

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

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

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 ¹³	% 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_NSNG 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

¹³ 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 (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

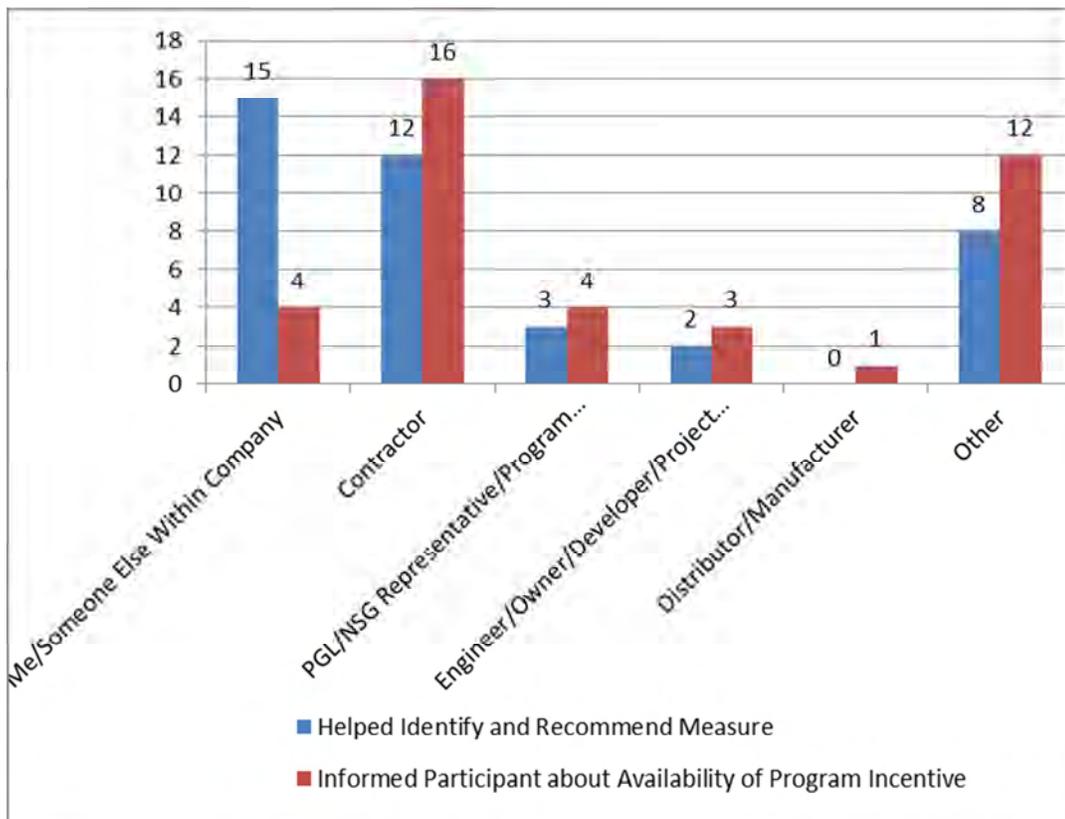
The process evaluation findings of the C&I Custom program are organized by the process research questions outlined in Section 1 of this report.

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

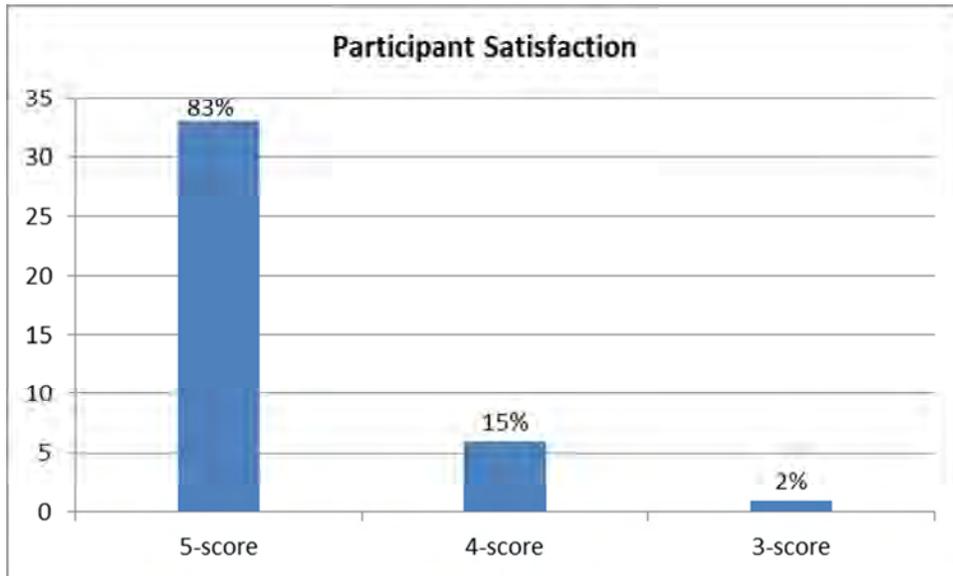


As shown in Figure 5-1, participants were asked to indicate who identified and recommended the type of measure that they installed and who informed them about the incentive through the C&I

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.

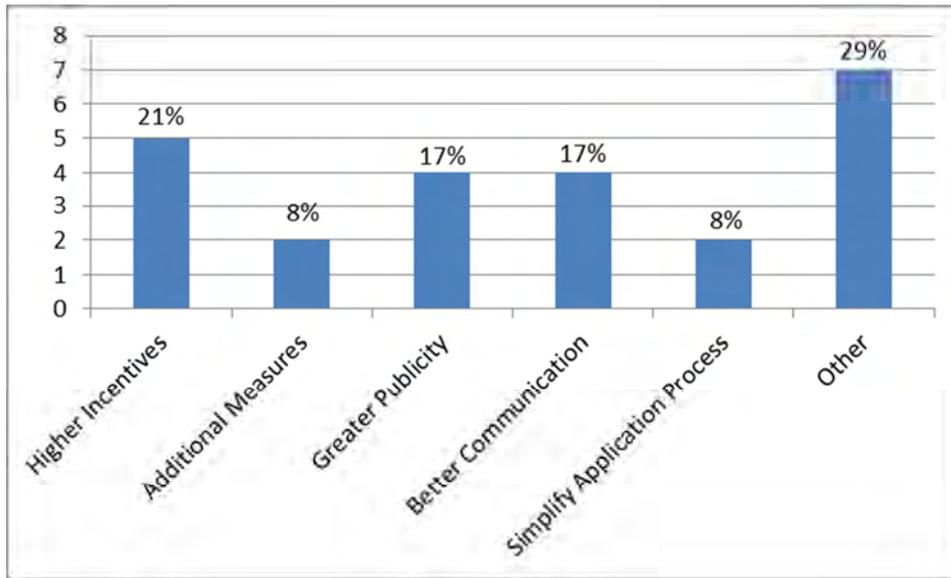
Figure 5-2. Participant Satisfaction



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"> ▪ 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. ▪ 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. ▪ One respondent said as a consulting company without a business license, they cannot work with PG/NSG, and its customers did not apply. ▪ Another respondent said its customers had already allocated budget for the project, and may rather participate in PG/NSG program next year.
<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"> ▪ Some responses included: <ul style="list-style-type: none"> ○ “Help us with the form. Provide a name and number that act as a liaison to help us go through these.” ○ “Keep the application form simple and short. Clear and concise is a lot better than page after page of legal stuff.” ○ PGL / NSG “should come and address the customers in person or more onsite training. Get the word out more; Emails and brochures.” ○ “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.” ○ “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.”
<p>Have you received any promotional materials or looked at the program website to find information?</p>	<ul style="list-style-type: none"> ▪ 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. ▪ 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.

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 therms¹⁴. 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.¹⁵ 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.

¹⁴ 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)*

¹⁵ 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.¹⁶

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.

¹⁶ 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^E, HOU-Residential^E).

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^{DV} (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^{AV}

Glossary Incorporated From the TRM

Below is the full Glossary section from the TRM Policy Document as of October 31, 2012¹⁷.

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)**

¹⁷ 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%
TOTAL	99	2,903,076	100%	20	1,349,100	100%	46%

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	
TOTAL	1,349,100			1,047,874	0.81

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
Overall Therms RR	13%	0.71	0.81	0.91	0.06

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_{Program} = Program NTG
 FR_{Part.} = Participant Free-Ridership
 FR_{TA} = Trade Ally Free-Ridership
 SO_{Part.} = Participant Spillover
 SO_{PartTA} = Participating TA Spillover
 SO_{Non-PartTA} = 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_{Part.} (0.24) and FR_{TA} (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] B. Recommendation from utility or program staff [N3f] C. Information from utility or program marketing materials [N3h] 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 <ENDUSE>, 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 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?” <u>Adjustments to the “likelihood score” are made for timing:</u> “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 (N=100)	NTG Interviews (n=40)	NTG Sample (n=44)	Sample kWh Wgts.	Relative Precision ± %	Low	NTGR 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
Total	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: 14 said "Yes" 5 said "No" 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: (3) "Blank" (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 (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: <ul style="list-style-type: none"> • 1,534 therms estimated • Estimated participant spillover value is 0.1%

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.