

Nicor BEER Program Participating Trade Ally Interview Guide

Respondent name:	
Respondent phone number:	
Respondent title:	
Email Address:	
Respondent Company	
Date:	
Status:	

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 Nicor 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 Nicor Gas. By participating in the program, you also agreed to support evaluation efforts of Nicor Gas' Business Energy Efficiency 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 Business Energy Efficiency Rebate Program, which I may refer to as the Business EER Program, or simply as the Program.

NAVIGANT

Background

1. How familiar are you with the Business Energy Efficiency 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 Nicor 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 Nicor 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 Nicor Gas training sessions, such as a Nicor 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 Nicor Gas Training session?
 - b. Do you have any suggestions for improving the Nicor 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,

NAVIGANT

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]**



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?

NAVIGANT

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 Nicor 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.



4.9 *Business Custom*

Nicor Gas
Business Custom Incentive Program
GPY2 Evaluation Report

Final

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

Presented to
Nicor Gas Company

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Prepared by:

Nicholas Beaman
Navigant Consulting, Inc.

Lorraine Renta
Navigant Consulting, Inc.



Submitted to:

Nicor Gas Company
1844 Ferry Road
Naperville, IL 60563

Submitted by:

Navigant Consulting, Inc.
30 S. Wacker Drive, Suite 3100
Chicago, IL 60606
Phone 312.583.5700
Fax 312.583.5701

Contact:

Randy Gunn, Managing Director
312.938.4242
randy.gunn@navigant.com

Julianne Meurice, Director
312.583.5740
julianne.meurice@navigant.com

Prepared by:

Nicholas Beaman, Managing Consultant
802.526.5107
nick.beaman@navigant.com

Lorraine Renta, Senior Consultant
608.497.2341
lorraine.renta@navigant.com

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E. Executive Summary

This report presents a summary of the findings and results from the impact and process evaluation of gas program year 2 (GPY2)¹ of the Nicor Gas Business Custom Incentive Program (Business Custom Program). The Business Custom Program is targeted to active commercial and industrial customers of Nicor Gas. It provides these customers with rebate incentives for the installation of natural gas-related energy improvements that are not specified for a prescriptive rebate under the Nicor Business Energy Efficiency Rebate program. The program relies on wholesale and retail trade allies to assist in the marketing of this program. Trade ally support and engagement is considered to be a key element to the success of this program.

No major changes were introduced to the program during the GPY2 period. The majority of the savings from the measures installed in GPY2 are derived from energy management system controls and boiler upgrades in the heavy and light industry business category. The GPY2 evaluation involved applying the necessary research to verify the reported savings and any necessary adjustments for measures not deemed in the Illinois Technical Reference Manual (TRM)². The evaluation conducted net-to-gross (NTG) research to assess and quantify participating customer free ridership and spillover to determine program verified net savings. The evaluation efforts included interviews with participating trade allies to examine their influence, challenges and satisfaction with the program. The Business Custom Program was implemented in GPY2 by CLEARResult³ for the Nicor Gas Rider 30 Energy Efficient Portfolio period.

¹ The GPY2 program year began June 1, 2012 and ended May 31, 2013.

² State of Illinois Energy Efficiency Technical Reference Manual. Final as of September 14th, 2012. Effective June 1st, 2012.

³ The Business Custom Program was implemented by Resource Solutions Group (RSG), a CLEARResult Company.

E.1. Program Savings

Table E-1 summarizes the natural gas savings from the Business Custom Program.

Table E-1. Nicor Gas GPY2 Business Custom Program Total Savings

Savings Category	Energy Savings
Ex Ante Gross Savings (Therms)	3,317,145
Ex Ante Net Savings (Therms)	2,388,344
Verified Gross Savings (Therms)	4,263,751
Verified Net Savings (Therms)	3,069,901
Verified Gross Realization Rate	1.29 [†]
Net to Gross Ratio (NTG)	0.72 [†]

Source: Utility tracking data and Navigant analysis.

[†] Based on evaluation research findings

E.2. Program Savings

Table E-2 summarizes the program savings by savings strata. The estimates are statistically significant at the 90/10 confidence and precision level.

Table E-2. Nicor Gas GPY2 Business Custom Program Savings by Measure Savings Strata

Savings Strata	Ex Ante Gross Savings (Therms)	Verified Gross Realization Rate [†]	Verified Gross Savings (Therms)	NTG [†]	Verified Net Savings (Therms)
1	1,295,385	1.47	1,898,157	0.72	1,366,673
2	977,112	1.07	1,045,699	0.72	752,903
3	1,044,648	1.26	1,319,895	0.72	950,324
Total	3,317,145	1.29	4,263,751	0.72	3,069,901

Source: Utility tracking data and Navigant analysis.

[†] Based on evaluation research findings.

E.3. Impact Estimate Parameters

The evaluation used a variety of parameters in the course of estimating verified gross and net savings. These parameters were derived based on evaluation research from participant and trade ally surveys or through EM&V impact analysis. The key parameters used in the analysis are shown in Table E-3 below.

Table E-3. Nicor Gas GPY2 Business Custom Program Impact Estimate Parameters

Parameter	Data Source	Deemed or Evaluated?
Quantity of measures installed	Program tracking data	Evaluated
Net-to-Gross Ratio (NTGR)	Evaluation Research	Evaluated
Verified Gross Realization Rate	Evaluation Research	Evaluated
Participant Survey Sample Size	Program Tracking Data/Evaluation Research	Evaluated
Trade Ally Survey Sample Size	Program Tracking Data/Evaluation Research	Evaluated
NTGR Confidence Interval/Precision	Program Tracking Data/Evaluation Research	Evaluated
Onsite M&V Sample Size	Program Tracking Data/Evaluation Research	Evaluated
Engineering Desk Review Sample	Program Tracking Data/Evaluation Research	Evaluated

Source: Utility tracking data and Navigant analysis.

E.4. Participation Information

Overall, the Nicor Gas Business Custom Program performed very well in GPY2 compared to GPY1. The program installed 92 measures (119 percent increase) and implemented 73 projects (161 percent increase) from 62 participants (121 percent increase). Table E-4 below shows the overall GPY2 program participation statistics.

Table E-4. Nicor Gas GPY2 Business Custom Program Primary Participation Detail

Participation	Nicor Gas GPY2 Business Custom
Total Installed Measures	92
Implemented Projects	73
Business Participants	62
Projects/Participant	1.18
Ex-Ante Therms/Project	45,440

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 GPY2 Business Custom Program achieved verified net savings of 3,069,901 therms, 10 percent less than the program’s filed net savings goal of 3,417,000 therms. Compared to GPY1, the Business Custom Program increased net energy savings by 288 percent in GPY2.

Recommendation 1a. The program should continue to encourage program trade allies and contractors to market the program and inform customers of the program incentives. The program implementers should also continue to actively look outside of the organizations that are currently active within the program to find potential unconventional program allies, such as trade organizations, local banks, and environmental advocates.

Recommendation 1b. Consider compiling and promoting specific examples of the non-energy benefits of gas measures (reduced maintenance, improved performance, reliability, etc.) from past participants.

Recommendation 1c. Consider using segmenting strategies to tailor marketing messages to specific customers, and use sales analytics to provide feedback to program implementation staff.

Recommendation 1d. Consider replicating technical successes at other facilities (supported by case studies and outreach), and building an energy partnership with customers to encourage repeat participation and multi-year project planning.

Net-to-Gross Ratio

Finding 2. Navigant calculated a NTG ratio of 0.72 based on evaluation research conducted on GPY2 participants. This value is an increase of 36 percent compared to the NTG ratio calculated in GPY1.

Recommendation 2a. The implementation contractor (IC) should consider adding an impact statement at the application phase of the project so free ridership can be identified and appropriate project planning can be done to mitigate the effects.

Recommendation 2b. Potential participants with low free-ridership may have financial barriers that rebates alone cannot overcome, and may show little interest in pursuing initial projects. If that is the IC’s experience, Nicor Gas should tailor financial solutions with participants who raise the issue of limited capital, investment criteria, or financing to help overcome specific barriers that are common within customer segments. In addition, Nicor Gas should continue to promote the financing options currently available to commercial customers through external programs and organizations⁴.

Verified Gross Realization Rates

Finding 3. The research finding realization rate on ex ante gross savings is 1.29. This value is an increase of 40 percent compared to the realization rate achieved in GPY1. The key factor in the increased realization rate was the use of updated weather and metering data

⁴ <http://nicorgasrebates.com/programs/financing-resources#comm>

in the project evaluations. The use of these updated data resulted in evaluated savings that were greater than the reported savings.

Savings Estimates

Finding 4. The GPY2 ex ante gross savings are 3,317,145 therms and the verified gross savings are 4,263,751 therms. The ex ante net savings are 2,388,344 therms and the verified net savings are 3,069,901 therms. Heavy and light industry business types represent 65 percent of the GPY2 gross savings and continue to have the largest therm savings per project. These customers implemented mainly control systems and boiler upgrades.

Recommendation. The program should continue to seek opportunities and adopt strategies that increase the savings beyond current successes with control systems and boiler upgrades for industrial business types. Strategies might include targeted marketing or targeted incentive increases. Nicor Gas might also consider targeting bonus incentives for repeat participants, to expand the comprehensiveness of past participant treatments and exert higher influence on projects (potentially helping to lower free-ridership).

Program Participation

Finding 5. Overall program verified gross savings (+186 percent), measure count (+119 percent) and projects per participant (+18 percent) increased in GPY2. Heavy and light industry business types continue to have the largest therms savings per project, and these customers implemented mainly energy management controls and boiler upgrades. The number of participants in GPY2 was 62, 44 percent less than the goal of 110.

Recommendation 5a. The program did not meet the targeted participation goal for GPY2, so the IC should continue to pursue new and innovative ways of targeting high potential measures and trade ally segments through specific targeted marketing efforts.

Recommendation 5b. The program should consider having special incentive promotions for targeted measures.

Recommendation 5c. The program should include any relevant special offerings on the program pre-approval application to bring visibility of the offerings to potential applicants.

Trade Ally Satisfaction and Other Participation

Finding 6. Overall, approximately half of the interviewed trade allies and contractors are very familiar with the Business Custom Program. Eight out of 14 participating trade allies interviewed (57 percent) gave a score of 5 or 4 (highest on a scale of 0 to 5) of their familiarity with the program. On the question of satisfaction, nine respondents (64 percent) indicated very high satisfaction with responses of 5 or 4. Three respondents with a lower satisfaction score indicated they received a lower rebate than expected due to final estimates of their project savings. Two additional respondents indicated the processes involved with the program were confusing and discouraging.

Recommendation 6a. Nicor Gas should consider offering an option to “lock-in” an incentive at the pre-approval stage. The incentive could be paid at a lower rate (e. g., 80 percent of regular incentives) to cover the risk of under-performing projects. Over-performing projects would still be paid at the lower incentive level.

Recommendation 6b. Nicor Gas and the IC should consider providing additional non-financial incentives to trade allies to promote their interest in the program, such as a

trade ally recognition program in which trade allies that have championed the program are recognized by Nicor Gas as leaders in their field, either through the existing Business Custom website, or through industry news letters.

Recommendation 6c. The program should continue to encourage trade allies to participate in future evaluation surveys. It should be noted that the implementation contractor provided considerable support to Navigant's survey efforts during the GPY2 evaluation cycle.

Recommendation 6d. Nicor Gas could offer a special onetime offering of a cash bonus for trade allies that submit a Final Application within a certain month to encourage them to submit projects in a timely manner.

Overall, the GPY2 Business Custom Program built on a solid foundation from GPY1 to substantially expand its impacts. The program increased participation year over year and significantly exceeded energy savings in GPY2 compared to GPY1. In GPY2, the program NTG ratio used to estimate program verified net savings was determined through evaluation research. The resulting NTG is 36 percent higher than the calculated NTG ratio for GPY1.

1. Introduction

1.1 Program Description

This report presents a summary of the findings and recommendations from the impact and process evaluation of gas program year 2 (GPY2)⁵ of the Nicor Gas Business Custom Incentive Program (Business Custom Program). The Business Custom Program provides business customers with financial incentives for the installation of natural gas-related energy improvements that are not specified for a prescriptive rebate under the Nicor Gas Business Energy Efficiency Rebate program or other Nicor Gas programs. Participants span a range of market segments and can receive incentives for a wide variety of natural gas saving technologies. Typical market segments for this program may include light and heavy industry, steel and metal working, plastics compounding and processing, hospitals, food processing, hotels, commercial laundry and other process heating intensive businesses. Large centrally-heated multifamily buildings and office buildings are also target segments for this program.

The Business Custom Program staff work with both trade allies and decision-makers at larger facilities to identify and quantify efficiency opportunities at their facilities. Interested customers must first submit a letter of interest and a pre-approval application to the program. The initial application includes usage history and detailed calculations and specifications for the project. Program staff review the customer's initial savings claims and screen projects using an internal cost-benefit test. Prior to issuing an approval notice, pre and post installation inspections are performed, where applicable. The Business Custom Program requires that a project's initial application be pre-approved prior to the start of the project.

No major changes were introduced to the program during the GPY2 period. The majority of the savings from the measures installed in GPY2 are derived from energy management system controls and boiler upgrades in the heavy and light industry business category. The GPY2 evaluation involved applying the necessary research to verify the reported savings and any necessary adjustments for measures not deemed in the Illinois Technical Reference Manual (TRM)⁶. The evaluation conducted net-to-gross (NTG) research to assess and quantify participant free ridership and spillover to determine program verified net savings. The evaluation efforts included interviews with participating and non-participating trade allies to examine their influence, challenges and satisfaction with the program. The Business Custom Program was implemented in GPY2 by CLEAResult⁷ for the Nicor Gas Rider 30 Energy Efficient Portfolio period.

Nicor Gas and Commonwealth Edison Company (ComEd) coordinate their programs by exchanging project leads. In some cases, prospective projects may have both natural gas and electricity benefits.

⁵ The GPY2 program year began June 1, 2012 and ended May 31, 2013.

⁶ State of Illinois Energy Efficiency Technical Reference Manual. Final as of September 14th, 2012. Effective June 1st, 2012.

⁷ The Business Custom Program was implemented by Resource Solutions Group (RSG), a CLEAResult Company.

In such cases, joint offerings will be made to the customer to address both natural gas and electricity savings. Impact evaluation efforts for Nicor Gas and ComEd will primarily be independent as gas savings and electric savings are independent of each other and not interchangeable between utilities, although there may be some observed interaction of measures that influence savings. Navigant's 2012 evaluation of the Nicor Gas PY1 Business Custom Program found that the program did not meet its therm savings goals. Lower than expected participation was a factor in this outcome. The GPY2 evaluation builds on Navigant's experience in GPY1.

1.2 Evaluation Objectives

The key objectives of the GPY2 Business Custom Program evaluation are to: (1) Quantify gross and net savings impacts from the program; and (2) continue to provide early feedback on baseline gross impact assumptions for some projects. Evaluation efforts in GPY3 will build upon findings in the GPY1 and GPY2 evaluations and will include more real-time impact assessments.

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

1.2.1 Impact Questions

1. What is the level of gross therm savings for customers participating in the program?
2. What are the net impacts from the 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?
3. Did the program meet its energy savings goals? If not, why not?
4. Are the assumptions and calculations in compliance with standard engineering practice? If not, what changes are required?
5. Is the proper baseline being assumed? Is the program leading to early replacement of equipment?

1.2.2 Process Questions

1. Are customers satisfied with the program? In what ways can the program increase the customer participation?
2. Are trade allies satisfied with the program? In what ways can the program increase the trade ally participation? How can trade allies become more engaged in championing the program?
3. How can the program be improved?

2. Evaluation Approach

This section describes the analytic methods and data collection activities implemented as part of the GPY2 impact and process evaluation of the Business Custom Program, including the data sources and sample designs used as a basis for the data collection activities. This evaluation reflects the second full-scale year of program operation.

During GPY2, 73 facilities participated in the Business Custom Program and a sample of 20 projects was verified by Navigant. Navigant conducted evaluation research in GPY2 for NTG analysis. Navigant conducted interviews with program participants for free ridership and spillover assessment. Navigant also conducted interviews with participating and non-participating trade allies as part of the process evaluation.

2.1 Overview of Data Collection Activities

The key evaluation activities to estimate the evaluation research finding gross and net energy savings of the Business Custom Program were:

- Conducted a participant telephone survey targeting a sample of the Business Custom Program population;
- Conducted an engineering review of the tracking database entries, and;
- Implemented a stratified random sampling design to select 20 projects for gross impact verification from the population of Business Custom project applications, and collected the project documents from the IC to conduct M&V activities including engineering file reviews, telephone verifications and on-site verifications.

Program tracking data were requested from the program IC including:

- Contact information for participating customers and trade allies including name, address, and telephone number.
- Date of participation.
- Number and type of measures installed.
- Tracked gross savings estimates.
- Project specific program files.

The process analysis reflects input from the program manager and implementation contractor interviews as well as the telephone surveys of program participants and trade allies. Participant free ridership and spillover were calculated for GPY2 using an algorithm approach based on survey self-report data.

The full set of data collection activities is shown in Table 2-1 below.

Table 2-1. Nicor Gas GPY2 Business Custom Program Core Data Collection Activities

N	What	Who	Target Completes	Completes Achieved	When	Comments
<i>Impact Assessment</i>						
1	Engineering File Reviews	Participant Sample	20	20	September - November 2013	All projects underwent either onsite M&V Audit or Telephone M&V Audit.
2	Onsite M&V Audit	Participant Sample	10	10	September - November 2013	
3	Telephone M&V Audit	Participant Sample	10	10	September - November 2013	
4	Telephone Survey	Program Participants Sample	20	16	October – December 2013	Data collection supporting NTG and process analysis in the same instrument.
<i>Process Assessment</i>						
5	Telephone Survey	Program Participants Sample	20	16	October – December 2013	Data collection supporting NTG and process analysis in the same instrument.
6	Telephone Survey	Trade Ally Program Participants Sample	20	14	October – December 2013	Data collection supporting process analysis.
7	Telephone Survey	Trade Ally Program Non-Participants Sample	≤30	31	October – December 2013	Data collection supporting process analysis.
8	In Depth Interviews	Program Manager/Implementer Staff	2	2	May 2013	Data collection supporting process analysis.

To support the impact and process evaluation efforts, the evaluation team reviewed the verification and due diligence procedures of the Business Custom Program, and reviewed project files and the

program tracking system. Navigant reviewed the methodology and assumptions used by project applications to estimate custom energy savings.

2.2 Verified Savings Parameters

Verified gross and net savings resulting from the GPY2 Business Custom Program were evaluated by Navigant. This section describes the analytic methods implemented as part of the GPY2 impact evaluation of the Business Custom Program.

2.3 Verified Gross Program Savings Analysis Approach

The objective of this aspect of the impact evaluation was to verify the accuracy of the reported GPY2 ex-ante gross energy savings values in the Business Custom Program tracking database submitted to the evaluation team on May 31, 2013. The savings reported in the tracking database were evaluated using the following key steps.

- Engineering review at the measure-level for a sample of 20 projects.
- Preparation of a detailed, site-specific impact evaluation report for each sampled project.
- Conducting a quality control review of the ex post impact estimates and the associated site reports, and implementation of any necessary revisions.

On-site or telephone verification activities were conducted on all 20 projects in the file review sample. The on-site and telephone verification activities sought to develop independent research finding gross estimates of energy savings, and to update, refine, or replace the calculation procedures that were submitted as part of the final application submittal.

Gross Impact M&V Sample

For the GPY2 gross impact evaluation, sampling was conducted on paid projects in the May 31, 2013 database. A statistically significant sample based on 90/10 confidence/precision levels for program-level savings was drawn for the gross savings verification. Table 2-2 provides a profile of the gross impact verification sample for the Business Custom Program in comparison with the population. All projects in the population strata 1 and 2 were selected in the sample, and projects accounting for 50 percent of the savings in stratum 3 were selected in the sample.

Table 2-2. Nicor Gas GPY2 Business Custom Program Gross Impact Sample by Strata

Population Summary			M&V Sample		
Sampling Stratum	Number of Projects (N)	Ex Ante Gross Savings (therms)	Number of Projects (N)	Ex Ante Gross Savings (therms)	Sampled % of Population
1	2	1,295,385	2	1,295,385	100%
2	7	977,112	7	977,112	100%
3	64	1,044,648	11	523,369	50%
TOTAL	73	3,317,145	20	2,795,866	84%

Source: Navigant analysis of Nicor Gas tracking database

2.4 Verified Net Program Savings Analysis Approach

Navigant calculated verified net energy savings by multiplying the verified gross savings estimates by the program NTG ratio. In GPY2 the NTG ratio estimate used to calculate the net verified savings was determined by evaluation research conducted on GPY2 participants. The net-to-gross analysis was conducted following completion of the telephone survey of program participants. Free ridership was calculated using an algorithm approach based on survey self-report data. The analysis relied on interview results from participating customers. The existence of spillover was examined using survey self-report data from participating customers. The detailed methodology is provided in Appendix 7.2.2.

2.4.1 Free-Ridership

Participant free-ridership assessment was conducted to support the NTG research. A total of 16 participants were interviewed for this effort. See the Appendix for details on participant free-ridership algorithms and results.

2.4.2 Spillover

Participant spillover assessment was conducted to support the NTG research. A total of 16 participants were interviewed for this effort. See the Appendix for details on participant spillover algorithms and results.

2.5 Process Evaluation

The GPY2 process evaluation activities assessed the effectiveness of program implementation and design through in-depth interviews with program staff, trade allies, and program participants. The evaluation examined areas that went well and areas identified for improvement in GPY1, and what changes were made in GPY2 that were expected to impact customer and trade ally participation and satisfaction. Navigant interviewed participants about their satisfaction with the program, including the program's application and approval process, program incentives and customer interactions with program staff. The evaluation team asked questions about sources of program awareness and effectiveness of program marketing and outreach materials.

Navigant conducted interviews with 14 participating trade allies about their satisfaction with the program and why customers that were eligible to participate in the program did not. The evaluation made an effort to interview the participating trade allies about how the incentive program has impacted their business, including investigating how their business operations, sales and stocking practices have changed since they began participating in the program. Thirty one non-participating trade allies were also interviewed. These trade allies were asked a series of questions regarding familiarity with the program, reason for non-participation, and suggested changes to enable them to promote the program and help customers complete program applications.

3. Gross Impact Evaluation

This section presents the Business Custom Program impact evaluation results. Included in the impact evaluation results are a verification and due diligence procedure review and tracking system review. Gross impact results are also provided below.

3.1 Tracking System Review

Navigant requested the program tracking data from the IC to aid in the evaluation efforts. The Navigant evaluation team performed an independent verification of the program tracking database to determine whether the database included an appropriate level of inputs, outliers, missing values, and potentially missing variables. The purpose of the tracking system review was to ensure that the program tracking system gathered the necessary data to support future program evaluation and to allow program managers to monitor key aspects of program performance at regular intervals. Recommendations from GPY1 were implemented and the tracking system data provided by the IC included all necessary data for evaluation.

3.2 Program Volumetric Findings

Overall, the Business Custom Program performed very well in GPY2 compared to GPY1. The key GPY2 volumetric findings are summarized in Table 3-1.

Table 3-1. Nicor Gas GPY2 Business Custom Program Volumetric Findings Detail

Detail	Value
Participants	62
Measure Types	30
Measures Installed	92
Total Projects	73
Total Ex Ante Gross Savings (Therms)	3,317,145
Ex-Ante Gross Therms/Project (Therms)	45,440
Ex-Ante Gross Therms/Participant (Therms)	53,502
Total Incentives Amount (\$)	2,095,092
Incentive/Project (\$)	28,700
Incentive/Participant (\$)	33,792

Source: Navigant analysis

The year to year volumetric differences from GPY1 and GPY2 are provided in Table 3-2.

Table 3-2. Nicor Gas Rider 30 Business Custom Program Performance from GPY1 and GPY2

Program Result	GPY1	GPY2	Year-to-Year Volumetric Difference (GPY2/GPY1)
Ex Ante Gross Therms	1,622,380	3,317,145	204%
Verified Gross Therms	1,492,590	4,263,751	286%
Realization Rate	0.92	1.29	140%
Total Installed Measures	42	92	219%
Unique Projects	28	73	261%
Business Participation	28	62	221%
Projects/Participant	1	1.18	18%
Ex-ante Gross Therms/Project (Therms)	57,942	45,440	78%
Incentives Paid (\$)	1,015,210	2,095,092	206%
Incentives/Project (\$)	36,257	28,700	79%
Incentive/Participant (\$)	36,257	33,792	93%

Source: Utility GPY1 and GPY2 tracking data and Navigant analysis.

Key findings include:

1. The overall performance of the Business Custom Program improved in GPY2 compared to GPY1 in terms of measure installation and participation. The program installed 92 measures of 30 different types and implemented 73 projects from 62 unique participants. That is a 119 percent increase in the amount of installed measures, 161 percent increase in the amount of unique projects, and 121 percent increase in the number of unique participants when compared to GPY1.
2. The overall performance of the Business Custom Program improved in GPY2 compared to GPY1 in terms of program savings. The program achieved an ex ante gross savings of 3,317,145 therms, an increase of 104 percent in comparison to GPY1.
3. The average savings per project decreased by 22 percent in GPY2 when compared to GPY1.
4. The average incentive paid per project decreased by 21 percent in GPY2 when compared to GPY1.

3.3 Gross Program Impact Parameter Estimates

The program parameters used for evaluating the program are summarized in Table 3-3 below.

Table 3-3. Nicor Gas GPY2 Business Custom Program Verified Gross Savings Parameters

Input Parameters	Value	Deemed or Evaluated?
Research finding Realization Rate on Ex-Ante Gross Savings	1.29	Evaluated
Measure Type and Eligibility	Varies	Evaluated
Participants	62	Evaluated
M&V Sample	20	Evaluated
Gross Savings per Measure	Custom	Evaluated

Source: Navigant analysis.

3.4 Development of the Verified Gross Realization Rate

The program verified gross realization rate (RR) was determined by calculating the ratio of the verified gross savings to the reported ex ante gross savings. Weighted realization rates by strata were calculated for the Business Custom Program, results are detailed in Table 3-4 below.

Table 3-4. Nicor Gas GPY2 Business Custom Program Verified Gross Realization Rate

Sample Strata	Rebate Measure Kind	Projects in Sample	Projects in Population	Sample Based Ex Ante Gross Savings (therms)	Sample Based Verified Gross Savings (therms)	Therm Weight	Sample Based Verified Gross RR
1	Energy Management Systems, Regenerative Thermal Oxidizer	2	2	1,295,385	1,898,157	0.39	1.47
2	Burner / Economizer Replacement, Boilers	7	7	977,112	1,045,699	0.29	1.07
3	Burner / Economizer Replacement, Direct Contact Water Heater, Boilers, Grain Dryer, Insulation, Door Sealing	11	64	523,369	661,268	0.31	1.26
Total	-	20	73	2,795,866	3,605,124	1.00	1.29

Source: Navigant analysis

3.5 Verified Gross Program Impact Results

This section provides the gross impact findings based on results from the engineering file reviews, on-site verification and telephone verification activities.

The results of the sample-based research findings are summarized in the tables below. The therm-weighted research finding sample gross realization rate (RR) was 1.29 at a relative precision of ± 11 percent at 90 percent confidence level. The resulting total program verified gross savings is 4,263,751 therms. The detailed calculations and discussion are presented in Appendix 7.2.1.

Table 3-5. Nicor Gas GPY2 Business Custom Program Verified Gross Impact Savings Estimates

Category	Sample Size	Sample Based Verified Gross Savings (therms)
Ex-Ante Gross Savings	20	2,795,866
Verified Gross Realization Rate	20	1.29
Verified Gross Savings	20	3,605,124

Source: Navigant analysis

Table 3-6 shows the verified gross savings by strata at 90/11 confidence and precision.

Table 3-6. Nicor Gas GPY2 Business Custom Program Ex Ante and Verified Gross Therms at 90% Confidence and 11% Relative Precision

Sample Strata	Rebate Measure Kind	Projects in Sample	Projects in Population	Sample Based Ex Ante Gross Savings (therms)	Sample Based Verified Gross Savings (therms)	Population Based Ex Ante Gross Savings (therms)	Population Based Verified Gross Savings (therms)
1	Energy Management Systems, Regenerative Thermal Oxidizer	2	2	1,295,385	1,898,157	1,295,385	1,898,157
2	Burner / Economizer Replacement, Boilers	7	7	977,112	1,045,699	977,112	1,045,699
3	Burner / Economizer Replacement, Direct Contact Water Heater, Boilers, Grain Dryer, Insulation, Door Sealing	11	64	523,369	661,268	1,044,648	1,319,895
Total	-	20	73	2,795,866	3,605,124	3,317,145	4,263,751

Source: Navigant analysis

4. Net Impact Evaluation

Per SAG⁸ direction, the Navigant team calculated the NTGR value in GPY2 and applied it retrospectively to the calculated verified gross savings. The evaluation team calculated verified net savings of 3,069,901 therms for the GPY2 Business Custom Program using the NTG research findings presented in Table 4-1. The estimates are presented in Table 4-2 below and are statistically significant at 90/5 confidence level and relative precision. The detailed methodology is provided in Appendix 7.2.2.

Table 4-1. Nicor Gas GPY2 Business Custom Program Research Finding Net Impact Parameter Estimates

Parameter	Value	Deemed or Evaluated?	Source Notes
Participant Surveys	16	Evaluated	Participant interview responses.
Free-ridership	0.29	Evaluated	GPY2 EM&V analysis based on participant interview responses.
Spillover	0.0	Evaluated	GPY2 EM&V analysis based on participant interview responses.
Research finding overall NTGR Ratio	0.72	Evaluated	GPY2 EM&V analysis based on participant interview responses.

Source: Navigant analysis

As presented in Table 4-2, the Business Custom Program had verified net savings of 3,069,901 therms.

Table 4-2. Nicor Gas GPY2 Business Custom Program Verified Net Savings by Savings Strata

Savings Strata	Ex Ante Gross Savings (Therms)	Verified Gross Realization Rate [†]	Verified Gross Savings (Therms)	NTG [†]	Verified Net Savings (Therms)
1	1,295,385	1.47	1,898,157	0.72	1,366,673
2	977,112	1.07	1,045,699	0.72	752,903
3	1,044,648	1.26	1,319,895	0.72	950,324
Total	3,317,145	1.29	4,263,751	0.72	3,069,901

Source: Utility tracking data and Navigant analysis.

[†] Based on evaluation research findings.

⁸ PY6 Proposal Comparisons with SAG.xls

The Nicor Gas Business Custom Program achieved 90 percent of the initial planned savings for GPY2. Results are detailed in Table 4-3 below.

Table 4-3. Nicor Gas GPY2 Business Custom Program Planned and Actual Savings

	Ex Ante Net Savings (Therms)	Verified Net Savings (Therms)	Planned GPY2 Net Savings (Therms)	% Planned Net Savings Achieved
Total	2,388,344	3,069,901	3,417,000	90%

Source: Navigant analysis

Table 4-4 below provides a comparison of GPY2 Business Custom Program findings versus GPY1 findings. The GPY2 Business custom program exceeded the previous year verified net savings by 288 percent and program participation by 121 percent.

Table 4-4. Nicor Gas GPY2 Business Custom Program Results Compared to Rider 29 and Rider 30 GPY1

Program Result	Rider 29	Rider 30 GPY1	Rider 30 GPY2	R30 GPY2 / R30 GPY1
Ex Ante Gross Therms (x 1000)	315	1,622	3,317	204%
Verified Gross Therms (x 1000)	315	1,493	4,264	286%
Verified Gross Realization Rate	1.00	0.92	1.29	140%
Ex Ante Net Therms (x 1000)	236	1,298	2,388	184%
Verified Net Therms (x 1000)	236	791	3,070	388%
Net-to-Gross Ratio ⁹	0.75	0.53	0.72	136%
Business Participation	9	28	62	221%
Incentives/Participant (\$)	205,823	1,015,210	2,095,092	206%

Source: Rider 30 GPY1 and GPY2 evaluation analysis, and Nicor Rider 29 Custom Incentive Program report.

Numbers presented in table have been rounded; errors in subsequent manual calculation of savings percentages may be due to rounding.

⁹ It should be noted that zero field verification on-site visits were conducted during Rider 29 by the Navigant team. The Rider 29 NTG ratio of 0.75 was rather based on planning estimate.

5. Process Evaluation

The process evaluation findings of the Business Custom Program are organized by the process research questions outlined in Section 1 of this report. The GPY2 process evaluation activities investigated satisfaction with the program including the program’s application and approval process, program incentives and customer interactions with program staff. Navigant conducted interviews with program participants, participating trade allies, non-participating trade allies and program staff. All interviews were conducted between October 2013 and January 2014. The detailed process findings are provided by topic below.

1. Are customers satisfied with the program? In what ways can the program increase the customer participation?

The participating customers were asked to rate their satisfaction with the program using a scale of 0 to 5, where 0 is “not at all satisfied” and 5 is “very satisfied”. The average satisfaction rating was 4.8. Participants said they were very satisfied with the program, that it is “really good”, they “got really good assistance” and “incentives are very generous.”

Program participation in GPY2 has increased more than two times when compared with GPY1. A total of 62 individual participants completed a total of 73 projects in GPY2, as compared with the 28 participants that each completed a project in GPY1. Some participants indicated that a possible way to increase program participation is to “increase marketing” and “increase awareness” because “not many people know about it.”

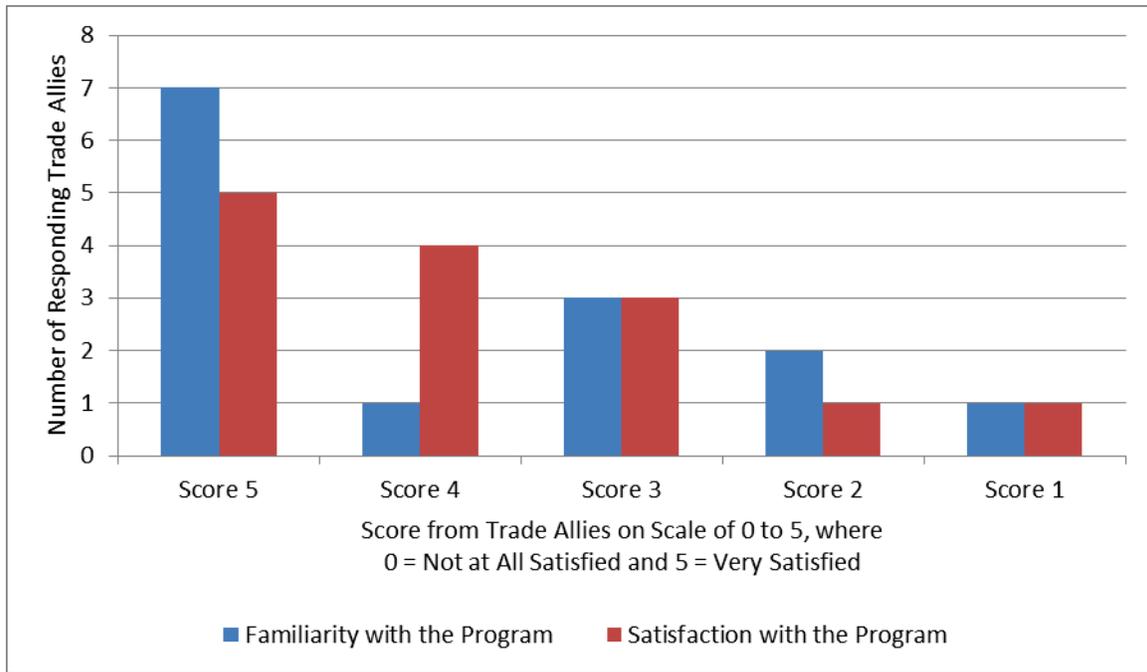
The participation goal for GPY2 was 110 participants. The program was successful in increasing the number of projects completed, yet it did not meet its participation goals. Navigant is working with Nicor Gas and its implementation contractor, CLEAResult, to develop an effective means to reduce the risk of non-performance to Nicor Gas through early discussions about Custom project baseline assumptions. Navigant has participated in the parallel path evaluation of large custom projects to evaluate the engineering assumptions and algorithms to review applicable baselines for the projects. In GPY3, Navigant plans to conduct impact research at points in time closer to project completion (quarterly or mid-year).

2. Are trade allies satisfied with the program? In what ways can the program increase the trade ally participation? How can trade allies become more engaged in championing the program?

Participating Trade Allies

Navigant identified from the tracking system that 56 trade allies participated in the Business Custom Program in GPY2. A sample of 14 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.

Figure 5-1. Participating Trade Ally Familiarity and Satisfaction with Nicor Gas GPY2 Business Custom Program



Source: Navigant analysis of GPY2 participating trade ally survey responses.

As shown in Figure 5-1, trade allies and contractors are very familiar and satisfied with the Business Custom Program overall. On a scale from 0 to 5, where 0 is not at all familiar/satisfied and 5 is very familiar/satisfied, eight out of the 14 respondents (57 percent) gave a score of 5 or 4 of their familiarity with the Business Custom Program, three respondents (21 percent) gave a score of three, and another three respondents (21 percent) gave a score of 2 or 1. On the question of satisfaction, trade allies indicated their strong satisfaction with the program. Nine respondents (64 percent) gave a score of 5 or 4, three respondents gave a score of 3 (21 percent), and another two respondents (14 percent) gave a score of 2 or 1. The two respondents with lower satisfaction scores indicated the process required to get the rebates approved for their customers took too long, and the rebates themselves are too low in comparison to similar programs. Trade allies who were very satisfied with the program said that “the local outreach team is doing a really good job educating customers,” “the support network and structure is really great for trade allies”, and that “on the engineering side there’s been some good support”.

When respondents were asked whether they have attended any Nicor Gas training sessions and how they rank the overall effectiveness of the training session, five indicated they have attended a training session and the remaining nine indicated they had not. Of those who responded “Yes”, four gave a score of 5 or 4 when asked about the effectiveness of the training session, and the remaining one gave a score of 3 indicating that, although he “got something” from the session, he already knew about a lot of the topics covered.

Among the suggestions to improve the program, two of the trade allies suggested the incentives should be increased. Two other trade allies suggested the program should work to simplify the

application process, and improve internal communications in the approval phase to speed up the process between application and completion.

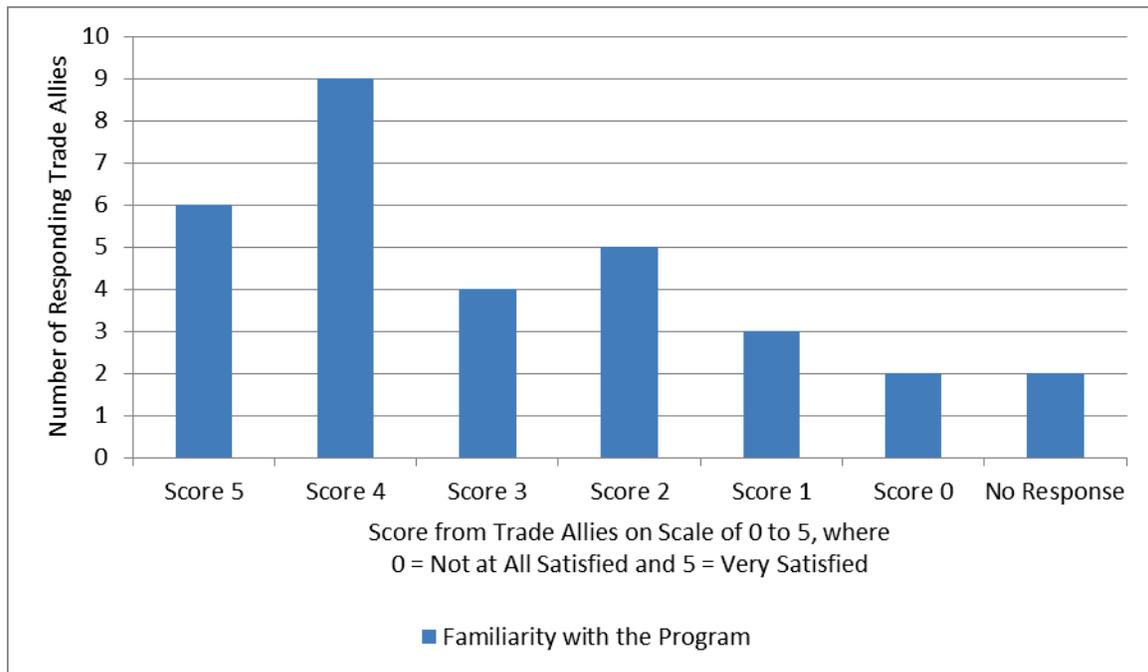
On the question of program marketing and outreach, most respondents said the program marketing is working well, but some mentioned the need to continue the marketing efforts so that “all Nicor Gas customers are aware of it”. Ideas included meeting customers face to face, bill inserts, and radio or TV adverts. Most trade allies stated that they make sure to communicate information about the program to their customers in addition to the promotional efforts by Nicor Gas.

Increasing participation of trade allies in research surveys should be a priority in GPY3. A suggested strategy is to offer incentives, such as a \$1,000 prize gift card among the trade allies that take part in the survey.

Non-Participating Trade Allies

Thirty one non-participating trade allies were asked a series of questions regarding familiarity with the program, reason for non-participation, and suggested changes to enable trade allies to promote the program and help customers complete program applications.

Figure 5-2. Non-Participating Trade Ally Familiarity with Nicor Gas GPY2 Business Custom Program



Source: Navigant analysis of GPY2 non-participating trade ally survey responses.

As shown in Figure 5-2, 15 of the 31 non-participant trade allies interviewed (48 percent) gave a score of 4 or 5, indicating their high familiarity with the Business Custom Program. Twelve respondents (39 percent) gave a score between 1 and 3, indicating they are somewhat familiar with the program. Two

respondents said they are not at all familiar with the program and gave a 0 score, and two others did not respond.

Respondents who attended a Nicor Gas training session but did not submit any project applications to the program were asked to give their reasons for not participating. Among the reasons given were:

- Customers are still communicating with engineers trying to explain to them about their product, although it is qualified in other states;
- Poor communication with CLEAResult (misunderstanding of customer measure);
- Does not sell high efficiency equipment (measures do not qualify for the program) because customers perceived them as too expensive, and that Nicor Gas program rebates aren't high enough; and
- Never submitted an application because customers received lots of grants including Rural Energy for American Program (REAP) grants, but those dried up. Customers are considering participation in future Nicor Gas programs.

On the question of what the program can do or change to enable trade allies to promote the program and help customers complete program applications, suggestions given by non-participant trade allies were:

- Would be helpful for the program administrator to send someone to our office to have a refresh on the programs;
- Sales is driven by end-users so the program needs to get information to end users;
- The timing should be less stringent, it is hard to apply for rebates on short timeline projects;
- Increase incentives; and
- Give out leads to contractors.

3. How can the program be improved?

Some of the participating customers had suggestions for further program improvement. They suggested that the program should “finalize the amount of the incentive before the project starts” since “revising it once the project started is not a good practice” and “caused issues and delays.” Another suggestion was to “offer no-cost replacement for low-flow showerheads and faucet aerators” through “direct replacement without process applications.”

Some of the participating trade allies had suggestions for further program improvement. They indicated that “sometimes the application process takes a long time, which could be sped up”, and that the program can “improve the communication between engineering and the account reps in order to ... help faster completion.”

6. Conclusions and Recommendations

This section summarizes the key impact and process findings and recommendations. Overall, the GPY2 Business Custom Program built on a solid foundation from GPY1 to substantially expand its impacts. The Business Custom Program did not meet its GPY2 participation and savings targets, but still increased both participation and savings in GPY2 compared to GPY1. The programs' GPY2 gross realization rate was calculated to be 1.29. In GPY2, the program net-to-gross ratio used to estimate program verified net savings was calculated through evaluation research to be 0.72.

Program Savings Goals Attainment

Finding 1. The GPY2 Business Custom Program achieved verified net savings of 3,069,901 therms, 10 percent less than the program's filed net savings goal of 3,417,000 therms. Compared to GPY1, the Business Custom Program increased net energy savings by 288 percent in GPY2.

Recommendation 1a. To further increase program savings, the program should continue to encourage program trade allies and contractors to market the program and inform customers of the program incentives. The program implementers should also continue to actively look outside of the organizations that are currently active within the program to find potential unconventional program allies, such as trade organizations, local banks, and environmental advocates.

Recommendation 1b. In order to improve attractiveness of measures when natural gas prices are relatively low, consider compiling and promoting specific examples of the non-energy benefits of gas measures (reduced maintenance, improved performance, reliability, etc.) from past participants – if possible supported by quantified impacts or actual quotes.

Recommendation 1c. Nicor Gas could consider using segmenting strategies to tailor their marketing messages to specific customers, and use sales analytics to provide feedback to program implementation staff. Improvements in technology have made it possible to implement customer relationship management techniques, use data analytics to target marketing, and track performance based sales incentives among staff.

Recommendation 1d. The technical successes and customer satisfaction that Nicor Gas has generated in the first two program years are good leverage points that Nicor Gas could consider using to an advantage. This could involve replicating technical successes at other facilities (supported by case studies and outreach), and building an energy partnership with customers to encourage repeat participation and multi-year project planning.

Net-to-Gross Ratio

Finding 2. Navigant calculated a NTG ratio of 0.72 based on evaluation research conducted on GPY2 participants. This value is an increase of 36 percent compared to the NTG ratio calculated in GPY1.

Recommendation 2a. The implementation contractor (IC) should consider adding an impact statement at the application phase of the project, which could 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 four years)? By identifying the above issues at the beginning of the project application cycle, project free ridership can be identified and appropriate project planning can be done to mitigate the effects.

Recommendation 2b. Potential participants with low free-ridership may have financial barriers that rebates alone cannot overcome, and may show little interest in pursuing initial projects. If that is the IC’s experience, Nicor Gas should tailor financial solutions with participants who raise the issue of limited capital, investment criteria, or financing to help overcome specific barriers that are common within customer segments. Possible solutions may include interest rate buy-downs, investment grade energy studies, on-bill financing, quantifying non-energy benefits to improve the calculated rate of return, and facilitating partnerships for grants, loans, and financing arrangements. In addition, Nicor Gas should continue to promote the financing options currently available to commercial customers through external programs and organizations¹⁰.

Verified Gross Realization Rates

Finding 3. The research finding realization rate on ex ante gross savings is 1.29. This value is an increase of 40 percent compared to the realization rate achieved in GPY1. The key factor in the increased realization rate was the use of updated weather and metering data in the project evaluations. The use of these updated data resulted in evaluated savings that were greater than the reported savings.

Savings Estimates

Finding 4. The GPY2 ex ante gross savings are 3,317,145 therms and the verified gross savings are 4,263,751 therms. The ex ante net savings are 2,388,344 therms and the verified net savings are 3,069,901. Heavy and light industry business types represent 65 percent of the GPY2 gross savings and continue to have the largest therm savings per project. These customers implemented mainly control systems and boiler upgrades.

Recommendation. The program should continue to seek opportunities and adopt strategies that increase the savings beyond current successes with control systems and boiler upgrades for industrial business types. Strategies might include targeted marketing or targeted incentive increases. For example, the Business Custom Program currently offers bonus incentives for projects that are above 25,000 therms. The Bonus Incentive Opportunity removes the standard 50 percent project cost cap and doubles the available incentive to \$2/therm¹¹. Nicor Gas should consider lowering the estimated therms requirement from 25,000 therms to allow for more projects to be submitted through this opportunity. In GPY3, 53 of the total 73 projects were below the 25,000 therm threshold. These 53 projects accounted for 12 percent (410,108 therms) of the overall program ex ante savings. By lowering the therm requirement, the program may encourage customers to participate in the program that otherwise would have not (due to capital financial constraints) while increasing program awareness and reducing overall free ridership.

¹⁰ <http://nicorgasrebates.com/programs/financing-resources#comm>

¹¹ http://www.nicorgasrebates.com/images/pdfs/CUSTOM_BonusIncentive_Final.pdf

Nicor Gas might also consider targeting bonus incentives for repeat participants, to expand the comprehensiveness of past participant treatments and exert higher influence on projects (potentially helping to lower free-ridership).

Program Participation

Finding 5. Overall program verified gross savings (+186 percent), measure count (+119 percent) and projects per participant (+18 percent) increased in GPY2. Heavy and light industry business types continue to have the largest therms savings per project, and these customers implemented mainly energy management controls and boiler upgrades. The number of participants in GPY2 was 62, 44 percent less than the goal of 110.

Recommendation 5a. The program did not meet the targeted participation goal for GPY2, so the IC should continue to pursue new and innovative ways of targeting high potential measures and trade ally segments through specific targeted marketing efforts, including:

- Undertake regular market research including penetration analysis for the program to aid in identifying potential markets.
- Recruit program staff, trade allies, or auditors with connections to potential target communities or markets that have a high energy savings potential.

Recommendation 5b. The program should consider having special incentive promotions for targeted measures. For example, the program could offer a limited time offer of increasing the incentive by 50 percent for trade allies that perform a burner replacement. Ideal measure for this type of offering would be measures that are not currently predominant in the program.

Recommendation 5c. The program should include any relevant special offerings on the program pre-approval application. This brings visibility to the offerings of potential applicants when reviewing the process and may act as a catalyst for encouraging participation.

Trade Ally Satisfaction and Other Participation

Finding 6. Overall, approximately half of the interviewed trade allies and contractors are very familiar with the Business Custom Program. Eight out of 14 participating trade allies interviewed (57 percent) gave a score of 5 or 4 (highest on a scale of 0 to 5) of their familiarity with the program. On the question of satisfaction, nine respondents (64 percent) indicated very high satisfaction with responses of 5 or 4. Three respondents with a lower satisfaction score indicated they received a lower rebate than expected due to final estimates of their project savings. Two additional respondents indicated the processes involved with the program were confusing and discouraging

Recommendation 6a. Nicor Gas should consider offering an option to “lock-in” an incentive at the pre-approval stage. The incentive could be paid at a lower rate (e. g., 80 percent of regular incentives) to cover the risk of under-performing projects. Over-performing projects would still be paid at the lower incentive level.

Recommendation 6b. Nicor Gas and the IC should consider providing additional non-financial incentives to trade allies to promote their interest in the program, such as a trade ally recognition program in which trade allies that have championed the program are recognized by Nicor Gas as leaders in their field, either through the existing Business Custom website, or through industry news letters. This recognition may encourage other trade allies to become more active.

Recommendation 6c. The program should encourage trade allies to participate in future evaluation surveys. The program may consider adding a note to the terms and conditions for trade ally participation that trade allies should be aware they may be contacted by an independent evaluator to complete a survey of their experience with the program.

Recommendation 6d. In order to further incentivize contractors to participate in the Business Custom Program, Nicor Gas could offer a special onetime offering of a cash bonus for trade allies that submit a Final Application within a certain month. For each Final Application submitted by a trade ally between the first and last day of the chosen month, they could be entered into a drawing to win the predetermined cash prize (e. g., \$1,000 gift card). These incentives encourage trade allies to submit projects in a timely manner, allowing for better program planning, while also having the added benefit of attracting trade allies that may not have otherwise participated in the program. Additionally, this would reward particularly active trade allies, encouraging them to remain active and possibly become champions for the program.

7. Appendix

7.1 Glossary

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 ComEd's deemed parameters were defined in its filing 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, Retrocommissioning), 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, Retrocommissioning), 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 research 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 ComEd’s approved deemed values. Values that are based upon a deemed measure shall use the superscript “D” (e. g. , delta watts^D, HOU-Residential^D).

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 ComEd’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, 2012¹².

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)**

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

¹² IL-TRM_Policy_Document_10-31-12_Final.docx

(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, consistent with Section 3. 2.

7.2 Detailed Impact Research Findings and Approaches

7.2.1 Gross Impact Results

Gross Impact sampling

A sample of 20 projects was drawn from the implementation contractor program tracking database of a population of 73 projects. Projects were classified into three strata according to the level of savings to determine verified gross realization rates based on a planned target of 90/10 confidence and precision level for program-level verified gross savings. A thorough engineering review of the algorithms used by the program to calculate energy savings, and the assumptions that feed into those algorithms, was conducted for all 20 sampled projects. The savings evaluation approaches were then 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) was conducted for 10 out of the 20 sampled projects based on IPMVP protocols. Telephone verification to support the engineering review was performed for the remaining 10 sampled projects. 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 Nicor Gas GPY2 Business Custom Program Gross Impact Sample by Savings Strata

Population Summary					Sample			
Strata	End Use Type	Number of Projects (N)	Ex Ante Gross Savings (Therms)	Therms Weights	Number of Projects (n)	Ex Ante Gross Savings (Therms)	Therms Weights	Sampled Therms % of Population
1	Energy Management Systems, Regenerative Thermal Oxidizer	2	1,295,385	0.39	2	1,295,385	0.39	100%
2	Burner / Economizer Replacement, Boilers	7	977,112	0.29	7	977,112	0.29	100%
3	Burner / Economizer Replacement, Direct Contact Water Heater, Boilers, Grain Dryer, Insulation, Door Sealing	64	1,044,648	0.31	11	523,369	0.31	50%
Total		73	3,317,145	1.00	20	2,795,866	1.00	81%

Source: Utility tracking data and Navigant analysis.

Engineering Review of Project Files

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

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

On-Site Verification

An analysis plan was developed for each of the 10 projects selected for on-site verification. Each plan explained the general gross impact approach to be used (including monitoring plans), provided an analysis of the current inputs (based on the application and other available sources at that time), and identified sources needed to verify data or obtain newly identified inputs for the ex post gross impact approach. The engineer assigned to each project first called each customer to set up an appointment for the visit and explained the activities that would be taking place. On-site verification was then completed for the subset of 10 projects. The on-site verification visits included interviews with the customer, visual inspection of the installed systems and equipment, and spot measurements and short-term monitoring (e. g., less than four weeks) when required. In addition, data identified in the analysis plan was collected including records such as measured temperatures, data from equipment logs, equipment nameplate data, system operation sequences and operating schedules, and a careful description of site conditions that might contribute to baseline selection.

All engineers who conducted the on-site verification visits are trained and experienced in completing inspections for related types of projects. Each carried properly calibrated equipment required to conduct the planned activities. They checked in with the site contact upon arrival at the business, and checked out with that same site contact, or a designated alternate, upon departure. All information collected during the audit was recorded and verified for completeness before leaving the site.

Telephone Verification

An analysis plan was developed for each of the 10 projects selected for telephone verification. Each plan explained the general gross impact approach to be used, provided an analysis of the current inputs (based on the application and other available sources at that time), and identified sources needed to verify data or obtain newly identified inputs for the ex post gross impact approach. The engineer assigned to each project first called each customer to set up an appointment for the telephone interview and explained the nature of the verification telephone call. Telephone verification was then completed for the subset of 10 projects. The verification interviews included questions to the customer about the installed systems and equipment and any other data identified in the analysis plan that was needed for evaluation including records such as measured temperatures, data from equipment logs, equipment nameplate data, system operation sequences and operating schedules, and a careful description of site conditions that might contribute to baseline selection.

All engineers who conducted the telephone verification interviews are trained and experienced in completing evaluations for related types of projects. All information collected during the telephone interview was documented and verified for completeness before terminating the interview with the customer.

Site-Specific Impact Estimates

Annual energy impacts were developed for each of the 20 sampled projects based on the data gathered on-site and via telephone, supplemental monitoring data, application information, and, in some cases, billing or interval data. 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

Table 7-2 below presents a summary of the research findings for the 20 sampled projects to provide insight into the engineering review, onsite verification and telephone verification research findings.

Table 7-2. Nicor Gas GPY2 Business Custom Program Summary of Sample EM&V Results

Project ID	Measure Description	Summary of Adjustment
NG02-001	Replace burners on two 900HP boilers	Adjustment due to use of TMY2 weather data in original analysis. Updated using TMY3.
NG02-014	Eliminate summer steam heat system (previously NG01-063)	Adjustment due to use of assumptions in original analysis. Updated using actual gas consumption data.
NG02-016	Boiler replacement and controls addition (previously NG01-068)	Adjustment due to use of TMY2 weather data in original analysis. Updated using TMY3.
NG02-017	High efficiency burner replacement	Adjustment due to use of actual weather data in original analysis. Updated using TMY3.
NG02-018	Boiler burner replacement	Adjustment due to use of actual weather data in original analysis. Updated using TMY3.
NG02-019	Boiler burner replacement	Analysis complete. Adjustment due to use of TMY2 weather data in original analysis. Updated using TMY3.
NG02-034	Burner replacement (previously NG01-053)	No adjustment necessary.
NG02-040	New RTO	Adjustment due to use of post-implementation sub-metered gas use data.
NG02-055	Replace furnace	Adjustment due to analysis of additional post-implementation data.
NG02-061	Insulation of outdoor hot oil pipe at asphalt plant	No adjustment necessary.
NG02-067	Replacement of burner control	Adjustment due to analysis of two months of additional post-implementation data.
NG02-074	Replace grain dryer with more efficient model (previously NG01-067)	Algorithm used to calculate the gas consumption per amount of moisture removed from the grain did not properly represent the absolute amount of moisture removed.

Project ID	Measure Description	Summary of Adjustment
NG02-080	Dock door sealing and de-stratification fans (previously NG01-075)	No adjustment necessary.
NG02-082	Burner replacement on three 400HP boilers	Adjustment due to use of TMY2 weather data in original analysis. Updated using TMY3.
NG02-083	Parallel positioning and O2 trim	Adjustment due to use of actual weather data in original analysis. Updated using TMY3 and additional utility data.
NG02-093	Install direct contact water heater (previously NG01-062)	No adjustment necessary.
NG02-100	Install stack economizer, heat exchanger, modulating feed water, and DDC monitoring and control (previously NG01-072)	Adjustment due to use of additional data on de-aerator bypass time, flow rates, and make-up water temperatures in verification analysis.
NG02-125	Condensate polisher and heat exchanger (previously NG01-032)	Adjustment due to adjustment in the operating hours of the plant from 360 days per year to 358 days per year.
NG02-126	Replace two hot water boilers and one steam boiler (previously NG01-060)	Adjustment due to the use of additional post-implementation data in analysis.
NG02-143	Install EMS and controls (previously NG01-076)	Adjustment due to use of additional post-implementation data in analysis.

Source: Utility tracking data and Navigant analysis.

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

Table 7-3. Nicor Gas GPY2 Business Custom Program Gross Realization Rate Results for the Selected Sample by Project and Strata

Sampled Project ID	Sample-Based Ex Ante Gross Savings (Therms)	Sampling Strata	Project-Specific Research Finding Gross Realization Rate	Sample-Based Research Finding Gross Savings (Therms)	Weighted Sample-Based Research Finding Gross Realization Rate
NG02-143	1,018,609	1	1.61	1,636,253	1.47
NG02-040	276,776	1	0.95	261,904	
NG02-055	169,055	2	1.44	243,126	1.07
NG02-017	181,066	2	1.19	216,183	
NG02-018	121,646	2	1.26	153,287	
NG02-001	102,159	2	1.30	133,157	
NG02-125	118,391	2	0.99	117,505	
NG02-014	132,376	2	0.76	100,414	
NG02-100	152,419	2	0.54	82,027	
NG02-067	92,465	3	2.09	193,559	
NG02-019	94,775	3	1.20	114,028	
NG02-082	85,597	3	1.23	105,114	
NG02-093	96,627	3	1.00	96,627	
NG02-074	34,610	3	0.93	32,154	
NG02-083	23,236	3	1.21	28,152	
NG02-061	27,533	3	1.00	27,533	
NG02-016	23,403	3	1.12	26,190	
NG02-034	18,834	3	1.00	18,834	
NG02-080	16,089	3	1.00	16,089	
NG02-126	10,200	3	0.29	2,988	
TOTAL	2,795,866	-	1.29	3,605,124	1.29

Source: Utility tracking data and Navigant analysis.

The relative precision at 90 percent level of confidence for the sample is provided in Table 7-4. The mean research findings gross realization rate for the overall sample was 1.29 at a relative precision of ±11 percent at 90 percent confidence level.

Table 7-4. Nicor Gas GPY2 Business Custom Program Gross Therms Relative Precision and Realization Rates at 90% Confidence Level

Sampling Strata	Relative Precision at 90% Level of Confidence (± %)	Low	Mean	High	Standard Error
1	0%	1.47	1.47	1.47	0.00
2	0%	1.07	1.07	1.07	0.00
3	19%	1.03	1.26	1.50	0.14
Overall Therms RR	11%	1.15	1.29	1.42	0.08

Source: Navigant analysis

7.2.2 Net Program Impact Results

A net-to-gross (NTG) ratio of 0.72 was calculated in GPY2 through evaluation research activities conducted with GPY2 participants. This section provides additional details of the NTG research effort in GPY2 aimed at providing program participant free ridership and spillover parameters to determine the overall NTG ratio of the Business Custom Program.

Navigant conducted research of participant and non-participant trade ally free-ridership and spillover. After considerable assistance from the implementation contractor and Nicor Gas staff, Navigant was unable to reach the target number of trade allies to achieve a statistically valid result. This was particularly a problem given the variability of measures present in the Custom Incentive program, as an appropriate representation by all measure end-uses was not achieved. The free-ridership and spillover estimate from Nicor Gas participating and non-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.

Research NTGR Sampling Approach

Customer-level savings data were analyzed by project size to inform the sample design. The reported savings were sorted from largest to smallest and placed into one of three strata. Table 7-5 shows the program participant tracking population and the sample draw. Navigant completed 16 participant interviews to estimate free ridership and spillover. Sampling of participants attempted to achieve a minimum of 90/10 confidence and precision on the reported therms savings at the program level. In order to achieve the designed confidence and precision, Navigant conducted a census of the participants that reported the top portion of program savings. Participants that reported a smaller proportion of the savings were sampled in order to achieve a balanced perspective.

Table 7-5. Nicor Gas GPY2 Business Custom Program Process Evaluation Sampling Summary

Survey Target	Project Population	Sample	Completed	Planned Confidence / Precision
Program Participants	73	20	16	90/10

Source: Utility tracking data and Navigant analysis

In an effort to improve the response rate of the program participant surveys, Navigant worked with the implementation contractor to verify the accuracy of the contact name and telephone number data

in the tracking system prior to initiating outreach. This ensured that the evaluation team interviewed contacts that were knowledgeable about the projects and were able to provide accurate feedback.

The research finding NTG was calculated using the participating customer free-ridership rate and spillover resulting from the GPY2 process evaluation. The algorithm is as follows:

$$NTG_{Program\ research\ calculation} = 1 - FR_{Part.} + SO_{Part.}$$

Where $NTG_{Program\ research\ calculation}$ = Program NTG resulting from evaluation research
 $FR_{Part.}$ = Program Participant Free-Ridership.
 $SO_{Part.}$ = Program Participant Spillover.

Table 7-6 below presents the sources for the parameters used in the verified gross savings analysis.

**Table 7-6. Nicor Gas GPY2 Business Custom Program
 NTG Research Savings Parameter Data Sources**

Parameter	Data Source	Deemed or Evaluated?
Research Findings Net-to-gross Ratio (NTGR)	GPY2 Evaluation Research	Evaluated
Participating Customer Free Ridership	GPY2 Evaluation Research	Evaluated
Participating Customer Spillover	GPY2 Evaluation Research	Evaluated

Source: Evaluation Research

7.2.2.1 Free-Ridership

Participating customer free ridership was estimated through evaluation research in GPY2. Results were used to calculate the GPY2 NTG ratio. A participant free ridership value of 0.28 was calculated. Table 7-7 shows the sampling analysis conducted as part of the free ridership research.

Table 7-7. Nicor Gas GPY2 Business Custom Program Free Ridership Sampling Analysis

Sample (Customer Ex Ante Gross Therms)				Population (Customer Ex Ante Gross Therms)			Free Ridership
Strata	Count	Therms	Therms weight	Count	Therms	Therms weight	Strata FR
Energy Management Systems, Regenerative Thermal Oxidizer	2	1,295,385	0.39	2	1,295,385	0.39	0.23
Burner / Economizer Replacement, Boilers	7	977,112	0.29	7	977,112	0.29	0.35
Burner / Economizer Replacement, Direct Contact Water Heater, Boilers, Grain Dryer, Insulation, Door Sealing	7	416,139	0.31	64	1,044,648	0.31	0.26
Program Overall	16	2,688,636	1.00	73	3,317,145	1.00	0.28
Percent Sample Therms of Population						81%	

Source: Navigant research

From the analysis of the 16 participating customer interview responses, Navigant estimated program participant average free ridership of 0.28 at ±5 percent overall relative precision at 90 percent confidence level, as shown in Table 7-8.

Table 7-8. Nicor Gas GPY2 Business Custom Program Free Ridership and Relative Precision at 90% Confidence Level

Sample Strata	Project Population (N=73)	FR Interviews (n=16)	Relative Precision (± %)	FR Low	FR Mean	FR High
Energy Management Systems, Regenerative Thermal Oxidizer	2	2	0%	0.23	0.23	0.23
Burner / Economizer Replacement, Boilers	7	7	0%	0.35	0.35	0.35
Burner / Economizer Replacement, Direct Contact Water Heater, Boilers, Grain Dryer, Insulation, Door Sealing	64	7	17%	0.39	0.26	0.14
Total	73	16	5%	0.35	0.28	0.20

Source: Navigant research

Below is a sample of the free ridership questions that were asked to program participants.

1. Was the XX project already part of a capital budget before you learned about the program?
2. Did you learn about Nicor Gas' program before or after you decided to implement the high efficiency XX measure that was installed?
3. 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?
 - o You indicated earlier that there was a XX 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 XX measure?

The free ridership score was determined using the following formula, where the percentage of measures is determined using the answers to question 3 above:

$$\text{Program Participant FR} = (\text{Percent Measures Installed Without Program}) * 100 \text{ Percent}$$

7.2.2.2 Spillover

A program participant spillover of zero was calculated using the following algorithm:

$$\text{Participant SO} = \left[\frac{\text{Savings Associated with Additional High Efficiency Measures}}{\text{Total Participant Savings} \times \text{Program Influence Score}} \right]$$

Below is a sample of the spillover questions that were used to calculate the results for the algorithm above.

1. Since your participation in the program, have you implemented any additional energy efficiency measures at this facility or at your other facilities within Nicor Gas’ service territory?
2. 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?
3. If you had not participated in the program, how likely is it that your organization would still have implemented the exact same (additional efficient) measure, 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?

The difference between measures installed through the program and newly installed program qualified measures was potential spillover. This difference was discounted based on the level of influence of the program. The program influence score was calculated using the following formula:

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

Program participants who reported that the program had no influence (score of zero) had their increase in measure installation discounted by 100 percent. Participants who reported very little influence (score of 1 or 2) had their increase in measure installations discounted by 50 percent.

Table 7-9 shows the estimated parameters that led to a research finding NTG of 0.72. Navigant recommends future studies should revisit interviews with trade allies to estimate trade ally free ridership and spillover, with the hope that more trade ally participation may produce reliable results that can inform the estimation of the NTG ratio.

Table 7-9. Nicor Gas GPY2 Business Custom Program Research Finding Net-to-Gross Estimate

Interview Type	Research Estimated Values
Program Participant Free-Ridership Score (P)	0.28
Program Participant Spillover (PSO)	0.00
Net-to-Gross (1-P) + PSO	0.72

Source: Evaluation Team analysis.

7.3 Data Collection Instruments

7.3.1 Non-Participating Trade Ally Survey Guide

The same survey guide was used for the Nicor Gas Business Energy Efficiency Rebate Program (BEER) and Business Custom Incentive Program. The guide is included below.