project Sample                  | Projects documentation/<br>Evaluation Research | Evaluated            |

Source: Utility tracking data and Navigant analysis.

### 2.1.3 Research Finding Gross Program Savings Analysis Approach

The gross impact analysis of the C&I Custom program was based on an engineering estimate of gross therm measure savings from each sampled project, with analysis of on-site collected verification data

for a subset of projects. The engineering analysis methods and degree of monitoring vary from project to project, depending on the complexity of the measures installed, the size of the associated savings, the potential to revise input assumptions, and the availability and reliability of existing data. On-site performance measurement methodologies were based on IPMVP protocols, primarily options A through D.

The measure-level and project level realization rates were then extrapolated to the program population for Peoples Gas and North Shore Gas, using a ratio estimation method to yield research finding evaluation-adjusted gross energy savings.

Navigant conducted a limited number of early reviews of projects. These are projects that the implementation contractor had identified early in the project application cycle that may pose a risk, either due to the complex technical nature or difficulty in baseline determination, during evaluation efforts.

#### 2.1.4 Verified Net Program Savings Analysis Approach

Net to gross (NTG) research methods in GPY2 combine participant and trade ally survey results, based on a self-report method. The approach focused on capturing a broader market representation of free ridership and spillover. Participant’s actions in the absence of the program along with the presence of any spillover installations are analyzed, along with participating trade ally spillover and non-participant trade ally spillover analysis. Navigant attempted a census on all 99 project participants and was able to complete 40 interviews for participant free ridership and spillover analysis. A ten trade ally participant sample was attempted for the spillover analysis. An additional 10 non-participant trade ally interviews were also attempted for the spillover sample. Sampling for the NTG analysis was designed to achieve a 90/10 confidence and precision level. In order to achieve the designed confidence and precision on the trade ally sample, Navigant conducted a census of the participating contractors that generate the largest portion of program savings. Contractors that contributed a smaller proportion of the savings were also sampled in order to achieve a balanced sample.

The overall program NTG is calculated by using the participating customer free-ridership rate, and then adding the participant spillover and trade ally participant and non-participating spillover results, as follows:

$$NTG_{Program} = 1 - (Participating\ Customer\ Free\ Rider\ Score) + Participant\ Spillover + Trade\ Ally\ Participant\ and\ Non\ Participating\ Spillovers$$

Navigant examined the spillover results to identify and eliminate double counting of spillover resulting from overlap between the participants and the trade allies. The GPY2 research findings net energy savings for Peoples Gas and North Shore Gas C&I Custom programs were calculated by multiplying the verified gross savings estimates by the estimated net-to-gross ratio. The calculation results are summarized in Appendix 7.2.2.

### 2.1.4.1 Free-Ridership

#### Participant Free Ridership

The participant free ridership was assessed using a customer self-report method. This method calculates free-ridership using data collected during participant telephone interviews covering the three scoring items of Timing and Selection Score (reflects the influence of the most important of various program and program-related elements in the customer’s decision to select a specific program measure at the time), Program Influence Score (captures the perceived importance of the program whether rebate, recommendation, or other program intervention), and 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). Each of these scores represents the highest response or the average of several responses given to one or more questions about the decision to install a program measure. The rationale for using the maximum value is to capture the most important element in the participant’s decision making.

The algorithm for determining participant free ridership is shown below. Detail of the scoring and weighting of the three main participant free-ridership scores is summarized in the Appendix 7-2.

$$\begin{aligned} \text{Participant Free Ridership} &= \text{Average}[(\text{Timing \& Selection Score} + \text{Program Influence Score} \\ &+ \text{No Program Influence Score})] \end{aligned}$$

### 2.1.4.2 Spillover

#### Participating Customer Spillover

Participant spillover is calculated using the following algorithm:

$$\text{Participant SO} = [(\text{Savings Associated with Additional High Efficiency Measures} / \text{Total Participant Savings}) \times (\text{Program Influence Score})]$$

The savings values associated with the additional high efficiency measures were taken from the Illinois TRM when available, and from other third party industry documents if not in the Illinois TRM.

#### Trade Ally Participant Spillover

The trade allies and other contractors were asked about their total sales. This number was used to weight the trade ally responses to calculate an overall increase in the sales of program qualified measures. For participating trade allies, their total sales were compared to the program sales, to calculate an estimated savings from the additional measures installed outside of the program. Trade ally spillover was calculated using the following algorithm:

$$\text{Trade Ally PSO} = [(\text{Percentage of Program Qualified Sales} - \text{Percentage of Program Sales}) \times (\text{Program Influence Score})]$$

## Non-Participating Trade Ally Spillover

To estimate spillover, Navigant used the non-participating trade ally sales that can be credited to program influence, and used the terms per cost of similar equipment found in the program tracking system to calculate estimated spillover terms savings that can be credited to the program. The non-participant trade ally survey could not distinguish which program, C&I Prescriptive or C&I Custom, influenced the non-participant trade allies, so the non-participant spillover savings were credited to the Prescriptive program because the spillover measures identified were similar to prescriptive measures.

Non-participating and drop-out trade ally spillover was calculated using the following algorithm:

$$\begin{aligned}
 & \text{Non Participant Trade Ally SO} \\
 & = [(Percentage\ of\ High\ Efficiency\ Sales\ After\ Program\ Participation \\
 & \quad / Training - Percentage\ of\ High\ Efficiency\ Sales\ Before\ Program\ Participation \\
 & \quad / Training) \times (Program\ Influence\ Score)]
 \end{aligned}$$

### 2.1.5 Process Evaluation

The GPY2 process evaluation activities assessed the effectiveness of program implementation and design through in-depth interviews with program staff and the implementation contractor. The evaluation examined what went well or not so well in GPY2 and what changes have been made in GPY2 that are expected to impact customer and trade ally participation and satisfaction. Navigant also interviewed participants about their satisfaction with the program, including the program’s application and approval process, program incentives and customer interactions with program staff. We asked questions about sources of program awareness and effectiveness of program marketing and outreach materials. Navigant conducted interviews with an attempted census of all program participants in GPY2 and completed 40 interviews, and five trade ally participant interviews for the process evaluation.

### 3. Gross Impact Evaluation

Navigant reviewed the C&I Custom program tracking database to ascertain the level of inputs, and if there were outliers that can be brought to the attention of the program staff for review. Based on findings from the engineering desk reviews and onsite M&V of the sample of 20 projects, Navigant calculated the sample gross realization rate (by multiplying the quantity of measures installed by the verified measure savings) and applied to the population using a ratio estimation technique, as explained in Appendix 7.2.1. Navigant determined that the Peoples Gas GPY2 C&I Custom program achieved research finding gross savings of 2,108,877 Therms based on evaluation research finding gross realization rate of 0.81. The North Shore Gas program achieved research finding gross savings of 249,179 Therms based on a gross realization rate 0.81.

#### 3.1.1 Tracking System Review

Over the course of the GPY2 program year, Navigant and the implementation contractor maintained close contact regarding the program tracking system (Bensight Data Management platform) updates to follow up from previous program evaluation recommendations. The implementation contractor granted Navigant direct access to the program tracking system, enabling Navigant to obtain real-time information from the tracking system. Navigant used an extract from the program’s tracking system (September 24, 2013 data extract) to verify the GPY2 program ex ante inputs including measure counts and ex ante savings. Navigant verified that the Peoples Gas and North Shore Gas C&I Custom program tracking system continued to capture relevant data required to track the program’s actions for reporting and evaluation activities. Navigant found that the program had implemented quality assurance and quality control procedures to minimize the likelihood of data entry errors and that the program continued to maintain or improve upon these procedures.

As Navigant recommended in the GPY1 C&I Custom evaluation report, the IC can ensure the tracking database extract provided to the evaluation team contains important project information on pre- and post-inspection findings prior to project final approval, equipment baseline assessment (e.g., pass/fail status), equipment make and model, critical communications, and additional baseline information whether the measure is a replacement on burn-out, early replacement or retrofit, age or measure useful life, etc.

#### 3.1.2 Program Volumetric Findings

Overall, the PGL/NSG GPY2 Custom program performed very well in GPY2 compared to the previous year. Program participation increased in GPY2 for both Peoples Gas and North Shore Gas. The Peoples Gas implemented 89 projects from 73 participants (compare to 29 projects in GPY1)<sup>11</sup>, and North Shore Gas installed 10 projects from 10 participants (compare to 3 projects in GPY1). Measures installed included boiler and burner upgrades and replacement and controls, pipe and tank insulation, demand controlled ventilation, kiln door replacement, ozone laundry and other heat recovery systems. Table 3-1 and Table 3-2 provide the measure level quantities and the ex ante savings in GPY2.

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<sup>11</sup> The Peoples Gas projects exclude project #85581 which was moved from GPY2 to GPY3 as a work in progress project status.

**Table 3-1. Peoples Gas GPY2 Custom Program Participation and Savings by Measure**

| Measure                                | Peoples Gas           |                                |                 |
|--|-----------------------|--------------------------------|-----------------|
|  | Measure Count (units) | Ex Ante Gross Savings (Therms) | % Gross Savings |
| Boiler Retrofit & Replacement          | 26                    | 860,274                        | 33.1%           |
| Burner Upgrade                         | 19                    | 495,533                        | 19.1%           |
| Boiler/Burner & Other Control Systems  | 13                    | 186,935                        | 7.2%            |
| Condensate/Steam Recovery System       | 5                     | 293,411                        | 11.3%           |
| Condensate/Tempered/HW Tank Insulation | 3                     | 5,830                          | 0.2%            |
| Demand Control Ventilation             | 12                    | 376,156                        | 14.5%           |
| GREM                                   | 1                     | 10,976                         | 0.4%            |
| Heat timer setback                     | 2                     | 2,829                          | 0.1%            |
| Ozone Laundry System                   | 1                     | 4,932                          | 0.2%            |
| Pipe/Valve and Fittings Insulation*    | 15                    | 277,008                        | 10.7%           |
| Regenerative Thermal Oxidizer (RTO)    | 1                     | 1,720                          | 0.1%            |
| Roof Insulation/Insulation Blankets    | 3                     | 80,698                         | 3.1%            |
| <b>TOTALS</b>                          | <b>101</b>            | <b>2,596,304</b>               | <b>100.0%</b>   |

Source: Navigant Evaluation Team Analysis of Tracking Data

\*- Contains 2 steam pipe insulation projects with total retrofit quantity of 2924 linear feet of pipe insulation. For the sake of simplicity these are counted here as 2 unit pipe measures.

**Table 3-2. North Shore Gas GPY2 Custom Program Participation and Savings by Measure**

| Measure                                   | North Shore Gas       |                                |                 |
|---|-----------------------|--------------------------------|-----------------|
|   | Measure Count (units) | Ex Ante Gross Savings (Therms) | % Gross Savings |
| Boiler Retrofit & Replacement             | 1                     | 43,818                         | 14.3%           |
| Burner Upgrade                            | 2                     | 104,844                        | 34.2%           |
| Tank Insulation                           | 1                     | 2,361                          | 0.8%            |
| Kiln Door & Seal Door Replacement         | 1                     | 75,013                         | 24.5%           |
| Weatherization -Overhead Door Replacement | 1                     | 2,056                          | 0.7%            |
| Ozone Laundry System                      | 2                     | 7,330                          | 2.4%            |
| Pipe Insulation                           | 2                     | 71,350                         | 23.3%           |
| <b>TOTALS</b>                             | <b>10</b>             | <b>306,772</b>                 | <b>100.0%</b>   |

Source: Navigant Evaluation Team Analysis of Tracking Data

Key findings include:

1. The majority of the installed measures from Peoples Gas (57%) and the ex ante savings (59%) came from projects with boiler and burner upgrades, replacements and control systems. Also, significant savings were realized from demand controlled ventilation measures (about 15%), and 14% of the savings from steam pipe, valves and fittings insulation, and roof and tank insulations. The multifamily sector provided Peoples Gas the highest percentage of projects (37%, by count) but the university/college sector (26%) provided the most therm savings.
2. For North Shore Gas, the projects with boiler and burner upgrades and replacements contributed 48% of the ex ante gross savings, and 14% from tank and pipe insulations. Most of the North Shore Gas projects were installed in manufacturing facilities.
3. Navigant applied adjustments to most of the sampled measures based on the onsite and engineering desk review findings. Thirteen (65%) of the sample projects had some downward evaluation savings adjustment due to baseline efficiency, billing gas usage analysis, or other adjustments to claimed efficiency improvements. These adjustments resulted in an overall sample gross realization rate of 0.81 (weighted by project size and by strata). The volumetric findings of the adjustments made to achieve the program verified gross savings are presented in the Table 7-2 in Appendix 7.2.1.
4. Comparing year to year volumetric results from GPY1 and GPY2, the Peoples Gas has increased program participation from 28 in GPY1 to 73 in GPY2 (increase of 161%), and North Shore Gas has 10 participants from 3 in GPY2 (increase of 233%). The gross realization rate of ex ante savings dropped from 1.02 in GPY1 to 0.81 in GPY2 for both Peoples Gas and North Shore Gas, although Peoples Gas in GPY2 had an increase in research finding gross savings of over 720 percent and North Shore Gas had an increase of over 520 percent.

### 3.1.3 Gross Program Impact Parameter Estimates

The gross impact parameters are presented in Table 3-3 below.

**Table 3-3. Verified Gross Savings Parameters**

| Parameter   | Value                     | Deemed or Evaluated? | Source Notes                                      |
|---|---------------------------|----------------------|---|
| Measure Type and Eligibility                      | Varies                    | Evaluated            | GPY2 EM&V analysis based on program tracking data |
| PGL Project/Measure Participation                 | 101 measures, 89 projects | Evaluated            | Program tracking data                             |
| NSG Project/Measure Participation                 | 10 measures, 10 projects  | Evaluated            | Program tracking data                             |
| Research Findings Gross Savings Realization Rate  | 0.81                      | Evaluated            | GPY2 EM&V analysis                                |
| Rel. Precision @ 90% Confidence Level on Gross RR | 13%                       | Evaluated            | GPY2 EM&V analysis                                |

Source: Utility tracking data and Navigant analysis



### 3.1.4 Development of the Verified Gross Realization Rate

From the results of the on-site M&V and engineering project file reviews, the measure-level verified savings were determined for the sampled projects as the sample research findings gross savings. The research finding gross realization rates for the sample were determined as the ratio of the research finding gross energy savings to ex-ante gross energy savings derived from ex ante net savings reported in the tracking system. The results of the sample-based research findings gross realization rates by strata are summarized in Table 3-4 for the Peoples Gas and North Shore Gas combined sample. Once initial research findings were provided to the IC for review, Navigant and the IC selected nine projects that underwent further review. Of these nine projects, the sample research findings gross savings were adjusted up for five of the projects based on additional project documentation provided by the IC. Further discussion of these projects and reasons for the adjustments are provided in the Appendix in Table 7-4.

**Table 3-4. Gross Impact Realization Rate Results for the Custom Sample**

| Sampling Strata | Sample-Based Ex Ante Gross Savings (Therms) | Sample-Based Research Findings Gross Realization Rate <sup>12</sup> | Sample-Based Research Findings Gross Savings (Therms) |
|-----------------|---|---|---|
| 1               | 721,444                                     | 0.61  | 439,030   |
| 2               | 480,172                                     | 1.02  | 491,432   |
| 3               | 147,484                                     | 0.80  | 117,413   |

Source: Navigant analysis

From the on-site M&V and engineering project file reviews, the evaluation verified that the ex ante savings calculations of some of the boiler replacement or burner upgrade projects assumed baseline efficiencies or pre and post-installation combustion efficiencies which were verified to be inaccurate through combustion test results or billing analysis conducted by the evaluation team. The evaluation adjustments resulted in a low realization rate of an average of 0.61 for stratum 1 projects.

The relative precision at 90% level of confidence for the sample is provided in Table 3-5. The mean research findings gross realization rate for the overall sample was 0.81 at ±13% relative precision at 90% confidence level.

<sup>12</sup> These are sample weighted therms realization rate values rounded to 2 digits. Direct application to the ex ante gross savings (to get sample research findings gross savings) will produce rounding differences.

**Table 3-5. Gross Therms Realization Rates and Relative Precision at 90% Confidence Level**

| Sampling Strata          | Relative Precision at 90% Level of Confidence (± %) | Low         | Mean        | High        | Standard Error |
|--------------------------|---|-------------|-------------|-------------|----------------|
| 1                        | 17%   | 0.50        | 0.61        | 0.71        | 0.06           |
| 2                        | 14%   | 0.88        | 1.02        | 1.17        | 0.09           |
| 3                        | 31%   | 0.55        | 0.80        | 1.05        | 0.15           |
| <b>Overall Therms RR</b> | <b>13%</b>  | <b>0.71</b> | <b>0.81</b> | <b>0.91</b> | <b>0.06</b>    |

Source: Navigant analysis

As mentioned above, thirteen of the twenty (65%) sampled projects had gross realization rates below 1.00. Five projects had realization rates below 0.50, as shown in Table 7-3, including projects 111174 (35%), 172512 (12%), and 64427 (17%). Some other projects had higher gross realization rates, including projects 111188 (166%), 150917 (134%) and 85524 (105%). The sample strata research findings gross realization rates were applied to the population strata to achieve the program level research findings gross savings.

### 3.1.5 Verified Gross Program Impact Results

The realization rate was applied to the program reported ex ante gross savings for both Peoples Gas and North Shore Gas to achieve the program level research findings gross savings, as summarized in Table 3-6 and Table 3-7. The resulting total program verified gross savings is 2,108,877 Therms for Peoples Gas and 249,179 Therms for North Shore Gas.

**Table 3-6. Peoples Gas GPY2 Verified Gross Impact Savings Estimates**

| Category   | Sample | Energy Savings (Therms) | 90/10 Significance? |
|--|--------|-------------------------|---------------------|
| <b>Boiler/Burner Retrofit &amp; Replacement/Controls</b> |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA     | 1,556,548               | NA                  |
| <b>Demand Control Ventilation</b>                        |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA     | 376,156                 | NA                  |
| <b>Pipe/Tank/Roof/Valve Insulation</b>                   |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA     | 363,536                 | NA                  |
| <b>Process/Steam/Heat Recovery System</b>                |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA     | 293,411                 | NA                  |
| <b>RTO/Ozone Laundry System</b>                          |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA     | 6,651                   | NA                  |
| <b>Peoples Gas GPY2 Total</b>                            |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               |        | 2,596,304               |                     |
| Research Findings Gross Realization Rate‡                | 20     | 0.81                    | No (90/13)          |
| <b>Research Findings Gross Savings‡</b>                  |        | <b>2,108,877</b>        | <b>No</b>           |

Source: Utility tracking data and Navigant analysis.

‡ Based on evaluation research on a sample drawn from a population that combined Peoples Gas and North Shore Gas.

Note: Gross realization rate is rounded to two digits. Direct application may produce rounding differences.

**Table 3-7. North Shore Gas GPY2 Verified Gross Impact Savings Estimates**

| Category   | Sample | Energy Savings (Therms) | 90/10 Significance? |
|--|--------|-------------------------|---------------------|
| <b>Boiler/Burner Retrofit &amp; Replacement/Controls</b> |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA     | 148,662                 | NA                  |
| <b>Pipe/Tank/Roof/Valve Insulation</b>                   |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA     | 73,711                  | NA                  |
| <b>Process/Steam/Heat Recovery System</b>                |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA     | 77,069                  | NA                  |
| <b>RTO/Ozone Laundry System</b>                          |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA     | 7,330                   | NA                  |
| <b>North Shore Gas GPY2 Total</b>                        |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA     | 306,772                 |                     |
| Research Findings Gross Realization Rate‡                | 20     | 0.81                    | No (90/13)          |
| <b>Research Findings Gross Savings‡</b>                  |        | <b>249,179</b>          | <b>No</b>           |

Source: Utility tracking data and Navigant analysis.

‡ Based on evaluation research on a sample drawn from a population that combined Peoples Gas and North Shore Gas.

Note: Gross realization rate is rounded to two digits. Direct application may produce rounding differences.

## 4. Net Impact Evaluation

As noted in Section 2, free-ridership and participant spillover were estimated through the implementation of a participating customer survey. Navigant calculated net-of free-ridership for each interview and then savings-weighted net-of-free-ridership for the program. Navigant completed 40 participating customer interviews. Five participating trade ally interviews were used to estimate spillover, along with an additional five interviews with non-participant trade allies to estimate spillover. Both non-participant and participant trade ally spillover estimates were combined to determine the overall net to gross.

The overall program net to gross estimate was 0.78 at a 90/9 confidence interval and precision level, as shown in Table 4-1. Details of the free ridership estimation and spillover analysis are provided in Section 7.2.2.

**Table 4-1. GPY2 Research Findings Net-to-Gross Estimate**

| Interview Type   | Research Estimated Values |
|--|---------------------------|
| Participant Free-ridership Score (P)   | 0.24                      |
| Participant Spillover (PSO)  | 0.001                     |
| Participating Trade Ally Spillover (TSO)                                     | 0.02                      |
| Trade Ally Non-Participant Spillover (TNSO)                                  | 0.00                      |
| Net-to-Gross (1-(P)+PSO+TSO+TNSO)  | 0.78                      |
| NTGR Rel. Precision at 90% Confidence Interval (based on participant survey) | 9%                        |

*Source: Utility tracking data and Navigant analysis of survey data.*

Using the estimated NTG of 0.78, the evaluation research finding net savings is 1,644,924 therms for Peoples Gas as shown in Table 4-2. The evaluation research finding net savings for North Shore Gas is 194,360 therms as shown in Table 4-3. The tables present savings at the measure group level including end-use groups where the estimates are not statistically significant at the 90/10 level, and the program level savings at 90/9 confidence interval and precision level.

**Table 4-2. Peoples Gas GPY2 Verified Net Impact Savings Estimates by Measure Category**

| Category   | Sample | Energy Savings (Therms) | 90/10 Significance? |
|--|--------|-------------------------|---------------------|
| <b>Boiler/Burner Retrofit &amp; Replacement/Controls</b> |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA     | 1,556,548               | NA                  |
| <b>Demand Control Ventilation</b>                        |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA     | 376,156                 | NA                  |
| <b>Pipe/Tank/Roof/Valve Insulation</b>                   |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA     | 363,536                 | NA                  |
| <b>Process/Steam/Heat Recovery System</b>                |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA     | 293,411                 | NA                  |
| <b>RTO/Ozone Laundry System</b>                          |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA     | 6,651                   | NA                  |
| <b>Peoples Gas GPY2 Total</b>                            |        |                         |                     |
| Ex-Ante GPY2 Gross Savings                               |        | 2,596,304               |                     |
| Research Findings Gross Realization Rate‡                | 20     | 0.81                    | Yes                 |
| <b>Research Findings Gross Savings‡</b>                  |        | <b>2,108,877</b>        | <b>No</b>           |
| Spillover (Participating Customer, PSO) ‡                | 40     | 0.001                   | Yes                 |
| Spillover (Participating TA, TSO) ‡                      | 5      | 0.02                    |                     |
| Spillover (Non-Participating TA, TNSO) ‡                 | 5      | 0.00                    | NA                  |
| Free ridership (Participating Customer) ‡                | 40     | 0.24                    | Yes                 |
| <b>Spillover Total (PSO + TSO + TNSO) ‡</b>              | NA     | <b>0.02</b>             |                     |
| <b>Free ridership (Evaluation Reporting) ‡</b>           | NA     | <b>0.24</b>             | <b>Yes</b>          |
| <b>Net-to-Gross Ratio (NTGR)‡</b>                        | NA     | <b>0.78</b>             |                     |
| <b>Research Findings Net Savings ‡</b>                   | NA     | <b>1,644,924</b>        | <b>No</b>           |

Source: Utility tracking data and Navigant analysis.

‡ Based on evaluation research on a sample drawn from a population that combined Peoples Gas and North Shore Gas.

Evaluation Reporting: NTGR = 1-Participating Customer Free-ridership +PSO+TSO+TNSO

Note: Gross realization rate is rounded to two digits. Direct application may produce rounding differences.

**Table 4-3. North Shore Gas GPY2 Verified Net Impact Savings Estimates by Measure Category**

| Category   | Sample    | Energy Savings (Therms) | 90/10 Significance? |
|--|-----------|-------------------------|---------------------|
| <b>Boiler/Burner Retrofit &amp; Replacement/Controls</b> |           |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA        | 148,662                 | NA                  |
| <b>Pipe/Tank/Roof/Valve Insulation</b>                   |           |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA        | 73,711                  | NA                  |
| <b>Process/Steam/Heat Recovery System</b>                |           |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA        | 77,069                  | NA                  |
| <b>RTO/Ozone Laundry System</b>                          |           |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA        | 7,330                   | NA                  |
| <b>North Shore Gas GPY2 Total</b>                        |           |                         |                     |
| Ex-Ante GPY2 Gross Savings                               | NA        | 306,772                 |                     |
| Research Findings Gross Realization Rate‡                | 20        | 0.81                    | Yes                 |
| <b>Research Findings Gross Savings‡</b>                  |           | <b>249,179</b>          | <b>No</b>           |
| Spillover (Participating Customer, PSO) ‡                | 40        | 0.001                   | Yes                 |
| Spillover (Participating TA, TSO) ‡                      | 5         | 0.02                    |                     |
| Spillover (Non-Participating TA, TNSO) ‡                 | 5         | 0.00                    | NA                  |
| Free ridership (Participating Customer) ‡                | 40        | 0.24                    | Yes                 |
| <b>Spillover Total (PSO + TSO + TNSO) ‡</b>              | <b>NA</b> | <b>0.02</b>             |                     |
| <b>Free ridership (Evaluation Reporting) ‡</b>           | <b>NA</b> | <b>0.24</b>             | <b>Yes</b>          |
| <b>Net-to-Gross Ratio (NTGR)‡</b>                        | <b>NA</b> | <b>0.78</b>             |                     |
| <b>Research Findings Net Savings ‡</b>                   | <b>NA</b> | <b>194,360</b>          | <b>No</b>           |

Source: Utility tracking data and Navigant analysis.

‡ Based on evaluation research on a sample drawn from a population that combined Peoples Gas and North Shore Gas.

Evaluation Reporting: NTGR = 1-Participating Customer Free-ridership +PSO+TSO+TNSO

Note: Gross realization rate is rounded to two digits. Direct application may produce rounding differences.

#### 4.1.1 Program Planned and Actual Accomplishments

As shown in Table 4-4, both the Peoples Gas and North Shore Gas C&I Custom programs did not meet their revised planned target net savings. The Peoples Gas evaluation net savings was 68 percent of the program net savings target in GPY2. North Shore Gas achieved 40 percent of its savings target in GPY2.

**Table 4-4. GPY2 C&I Custom Program Planned and Actual Accomplishments**

| Detail          | Ex Ante Net Savings (Therms) | Research Finding Net Savings (Therms) | Revised Planned GPY2 Net Savings <sup>13</sup> | % Revised Planned Net Savings Achieved |
|-----------------|------------------------------|---------------------------------------|--|--|
| Peoples Gas     | 1,765,487                    | 1,644,924                             | 2,415,500                                      | 68%                                    |
| North Shore Gas | 208,605                      | 194,360                               | 489,289  | 40%                                    |

Source: PG\_NSJ GPY2 Preliminary ICC report 2013-07-11;  
 Navigant analysis of GPY2 program tracking data

Table 4-5 and Table 4-6 below provide comparison of GPY2 Peoples Gas and North Shore Gas C&I Custom program findings versus GPY1 findings. The Peoples Gas GPY2 program achieved over 850 percent more of verified net savings compared to GPY1. North Shore Gas achieved almost 620 percent more of verified net savings in GPY2. An expansion of this magnitude in one program year is an exemplary achievement.

**Table 4-5. Peoples Gas C&I Custom Program Yearly Comparison**

| Program Result                          | GPY1    | GPY2      | Year-to-Year Ratio (GPY2/GPY1) |
|---|---------|-----------|--------------------------------|
| Ex Ante Gross Savings (Therms)          | 246,546 | 2,596,304 | 1053%                          |
| Research Finding Gross Realization Rate | 1.02    | 0.81      |                                |
| Research Finding Gross Savings (Therms) | 252,368 | 2,108,877 | 836%                           |
| Net to Gross Ratio                      | 0.68    | 0.78      |                                |
| Research Finding Net Savings (Therms)   | 171,610 | 1,644,924 | 959%                           |
| Participants                            | 28      | 73        | 261%                           |
| Installed Projects                      | 29      | 89        | 307%                           |

Navigant analysis of GPY2 Program tracking data (September 24, 2013 data extract)  
 GPY1 C&I Custom Program Evaluation Report\_Final

<sup>13</sup> The Peoples Gas program GPY2 net savings exceeded the initial Compliance Filing GPY2 goal of 1,185,600 Therms by 39 percent, although it was below the revised net goal of 2,415,500 Therms. The North Shore Gas program GPY2 net savings was also below the initial Compliance Filing GPY2 goal of 228,000 Therms by 15 percent. See *Integritys EE Compliance Filing June 1, 2011-May 31, 2014 (Docket 10-0564)*

**Table 4-6. North Shore Gas C&I Custom Program Yearly Comparison**

| Program Result                          | GPY1   | GPY2    | Year-to-Year Ratio<br>(GPY2/GPY1) |
|---|--------|---------|-----------------------------------|
| Ex Ante Gross Savings (Therms)          | 38,755 | 306,772 | 792%                              |
| Research Finding Gross Realization Rate | 1.02   | 0.81    |                                   |
| Research Finding Gross Savings (Therms) | 39,670 | 249,179 | 628%                              |
| Net to Gross Ratio                      | 0.68   | 0.78    |                                   |
| Research Finding Net Savings (Therms)   | 26,975 | 194,360 | 721%                              |
| Participants                            | 3      | 10      | 333%                              |
| Installed Projects                      | 3      | 10      | 333%                              |

*Navigant analysis of GPY2 Program tracking data (September 24, 2013 data extract)  
GPY1 C&I Custom Program Evaluation Report\_Final*



## 5. Process Evaluation

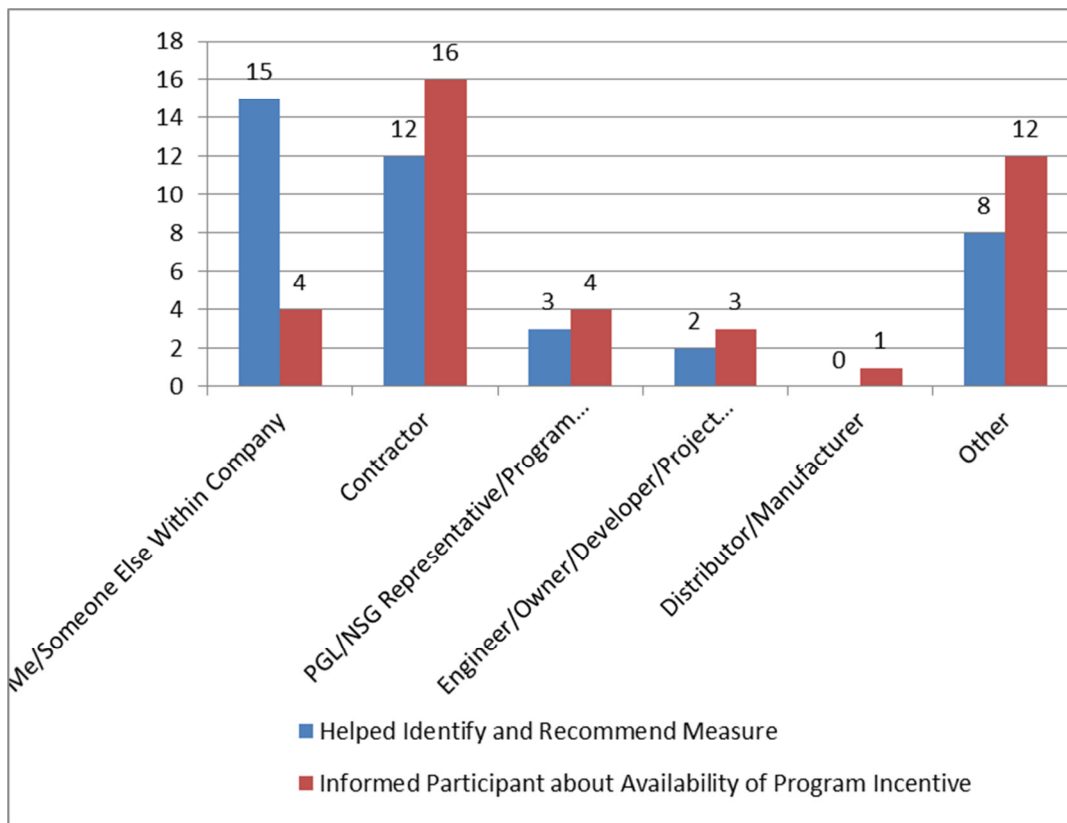
The process evaluation findings of the C&I Custom program are organized by the process research questions outlined in Section 1 of this report.

### Participant Survey Results

Navigant completed interviews with 40 of the 99 PGL/NSG C&I Custom program participants in GPY2. The interview asked customers about their satisfaction with the program, including the program’s application and approval process, program incentives and customer interactions with program staff.

The implementation contractor provided a great deal of support throughout the survey process. Navigant’s targeted sample size for both the participant customer and trade allies and non-participant trade allies required a great deal of coordination between all parties. Support was provided to Navigant by reaching out to potential survey participants and encouraging them to complete the survey. Based upon Navigant’s assessment, it appears clear that the efforts put forth by the IC increased the overall success rate of a difficult subset of respondents.

**Figure 5-1. Method of Initial Introduction to Program**

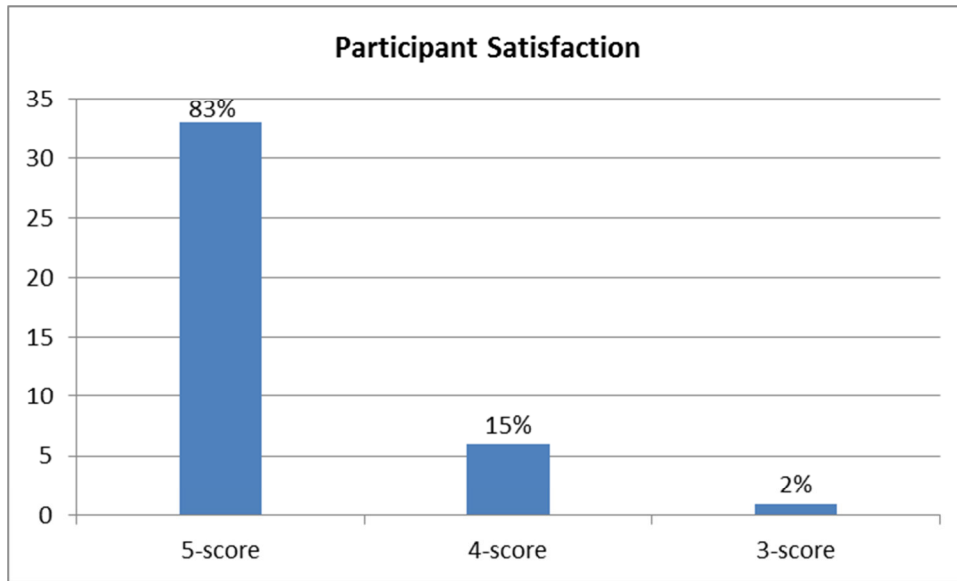


As shown in Figure 5-1, participants were asked to indicate who identified and recommended the type of measure that they installed and who informed them about the incentive through the C&I

Custom program. Twelve of the 40 respondents (30%) reported that a contractor helped them to identify and recommended the measure they installed, while 16 respondents (40%) said contractors informed them about the availability of incentive through the C&I Custom program. An additional 15 respondents (38%) identified themselves or someone within their company as recommending the measure, but only four respondents (10%) said they learned about the incentive benefit themselves or within their company. Additionally, three participants (8%) reported that the utility account manager or PGL/NSG representative helped to identify and recommended a measure, and eight respondents (20%) said they learned about the program incentives through “Other” representatives. Of those who gave “Other” as a response, the majority mentioned the assistance of PGL/NSG program affiliates. Five respondents mentioned Franklin Energy Services, and three mentioned other energy audit or consulting firms as being instrumental in recommending measures and program incentives to participants. One respondent indicated a vendor or distributor recommended the measure and program incentives. One respondent indicated receiving information through bill inserts.

Participants were asked whether they filled out the application forms for the project (either the initial or the final program application), and whether the application forms clearly explain the program requirements and how to participate. Of the 40 survey participants, 32 respondents (80%) said they filled out the application themselves. Twenty-nine of those (73%) said that the application forms clearly explain the program requirements and how to participate, and three (7%) said the application forms are somewhat clear.

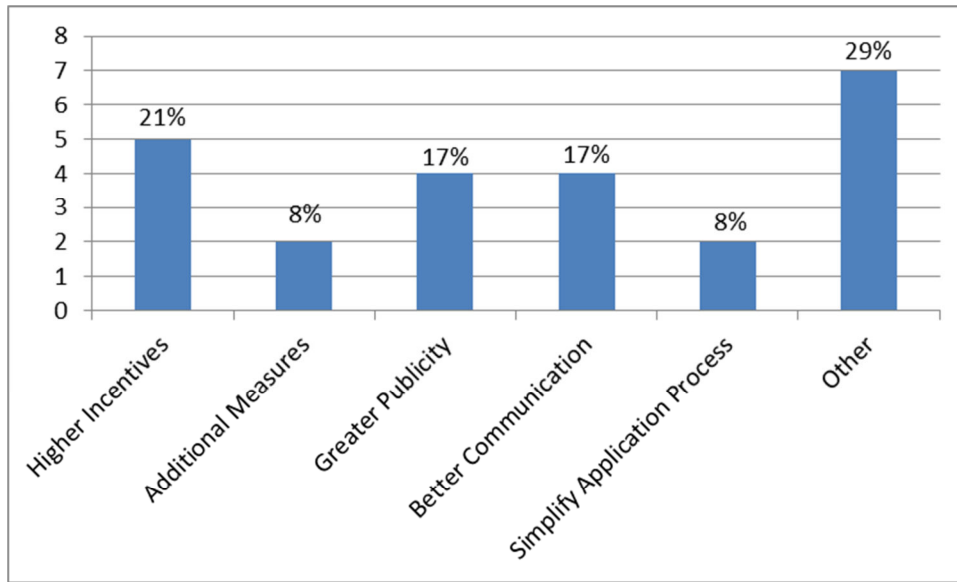
**Figure 5-2. Participant Satisfaction**



Source: Evaluation Team analysis.

Figure 5-2 shows a summary of participant satisfaction. Participants were asked to rate their overall satisfaction with the program, on a scale of 0 to 5 where 0 is “not at all satisfied” and 5 is “very satisfied”. Participants indicated very strong satisfaction with the program, and no participant gave a score below 3. Overall, thirty-three respondents (83%) gave a score of 5, and additional six respondents (15%) gave a score of 4. One respondent gave a score of 3.

**Figure 5-3. Participant Recommendations for Program Improvement**



As shown in Figure 5-3, when asked if the participant had any suggestions for improving the program, 24 participants (60%) responded with various suggestions. Among those who gave specific suggestions, five respondents (21%) suggested increasing the program incentive levels. Four respondents (17%) suggested increasing the publicity that the program receives, and a similar number of respondents recommended improving information about the program (17%). Two participants (8%) suggested simplifying the application process. Seven respondents (29%) gave “Other” suggestions. Of those who gave “Other” as a response, one respondent recommended that the program should have incentives with new construction measures just as ComEd and Nicor Gas have. One mentioned that “there are several different programs from PGL/NSG and it is difficult to figure out what applies to the project you are currently working on; qualification of measures, different systems, housing units -- so many different things where your project falls and what potential assistance is available is the tough part”. Other respondents suggested that the PGL/NSG should continue to offer the C&I Custom program.

## Trade Ally Survey Results

### *Participant Trade Allies*

Navigant completed interviews with five participant trade allies out of the ten trade ally sample target, and five non-participant trade allies out of a sample target of ten. The five participating trade allies represented 15 GPY2 projects. Navigant attempted contact with all 49 participating trade allies, but encountered significant non-response. Overall, participating trade allies and contractors are very familiar and satisfied with the Peoples Gas and North Shore Gas C&I Custom program. This satisfaction comes as the population of unique trade allies doubled from 25 in GPY1 to 49 in GPY2.

Trade allies were asked a series of questions regarding participation, satisfaction with the program and marketing effectiveness, and suggested changes to reach a targeted audience. One out of the five respondents (20%) gave a score of 5, and four of the five respondents (80%) gave a score of 4 on their familiarity with the program (on a scale from 0 to 5, where zero is not at all familiar and five is very

familiar). On the question of satisfaction, trade allies indicated their strong satisfaction with the program. Four respondents (80%) gave a score of 5, and one respondent gave a score of 2. When respondents were asked whether they have attended any Peoples Gas and North Shore Gas training sessions and how they will rank the overall effectiveness of the training session, only two participants responded. One respondent gave a score of 5 and the other respondent gave a 4.

***Non-Participant Trade Allies***

Responses from five non-participants trade allies on reasons for not participating and recommendations to improve relations with trade allies are illustrated in Table 5-1. Generally, the non-participant trade allies view streamlining the application process and coordination with other utilities as key to win more trade allies to participate in the PG/NSG program.

**Table 5-1. Non-Participant Trade Ally Survey Results**

| Survey Questions   | Non-Participant Trade Ally Response   |
|--|---|
| <p>Why have you not yet participated or submitted any project applications to the PGL / NSG program?</p>           | <ul style="list-style-type: none"> <li>▪ Two respondents indicated lack of knowledge of application process or where to submit the application were reasons for not participating. One trade ally said part of the application had PG/NSG information, and part had Nicor information. The other mentioned lack of time to review the PG/NSG information and get to the right contact.</li> <li>▪ Two respondents mentioned they would rather work with Nicor Gas, and indicated that in-person visit from Nicor Gas to address their questions was key.</li> <li>▪ One respondent said as a consulting company without a business license, they cannot work with PG/NSG, and its customers did not apply.</li> <li>▪ Another respondent said its customers had already allocated budget for the project, and may rather participate in PG/NSG program next year.</li> </ul>  |
| <p>Is there anything the PGL / NSG can do to help you complete the program applications or any recommendation?</p> | <ul style="list-style-type: none"> <li>▪ Some responses included:               <ul style="list-style-type: none"> <li>○ “Help us with the form. Provide a name and number that act as a liaison to help us go through these.”</li> <li>○ “Keep the application form simple and short. Clear and concise is a lot better than page after page of legal stuff.”</li> <li>○ PGL / NSG “should come and address the customers in person or more onsite training. Get the word out more; Emails and brochures.”</li> <li>○ “Split the incentives. The building owner doesn’t gain the benefits of the saved energy costs, but has to pay the capital cost. Suggests getting the two parties involved to split the cost.”</li> <li>○ “Getting all of the programs in the same geographical region in line with each other (Nicor, PG, NSG, etc.) makes it much easier for the contractors to understand and participate. Many other states have a single program for the entire state.”</li> </ul> </li> </ul> |
| <p>Have you received any promotional materials or looked at the program website to find information?</p>           | <ul style="list-style-type: none"> <li>▪ Only two respondents indicated “Yes” that they checked the website or received promotional materials through emails for upcoming event or brochures, and frequently forward these emails to their customers.</li> <li>▪ One of the two respondents said other than for downloading application forms, the PG/NSG website had very minimal information, and that the NSG/PG website is the most lacking of all EE program websites they know.</li> </ul>  |

Source: Non-Participant Trade Ally Survey

## 6. Conclusions and Recommendations

This section summarizes the key impact and process findings and recommendations. Overall, the GPY2 Peoples Gas and North Shore Gas C&I Custom programs built on a solid foundation from GPY1 to substantially expand their impacts. Both the Peoples Gas and North Shore Gas programs increased their participation year over year but did not achieve their planned savings target in GPY2, although they increased their savings significantly compared to GPY1. The evaluation EM&V activities applied adjustments to a sample of the tracking system projects ex ante savings, and this caused a drop in the gross realization of savings from 1.02 in GPY1 to 0.81 in GPY2 for both Peoples Gas and North Shore Gas. In GPY2, the program-level research finding Net-to-Gross Ratio of 0.78 was a significant increase from the GPY1 value of 0.68.

### Program Savings Goals Attainment

**Finding 1.** The Peoples Gas GPY2 program achieved evaluation research findings net savings of 1,644,924 Therms, which is 68 percent of the program’s revised net savings goal of 2,415,500 therms<sup>14</sup>. Compared to GPY1, the Peoples Gas program increased net energy savings by more than 850 percent. The North Shore Gas GPY2 program achieved evaluation research findings net savings of 194,360 Therms which is 40 percent of the program’s revised net savings goal of 489,289 Therms.<sup>15</sup> Compared to GPY1, the North Shore Gas program increased energy savings by more than 620 percent. Boiler and burner retrofits and replacements, and demand control ventilation measures were a significant factor in the savings increase of both programs in GPY2. An expansion of savings of this magnitude in one year is an exemplary achievement. The goals suggest further expansion is possible.

**Recommendation 1.** To achieve program savings goals, the program IC staff should continue to identify opportunities and encourage program trade allies and contractors to market the program incentives offerings and options available to customers. The implementation contractor should continue to target high potential / low participating segments of the marketplace including controls type projects that have potential for high savings. An effort should be considered to identify the technology successes of GPY2 that have wide applicability, and build marketing initiatives and case studies around them. For example, the demand control ventilation projects performed well in our evaluation sample.

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<sup>14</sup> The Peoples Gas program GPY2 net savings exceeded the initial Compliance Filing GPY2 goal of 1,185,600 Therms by 39 percent. The program revised net savings goal of 2,415,500 Therms was due to transfers from other underperforming programs. See *Integrus EE Compliance Filing June 1, 2011-May 31, 2014 (Docket 10-0564)*

<sup>15</sup> The North Shore Gas program GPY2 net savings was below the initial Compliance Filing GPY2 goal of 228,000 Therms by 15 percent. See *Integrus EE Compliance Filing June 1, 2011-May 31, 2014 (Docket 10-0564)*

### Net-to-Gross Ratio

**Finding 2.** The NTG ratio found in this evaluation is 0.78, derived from evaluation estimates of participant free ridership and spillover, and participating and non-participating trade ally spillover. The GPY2 NTGR is a substantial increase over the GPY1 NTG ratio of 0.68, which did not include spillover and was based on a more limited sample.

**Recommendation 2.** As approved in the SAG meeting, the NTG ratio found in this evaluation should be applied to both GPY2 and GPY3. In order to further increase the NTG, the IC should proactively market to an expanded base of customers with the technology successes of GPY2. Providing technical assistance and maintaining relationships with past participants will help the program influence future efficiency projects.

### Verified Gross Realization Rates

**Finding 3.** The evaluation on-site verification and engineering reviews on a sample of 20 projects from the population of 99 projects triggered adjustments to the sample projects and the program savings. The GPY2 Peoples Gas and North Shore Gas Custom programs verified gross realization rate was 0.81.

**Recommendation 3.** The Parallel Path baseline early review process initiated in GPY2 should be implemented more effectively to minimize evaluation adjustments to assumptions at the end of the program year. In particular, baseline determination and equipment efficiencies were a source of large evaluation adjustments. The IC should continue the process of the developing impact statements at the application phase of the project, which should include questions regarding customer capital planning (i.e. was the project part of regularly scheduled maintenance?), planned efficiencies in the absence of the program (i.e. would the customer have installed the same efficiency equipment without the availability of the program incentive?), and based on the preponderance of evidence, does the customer need to or are they planning to replace the equipment within the near future (e.g. within 4 years)?

### Savings Estimates

**Finding 4.** As noted in the report findings, 13 out of the 20 sampled projects from the on-site and engineering file reviews produced a gross savings realization rates below 1.00, resulting in a reduction of ex ante 487,425 therms for PGL and 57,593 therms for NSG compared to the research finding gross energy savings.

**Recommendation 4.** The IC should consider reassessing due diligence procedures employed to gather project documentation and inspections prior to a project final approval. The IC should ensure projects savings assumptions and estimates adequately reflect the projects' documentation and the baseline conditions of the equipment.

### Evaluation Coordination

**Finding 5.** The implementation contractor provided a great deal of support throughout the survey process. Navigant's targeted sample size for both the participant customer and trade allies and non-participant trade allies required a great deal of coordination between all parties. Support was provided to Navigant by reaching out to potential survey participants and encouraging them to complete the survey. Navigant believes the efforts put forth by the IC increased the overall success rate of evaluation data collection on a difficult subset of respondents. Despite success reaching customers and calls made to

trade allies by the IC, Navigant was unable interview the targeted number of trade allies due to non-response. Year-end evaluation activities coincide with the start of the heating season for trade allies, and this may be a factor in the low trade ally response rates.

**Recommendation 5.** The implementation contractor and Navigant should continue to work collaboratively prior to the end of each program year through the Parallel Path review process to identify issues that can affect gross realization rates. This may include allowing the evaluation team to contact the customer to verify key assumptions. Additionally, the IC should continue to engage Navigant’s engineering team during the program year when questions arise around particular projects that may be new to the program (e.g. kiln door seal replacements). The IC should collaborate with the evaluation team to find ways to improve trade ally interview response rates, such as identifying trade allies that may be interviewed during the evaluated program year as projects are completed.

### **Program Participation**

**Finding 6a.** Overall, PGL and NSG C&I Custom program participation increased significantly in GPY2 compared to the previous year. Comparing year to year volumetric results from GPY1 and GPY2, Peoples Gas implemented 89 projects (increase of 207%) and increased program participation from 28 in GPY1 to 73 in GPY2 (increase of 161%). North Shore Gas has increased program participation and projects from 3 to 10 (increase of 233%). The multifamily sector accounted for the bulk of the total number of installed projects and participation for Peoples Gas (37%) but the university/college sector provided the most savings (26%). The manufacturing sector accounted for the bulk of the savings and the measures for North Shore Gas.

**Finding 6b.** Overall, participants indicated strong satisfaction with the program, with 83 percent indicating they were very satisfied with the program.

**Recommendation 6.** The program should continue to identify opportunities that remove any bottlenecks within the application process and improve the overall program delivery to further increase customer participation. Consider improving customer understanding of program legal requirements and understanding of program policies and timelines.

### **Trade Ally Satisfaction and Other Participation.**

**Finding 7.** Participant trade allies were generally very satisfied with the program, as four of the five respondents (80%) gave a score of five, and one respondent gave a score of 2 on a scale of 0-5. The population of non-participant trade allies provided to Navigant contained both residential and non-residential trade allies. Of the 243 non-participants, approximately 18% of the contacts provided did not qualify for the survey. The provided population contained distributors, manufacturers, manufacturer representatives, and residential sector contacts.

**Recommendation 7.** The IC should continue to market the program to participating trade allies but also encourage non-participating trade allies to actively pursue and submit projects to the program. The IC should develop a commercial and industrial specific list of non-participating trade allies that would qualify for the program. By identifying potential trade allies, the IC will be better able to target new contractors to further increase program participation and savings.



**Finding 8.** From the non-participating (NP) trade ally survey results, NP trade allies continue to find the application process cumbersome and indicated that there is lack of coordination among utilities to improve communication to the trade allies.<sup>16</sup>

**Recommendation 8.** The IC should revisit the concerns and recommendations raised by non-participant trade allies as elaborated in Table 5-1, to improve on the dissemination of information to both program trade allies and those potential trade allies working with other utilities.

**Finding 9.** Twelve of the 40 **respondents** (30%) reported that a contractor helped them to identify and recommended the measure they installed, but 16 respondents (40%) said contractors informed them about the availability of incentive through the C&I Custom program.

**Recommendation 9.** From the participant survey, contractors continue to be a crucial part in the acquisition of new customers to the program and the flow of information to potential participants. The IC should continue to foster their relationship with existing trade allies and establish new connections with non-participant trade allies.

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<sup>16</sup> This statement reflects the views of the non-participating trade allies, not evaluation.

## 7. Appendix

### 7.1 ComEd, Nicor Gas, Peoples Gas, and North Shore Gas EM&V Reporting Glossary. December 17, 2013

#### High Level Concepts

##### Program Year

- EPY1, EPY2, etc. Electric Program Year where EPY1 is June 1, 2008 through May 31, 2009, EPY2 is June 1, 2009 through May 31, 2010, etc.
- GPY1, GPY2, etc. Gas Program Year where GPY1 is June 1, 2011 through May 31, 2012, GPY2 is June 1, 2012 through May 31, 2013.

There are two main tracks for reporting impact evaluation results, called Verified Savings and Impact Evaluation Research Findings.

##### Verified Savings composed of

- Verified Gross Energy Savings
- Verified Gross Demand Savings
- Verified Net Energy Savings
- Verified Net Demand Savings

These are savings using deemed savings parameters when available and after evaluation adjustments to those parameters that are subject to retrospective adjustment for the purposes of measuring savings that will be compared to the utility's goals. Parameters that are subject to retrospective adjustment will vary by program but typically will include the quantity of measures installed. In EPY5/GPY2 the Illinois TRM was in effect and was the source of most deemed parameters. Some of the PGL, NSG, Nicor Gas and ComEd deemed parameters were defined in filings with the ICC but the TRM takes precedence when parameters were in both documents.

**Application:** When a program has deemed parameters then the Verified Savings are to be placed in the body of the report. When it does not (e.g., Business Custom, Retro-commissioning), the evaluated impact results will be the Impact Evaluation Research Findings.

##### Impact Evaluation Research Findings composed of

- Research Findings Gross Energy Savings
- Research Findings Gross Demand Savings
- Research Findings Net Energy Savings
- Research Findings Net Demand Savings

These are savings reflecting evaluation adjustments to any of the savings parameters (when supported by research) regardless of whether the parameter is deemed for the verified savings analysis. Parameters that are adjusted will vary by program and depend on the specifics of the research that was performed during the evaluation effort.

**Application:** When a program has deemed parameters then the Impact Evaluation Research Findings are to be placed in an appendix. That Appendix (or group of appendices) should be labeled Impact Evaluation Research Findings and designated as “ER” for short. When a program does not have deemed parameters (e.g., Business Custom, Retro-commissioning), the Research Findings are to be in the body of the report as the only impact findings. (However, impact findings may be summarized in the body of the report and more detailed findings put in an appendix to make the body of the report more concise.)

### Program-Level Savings Estimates Terms

| N | Term Category | Term to Be Used in Reports†              | Application†              | Definition   | Otherwise Known As (terms formerly used for this concept)§ |
|---|---------------|--|---------------------------|--|--|
| 1 | Gross Savings | Ex-ante gross savings                    | Verification and Research | Savings as recorded by the program tracking system, unadjusted by realization rates, free ridership, or spillover.   | Tracking system gross                                      |
| 2 | Gross Savings | Verified gross savings                   | Verification              | Gross program savings after applying adjustments based on evaluation findings for only those items subject to verification review for the Verification Savings analysis      | Ex post gross, Evaluation adjusted gross                   |
| 3 | Gross Savings | Verified gross realization rate          | Verification              | Verified gross / tracking system gross   | Realization rate   |
| 4 | Gross Savings | Research Findings gross savings          | Research                  | Gross program savings after applying adjustments based on all evaluation findings  | Evaluation-adjusted ex post gross savings                  |
| 5 | Gross Savings | Research Findings gross realization rate | Research                  | Research findings gross / ex-ante gross  | Realization rate   |
| 6 | Gross Savings | Evaluation-Adjusted gross savings        | Non-Deemed                | Gross program savings after applying adjustments based on all evaluation findings  | Evaluation-adjusted ex post gross savings                  |
| 7 | Gross Savings | Gross realization rate                   | Non-Deemed                | Evaluation-Adjusted gross / ex-ante gross  | Realization rate   |
| 1 | Net Savings   | Net-to-Gross Ratio (NTGR)                | Verification and Research | 1 – Free Ridership + Spillover   | NTG, Attribution   |
| 2 | Net Savings   | Verified net savings                     | Verification              | Verified gross savings times NTGR  | Ex post net  |
| 3 | Net Savings   | Research Findings net savings            | Research                  | Research findings gross savings times NTGR   | Ex post net  |
| 4 | Net Savings   | Evaluation Net Savings                   | Non-Deemed                | Evaluation-Adjusted gross savings times NTGR   | Ex post net  |
| 5 | Net Savings   | Ex-ante net savings                      | Verification and Research | Savings as recorded by the program tracking system, after adjusting for realization rates, free ridership, or spillover and any other factors the program may choose to use. | Program-reported net savings                               |

‡ “Energy” and “Demand” may be inserted in the phrase to differentiate between energy (kWh, Therms) and demand (kW) savings.

† **Verification** = Verified Savings; **Research** = Impact Evaluation Research Findings; **Non-Deemed** = impact findings for programs without deemed parameters. We anticipate that any one report will either have the first two terms or the third term, but never all three.

§ Terms in this column are not mutually exclusive and thus can cause confusion. As a result, they should not be used in the reports (unless they appear in the “Terms to be Used in Reports” column).

## Individual Values and Subscript Nomenclature

The calculations that compose the larger categories defined above are typically composed of individual parameter values and savings calculation results. Definitions for use in those components, particularly within tables, are as follows:

**Deemed Value** – a value that has been assumed to be representative of the average condition of an input parameter and documented in the Illinois TRM or PGL and NSG’s approved deemed values.

**Non-Deemed Value** – a value that has not been assumed to be representative of the average condition of an input parameter and has not been documented in the Illinois TRM or PGL and NSG’s approved deemed values. Values that are based upon a non-deemed, researched measure or value shall use the superscript “E” for “evaluated” (e.g., delta watts<sup>E</sup>, HOU-Residential<sup>E</sup>).

**Default Value** – when an input to a prescriptive saving algorithm may take on a range of values, an average value may be provided as well. This value is considered the default input to the algorithm, and should be used when the other alternatives listed for the measure are not applicable. This is designated with the superscript “DV” as in X<sup>DV</sup> (meaning “Default Value”).

**Adjusted Value** – when a deemed value is available and the utility uses some other value and the evaluation subsequently adjusts this value. This is designated with the superscript “AV” as in X<sup>AV</sup>

## Glossary Incorporated From the TRM

Below is the full Glossary section from the TRM Policy Document as of October 31, 2012<sup>17</sup>.

**Evaluation:** Evaluation is an applied inquiry process for collecting and synthesizing evidence that culminates in conclusions about the state of affairs, accomplishments, value, merit, worth, significance, or quality of a program, product, person, policy, proposal, or plan. Impact evaluation in the energy efficiency arena is an investigation process to determine energy or demand impacts achieved through the program activities, encompassing, but not limited to: *savings verification, measure level research, and program level research*. Additionally, evaluation may occur outside of the bounds of this TRM structure to assess the design and implementation of the program.

*Synonym:* **Evaluation, Measurement and Verification (EM&V)**

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<sup>17</sup> IL-TRM\_Policy\_Document\_10-31-12\_Final.docx

**Measure Level Research:** An evaluation process that takes a deeper look into measure level savings achieved through program activities driven by the goal of providing Illinois-specific research to facilitate updating measure specific TRM input values or algorithms. The focus of this process will primarily be driven by measures with high savings within Program Administrator portfolios, measures with high uncertainty in TRM input values or algorithms (typically informed by previous savings verification activities or program level research), or measures where the TRM is lacking Illinois-specific, current or relevant data.

**Program Level Research:** An evaluation process that takes an alternate look into achieved program level savings across multiple measures. This type of research may or may not be specific enough to inform future TRM updates because it is done at the program level rather than measure level. An example of such research would be a program billing analysis.

**Savings Verification:** An evaluation process that independently verifies program savings achieved through prescriptive measures. This process verifies that the TRM was applied correctly and consistently by the program being investigated, that the measure level inputs to the algorithm were correct, and that the quantity of measures claimed through the program are correct and in place and operating. The results of savings verification may be expressed as a program savings realization rate (verified ex post savings / ex ante savings). Savings verification may also result in recommendations for further evaluation research and/or field (metering) studies to increase the accuracy of the TRM savings estimate going forward.

**Measure Type:** Measures are categorized into two subcategories: custom and prescriptive.

**Custom:** Custom measures are not covered by the TRM and a Program Administrator’s savings estimates are subject to retrospective evaluation risk (retroactive adjustments to savings based on evaluation findings). Custom measures refer to undefined measures that are site specific and not offered through energy efficiency programs in a prescriptive way with standardized rebates. Custom measures are often processed through a Program Administrator’s business custom energy efficiency program. Because any efficiency technology can apply, savings calculations are generally dependent on site-specific conditions.

**Prescriptive:** The TRM is intended to define all prescriptive measures. Prescriptive measures refer to measures offered through a standard offering within programs. The TRM establishes energy savings algorithm and inputs that are defined within the TRM and may not be changed by the Program Administrator, except as indicated within the TRM. Two main subcategories of prescriptive measures included in the TRM:

**Fully Deemed:** Measures whose savings are expressed on a per unit basis in the TRM and are not subject to change or choice by the Program Administrator.

**Partially Deemed:** Measures whose energy savings algorithms are deemed in the TRM, with input values that may be selected to some degree by the Program Administrator, typically based on a customer-specific input.

In addition, a third category is allowed as a deviation from the prescriptive TRM in certain circumstances, as indicated in Section 3.2:

**Customized basis:** Measures where a prescriptive algorithm exists in the TRM but a Program Administrator chooses to use a customized basis in lieu of the partially or fully deemed inputs. These measures reflect more customized, site-specific calculations (e.g., through a simulation model) to estimate savings.

## 7.2 Detailed Impact Research Findings and Approaches

### 7.2.1 Gross Impact Results

#### Gross Impact sampling

A sample of 20 projects based on a planned target of 90/10 confidence and precision level for program-level verified gross savings was drawn from the PGL and NSG program tracking database of a population of 99 projects to determine verified gross realization rates. The engineering review of the algorithms used by the program to calculate energy savings and the assumptions that feed into those algorithms were assessed and the savings evaluation approach were classified into one of two categories, 1) reasonable and acceptable, or 2) needs revision based on evaluation findings. On-site measurement and verification (M&V) based on IPMVP protocols was conducted for 10 out of the 20 selected sites including spot measurements and billing analysis. A profile of the sample selection is shown below in Table 7-1. Navigant reviewed the sample to verify that there is an accurate representation by measure technology and business type within the overall sample.

**Table 7-1. Profile of GPY2 Gross Impact Sample by Measure Category**

| Population Summary                            |                       |                                 |                | Sample                |                                |                       |                                |
|---|-----------------------|---------------------------------|----------------|-----------------------|--------------------------------|-----------------------|--------------------------------|
| End Use Type                                  | Number of Project (N) | Ex Ante Gross Savings, (Therms) | Therms Weights | Number of Project (n) | Ex Ante Gross Savings (Therms) | Sample Therms Weights | Sampled Therms % of Population |
| Boiler/Burner Retrofit & Replacement/Controls | 61                    | 1,705,211                       | 59%            | 12                    | 879,223                        | 65%                   | 52%                            |
| Demand Control Ventilation                    | 12                    | 376,156                         | 13%            | 5                     | 244,818                        | 18%                   | 65%                            |
| Pipe/Tank/Roof/Valve Insulation               | 15                    | 437,248                         | 15%            | 2                     | 150,047                        | 11%                   | 34%                            |
| Process/Steam/Heat Recovery System            | 7                     | 370,480                         | 13%            | 1                     | 75,013                         | 6%                    | 20%                            |
| RTO/Ozone Laundry System                      | 4                     | 13,981                          | <1%            | 0                     | 0                              | 0%                    | 0%                             |
| <b>TOTAL</b>                                  | <b>99</b>             | <b>2,903,076</b>                | <b>100%</b>    | <b>20</b>             | <b>1,349,100</b>               | <b>100%</b>           | <b>46%</b>                     |

Source: Utility tracking data and 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, Franklin Energy provided project documentation in electronic format for each sampled project. Documentation included some or all of 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), calculation spreadsheets, and a project summary report.

### **On-Site Data Collection**

On-site surveys were completed for a subset of 10 of the 20 customer applications sampled. For most projects on-site sources include interviews that are completed at the time of the on-site, visual inspection of the systems and equipment, spot measurements, and short-term monitoring (e.g., less than four weeks). An analysis plan is developed for each project selected for on-site data collection. Each plan explains the general gross impact approach used (including monitoring plans), provides an analysis of the current inputs (based on the application and other available sources at that time), and identifies sources that will be used to verify data or obtain newly identified inputs for the ex post gross impact approach.

The engineer assigned to each project first calls to set up an appointment with the customer. During the on-site audit, data identified in the analysis plan is collected, including monitoring records such as measured temperatures, data from equipment logs, equipment nameplate data, system operation sequences and operating schedules, and, of course, a careful description of site conditions that might contribute to baseline selection.

All engineers who conduct audits are trained and experienced in completing inspections for related types of projects. Each carries properly calibrated equipment required to conduct the planned activities. They check in with the site contact upon arrival at the business, and check out with that same site contact, or a designated alternate, on departure. The on-site audit consists of a combination of interviewing and taking measurements. During the interview, the engineer meets with a business representative who is knowledgeable about the facility's equipment and operation, and asks a series of questions regarding operating schedules, location of equipment, and equipment operating practices. Following this interview, the engineer makes a series of detailed observations and measurements of the business and equipment. All information is recorded and checked for completeness before leaving the site.

### **Site-Specific Impact Estimates**

After all of the field data is collected, including any monitoring data, annual energy impacts are developed based on the on-site data, monitoring data, application information, and, in some cases, billing or interval data. Each program engineering analysis is based on calibrated engineering models that make use of hard copy application review and on-site gathered information surrounding the equipment installed through the program (and the operation of those systems).

Energy savings calculations are accomplished using methods that include short-term monitoring-based assessments, simulation modeling (e.g., DOE-2), bin models, application of ASHRAE methods and algorithms, analysis of pre- and post-installation billing and interval data, and other specialized algorithms and models.

### Research Findings for the Gross Impact Sample

In Table 7-2 below we present the research findings results for the 20 sampled projects to provide insight into the engineering review and onsite research findings.

**Table 7-2. GPY2 Summary of Sample EM&V Results**

| Project ID | Measure Description         | Summary of Adjustment  |
|------------|-----------------------------|--|
| 45907      | Steam Boilers to Hot Water  | The ex ante calculations use a post-installation efficiency of 90% which is inaccurate based on the equipment efficiency curves. Gross savings RR is 96%.  |
| 56727      | Boiler Retrofit             | Ex ante savings assumed baseline eff. of 65%. Billing analysis based on customer combustion test data indicated the old equipment was approximately 81-83% eff (close to a code baseline of 80%). Gross savings RR is 73%.             |
| 85524      | Other - Insulation Blankets | The ex ante calculations assumed one heat transfer rate and the ex post calculations used a different heat transfer rate for each bin based on pipe temperature. Gross savings RR is 105%.   |
| 111173     | Boiler Replacement          | The combustion tests show that the existing boilers varied in efficiency from 70-80%, compared to 65% assumed in the ex ante calculations. Gross savings RR is 38%.  |
| 172512     | Burner Retrofit             | The ex ante calculations used a pre and post-installation combustion efficiencies which were different from combustion tests obtained from the customer. Gross savings RR is 12%.  |
| 107177     | Insulation                  | Ex ante calculations used incorrect surface temperatures in the 3E+ model. Used updated surface temperature obtained from the site contact for ex post calculations. Gross savings RR is 105%.   |
| 150928     | DCV: Parking Garage         | Savings increased due to fans operating 1% of the time compared to the 20% run time assumed in the ex ante savings calculations. Gross savings RR is 134%.   |
| 111174     | Boiler Burner Upgrade       | The ex ante calculations used a pre and post-installation combustion efficiencies which were different from combustion tests obtained from the customer. Gross savings RR is 35%.  |
| 203498     | DCV: Kitchen                | The ex ante calculations used a generation efficiency of 80% compare to 83% provided by the site contact for ex post calculation. Gross savings RR is 90%.   |
| 110623     | Burner Retrofit             | The ex ante savings calculations assumed an efficiency improvement of 5% while the onsite combustion reports shows 5.1%. The ex ante savings assumed an annual gas usage higher than the billed usage showed. Gross savings RR is 78%. |



| Project ID | Measure Description          | Summary of Adjustment   |
|------------|------------------------------|---|
| 109415     | Boiler Burner Upgrade        | The ex ante estimate assumes 5% improvement while the combustion tests shown in the project documentation is closer to 3% or less depending on the loading conditions. Gross savings RR is 57%.   |
| 131510     | Kiln Door & Seal Replacement | Gross savings RR is 100%.   |
| 150917     | DCV: Parking Garage          | Same as project 150928 above. Gross savings RR is 134%.   |
| 49583      | Steam Boiler Replacement     | A basic bill regression approach was taken to calculate savings. Gross savings RR is 70%.   |
| 59648      | Boiler/Burner Controls       | A basic bill regression approach was taken in calculating savings. Gross savings RR is 132%.  |
| 81632      | Steam Boiler Replacement     | The savings were found by normalizing the pre-installation billing data to TMY3 data to gain a typical annual profile. The typical annual profile was then used in a boiler model to calculate the savings from the efficiency improvements. Gross savings RR is 13%. |
| 64427      | Boiler Burner Upgrade        | Ex ante assumed an eff. increase of 12.1% to a post-installation boiler eff. of 91.6% which is unreasonably high. The ex post used a max. eff. of 85% which is on the high end of values typically seen for this type of boiler. Gross savings RR is 17%.             |
| 152203     | Linkageless Controls         | A basic bill regression approach was taken to calculate savings. The ex ante estimate assumes 4% improvement while the combustion tests shown in the project documentation is closer to 3% or less depending on the loading conditions. Gross savings RR is 64%.      |
| 61830      | Heat Recover, BAS, DCV       | A basic bill regression approach was taken to calculate savings. Gross savings RR is 104%.  |
| 111188     | DCV: Condition Space         | The savings adjustments are due to: Using the actual schedules and bin hours to calculate savings. Gross savings RR is 166%.  |

Source: Utility tracking data and Navigant analysis.

The project specific research finding gross realization rates and strata weighted gross realization rates are provided in the Table 7-3.

**Table 7-3. Gross Realization Rate Results for the Selected Custom Sample – by Project and Strata**

| Sampled Project ID | Sample-Based Ex Ante Gross Savings (Therms) | Sampling Strata | Application - Specific Research Finding Gross Realization Rate | Sample-Based Research Finding Gross Savings (Therms) | Weighted Sample-Based Research Finding Gross Realization Rate |
|--------------------|---|-----------------|--|--|---|
| 45907              | 140,468                                     | 1               | 0.96   | 134,623  | 0.61  |
| 56727              | 180,529                                     | 1               | 0.73   | 131,786  |   |
| 85524              | 80,195                                      | 1               | 1.05   | 83,815   |   |
| 111173             | 125,556                                     | 1               | 0.38   | 47,797   |   |
| 172512             | 116,651                                     | 1               | 0.12   | 13,834   |   |
| 111174             | 78,044                                      | 1               | 0.35   | 27,174   |   |
| 107177             | 69,851                                      | 2               | 1.05   | 73,684   | 1.02  |
| 150928             | 73,953                                      | 2               | 1.34   | 99,264   |   |
| 203498             | 39,678                                      | 2               | 0.90   | 35,541   |   |
| 110623             | 43,347                                      | 2               | 0.78   | 33,661   |   |
| 109415             | 43,818                                      | 2               | 0.57   | 25,015   |   |
| 131510             | 75,013                                      | 2               | 1.00   | 75,013   |   |
| 150917             | 61,595                                      | 2               | 1.34   | 82,678   |   |
| 64427              | 36,661                                      | 2               | 0.17   | 6,287  |   |
| 111188             | 36,256                                      | 2               | 1.66   | 60,289   | 0.80  |
| 49583              | 28,830                                      | 3               | 0.70   | 20,051   |   |
| 59648              | 30,126                                      | 3               | 1.32   | 39,666   |   |
| 81632              | 23,789                                      | 3               | 0.13   | 3,144  |   |
| 152203             | 31,404                                      | 3               | 0.64   | 19,992   |   |
| 61830              | 33,336                                      | 3               | 1.04   | 34,560   |   |
| <b>TOTAL</b>       | <b>1,349,100</b>                            |                 |  | <b>1,047,874</b>                                     | <b>0.81</b>   |

Source: Utility tracking data and Navigant analysis.

Table 7-4 provides a summary for projects that received additional review by Navigant. The sample based research finding gross savings were adjusted accordingly based on additional information provided by the IC, or at times, an adjustment in the savings calculation methodology.

**Table 7-4. Gross Impact Realization Rate Results for Projects that Received Additional Review**

| Sampled Project ID | Sample-Based Ex Ante Gross Savings (Therms) | Sampling Strata | Application - Specific Research Finding Gross Realization Rate | Sample-Based Research Finding Gross Savings (Therms) | Revised Sample-Based Research Finding Gross Savings (Therms) | Reason for Research Finding Revision  |
|--------------------|---|-----------------|--|--|--|---|
| 56727              | 180,529                                     | 1               | 0.73   | 0  | 131,786  | Additional email correspondence was provided that established FES contact with customer previous to customer deciding to install efficient equipment  |
| 107177             | 69,851                                      | 2               | 1.05   | 39,215   | 73,684   | Additional documentation was provided that substantiated the IC claim that 1230' of 5" pipe and 1180' of 8" pipe should be included in the analysis.  |
| 109415             | 43,818                                      | 2               | 0.57   | 24,266   | 25,015   | The new burner turndown ratio was verified and the calculation was adjusted accordingly.  |
| 131510             | 75,013                                      | 2               | 1  | 4,234  | 75,013   | Further discussion with FES determined that this measure was eligible for the program. In the future, where possible, the IC should verify energy efficient measures that may be part of "maintenance" are not part of the customers capital planning budget. |
| 152203             | 31,404                                      | 3               | 0.64   | 13,446   | 19,992   | A basic bill regression approach was taken to calculate savings. Pre and post data was available. Ex-ante analysis used assumed 18 months of data over a 24 month period resulting incorrectly capturing two winter periods.                                  |

Source: Navigant analysis

The relative precision at 90% level of confidence for the sample is provided in Table 7-5. The mean research findings gross realization rate for the overall sample was 0.81 at a relative precision of  $\pm 13\%$  at 90% confidence level. The program was unable to achieve the 90/10 precision target set by Navigant in the sample design for program overall gross realization rate as the realized savings for certain projects contained within the sample were less than anticipated (especially stratum 1 which contained larger projects), which resulted in a slightly lower precision level.

**Table 7-5. Gross Therms Realization Rates and Relative Precision at 90% Confidence Level**

| Sampling Strata          | Relative Precision at 90% Level of Confidence ( $\pm$ %) | Low         | Mean        | High        | Standard Error |
|--------------------------|--|-------------|-------------|-------------|----------------|
| 1                        | 17%  | 0.50        | 0.61        | 0.71        | 0.06           |
| 2                        | 14%  | 0.88        | 1.02        | 1.17        | 0.09           |
| 3                        | 31%  | 0.55        | 0.80        | 1.05        | 0.15           |
| <b>Overall Therms RR</b> | <b>13%</b>   | <b>0.71</b> | <b>0.81</b> | <b>0.91</b> | <b>0.06</b>    |

Source: Navigant analysis

### Research Findings Program Gross Savings

The sample strata research findings gross realization rates were applied to the population strata to achieve the program level research findings savings for the Peoples Gas and North Shore Gas C&I Custom programs as shown in Table 7-6 and Table 7-7.

**Table 7-6. Peoples Gas Gross Parameter and Savings Estimates at the Program Level by Strata**

| Sampling Strata | Program Ex Gross Savings (Therms) | Program Research Finding Gross Realization Rate | Program Research Finding Gross Savings (Therms) |
|-----------------|-----------------------------------|---|---|
| 1               | 866,865                           | 0.61  | 527,525   |
| 2               | 807,177                           | 1.02  | 826,105   |
| 3               | 922,262                           | 0.80  | 734,216   |
| Total           | 2,596,304                         | 0.81  | 2,108,877                                       |

Source: Navigant analysis

**Table 7-7. North Shore Gas Gross Parameter and Savings Estimates at the Program Level by Strata**

| Sampling Strata | Program Ex Gross Savings (Therms) | Program Research Finding Gross Realization Rate | Program Research Finding Gross Savings (Therms) |
|-----------------|-----------------------------------|---|---|
| 1               | 81,893                            | 0.61  | 49,836  |
| 2               | 181,876                           | 1.02  | 186,141   |
| 3               | 43,003                            | 0.80  | 34,235  |
| Total           | 306,772                           | 0.81  | 249,179   |

Source: Navigant analysis

## 7.2.2 Net Program Impact Results

### NTGR Sampling Approach

For the participating customer sampling, a census of the population was sampled. Projects were stratified at the tracking record level using the ex ante gross therms savings. Records were sorted from largest to smallest custom energy savings claim, and placed into one of three strata such that each contains one-third of the program total ex ante gross energy savings. The program participants sample was drawn such that the sample represents the final population distribution by stratum. Participant sampling for the NTG analysis was designed to achieve a 90/10 confidence and precision level. Additionally, 10 participant trade ally interviews were attempted with 5 completed, as well as 10 non-participant trade allies attempted and 5 completed.

**Table 7-8. C&I Custom Program Sampling Summary**

| Survey Target              | Population | Sample | Completed | Planned Confidence/Precision |
|----------------------------|------------|--------|-----------|------------------------------|
| Participant                | 99         | Census | 40        | 90/10                        |
| Participant Trade Ally     | 186        | ≤10    | 5         | 90/10                        |
| Non-Participant Trade Ally | 243        | 10     | 5         | n/a                          |

In an effort to improve the response rate of both the program participant and trade ally surveys, Navigant worked with the implementation contractor to verify the customer contact name and telephone number data in the tracking system is accurate prior to initiating outreach to sampled participants. A reasonable number of attempts were made to complete enough interviews to reach the sample targets but completed interviews fell short due to non-response or refusals.

### Research Findings NTGR in Main Report

The overall program NTG is calculated using the customer participant free-ridership rate, and then adding the participant, participating trade ally, and non-participating trade ally spillovers, as follows:

$$NTG_{Program} = 1 - FR_{Part.} + SO_{Part.} + SO_{Part.TA} + SO_{Non-Part.TA}$$

- Where  $NTG_{Program}$  = Program NTG
- $FR_{Part.}$  = Participant Free-Ridership
- $SO_{Part.}$  = Participant Spillover
- $SO_{Part.TA}$  = Participating TA Spillover
- $SO_{Non-Part.TA}$  = Non-Participating TA Spillover

The overall program NTG estimate through this calculation was 0.78. The GPY2 research findings net energy savings for Peoples Gas and North Shore Gas C&I Custom programs were calculated by multiplying the verified gross savings estimates by the net-to-gross estimation.

## Research Calculation of the NTGR Using Responses from Participating Trade Allies in the Estimate of Free-Ridership

An estimate of free-ridership incorporating interview responses from participating trade allies was made by Navigant in the course of conducting GPY2 evaluation research. The participating trade ally free-ridership score is their response to the question “If the program had not existed, approximately what percentage of the rebated measures would your customers have purchased?” From the analysis of the participant trade ally interview responses, Navigant estimated an overall program trade ally free ridership of 41% weighted by therm savings contributed by the trade ally.

This research estimate of overall program NTG is calculated by averaging the free-ridership rates estimated from participating customer and participating trade ally interviews, and then adding the participant, participating trade ally, and non-participating trade ally spillovers, as follows:

$$NTG_{Program} = 1 - \frac{(FR_{Part.} + FR_{TA})}{2} + SO_{Part.} + SO_{Part.TA} + SO_{Non-Part.TA}$$

Where NTG<sub>Program</sub> = Program NTG  
 FR<sub>Part.</sub> = Participant Free-Ridership  
 FR<sub>TA</sub> = Trade Ally Free-Ridership  
 SO<sub>Part.</sub> = Participant Spillover  
 SO<sub>PartTA</sub> = Participating TA Spillover  
 SO<sub>Non-PartTA</sub> = Non-Participating TA Spillover

The above approach recognizes the influence trade allies may have on the decision making process as both parties exhibit different strengths and weaknesses. Trade allies have a broader understanding of the market in general, while program participants understand internal behavioral characteristics. The average of FR<sub>Part.</sub> (0.24) and FR<sub>TA</sub> (0.41) was 0.32, eight points higher than the free-ridership for participating customers only. The overall program NTG estimate through this calculation was 0.70, a 0.08 decrease. The free-ridership estimate from PGL and NSG participating trade allies was a research effort and was not used in GPY2 for evaluation reporting of verified net savings results. The approach may be considered for future use.

### 7.2.2.1 Free-Ridership

#### *Participant Free Ridership Research Findings*

The participant free ridership was assessed using a customer self-report approach method. This method calculates free-ridership using data collected during participant telephone interviews covering the following items:

1. Timing and Selection. This score reflects the influence of the most important of various program and program-related elements in the customer’s decision to select a specific program measure at this time;
2. Program Influence. This score captures the perceived importance of the program (whether rebate, recommendation, or other program intervention) relative to non-program factors in

the decision to implement the specific measure that is eventually adopted or installed. This score is cut in half if they learned about the program after they decided to implement the measures; and

3. No-Program. This 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. This score accounts for deferred free ridership by incorporating the likelihood that the customer would have installed program-qualifying measures at a later date if the program had not been available.

Each of these scores represents the highest response or the average of several responses given to one or more questions about the decision to install a program measure. The rationale for using the maximum value is to capture the most important element in the participant’s decision making.

Participants are asked to rate the importance of a variety of factors that influenced their decision to adopt the energy efficiency measure. These factors include age of equipment, availability of incentive, and recommendations from contractors, among others. Participants are also asked to rate any “other” factors that may have influenced their decision to install the specified measure. If the participant indicates “other” factors influenced their decision, they are asked to rate the influence on a scale of 0 to 5 (where 0 means not at all important and 5 means extremely important). The “other” influences will be included within the influence scores.

Table 7-9 below summarizes the scoring and weighting of the three main free-ridership elements.

**Table 7-9. C&I Custom Participant Net-to-Gross Scoring Algorithm**

| Scoring Element   | Calculation   |
|---|---|
| <p>Timing and Selection score. The maximum score (on a scale of 0 to 5 where 0 equals not at all influential and 5 equals very influential) among the self-reported influence level the program had for:</p> <p>A. Availability of the program incentive [N3b]<br/>                     B. Recommendation from utility or program staff [N3f]<br/>                     C. Information from utility or program marketing materials [N3h]<br/>                     D. Endorsement or recommendation by a utility account rep [N3k]</p>  | <p>Maximum of A, B, C, and D</p>  |
| <p>Program Influence score [N3p]. “If you were given a TOTAL of 100 points that reflect the importance in your decision to implement the &lt;ENDUSE&gt;, and you had to divide those 100 points between: 1) the program and 2) other factors, how many points would you give to the importance of the PROGRAM?”</p>   | <p>Points awarded to the program<br/>                     Divide by 2 if the customer learned about the program AFTER deciding to implement the measure that was installed</p>      |
| <p>No-Program score [N5]. “Using a likelihood scale from 0 to 5, where 0 is “Not at all likely” and 5 is “Extremely likely”, if the utility program had not been available, what is the likelihood that you would have installed exactly the same equipment?”<br/> <u>Adjustments to the “likelihood score” are made for timing:</u><br/>                     “Without the program, when do you think you would have installed this equipment?” [N7/N7a] Free-ridership diminishes as the timing of the installation without the program moves further into the future.</p> | <p>Interpolate between No Program Likelihood Score and 5 where “At the same time” or within 6 months equals No Program score, and 48 months later equals 10 (no free-ridership)</p> |
| <p>Project-level Free-ridership (ranges from 0.00 to 1.00)</p>  | <p>1 – Sum of scores (Timing and Selection, Program Influence, No-Program)/15</p>   |
| <p>GPY2 Project level Net-to-Gross Ratio (ranges from 0.00 to 1.00)</p>   | <p>1 – Project level Free-ridership + Participant Spillover</p>   |
| <p>Apply score to other projects of the same end-use?</p>   | <p>If yes, assign score to same end-use of the additional projects</p>  |

Table 7-10 below provides the results of the participant NTG analysis and relative precision. The analysis took into account participants who installed multiple projects and indicated during the interview that they were all affected by the same decision to implement (making a total of 44 projects for NTG analysis). The mean participant NTG ratio was 76% (24% free ridership) at a 90 percent confidence interval and ±9% precision.



**Table 7-10. Participant NTG Ratio and Relative Precision at 90% Confidence Level**

| Sample Strata | Population<br>(N=100) | NTG Interviews<br>(n=40) | NTG Sample<br>(n=44) | Sample kWh Wgts. | Relative Precision<br>± % | Low  | NTGR<br>Mean | High |
|---------------|-----------------------|--------------------------|----------------------|------------------|---------------------------|------|--------------|------|
| 1             | 9                     | 3                        | 3                    | 0.351            | 29%                       | 0.58 | 0.81         | 1.04 |
| 2             | 18                    | 7                        | 8                    | 0.328            | 20%                       | 0.62 | 0.78         | 0.93 |
| 3             | 73                    | 30                       | 33                   | 0.321            | 7%                        | 0.65 | 0.70         | 0.75 |
| <b>Total</b>  | 100                   | 40                       | 44                   | 1.000            | 9%                        | 0.70 | 0.76         | 0.83 |

Source: Navigant analysis

### 7.2.2.2 Spillover

#### *Participant Spillover Findings*

The evidence of spillover from the CATI participant survey for the Custom program is presented in Table 7-11 below. These findings suggested that participant spillover effects for GPY2 are evident, and an effort was made to quantify them. One participant identified a single family furnace was installed outside of the program, and another participant identified steam boiler pipe wrap measures that we were able to quantify as spillover, using assumptions and algorithms from the Illinois Technical Reference Manual (TRM). These projects gave a score of 4 or 5 to the PG/NSSG program influence. A participant spillover of 0.1% was found; compared to the trade ally participant spillover of 2%, which was predominant spillover value in the NTGR analysis.

**Table 7-11. GPY2 C&I Custom Program Spillover Evidence from Participant Telephone Survey**

| Spillover Question  | Evidence of Spillover  |
|---|--|
| [SP1] Since your participation in the program, have you implemented any <u>additional</u> energy efficiency measures at this facility or at your other facilities within Peoples Gas / North Shore Gas' service territory?  | Of the 40 survey respondents, 20 said "Yes."   |
| [SP2] Did you receive a rebate or incentive for this measure? This could have been a rebate from Peoples Gas / North Shore Gas as a part of another EE program, or any other utility or government agency.  | Scoring is as follows:<br>14 said "Yes"<br>5 said "No"<br>1 said "Don't Know"  |
| [SP5] I have a couple of questions about the <SP2 Response> that you installed. How influential was your experience participating in the Program on your decision to implement this measure, using a scale of 0 to 5, where 0 is not at all influential and 5 is extremely influential? | Scoring is as follows:<br>(3) "Blank"<br>(2) Rating between 4 and 5  |
| Spillover Candidates (influence 4 or higher)  | 2 participants   |
| Among the 2 candidates, what type of energy efficiency measures were installed without an incentive?  | (2) single family furnaces<br>(184 Ln Ft.) steam boiler pipe wrap  |
| Spillover candidate with gas measures with quantifiable spillover   | 2 of 2 participants  |
| Candidate, with quantifiable spillover  | 2 participants with estimated savings using Illinois TRM:<br><ul style="list-style-type: none"> <li>• 1,534 therms estimated</li> <li>• Estimated participant spillover value is 0.1%</li> </ul> |

Source: Evaluation analysis

***Participant Trade Ally Spillover***

Participant trade ally spillover was estimated as 2%, using the following algorithm:

$$\text{Trade Ally SO} = (\text{Percentage of Program Qualified Sales} - \text{Percentage of Program Sales}) * \text{Program Influence Score}$$

Below is a sample of the spillover questions that were used to obtain the above algorithm:

1. Approximated what percentage of your total sales were rebated measure sales? Was it more than 50% or less than 50%? More or less than 75% or 25%? Etc.

2. On a scale from zero to five, where zero is not at all influential and five is very influential, how influential was participating in the program on your decision to increase the frequency that you recommended measures that would qualify for the Program to your customers?
3. Since you participated in the program, what percentage of your sales was for measures that would qualify for the Program?
4. Using a 0 to 5 likelihood scale where 0 is not all likely and 5 is extremely likely, if the program, including incentives as well as program services and information, had not been available, what is the likelihood that you would have sold the same percentage of measures that would qualify for the Program to your customers?

Trade allies were asked to estimate what percentage of their sales were high efficiency (program qualified) and the percentage of sales that were rebated program sales. The trade allies were asked to rate the influence of the program on the quantity of program qualified sales. The influence of the program was rated on a zero to five scale, where zero is not at all influential, and five is extremely influential. The trade allies were also asked the likelihood that the same quantity of program qualified sales would have been sold had the program not been available, also using a zero to five scale.

The difference between program qualified sales and program sales is potential spillover. This difference was discounted based on the level of influence of the program. The program influence score on a scale of 0 to 5 was calculated using the following formula:

$$\text{Program Influence Score} = \text{Average} \left[ \left( 1 - \frac{\text{Likelihood Score}}{5} \right), \frac{\text{Influence Score}}{5} \right] * 100\%$$

#### *Non-Participating Trade Ally Spillover*

Five non-participating trade allies interviews were completed with quantifiable spillover. The spillover measures identified were furnace, boilers, boiler controls, and water heater measures. To estimate the spillover, Navigant used the trade ally sales that can be credited to the program, and used the terms per cost of similar equipment found in the program tracking system to calculate arbitrary spillover terms savings that can be credited to the program. Comparing this with program overall verified gross savings Navigant estimated non trade ally spillover of 2%. The non-participant survey could not distinguish which program influenced the non-participant trade allies, so the non-participant spillover savings were credited to the Prescriptive program because they were similar to prescriptive measures.

Below is a sample of the spillover questions that were asked that apply to the above algorithm:

1. Before you participated in the program/attended the program training session, how often did you recommend that your customers purchase high efficiency measures that would qualify for the program? Was it more than 50% or less than 50%? More or less than 75% or 25%? Etc.

2. Before you participated in the program/attended the program training, what percentage of your sales were for high efficiency measures that would qualify for the program? Was it more than 50% or less than 50%? More or less than 75% or 25%?
3. Since participated in the program/attended the program training, have you recommended high efficiency measures to your customers more often, less often, or the same amount?
4. What do you think the percentage of measures that would qualify for the Program would have been?
5. Using a 0 to 5 likelihood scale where 0 is not all likely and 5 is extremely likely, if the program, including incentives as well as program services and information, had not been available, what is the likelihood that you would have sold the same percentage of measures that would qualify for the Program to your customers?
6. Please select one of the following which best describes your typical average annual sales in dollars?
  - a. <\$100,000
  - b. Greater than \$100,000 but less than \$250,000
  - c. Greater than \$250,000, but less than \$500,000
  - d. Greater than \$500,000, but less than \$1 Million
  - e. Greater than \$1 Million

### 7.3 Survey Data Collection Instruments

**PARTICIPANT SURVEY – PEOPLES GAS / NORTH SHORE GAS BUSINESS CUSTOM  
DRAFT**

**INTRODUCTION**

Hello, this is \_\_\_\_\_ from Blackstone Group calling on behalf of Peoples Gas / North Shore Gas. This is not a sales call. May I please speak with <PROGRAM CONTACT>?

Our records show that <COMPANY> purchased a <MEASURE DESCRIPTION>, which was recently installed and received an incentive of <INCENTIVE AMOUNT> from Peoples Gas / North Shore Gas. When signing the application form, as a part of the programs terms and conditions, you also agreed to support evaluation efforts of Peoples Gas / North Shore Gas' Commercial & Industrial Custom Rebate Program, which includes participating in surveys like this one. I was told you're the person most knowledgeable about the financial decision making process for this project. Is this correct? [\[IF NOT, ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.\]](#)

This survey will take about 30 minutes. Is now a good time? [\[If no, schedule call-back\]](#)

**SCREENING QUESTIONS**

- A0 Which of the following statements best characterizes your relation to <COMPANY>? [\[READ LIST\]](#)
- 1 I am an employee of <COMPANY> [\[THIS CATEGORY SHOULD INCLUDE THE OWNER/PRESIDENT/PARTNER ETC. OF THE COMPANY.\]](#)
  - 2 My company provides energy-related services to <COMPANY>
  - 3 I am a contractor and was involved in the installation of energy efficient equipment for this project
  - 97 OTHER, SPECIFY [\[PUT OWNER/PRESIDENT/PARTNER ETC. OF THE COMPANY IN 1\]](#)
  - 98 DON'T KNOW
  - 99 REFUSED

[\[IF A0 = 3: Thank and Terminate\]](#)

[\[READ if A0 <> 1\]](#) This survey asks questions about the energy efficiency equipment upgrades for which <COMPANY> received an incentive at <ADDRESS>. Please answer the questions from the perspective of <COMPANY>. For example, when I refer to "YOUR COMPANY", I am referring to <COMPANY>. If you are not familiar with certain aspects of the project, please just say so and I will skip to the next question.

I will be referring to the Commercial & Industrial Custom Rebate Program simply as "the Program".

- A1 Just to confirm, between June 1, 2012 and May 31, 2013 did <COMPANY> participate in the Program at <ADDRESS>? [\[IF NEEDED\]](#) This is a program where your business received an incentive for the completion of a natural-gas saving project.
- 1 Yes, participated as described
  - 2 Yes, participated but at another location

**PG/NSG –CUSTOM SURVEY**

**J4405**

- 3 No, did not participate in program
- 97 OTHER, SPECIFY
- 98 DON'T KNOW
- 99 REFUSED

[SKIP A2 IF A1=1,2]

- A2. Is it possible that someone else dealt with the energy-efficient project installation?
- 1 Yes, someone else dealt with it
  - 2 No
  - 97 OTHER, SPECIFY
  - 98 DON'T KNOW
  - 99 REFUSED

[IF A2=1, ASK TO BE TRANSFERRED TO THAT PERSON. IF NOT AVAILABLE, THANK AND TERMINATE. IF AVAILABLE, GO BACK TO A1]

[IF A1 = 2, 3, 97, 98, 99, THANK AND TERMINATE. RECORD DISPO AS "COULD NOT CONFIRM PARTICIPATION".]

Before we begin, I want to emphasize that this survey will only be about the <END USE> you installed through the Program at <ADDRESS>.

- A3. I'd like to confirm some information in Peoples Gas / North Shore Gas' database. Our records show that you completed a <ENDUSE> project and received an incentive from the Program. Is this correct?
- 1 Yes
  - 2 No
  - 98 DON'T KNOW
  - 99 REFUSED

[ASK IF A3 = 2]

- A3a Did you complete any project that received an incentive from the Program?
- 1 Yes [RECORD MEASURE NAME]
  - 2 No
  - 98 DON'T KNOW
  - 99 REFUSED

[IF A3A = 2, 98, 99: Thank and Terminate, Record Dispo as "Could Not Confirm Measures"]

**PG/NSG –CUSTOM SURVEY**

**J4405**

A4. Can you briefly describe the company you work for and the type of business it conducts?

[Record VERBATIM]

98 (DON'T KNOW)

99. (REFUSED)

A5. About how many are employed at your company?

[Record VERBATIM]

98 (DON'T KNOW)

99. (REFUSED)

A6. What type of business does your company primarily serve?

[Record VERBATIM]

98 (DON'T KNOW)

99. (REFUSED)

A7. Can you briefly summarize your roles and responsibilities at your company?

[Record VERBATIM]

98 (DON'T KNOW)

99. (REFUSED)

A8. For how long have you carried these out?

[Record VERBATIM]

98 (DON'T KNOW)

99. (REFUSED)



**PG/NSG –CUSTOM SURVEY**

**J4405**

MM1 Who identified and recommended that you install the < Type of measure installed; from program tracking dataset >? [\[DO NOT READ LIST\]](#)

- 1 ME/SOMEONE ELSE WITHIN COMPANY
- 2 CONTRACTOR
- 3 ENGINEER
- 4 ARCHITECT
- 5 MANUFACTURER
- 6 DISTRIBUTOR
- 7 OWNER
- 8 PEOPLES GAS / NORTH SHORE GAS REPRESENTATIVE/PROGRAM STAFF
- 97 OTHER, SPECIFY
- 98 DON'T KNOW
- 99 REFUSED

MM2 And who informed you about the availability of an incentive through Program? [\[DO NOT READ LIST\]](#)

- 1 SELF/SOMEONE AT FIRM
- 2 CONTRACTOR
- 3 ENGINEER
- 4 ARCHITECT
- 5 MANUFACTURER
- 6 DISTRIBUTOR
- 7 PEOPLES GAS / NORTH SHORE GAS ACCOUNT MANAGER
- 8 OWNER/DEVELOPER
- 9 PROJECT MANAGER
- 10 PEOPLES GAS / NORTH SHORE GAS REPRESENTATIVE/PROGRAM STAFF
- 97 OTHER, SPECIFY
- 98 DON'T KNOW
- 99 REFUSED

I'd like to ask you a few questions about the equipment that was removed when you installed the <ENDUSE> through the Program.

**REMOVED EQUIPMENT**

MS1 Did the <END USE> you installed through the Program replace old or outdated equipment at this facility, or was it an addition of new equipment?

- 1 Replacement/Upgrade old or outdated equipment
- 2 Addition of new equipment
- 98 DON'T KNOW
- 99 REFUSED

[\[ASK MS2 – MS4 if MS1 = 1\]](#)

MS2 Approximately how old was the equipment it replaced?

- [RECORD ESTIMATED AGE IN YEARS - RANGE 0 TO 100](#)
- 98 DON'T KNOW
- 99 REFUSED

[IF RESPONDENT HAS TROUBLE ESTIMATING AGE OF EQUIPMENT]

MS2a Approximately in what year was the existing equipment purchased?

RECORD APPROXIMATE YEAR OF PURCHASE - RANGE 1900 TO 2012

98 DON'T KNOW

99 REFUSED

MS3 How much longer do you think it would have lasted?

RECORD ESTIMATE NUMBER OF YEARS - RANGE 0 TO 100

98 DON'T KNOW

99 REFUSED

MS4 Which of the following statements best describes the performance and operating condition of the equipment you replaced?

1 Existing equipment was fully functional

2 Existing equipment was functioning, but with minor problems

3 Existing equipment was fully functioning, but with significant problems

4 Existing equipment had failed or did not function.

5 Not applicable, ancillary equipment (VSD, EMS, controls, etc.)

97 OTHER, SPECIFY

98 DON'T KNOW

99 REFUSED

**NET-TO-GROSS MODULE**

I'd now like to ask a few questions about the < Type of measure installed; from program tracking dataset > you installed through the program. Please note, when I refer to 'you', I am referring to the firm that you work for. Also, if you are unfamiliar with any aspects of the project mentioned here on out, please say so.

N00 In deciding to do a project of this type, there are usually a number of reasons that it may be undertaken. In your own words, can you tell me the primary reason that you decided to implement this project? [PROBE] Were there any other reasons?

RECORD REASONS [UP TO 3]

98 DON'T KNOW

99 REFUSED

N1a Was the < Type of measure installed; from program tracking dataset > project already part of a capital budget before you learned about the Program?

- 1 Yes, it was already part of the budget
- 2 No, it was not part of the budget
- 3 Company does not have a capital budget
- 98 DON'T KNOW
- 99 REFUSED

(ASK N1B IF-N1a = 2, 98, 99)

N1b Did you learn of the Incentive Program before or after you budgeted for, or initially planned to implement, this < Type of measure installed; from program tracking dataset > measure?

- 1 Before [SKIP TO N3]
- 2 After
- 98 DON'T KNOW
- 99 REFUSED

N2 Did you learn about Peoples Gas / North Shore Gas' Program before or after you decided to implement the **high efficiency** < Type of measure installed; from program tracking dataset > measure that was installed?

- 1 Before
- 2 After
- 98 DON'T KNOW
- 99 REFUSED

N3 Next, I'm going to ask you to rate the importance of different factors that might have influenced your decision to implement this **higher efficiency** < Type of measure installed; from program tracking dataset > project. Think of the degree of importance as being shown on a scale with equally spaced units from 0 to 5, where 0 means not at all important and 5 means extremely

important. Using this scale, please rate the importance of each of the following in your decision to implement the <END USE> **at this time**.

[FOR N3a - N3n]

RECORD 0 to 5

96 NOT APPLICABLE

98 DON'T KNOW

99 REFUSED

[READ FOR EVERY THRID ATTRIBUTE IN THE LIST] How important was...

[SKIP N3a IF MS1 = 2]

N3a The age or condition of the replaced equipment

N3b The availability of the Program incentive

N3d A recommendation from an equipment vendor or contractor that helped you with the choice of the equipment

N3e Previous experience with the measure

N3f Recommendation from a Peoples Gas / North Shore Gas program representative

N3h Information from the Program or any Peoples Gas / North Shore Gas marketing materials

N3i A recommendation from a design or consulting engineer

N3j The standard practice in your business/industry

N3k Endorsement or recommendation by your Peoples Gas / North Shore Gas account manager

N3l Corporate policy or guidelines

N3m Payback on the investment

N3n Were there any other factors we haven't discussed that were influential in your decision to install this **higher efficiency** < Type of measure installed; from program tracking dataset > measure?

OTHER - RECORD

95 NOTHING ELSE

98 DON'T KNOW

99 REFUSED

[ASK N3nn IF N3n IS NOT 95, 98, 99]

N3nn. Using the same zero to 5 scale, how would you rate the influence of this factor?

RECORD 0 to 5

96 NOT APPLICABLE

98 DON'T KNOW

99 REFUSED

Thinking about this a little differently, I would like you to compare the importance of the program with the importance of other factors in implementing the higher efficiency < Type of measure installed; from program tracking dataset > project.

You just told me that the following other factors were important:

[READ IN ONLY ITEMS WHERE THEY GAVE A RATING OF 3 or higher]

N3a Age or condition of old replaced equipment,

N3e Experience with this type of equipment

N3j Standard practice in your business/industry

N3l Corporate policy or guidelines

N3n RESPONSE FROM N3n

N3p If you were given a TOTAL of 100 points that reflect the importance in your decision to implement the < Type of measure installed; from program tracking dataset >, and you had to divide those 100 points between: 1) the program and 2) all other factors, how many points would you give to the importance of the PROGRAM?

RECORD POINTS FROM 0 to 100

998 DON'T KNOW

999 REFUSED

[CALCULATE VARIABLE "OTHERPTS" AS: 100 MINUS N3p RESPONSE

IF N3p = 998, 999, SET OTHERPTS = BLANK]

N3o And how many points would you give to other factors?

RECORD POINTS FROM 0 to 100

98 DON'T KNOW

99 REFUSED

[The response should be <OTHERPTS> because both numbers should equal 100. If response is not <OTHERPTS> ask INC1]

[ASK INC1 IF N3p and N3o do not add up to 100]

INC1 The last question asked you to divide a total of 100 points between the program and other factors. You just noted that you would give <N3p RESPONSE> points to the program. Does that mean you would give <OTHERPTS> points to other factors?

- 1 Yes
- 2 No
- 98 DON'T KNOW
- 99 REFUSED

[IF INC1=2, go back to N3p]

[CONSISTENCY CHECK]

[ASK IF TWO OR MORE OF N3a, N3e, N3j, N3l > 4 AND OTHERPTS < 30]

N4a Earlier you stated that factors other than the program were very important, but you gave all other factors a rating of <OTHERPTS>. Can you help me understand why you gave them this rating?

RECORD RESPONSE

- 98 DON'T KNOW
- 99 REFUSED

[ASK IF TWO OR MORE OF N3b, N3f, N3h, N3k > 4 AND N3p RESPONSE < 30]

N4a Earlier you stated that various aspects of the program were very important, but you gave all other factors a rating of < N3p RESPONSE >. Can you help me understand why you gave them this rating?

RECORD RESPONSE

- 98 DON'T KNOW
- 99 REFUSED

Now I would like you to think about the action you would have taken with regard to the installation of this equipment if the Peoples Gas / North Shore Gas incentive had not been available.

N5 Using a likelihood scale from 0 to 5, where 0 is “Not at all likely” and 5 is “Extremely likely”, if the utility **program** had **not** been available, what is the likelihood that you would have installed exactly the same project or efficiency of equipment?

RECORD 0 to 5

- 98 DON'T KNOW
- 99 REFUSED

(ASK IF N5 > 0, ELSE SKIP TO SP1A)

N7 You indicated earlier that there was a <N5 RESPONSE> in 5 likelihood that you would have installed the exactly the same project or efficiency of equipment if the program had not been available. Without the program, when do you think you would have installed the < Type of measure installed; from program tracking dataset >? Would you say...

- 1 At the same time
- 2 Earlier
- 3 Later
- 4 NEVER
- 98 DON'T KNOW
- 99 REFUSED

[ASK N7a IF N7 = 3]

N7a. How much later would you have completed the < Type of measure installed; from program tracking dataset > project? Would you say...

- 1 Within 6 months?
- 2 6 months to less than 1 year later?
- 3 1 to less than 2 years later?
- 4 2 to less than 3 years later?
- 5 3 to less than 4 years later?
- 6 4 or more years later
- 98 DON'T KNOW
- 99 REFUSED [DON'T READ]

**SPILLOVER MODULE**

Thank you for discussing the new <ENDUSE> that you installed through the Program. Next, I would like to discuss any other energy efficient equipment you might have installed.

SP1a Since your participation in the program, have you implemented any additional energy efficiency measures at this facility or at your other facilities within Peoples Gas / North Shore Gas' service territory?

- 1 Yes
- 2 No SKIP TO S1
- 98 DON'T KNOW SKIP TO S1
- 99 REFUSED SKIP TO S1

SP2 What was the measure that you implemented?

[RECORD MEASURE NAME](#)

- 98 DON'T KNOW SKIP TO SP3
- 99 REFUSED SKIP TO SP3

SP2a Did you receive a rebate or incentive for this measure? This could have been a rebate from Peoples Gas / North Shore Gas as a part of another EE program, or any other utility or government agency.

- 1 Yes
- 2 No
- 98 DON'T KNOW
- 99 REFUSED

SP2b How many of this measure did you install?

[RECORD NUMBER](#)

- 98 DON'T KNOW
- 99 REFUSED

SP3 Did you install any other energy efficiency measures?

- 1 Yes
- 2 No SKIP TO S1
- 98 DON'T KNOW SKIP TO S1
- 99 REFUSED SKIP TO S1

[\[ASK IF SP3 = 1\]](#)

SP4 What was the second measure?

[RECORD MEASURE NAME](#)

- 98 DON'T KNOW SKIP TO S5



99 REFUSED SKIP TO S5

SP4a Did you receive a rebate for this measure? This could have been a rebate from Peoples Gas / North Shore Gas as a part of another EE program, or any other utility or government agency.

1 Yes

2 No

98 DON'T KNOW

99 REFUSED

SP4b How many of this measure did you install?

RECORD NUMBER

98 DON'T KNOW

99 REFUSED

(IF SP2 = 98/99 SKIP TO SP8)

SP5 I have a couple of questions about the <SP2 Response> that you installed. How influential was your experience participating in the Program on your decision to implement this measure, using a scale of 0 to 5, where 0 is not at all influential and 5 is extremely influential?

RECORD 0 to 5

98 DON'T KNOW

99 REFUSED

SP6 If you had not participated in the program for the < Type of measure installed; from program tracking dataset >, how likely is it that your organization would still have implemented the exact same measure <SP2 Response>, using a 0 to 5, scale where 0 means you definitely **would not** have implemented this measure and 5 means you definitely **would** have implemented this measure?

RECORD 0 to 5

98 DON'T KNOW

99 REFUSED

[ASK IF SP5 AND SP6 ARE >4]

SPCC1 Earlier you stated that your experience with the program was highly influential on your decision to install the <SP2 Response>, but you also stated that it was highly likely that you would have installed the measure if you hadn't participated in the program. Can you help me understand why that is?

RECORD RESPONSE

98 DON'T KNOW

99 REFUSED

(IF SP4 = 98/99 SKIP TO S1)

SP8 I have a couple of questions about the other measure, the <SP4 Response> that you installed. How influential was your experience participating in the Program on your decision to implement this measure, using a scale of 0 to 5, where 0 is not at all influential and 5 is extremely influential?

RECORD 0 to 5

98 DON'T KNOW

99 REFUSED

SP9 If you had not participated in the program, how likely is it that your organization would still have implemented the <SP4 Response>, using a 0 to 5, scale where 0 means you definitely **would not** have implemented this measure and 5 means you definitely **would** have implemented this measure?

RECORD 0 to 5

98 DON'T KNOW

99 REFUSED

[ASK IF SP8 AND SP9 ARE >4]

SPCC2 Earlier you stated that your experience with the program was highly influential on your decision to install the <SP4 Response>, but you also stated that it was highly likely that you would have installed the measure if you hadn't participated in the program. Can you help me understand why that is?

RECORD RESPONSE

98 DON'T KNOW

99 REFUSED

**PROCESS MODULE**

I'd now like to ask you a few general questions about your participation in the program.

**Program Processes and Satisfaction**

- S1 Did you fill out the application forms for the project? (Either the initial or the final program application)
- 1 Yes
  - 2 No
  - 98 DON'T KNOW
  - 99 REFUSED

[ASK S1a IF S1 = 1 ELSE SKIP TO S2]

- S1a Did the application forms clearly explain the program requirements and how to participate?
- 1 Yes
  - 2 No
  - 3 Somewhat
  - 98 DON'T KNOW
  - 99 REFUSED
- S2 How would you rate your overall satisfaction with the program? Please use a scale of 0 to 5 where 0 is "not at all satisfied" and 5 is "very satisfied"
- S3 In what ways can the program be improved?
- RECORD RESPONSE**
- 98 DON'T KNOW
  - 99 REFUSED

**Feedback and Recommendations**

R0 How could the Program be improved? [MULTIPLE RESPONSE, UP TO 4] (SHOW IN ALPHABETICAL ORDER DO NOT READ LIST)

- 1 HIGHER INCENTIVES
- 2 ADDITIONAL MEASURES
- 3 GREATER PUBLICITY
- 4 BETTER COMMUNICATION
- 5 SIMPLIFY APPLICATION PROCESS
- 6 QUICKER PROCESSING TIME
- 96 NO RECOMMENDATIONS
- 97 OTHER, SPECIFY
- 98 DON'T KNOW
- 99 REFUSED

*Thank you for your participation in this survey. Peoples Gas / North Shore Gas will use this feedback to serve you better.*

## Peoples Gas / North Shore Gas Participating Trade Ally Interview Guide

|                                 |  |
|---------------------------------|--|
| <b>Respondent name:</b>         |  |
| <b>Respondent phone number:</b> |  |
| <b>Respondent title:</b>        |  |
| <b>Email Address:</b>           |  |
| <b>Respondent Company</b>       |  |
| <b>Date:</b>                    |  |
| <b>Status:</b>                  |  |

### Introduction

(Note: the interviewer should change the introduction to match his/her own interviewing style)

Hi, may I please speak with [NAME]?

Hello, this is \_\_\_\_ from \_\_\_\_\_ calling on behalf of Peoples Gas / North Shore Gas. This is not a sales call. May I please speak with <PROGRAM CONTACT>? Our records show that <COMPANY> purchased a <MEASURE DESCRIPTION>, which was recently installed and received an incentive of <INCENTIVE AMOUNT> from Peoples Gas / North Shore Gas. By participating in the program, you also agreed to support evaluation efforts of Peoples Gas / North Shore Gas' Commercial & Industrial Custom Rebate Program, which includes participating in surveys like this one. I was told you're the person most knowledgeable about this project. Is this correct? [IF NOT, ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.] The questions will only take about a half hour. Is this a good time to talk? [IF NOT, SCHEDULE A CALL BACK.]

This interview is about your experience with the Commercial & Industrial Custom Rebate Program, which I may refer to as simply as the Program.

## NAVIGANT

### Background

1. How familiar are you with the Commercial & Industrial Custom Rebate Program? On a scale from 0 to 5, where zero is not at all familiar and five is very familiar, how would you rank your familiarity?
2. [IF UNFAMILIAR (SCORE OF <=1), ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.]

### Satisfaction, Marketing and Participation

3. How would you rate your overall satisfaction with the program? Please use a scale of 0 to 5 where 0 is "not at all satisfied" and 5 is "very satisfied"
  - a. What were the reasons that you gave that rating? RECORD RESPONSE
    - 88 DON'T KNOW
    - 99 REFUSED
4. In what ways can the program be improved?[OPEN ENDED]

## NAVIGANT

5. How and when did you (the contractor) become aware of the program?
6. Have you received any promotional materials from Peoples Gas / North Shore Gas regarding the program? [IF YES] Can you please describe the promotional materials that you received?
7. Have you been provided with any materials or information to market the Business EER Program to your customers? If so, do you use these utility-produced marketing materials?
  - a. If you do not use the marketing material provided by Peoples Gas / North Shore Gas, why not?
8. Do you think the level of marketing and promotion of the Business EER Program to the customer has been appropriate so far?
  - a. What about to contractors?
9. Are there any promotional efforts that you feel have been especially successful making customers aware of the program?
  - a. Do you think they reach the right audience?
10. If the utilities or implementers are missing areas of opportunity, what are those areas?
11. Have you attended any Peoples Gas / North Shore Gas training sessions, such as a Peoples Gas / North Shore Gas PEEZZA session? [IF YES] Can you please describe the training sessions that you attended?
  - a. [IF 6 = YES] On a scale of 0 to 5, where zero is not at all effective and 5 is very effective, how would you rank the overall effectiveness of the Peoples Gas / North Shore Gas Training session?
  - b. Do you have any suggestions for improving the Peoples Gas / North Shore Gas training sessions?
12. Have you looked at the program website to find information? Was it easy to find the information they were looking for?



## Net-to-Gross

### FREE-RIDERSHIP

PRIOR TO CONDUCTING PROGRAM SPILLOVER - REVIEW PROGRAM QUALIFYING MEASURES WITH RESPONDENT FOR THE PROGRAM THAT THEY ASSOCIATED WITH IN QUESTION 5.

COMMON CUSTOM PROGRAM MEASURES INCLUDE: High-efficiency burner replacements, High-efficiency furnace replacements, High-efficiency boiler replacements, Burner and furnace controls, Process heat recovery technologies, including flue stack and condensing economizers, Regenerative thermal oxidizers, Condensate return system improvements, Direct-fired heaters, Destratification fans, Air side measures: Make-up air units, Custom roof top tune-ups, Energy recovery ventilators.

COMMON PRESCRIPTIVE MEASURES INCLUDE: Water Heating Equipment (e.g. gas storage water heaters, etc.), Space Heating Equipment (e.g. space heating boilers, natural gas furnaces, infrared heaters, etc.), Energy Efficient Improvements (e.g. Steam traps, boiler tune-ups, boiler controls, ozone laundry system, pipe insulation, etc.), and Commercial Kitchen Equipment (e.g. pre-rinse spray valves, infrared broilers, griddles, fryers, etc.)



I'm going to ask a few questions about the measure(s) that you sold that were rebated by the Program.

13. Using a 0 to 5 likelihood scale where 0 is not all likely and 5 is extremely likely, how likely is it that you would have recommended that your customers install the rebated - measures without the program? Remember, I'm asking specifically about the measures that your customers received a rebate for.
14. Using the scale from zero to five, where zero is not at all influential and five is very influential, how influential was the program on your decision to recommend these specific - measures? Remember, I'm asking specifically about the measures that your customers received a rebate for.
15. According to our program records, you installed XX measure 1 [HAVE PROGRAM TRACKING RECORDS AVAILABLE] and xx measure 2...from June 2012 to May 2013. If the program had not existed, approximately what percentage of the rebated measures would you have still recommended to your customers? [IF NEEDED] Was it more than 50% or less than 50%? More or less than 75% or 25%? Etc. **[PROBE FOR PERCENTAGE - MUST GET PERCENTAGE]**
  - a. To make sure I understand correctly, you installed XX measure 1 through the program from June 2012 to May 2013, and you think that XX% [RESPONSE FROM ABOVE] of these, or XX, would still have been installed if the program had not existed?
16. If the program had not existed, approximately what percentage of the rebated measures would your customers have purchased? [IF NEEDED] Was it more than 50% or less than 50%? More or less than 75% or 25%? Etc. **[PROBE FOR PERCENTAGE - MUST GET PERCENTAGE]**
17. Approximated what percentage of your total sales were rebated measure sales? Was it more than 50% or less than 50%? More or less than 75% or 25%? Etc.

#### SPILOVER

18. Now I'm going to ask you a few questions about your total sales, including those outside of the program. Before you participated in the program, how often did you recommend that your customers purchase <MEASURE> or other - measures that would qualify for the Program that would qualify for the program? [IF NEEDED] Was it more than 50% or less than 50%? More or less than 75% or 25%? Etc. **[PROBE FOR PERCENTAGE - MUST GET PERCENTAGE]**

## NAVIGANT

19. Before you participated in the program, what percentage of your sales were for measures that would qualify for the Program? [IF NEEDED] Was it more than 50% or less than 50%? More or less than 75% or 25%? Etc. [PROBE FOR PERCENTAGE – MUST GET PERCENTAGE]
20. Since participated in the program, have you recommended measures that would qualify for the Program to your customers more often, less often, or the same amount? [IF SAME, SKIP TO Q27]
21. [IF FREQUENCY CHANGED] Since you've participated in the program, how often do you recommend measures that would qualify for the Program to your customers? [IF NEEDED] Was it more than 50% or less than 50%? More or less than 75% or 25%? Etc. [PROBE FOR PERCENTAGE – MUST GET PERCENTAGE]
  - a. [IF WENT DOWN] Can you tell me the reasons that you suggested fewer measures that would qualify for the program to your customers after participating in the program?
22. Using a 0 to 5 likelihood scale where 0 is not all likely and 5 is extremely likely, if the program, including incentives as well as program services and information, had not been available, what is the likelihood that you would have recommended the same percentage of measures that would qualify for the Program to your customers?
23. [ASK IF Q18 = MORE OFTEN] On a scale from zero to five, where zero is not at all influential and five is very influential, how influential was participating in the program on your decision to increase the frequency that you recommended measures that would qualify for the Program to your customers? [PROBE FOR RATING]
24. Since you participated in the program, what percentage of your sales were for measures that would qualify for the Program? [IF NEEDED] Was it more than 50% or less than 50%? More or less than 75% or 25%? Etc. [PROBE FOR PERCENTAGE – MUST GET PERCENTAGE]
25. Using a 0 to 5 likelihood scale where 0 is not all likely and 5 is extremely likely, if the program, including incentives as well as program services and information, had not been available, what is the likelihood that you would have sold the same percentage of measures that would qualify for the Program to your customers? [IF <4] What do you think the percentage of measures that would qualify for the Program would have been?
26. Since you participated in the program, has the volume/quantity of measures that would qualify for the Program that your customers purchased and installed changed? [IF YES] How has it changed?



27. Have any of the Business EER Program participants asked your organization to install additional energy efficient equipment after their program participation? [IF YES] What did you install? Why did they want more equipment? Did the equipment qualify for a utility incentive?
28. Have you changed your stocking practices, including equipment that qualifies for a rebate through the Program, as a result of the Program? By stocking practices I mean the types of equipment you supply and sell in Peoples Gas / North Shore Gas' service territory.
29. [ASK IF Q22 IS DIFFERENT THAN Q15] I noticed that XX% of your sales were for measures that qualified for the program, but XX% of your sales were actually rebated by the program. Can you tell me the reasons that these sales did not receive a program rebate?

Thank you and closing.

**Peoples Gas / North Shore Gas**

**Non-Participating Trade Ally In-Depth Interview Guide**

|                                 |  |
|---------------------------------|--|
| <b>Respondent name:</b>         |  |
| <b>Respondent phone number:</b> |  |
| <b>Respondent title:</b>        |  |
| <b>Email Address:</b>           |  |
| <b>Respondent Company</b>       |  |
| <b>Date:</b>                    |  |
| <b>Status:</b>                  |  |

**Introduction**

(Note: the interviewer should change the introduction to match his/her own interviewing style)

Hi, may I please speak with [NAME]?

**Background**

Hello, this is \_\_\_\_ from Navigant Consulting calling on behalf of Peoples Gas / North Shore Gas. THIS IS NOT A SALES CALL. I am calling about Peoples Gas / North Shore Gas' Commercial & Industrial Custom Rebate Program.

This survey will take about 20 minutes. Is now a good time? [\[If not, schedule call-back\]](#)

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. I will also be referring to the Commercial & Industrial Custom Rebate Program simply as "the Program".

1. Can you briefly describe the company you work for and the type of business it conducts? About how many are employed at your company? Does your firm specialize in:
  - a. Residential applications,
  - b. Commercial & Industrial Applications



- c. Both
- d. DK/Unknown

[IF 1= A or D, THANK CONTACT AND TERMINATE SURVEY.]

- 2. Can you briefly summarize your roles and responsibilities at your company? For how long have you carried these out?

**Marketing and Participation**

- 3. How familiar are you with the Commercial & Industrial Custom Rebate Program? On a scale from 0 to 5, where zero is not at all familiar and five is very familiar, how would you rank your familiarity?

[IF THE CONTACT HAS NO KNOWLEDGE OF THE PROGRAM]

- 1. Is there someone else within your company that may be more familiar with the program? [IF YES – RECORD CONTACT INFORMATION INFORMATION]

[IF YES – RECORD INFORMATION] THANK & TERMINATE

- 4. How and when did your firm (the contractor) become aware of the program? What other methods can the utilities and program implementers use to boost program awareness with contractors?

## NAVIGANT

5. Did you attend any Peoples Gas / North Shore Gas training session for Commercial and Industrial programs? **IF "YES" COMPLETE QUESTIONS 6 and 7. If NO, SKIP TO QUESTION 8.**
6. Can you please describe the training sessions that you attended – what kinds of information were you given that you recall? **[OPEN ENDED]**
  - a. Did you find the training sessions a good use of your time?
  - b. What information did you think was the most useful?
  - c. What information did you think was the least useful?
  - d. Have you made any changes to what products you market? Have you made any changes to how you market energy efficiency technologies since attending the training session?
7. Did you attend the training to learn about the:
  - a. Commercial & Industrial Prescriptive Rebate Program,
  - b. the Commercial & Industrial Custom Rebate Program, or
  - c. Both
  - d. Don't Know
8. What type of energy efficient equipment does your company install? **[OPEN ENDED – ACCEPT MULTIPLE RESPONSES. IF MULTIPLE MEASURES – REQUEST A PERCENTAGE BREAKDOWN FOR EACH MEASURE] DO NOT READ LIST BELOW.**
  - a. Water Heating Equipment (e.g. gas storage water heaters, etc.)
  - b. Space Heating Equipment (e.g. space heating boilers, natural gas furnaces, infrared heaters, etc.)
  - c. Energy Efficient Improvements (e.g. Steam traps, boiler tune-ups, boiler controls, ozone laundry system, pipe insulation, etc.)
  - d. Commercial Kitchen Equipment (e.g. pre-rinse spray valves, infrared broilers, griddles, fryers, etc.)
  - e. High Efficiency Burner Replacements
  - f. High Efficiency Furnace Replacements
  - g. High Efficiency Boiler Replacements

## NAVIGANT

- h. Burner and Furnace Controls
  - i. Regenerative Thermal Oxidizers (RTO) systems
  - j. Process Heat Recovery
  - k. Other [PROBE FOR CLARIFICATION]
9. Our records show that you have not yet submitted any project applications to the program. Is that your understanding as well? Can you tell me why not? [PROBE AS TO WHY THE CONTRACTOR HAS NOT PARTICIPATED]
- a. Were there any other reasons why you did not participate? Can you elaborate more?
10. Is there anything the Peoples Gas / North Shore Gas can do to help you complete program applications? [OPEN ENDED – PROBE FOR FURTHER EXPLANATION ]
- a. Do you have any other suggestions for improving the program? Can you elaborate more?
11. Have you received any promotional materials from Peoples Gas / North Shore Gas regarding the program? [IF YES] Can you please describe the promotional materials that you received?
- a. Did you use the promotional material with your customers? Did you find it useful?
12. Have you looked at the program website to find information? [IF YES] Did you find the information that you needed?
- a. [IF YES] Did you find the information on the website useful?

## NAVIGANT

### Program Spillover

PRIOR TO CONDUCTING PROGRAM SPILLOVER - REVIEW PROGRAM QUALIFYING MEASURES WITH RESPONDENT FOR THE PROGRAM THAT THEY ASSOCIATED WITH IN QUESTION 7. See table below.

13. Approximately how many [INSERT EQUIPMENT DESCRIPTIONS FROM Q7] does your firm install in a year? [GET AN ESTIMATE BY TYPE OF MEASURE REFERENCED IN Q7] This includes both the measures that would qualify for the program, and those that do not qualify. This information will be used for weighting purposes, and please know that all answers will be kept confidential.
14. Before learning about the program, how often did do you recommend that your customers purchase [INSERT EQUIPMENT DESCRIPTIONS FROM Q7] that would qualify for the program [BE PREPARED TO DESCRIBE QUALIFYING MEASURES, EFFICIENCY, ETC]? Was it more than 50% or less than 50%? More or less than 75% or 25%? Etc. **[PROBE FOR PERCENTAGE – MUST GET PERCENTAGE]**
15. Before you learned about the program, what percentage of your sales were of [INSERT EQUIPMENT DESCRIPTIONS FROM Q7] that would qualify for the Program? Was it more than 50% or less than 50%? More or less than 75% or 25%? Etc. **[PROBE FOR PERCENTAGE – MUST GET PERCENTAGE - READ INTRODUCTORY TEXT WHICH REVIEWS QUALIFYING MEASURES]**
16. Since you've learned about the program, have you recommended [INSERT EQUIPMENT DESCRIPTIONS FROM Q7] that would qualify for the Program to your customers more often, less often, or the same amount?

|  | 12: Annual Number | 13: Pre training Rec. % | 14: Pre training % EE sales | Q15: Rec more/less/same |
|--|-------------------|-------------------------|-----------------------------|-------------------------|
| <b>Custom Measures</b>   |                   |                         |                             |                         |
| High-efficiency burner replacements,   |                   |                         |                             |                         |
| High-efficiency furnace replacements,  |                   |                         |                             |                         |
| High-efficiency boiler replacements,   |                   |                         |                             |                         |
| Burner and furnace controls,   |                   |                         |                             |                         |
| Process heat recovery technologies, including flue stack and condensing economizers, |                   |                         |                             |                         |
| Regenerative thermal oxidizers   |                   |                         |                             |                         |
| Condensate return system improvements  |                   |                         |                             |                         |
| Direct-fired heaters,  |                   |                         |                             |                         |
| Destratification fans  |                   |                         |                             |                         |



|  |  |  |  |  |
|--|--|--|--|--|
| Air side measures: Make-up air units, Custom roof top tune-ups, Energy recovery ventilators                                      |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| <b>COMMON PRESCRIPTIVE MEASURES INCLUDE:</b>   |  |  |  |  |
| Water Heating Equipment (e.g. gas storage water heaters, etc.),  |  |  |  |  |
| Space Heating Equipment (e.g. space heating boilers, natural gas furnaces, infrared heaters, etc.),                              |  |  |  |  |
| Energy Efficient Improvements (e.g. Steam traps, boiler tune-ups, boiler controls, ozone laundry system, pipe insulation, etc.), |  |  |  |  |
| Commercial Kitchen Equipment (e.g. pre-rinse spray valves, infrared broilers, griddles, fryers, etc.)                            |  |  |  |  |

17. **[IF Q15 = MORE]** Since you've learned about the program, how often do you recommend equipment that would qualify for the Program to your customers? Was it more than 50% or less than 50%? More or less than 75% or 25%? Etc. **[PROBE FOR PERCENTAGE – MUST GET PERCENTAGE]**

18. Since you've learned about the program, what percentage of your sales were of equipment that would qualify for the Program? Was it more than 50% or less than 50%? More or less than 75% or 25%? Etc. **[PROBE FOR PERCENTAGE – MUST GET PERCENTAGE]**

Since you've learned about the program, has the volume/quantity of equipment that would qualify for the Program that your customers have purchased and installed changed?

|  | 16: Post Training EE Rec. % | 17: Post Training - % EE sales | Q18: Has freq changed? |
|--|-----------------------------|--------------------------------|------------------------|
| <b>Custom Measures</b>   |                             |                                |                        |
| High-efficiency burner replacements,   |                             |                                |                        |
| High-efficiency furnace replacements,  |                             |                                |                        |
| High-efficiency boiler replacements,   |                             |                                |                        |
| Burner and furnace controls,   |                             |                                |                        |
| Process heat recovery technologies, including flue stack and condensing economizers, |                             |                                |                        |
| Regenerative thermal oxidizers   |                             |                                |                        |
| Condensate return system improvements  |                             |                                |                        |
| Direct-fired heaters,  |                             |                                |                        |
| Destratification fans  |                             |                                |                        |

|  |  |  |  |
|--|--|--|--|
| Air side measures: Make-up air units, Custom roof top tune-ups, Energy recovery ventilators                                      |  |  |  |
|  |  |  |  |
|  |  |  |  |
| <b>COMMON PRESCRIPTIVE MEASURES INCLUDE:</b>   |  |  |  |
| Water Heating Equipment (e.g. gas storage water heaters, etc.),  |  |  |  |
| Space Heating Equipment (e.g. space heating boilers, natural gas furnaces, infrared heaters, etc.),                              |  |  |  |
| Energy Efficient Improvements (e.g. Steam traps, boiler tune-ups, boiler controls, ozone laundry system, pipe insulation, etc.), |  |  |  |
| Commercial Kitchen Equipment (e.g. pre-rinse spray valves, infrared broilers, griddles, fryers, etc.)                            |  |  |  |

19. **[IF Q18=YES]** How has it changed?

RECORD VERBATIM

20. **[IF Q5=YES]** On a scale from zero to five, where zero is not at all influential and five is very influential, how influential was participating in the training on your decision to increase the frequency that you recommended measures that would qualify for the Program to your customers? **[CIRCLE ONE]**

0            1            2            3            4            5

21. Have you ever had to lower your sales price on equipment that would qualify for the program to match the program rebate, without submitting a program application for a rebate?

1. Yes
2. No
8. Don't Know
9. Refused



22. Why did you not submit a rebate for these units?

RECORD VERBATIM

Don't Know

Refused

CONSISTENCY CHECK: [CONDUCT CONSISTENCY CHECK IF Q19 INDICATES A LOWER VALUE AND Q18 INDICATES A HIGHER VALUE AND VISE VERSA]

CC. I noticed that you stated that your customers were purchasing more/fewer [IF Q19 RESPONDENT INDICATES HIGHER, BUT Q18 INDICATES LOWER] measures that would qualify for the Program, but the percentage of sales that you gave was lower/higher after you learned about the program. These responses seem to contradict each other; can you help me understand this? [REPEAT QUESTIONS AS NECESSARY]

#### **Barriers to Participation**

23. Earlier you stated that approximately [INSERT ANSWER FROM Q18- XX] percent of your sales were for - measures/measures that would qualify for the program, but you did not participate in the program. Can you explain why you chose not to participate?

- a. [IF CLIENT NOT WANTING TO PARTICIPATE IS MENTIONED] Why were your clients not interested in participating?

24. Do you have any recommendations for changes that can be made to the program to increase participation by contractors like yourself?

**Thank you and closing.**