To:	Christina Pagnusat, Omy Garcia, Peoples Gas and North Shore Gas; Heidi Gorrill, Katie Baehring, Richard Boehnke, Franklin Energy; Erin Stitz, Applied Energy Group; Jennifer Morris, ICC Staff
CC:	Randy Gunn, Kevin Grabner, Rob Neumann, Navigant
From:	Sharon Mullen, Charles Ampong, Navigant
Date:	August 29, 2018
Re:	Net-to-Gross Research Results from GPY6 for the Gas Optimization Study Offering

Introduction

This memo presents our free ridership and spillover research results for the GPY6 Gas Optimization Study Offering (GOS) delivered by Peoples Gas (PGL) and North Shore Gas (NSG) using the Illinois TRM version 6.0 methodologies.[1] The net-to-gross (NTG) research was conducted by surveying GPY6 participants from PGL and NSG in July and August 2018. The focus of the research was to capture a representative sample of GOS participants. The participant free ridership and spillover results combined provide new findings to inform the program year 2019 NTG discussions in September 2018.

Table 1 below provides a summary of the participant free ridership and spillover research findings for the two different algorithm options included in the TRM NTG protocol. Overall, Navigant's professional interviewer completed seven interviews from nine unique program contacts from the combined population of GPY6 PGL and NSG Gas Optimization Study participants.

Table 1. Participant Free Ridership and Spillover Results

NTG Option	Program Path	Participant Free Ridership, (Weighted)	Participant Spillover	Sample (n)	Relative Precision @90% CI
Option 1	Gas Optimization	0.14	0.05	7	4.8%
Option 2	Gas Optimization	0.15	0.05	7	5.4%

Source: Navigant analysis of program tracking data and survey response data for PGL and NSG GPY6 Gas Optimization Study participants.

Free Ridership and Spillover Research Data Collection

Navigant conducted the free ridership and spillover research following a self-report approach with program participants. The participant research involved a telephone survey with an attempted census of nine unique GPY6 participants. We achieved a response rate of 78 percent by count and 53 percent by savings across the program. The counts for the completed participant survey and sample design are outlined in Table 2.

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[1] Illinois Statewide Technical Reference Manual for Energy Efficiency, Version 6.0, Volume 4: Cross-Cutting Measures and Attachments, effective January 1st, 2018.

Table 2. Free Ridership and Spillover Research Survey and Interview Disposition

Respondents	Unique Contacts	Target Completes	Actual Completes	Free Ridership Sample (n)	Percent Savings Represented
Participant Decision Makers	9	Census	7	7	53%

*Source: GOS GPY6 Participant Survey responses.*

We took steps to deliver a high response rate, including having the utility issue an email announcing the survey and asking participants to respond, using an experienced professional interviewer, and telephoning and emailing the participants to schedule a convenient time to conduct the survey.

Free Ridership Estimates

The following diagrams describe the TRM participant free ridership algorithms for commercial and industrial study-based programs. Figure 1 shows an overview of the framework which allows for two options for computing score 3. These two variants are shown graphically in Figure 2 and Figure 3 below.

Figure 1 Study-Based Free Ridership Overview

(Program Components FR Score + Program Influence FR Score + (No-Program FR Score * Timing Adjustment 1)) / 3
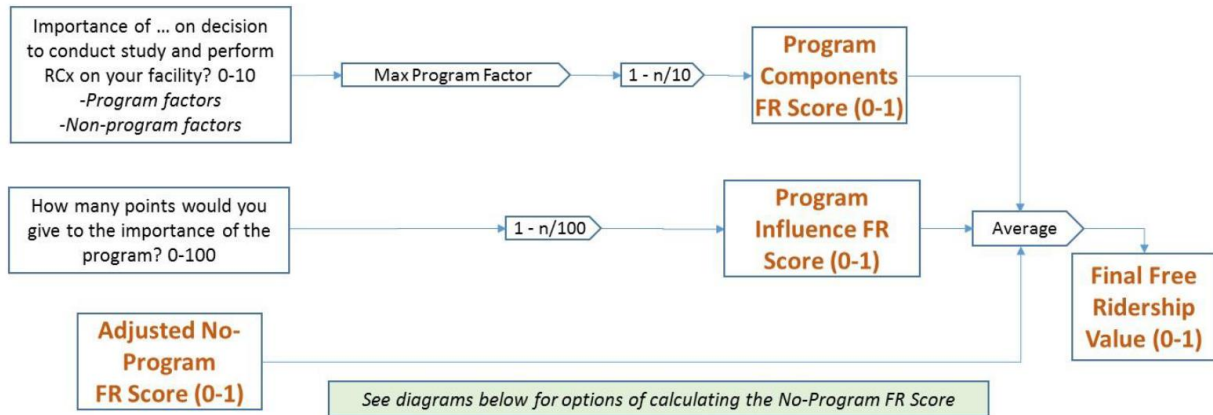
Source: Illinois TRM Version 6, Volume 4. Cross-Cutting Measures and Attachments, final February 8, 2017, effective January 1st, 2018.
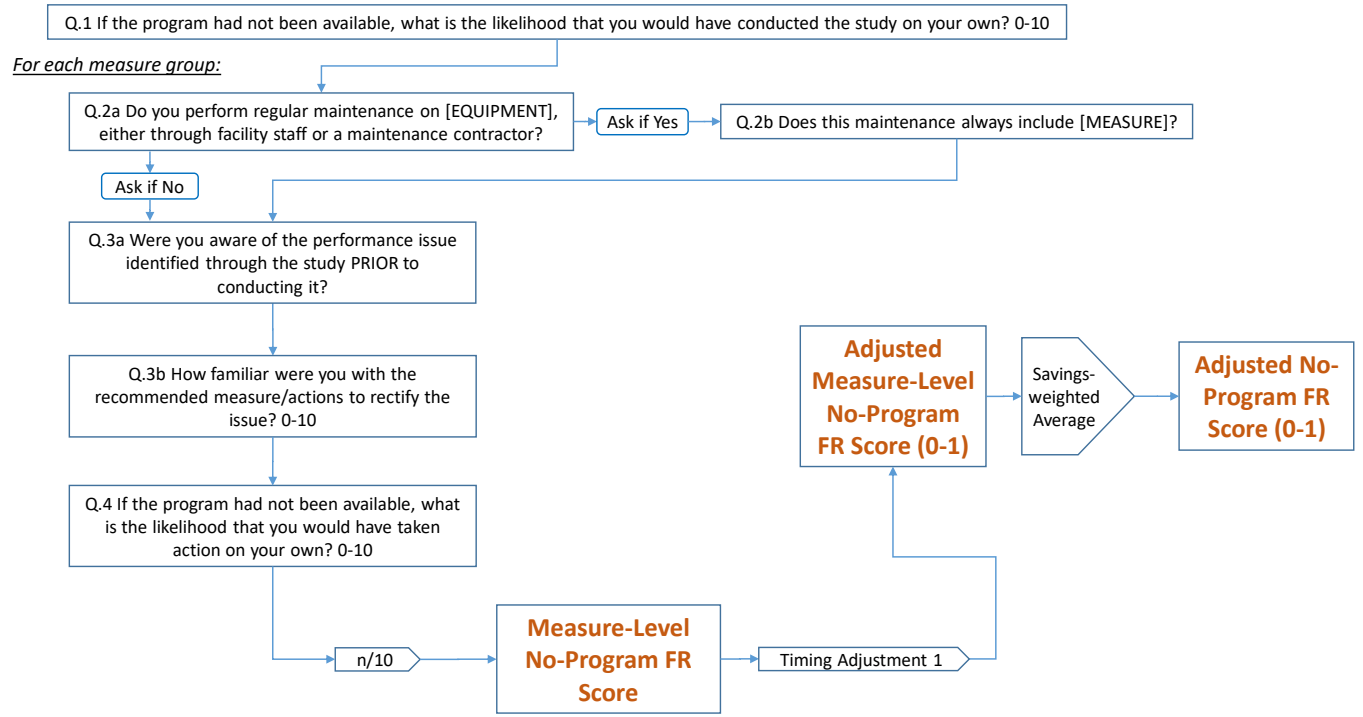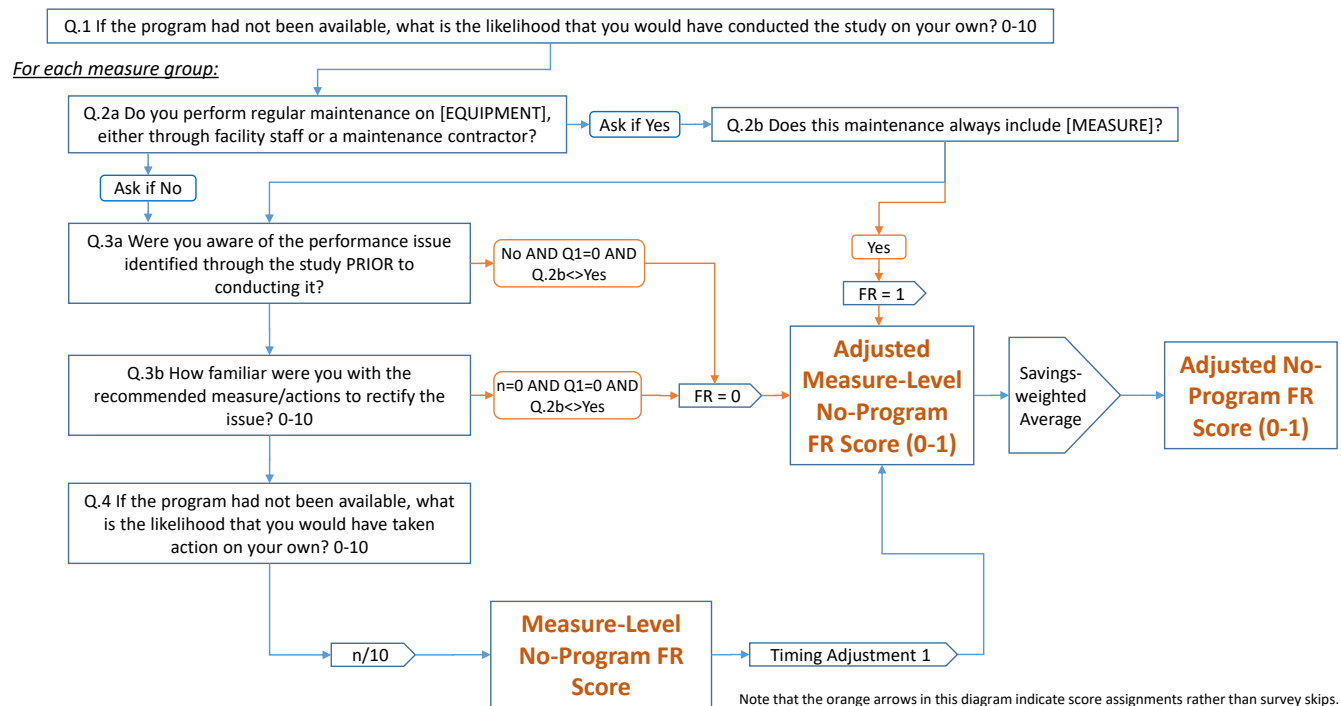
Q.1 If the program had not been available, what is the likelihood that you would have conducted the study on your own? 0-10

For each measure group:

Q.2a Do you perform regular maintenance on [EQUIPMENT], either through facility staff or a maintenance contractor?

Ask if Yes

Q.2b Does this maintenance always include [MEASURE]?

Ask if No

Q.3a Were you aware of the performance issue identified through the study PRIOR to conducting it?

Q.3b How familiar were you with the recommended measure/actions to rectify the issue? 0-10

Q.4 If the program had not been available, what is the likelihood that you would have taken action on your own? 0-10

n/10

Measure-Level No-Program FR Score

Timing Adjustment 1

Adjusted Measure-Level No-Program FR Score (0-1)

Savings-weighted Average

Adjusted No-Program FR Score (0-1)

Figure 2. Study-Based Free Ridership – No-Program FR Score Option #1

Figure 3. Study-Based Free Ridership – No Program FR Score Option #2

Note that the orange arrows in this diagram indicate score assignments rather than survey skips.

Navigant applied the algorithms indicated by the TRM version 6.0 to the data we collected from the GPY6 GOS participants. To achieve the Program Influence score, we expanded the program factor/non-program factor rating questions with follow up questions to determine if the GOS offering was influential when considering, for example, previous experience with similar studies, peer recommendations or trade organizations. We then prompted respondents with their three highest rated program factors when assigning points to the importance of the program and non-program factors when assigning points to the importance of non-program factors.

The TRM protocol requires the free ridership analysis to include an adjusted no-program free ridership score. This adjustment is determined by querying the decision maker about 1) the likelihood of conducting the study on their own had the program not been available and 2) how they addressed various implemented measures or actions prior to participating in the program. Results of our free ridership calculations using the two options are shown in Table 1.

Navigant recommends the results from Option #1 because that option yields a more balanced representation of free ridership in that it considers the full body of evidence regarding no-program behavior in computing the No-Program FR Score. In contrast, Option #2 goes straight to a FR value of 0 (NTGR of 1.0) solely based on the decisionmaker self-reported responses that their routine maintenance excludes the incented equipment. This option does not consider other no-program evidence when computing the No-Program FR score. This essentially ignores the effect of the other no-program actions

for such answer combinations, which in our view is inappropriate. This option also violates the general principal in the TRM that the NTG value should not be dependent on a single question.

Participant Spillover

Navigant anticipated participant spillover due to the high involvement of program resources, technical advice, and interaction with multiple employees at these larger customers. Navigant asked the participants if they had implemented or installed additional energy saving measures to reduce consumption at their facility since participating in the GOS offering. Navigant included questions to identify spillover candidates and measures and the level of program influence, using examples paraphrased below:

- Since completing your project, have you adopted any additional energy efficient improvements that you did not receive a rebate for? What did you implement?

- How important was your experience in the Gas Optimization Study offering in your decision to make these additional changes? Please use a 0-10 scale, where 0 means 'not at all important', and 10 means 'extremely important'?

One of the seven participants interviewed reported their company was influenced by the GOS offering to implement an additional capital improvement project to save energy at their facility since participating in the program that did not receive a rebate. The respondent described the project as:

> *"Another one of the condensate projects. It started with the same logic as the GOS measure, but this one had a fairly quick payback. It was a heat exchanger project where we were heating up process with heat condensate. It was waste heat being wasted, now we are capturing it to pre-heat the process."*

Navigant estimated the savings for the additional project based on the similar measure in the GOS report for that participant. The spillover rate for the sample was calculated following the TRM protocol: the savings for spillover project divided by the program tracked savings for the sample. Navigant estimated participant spillover at 0.05.

NTG Results

The NTG research results for the GOS offering are summarized in Table 3.

Table 3. Summary of Free Ridership, Spillover and NTGR Research Results for the Gas Optimization Study Offering

Respondent	Free Ridership	Participant Spillover	Trade Ally Spillover	Non-participant Spillover	NTGR
Participant	0.14	0.05	NA	NA	0.91

NTGR = 1 – FR + PSO + TSO + NPSO
FR = Participant Free Ridership; PSO = Participant Spillover; TSO = Trade Ally Spillover; NPSO = Non-Participant Spillover
Source: Navigant analysis of data from telephone interviews conducted by Navigant with GPY6 GOS participants. Trade ally research was not conducted for this program year.

NTG Comparison with Previous Research

Prior to the GPY6, the GOS offering has not had NTG research conducted with its participants. The NTG for the joint utility Retro-Commissioning program has served as a proxy value due to similarities in program design. The GOS NTG for GPY6 and 2018 was 1.02, based on NTG research with GPY1 Retro-Commissioning participants and service providers.