

**Commercial & Industrial  
New Construction Service  
EPY6 and GPY3 Evaluation Report**

**Final**

**Energy Efficiency / Demand Response Plan:  
Plan Year 6/3  
(6/1/2013-5/31/2014)**

**Presented to  
Commonwealth Edison Company and Nicor Gas  
Company**

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## E. Executive Summary

This report presents a summary of the findings and results from the impact and process evaluation of the sixth electric program year and third natural gas program year (EPY6/GPY3)<sup>1</sup> Commonwealth Edison (ComEd) and Nicor Gas New Construction Service.

### E.1. Program Savings

Table E-1 summarizes the gross and net electricity and gas savings from the New Construction Service by utility.

**Table E-1. EPY6/GPY3 Total Program Electric Savings**

Utility	Metric	Ex Ante Gross Savings	Gross Realization Rate†	Evaluation-Adjusted Gross Savings	NTGR‡	Verified Net Savings
ComEd	MWh	27,208	101%	27,518	0.52	14,310
	Total MW	6.18	114%	7.05	0.52	3.57
	Peak MW	6.18	88%	5.46	0.52	2.84
Nicor Gas	Therms with interactive effects	259,183	95%	246,850	0.52	128,362
	Therms without interactive effects	304,131	99%	300,266	0.52	156,138

Source: Utility tracking data and Navigant analysis.

† Based on evaluation research findings and deemed values

‡ A deemed value. Source: ComEd PY5-PY6 Proposal Comparisons with SAG.xls, which can be found on the IL SAG web site: <http://ilsag.info/net-to-gross-framework.html>

### E.2. Impact Estimate Parameters for Future Use

In the course of estimating verified gross and net savings, the evaluation team used a variety of parameters in its calculations. Some of those parameters were deemed for this program year and others were adjusted based on evaluation research. The key parameters and data sources used in the analysis are shown in the following table.

<sup>1</sup> The EPY6/GPY3 program year began June 1, 2013 and ended May 31, 2014.

**Table E-2. Impact Estimate Parameters for Future Use**

Parameter	Data Source	Deemed or Evaluated
Program Model Inputs	Program supplied building models	Evaluated
Evaluated Model Inputs	Desk reviews of project documentation	Evaluated
Evaluation Model Results	Savings calculation spreadsheet ‡, eQuest/DOE2.2, IEC, TRACE700	Evaluated
Realization Rate	Program savings and evaluated savings	Evaluated
NTG – Electric and Gas	SAG agreement †	Deemed

†ComEd PY5-PY6 Proposal Comparisons with SAG.xls, which can be found on the IL SAG web site: <http://www.ilsag.info/net-to-gross-framework.html>

‡ The program continues to use the systems track spreadsheet to calculate savings for simple project calculations, such as lighting and HVAC.

### **E.3. Program Volumetric Detail**

As shown in Table E-3, the program had 59 participants in EPY6/GPY3, consisting of 27 ComEd-only projects and 32 completed as ComEd and Nicor Gas joint projects. Of those 32 joint projects, 15 had therm savings eligible for incentives paid by Nicor Gas. Projects incorporated a variety of measures, including lighting, HVAC equipment and controls, and building envelope measures. While the number of participating projects decreased from the prior program year (EPY5/GPY2), the average size of projects increased in EPY6/GPY3. In EPY6/GPY3 the average square footage per project increased to 149,879, from 126,060 in the previous program year which is an 18.9% increase. Furthermore, the average evaluated gross energy savings per project increased in EPY6/GPY3 to 466 MWh, from 308 MWh in the previous year. Average per project evaluated therm saved (without interactive effects) increased to 5,089, from 2,392. These increases represent a 51% change in MWh savings and a 113% change in therm savings without interactive effects on average per project.

It should also be noted that in EPY5/GPY2, the program transitioned from three incentive tracks (Systems, Comprehensive, and Small Building) to a single performance-based comprehensive model. While in previous years, the evaluation team has broken-out program impacts by track, in EPY6/GPY3 and in future years, reporting will be done at the program level and will be broken out between ComEd-only projects, and those completed as ComEd and Nicor Gas-joint projects.

**Table E-3. EPY6/GPY3 Volumetric Findings Detail**

Participation	Count of Projects
ComEd Only	27
Joint (electric savings only)	17
Joint (electric and gas savings)	14
Joint (gas savings only)	1
Total	59

Source: ComEd tracking data and Navigant team analysis.

#### **E.4. Results Summary**

The following table summarizes the key metrics from EPY6/GPY3.

**Table E-4. EPY6/GPY3 Results Summary**

Participation	MWh	MW (total)	MW (peak)	Therms (without interactive effects)
Net Savings	14,310	3.57	2.84	156,138
Gross Savings	27,518	7.05	5.46	300,266
Program Realization Rate	101%	114%	88%	99%
Program NTG Ratio †	0.52	0.52	0.52	0.52
Building Area Served (Sq. ft.)	8,842,843			
<b>Customers Touched ‡</b>				
Training participants	994			
Leads transferred to other programs	84			
Projects completed	59			
Applications Received in EPY6/GPY3	100			
Projects in the Pipeline	152			

Source: ComEd tracking data and Navigant team analysis.

† A deemed value. Source: ComEd PY5-PY6 Proposal Comparisons with SAG.xls, which can be found on the IL SAG web site here: <http://ilsag.info/net-to-gross-framework.html>

‡ Customers touched includes training participants, leads transferred to other programs, and PY6 participants. The overall number of customers touched is not the total of these three groups, as certain customers may be present in multiple groups.

## *E.5. Key Findings and Recommendations*

The following provides insight into key program findings and recommendations.<sup>2</sup>

### **Verified Gross Impacts and Realization Rate**

**Finding 1.** The evaluation team found some errors in baseline parameters used in the building performance modeling. In general, few modifications to ex ante savings were required; however, in some instances our team found that the baseline used to calculate savings included specifications that were inconsistent with the corresponding building codes. The building codes used in the ex ante savings model were based on the codes in effect at the time of the application. However, the applicable energy codes may change by the time the building permit is obtained. The evaluation team used the building codes in effect at the time the building was permitted for the baseline.

**Recommendation 1.** We recommend the implementation team verify baseline parameters or describe any deviations from baseline assumptions in supporting documentation.

**Finding 2.** In some instances, projects had under-claimed savings due to as-built conditions differing from plans submitted by participants. In most cases, these changes were incorporated into the building models; however, for some projects, the evaluation team found minor discrepancies—particularly when projects added efficient equipment later in the project’s timeline. Similarly, our team found minor discrepancies between installed equipment and what was included in the project’s model.

**Recommendation 2.** Program and implementation staff should track and review projects’ most recent building plans and include these in the project models to ensure the program claims the most accurate level of savings. If implementation staff intentionally use equipment efficiencies in their models that are lower than the published values to provide conservative savings estimates, or to reflect less than ideal equipment operation, we recommend these assumptions be documented in the project files.

**Finding 3.** For several specific measures in our sample of projects, the evaluation team found savings calculations that were inconsistent with the Illinois TRM. The most significant effect from this was the addition of HVAC interactive effects to all lighting projects.

**Recommendation 3.** For projects where a building simulation approach is not used, consider using the Illinois TRM for ex ante savings calculations or adjusting measure templates to align with TRM approaches.

### **Market Baseline**

**Finding 4.** The evaluation team attempted to obtain baseline building code compliance and energy efficiency information for new construction from code enforcement officials in northern Illinois; but we found that, in most cases, these individuals were unable or

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<sup>2</sup> Numbered findings and recommendations in this section are the same as those found in the Findings and Recommendations section of the evaluation report for ease of reference between each section.



unwilling to provide meaningful feedback on the state of commercial buildings compliance with the latest building energy codes.

**Recommendation 4.** Upon reviewing the results of the ongoing energy code compliance study<sup>3</sup>, the implementation and evaluation teams should convene to discuss the potential for assessing any effects the New Construction Service has on the commercial new construction market, the information needed to conduct such an assessment, and what the program's role may be in influencing building energy efficiency in the market...

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<sup>3</sup> The study, and the associated program in development, is referred to as the CANDI effort. The study itself will both attempt to measure the baseline of compliance with current building codes in commercial and residential new construction, and will also estimate the potential savings that would result in increased rates of compliance.

## 1. Introduction

### 1.1 Program Description

The New Construction Service aims to capture immediate and long-term energy efficiency opportunities that are available during the design and construction of new buildings, additions, and renovations in the non-residential market. The program is jointly offered by Commonwealth Edison (ComEd) and Nicor Gas. The ComEd program has been operating since June 1, 2009 (EPY2). Nicor Gas joined the program to offer natural gas rebates in June 2011 (GPY1).

The Energy Center of Wisconsin (ECW) implements the program for both ComEd and Nicor Gas. ECW reaches out to design professionals and customers at the beginning of the design process to engage them in the program as early as possible. In EPY5/GPY2 (June 1, 2012 to May 31, 2013), the program transitioned from three tracks—the Systems, Comprehensive, and Small Buildings tracks—to a single performance-based Comprehensive track model. The single track offers incentives and technical assistance to non-residential buildings greater than 20,000 square feet and residential buildings greater than 100,000 square feet for whole-building electric and gas savings. The program provides incentives for a variety of measures, including lighting and HVAC equipment and controls and building envelope measures.

### 1.2 Evaluation Objectives

As described in our research plan, the evaluation of the New Construction Service for EPY6/GPY3 sought to answer several questions related to the program’s impacts and its implementation processes. These questions, broken into appropriate categories, are listed below.

#### 1.2.1 Impact Questions

1. What are the research findings gross energy and demand impacts?
2. What are the verified net impacts from the program using SAG-approved NTG ratios?
3. Did the program meet its energy and demand savings goals? If not, why not?
4. What are the free ridership and spillover values to be used prospectively in EPY8/GPY5?

#### 1.2.2 Process Questions

1. What design or implementation changes occurred in EPY6/GPY3?
2. What challenges did the program face in EPY6/GPY3 and how did the program respond to them?

#### 1.2.3 Market Baseline Questions

1. What is the current baseline of building energy efficiency practices used in commercial new construction and how do these practices compare to IECC 2012 specifications?
2. How can this information potentially be used in the future to estimate the effect of the program on this baseline?

## 2. Evaluation Approach

This evaluation of the New Construction Service covers the sixth year of program operation for ComEd and the third year for Nicor Gas. The impact evaluation work is utility-specific: the ComEd impact evaluation focuses on a sample of the EPY6 projects with electric savings (58 projects), while the Nicor Gas impact evaluation will focus on a projects claiming gas savings (15 projects). ComEd-only projects are those which do not fall within the Nicor Gas service territory, or do not claim gas savings.

### 2.1 Overview of Data Collection Activities

Table 2-1 summarizes the primary data sources that the team used to answer impact, process, and market effects questions for both the ComEd and Nicor Gas evaluations.

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

What	Who	Target Completes	Completes Achieved	When
In-Depth Interviews	Program Manager/Implementer Staff	3	1†	October – November 2014
Desk Review	Participants	25	25	September – October 2014
In-Depth Interviews	Participants	Census	35‡	January – October 2014
Online Survey	Participants and training participants	200	158	September – October 2014
Desk Review/Interviews	Spillover candidates	8	5	October - November 2014
In-Depth Interviews	Building Code Officials	15	5	October - November 2014

† Our team conducted one interview with representatives from ComEd, Nicor, and ECW, which built upon several meetings between the implementation team and evaluation team earlier in 2014.

‡ This count represents the unique projects for which interviews were completed, and includes 5 interviews from our pilot of the real-time NTG approach, described in Section Net-to-Gross Methodology 7.1.2.1.

**Table 2-2. Additional Resources**

Reference Source	Author	Application	Gross Impacts	Process
Program Tracking Database	Program Implementer	Impact and Process Evaluations	X	
Project narratives and Correspondence	Program Implementer	Impact Evaluation	X	X
Building Plans	Program Implementer	Impact Evaluation	X	
Program Marketing and Outreach Materials, and Events	Program Implementer	Process Evaluation		X
Illinois Technical Reference Manual, Version 2.0	Vermont Energy Investment Corporation	Impact Evaluation: Gross Savings Estimates	X	
International Energy Conservation Code 2009	International Code Council	Impact Evaluation: Baseline Determination	X	
International Energy Conservation Code 2012	International Code Council	Impact Evaluation: Baseline Determination	X	

## 2.2 Verified Savings Parameters

Verified Gross and Net Savings (e.g., energy, demand, and coincident peak demand) resulting from the EPY6/GPY3 New Construction Service were calculated using whole-building energy models to represent energy consumption for baseline and projected design scenarios. The estimated first year savings is the difference in annual electric and gas consumption between the two models. The energy performance baseline is the Illinois Energy Conservation Code for Commercial Buildings, which references and incorporates the applicable International Energy Conservation Code (IECC). This reference specifically allows for use of ASHRAE Standard 90.1 as an alternate compliance method. The date of the construction permit is used to determine which version of the IECC is the most appropriate to use as baseline; however, the program assumes the appropriate baseline based on the date that the project applied to the program. Projects that applied prior to January 1<sup>st</sup>, 2013 used the IECC 2009 as the baseline; those that applied after used the IECC 2012.

The following table presents the parameters that were used in the verified gross and net savings calculations and indicates which were examined through evaluation activities and which were deemed.

**Table 2-3. Verified Savings Parameter Data Sources**

Gross Savings Input Parameters	Data Source	Deemed † or Evaluated?
Program Model Inputs	Program supplied building models	Evaluated
Evaluated Model Inputs	Desk reviews of project documentation	Evaluated
Evaluation Model Results	Savings calculation spreadsheet ‡; eQuest/DOE2.2, IEC, TRACE700	Evaluated
Realization Rate – All Projects	Program savings and evaluated savings	Evaluated
NTG – Electric and Gas	SAG agreement	Deemed

† Source: ComEd PY5-PY6 Proposal Comparisons with SAG.xls and August 5-6, 2013

Meeting/Nicor\_Gas\_NTG\_Results\_and\_Application\_GPY1-3.pdf, which can be found on the IL SAG web site here: <http://www.ilsag.info/net-to-gross-framework.html>

‡ The program continues to use the systems track spreadsheet to calculate savings for simple project calculations, such as lighting and HVAC.

### 2.2.1 Verified Gross Program Savings Analysis Approach

The engineering analysis used existing building energy models listed in Table 2-3. The analysis included:

- 1) Adjusting the model inputs to match the as-built conditions identified in our review of the New Construction Service’s project files, and
- 2) Quantifying impacts by comparing two simulations representing the current building and the baseline building.

In cases where the implementation used a spreadsheet model for individual measures that are covered by the Illinois TRM, the team verified savings using the calculation approach dictated by the TRM.

The baseline building is one meeting (*but not exceeding*) the appropriate Illinois Energy Conservation Code for Commercial Buildings (this is to be distinguished from the IECC, the International Energy Conservation Code). The building codes used in the ex ante savings model were based on the codes in effect at the time of the application. However, the applicable energy codes may change by the time the building permit is obtained. The evaluation team used the version of the Illinois Energy Conservation Code in effect at the time the building was permitted for the baseline.

The evaluation team also calculated interactive effects, where applicable, for each utility. These are the resulting changes to savings that occur when the installation of one measure has a positive or negative effect on the savings for the other fuel type. The implementation team calculates therm savings for joint projects including interactive effects; however, the evaluation team has calculated therm savings both with and without interactive effects. Throughout this report it is noted when savings values are presented with and without interactive effects.

## 2.2.2 Verified Net Program Savings Analysis Approach

The evaluation team calculated verified Net Energy and Demand (coincident peak and overall) Savings by multiplying the Verified Gross Savings estimates by a deemed net-to-gross ratio (NTGR). In EPY6/GPY3, the NTGR values used to calculate the Net Verified Savings were based on past evaluation research and established through a negotiation process through the SAG and documented on the SAG website.<sup>4</sup>

During the course of the EPY6/GPY3 evaluation, the evaluation team researched free-ridership and spillover using a real-time approach piloted earlier in EPY6/GPY3, and agreed upon as the preferred method for estimating free-ridership and spillover going forward. The methodology involves a two-step interview process to assess free-ridership and spillover at different stages of the project participation. The methodology is discussed in detail in Section 7.1.2.1 in the Appendix of this report. Below, we provide an overview of how we calculate free-ridership and spillover.

### 2.2.2.1 Free-Ridership

Using a self-report method, the evaluation team measures free-ridership by assessing three different elements that are given a score based on participants' answers to interview questions: Program Influence (PI), Program Components (PC), and Timing and Efficiency (PT). The PI element considers how customers learned about the program and when in the design process participants signed up for the program. The PC element examines how much each of the program components influenced each individual projects' efficient design. The PT score is reached by asking participants questions about when and if the same efficient design features would have been included in the project in the absence of the program. A detailed breakdown of these three elements is included in Section 7.1, including the battery of free-ridership questions.

### 2.2.2.2 Spillover

The evaluation team used a self-report method to quantify any spillover resulting from the program. In addition to conducting in-depth interviews with EPY6/GPY3 program participants, we assessed the potential for spillover arising from previous years' participants (EPY3 to the present) by administering online surveys to past program participants and training recipients from 2010 to the present. The goal of the online survey was to flag potential cases of spillover to be targeted for follow-up interviews and desk reviews conducted by members of our engineering team.

## 2.3 Process Evaluation

Given program maturity and historically high participant satisfaction, the EPY6/GPY3 process evaluation was limited to activities that provided information on participant characteristics, program implementation changes, and program challenges.

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<sup>4</sup> Source: ComEd PY5-PY6 Proposal Comparisons with SAG.xls, which is to be found on the IL SAG web site here: <http://www.ilsag.info/net-to-gross-framework.html>

### **2.3.1 Program Manager Interviews**

The evaluation team conducted interviews with program management to collect information on EPY6/GPY3 program implementation changes and challenges for ComEd, Nicor Gas, and ECW. As in prior years, we conducted a group interview with representatives from all three organizations.<sup>5</sup>

### **2.3.2 Program Participant In-Depth Interviews**

The evaluation team collected and reviewed qualitative data from in-depth interviews with program participants to improve understanding of program processes and implementation. These interviews were conducted in conjunction with our net-to-gross research and were completed with participants that are currently in the pipeline and have moved past the program's reservation phase. We list the verbatim responses to the process-related questions covered in these interviews in Section 7.3.

### **2.3.3 Review of Program Materials**

The evaluation team reviewed new program documents, such as the updated program operations manual and the New Construction Service website, to improve understanding of new approaches for EPY6/GPY3. Additionally, a member of our team attended one of the program's educational events, titled *New Construction Contracts: Incorporating Energy Performance*.

## **2.4 Market Baseline**

To estimate the market baseline for commercial new construction in the ComEd and Nicor service territory, the evaluation team conducted interviews with local code officials to determine the baseline of building code compliance. These interviews attempted to gather information on the percentage of commercial buildings in their respective territories that meet or exceeded specifications from the 2012 International Energy Conservation Code (IECC).

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<sup>5</sup> In PY5 ComEd and Nicor program staff was interviewed at the same time, while the Energy Center of Wisconsin was interviewed separately.

### 3. Gross Impact Evaluation

Participants completed 59 projects in the New Construction Service in EPY6/GPY3. The evaluation's engineering desk review of a sample of 25 projects found minor discrepancies with some model inputs and ex ante savings calculations; however, for most of the projects in our sample, we made no adjustments to savings. Our review found realization rates of 100% for MWh and 110% for MW. For projects jointly administered by Nicor gas, the evaluation team found therm realization rates both with and without interactive effects, of 95% and 99% respectively.

#### 3.1 Program Volumetric Findings

The evaluation team reviewed the New Construction Service program tracking data for the projects completed in EPY6/GPY3 and identified 59 projects. Table 3-1 presents the total number of projects by savings type and utility. Though participation decreased over the past program year, the number of projects in the pipeline would indicate that the program will likely rebound in EPY7/GPY4. Therefore, we recommend that program continue its current outreach approach, continuing to focus on developing relationships with current participants and building repeat participation.

##### Key findings include:

1. Participation decreased in EPY6/GPY3, from 111 projects in EPY5/GPY2 to 59 projects over the past program year. The share of projects jointly administered by Nicor Gas (as a percentage of overall projects) also fell in EPY6/GPY3 from 63% in EPY5/GPY2 to 34% of the projects. Additionally, projects only claiming electric savings through the program (ComEd Only projects) increased as a percentage of overall projects from 37% in EPY5/GPY2 to 46% in EPY6/GPY3.
2. Though participation was significantly lower in EPY6/GPY3, the average size of projects admitted to the program has increased. On average, the square footage per project increased from 126,060 in EPY5/GPY2 to 149,879 over the past program year, and the overall incentive amount per project has increased from \$23,083 to \$49,984, respectively. Furthermore, the average evaluated gross energy savings per project increased in EPY6/GPY3 to 466 MWh, from 308 MWh in the previous year. Average per project evaluated therms saved (without interactive effects) increased to 5,089, from 2,392. These increases represent a 51% change in MWh savings and a 113% change in therm savings without interactive effects per project on average.
3. According to interviews with program staff, program administrators will focus on building outreach capacity in the coming program years by hiring additional staff throughout the ComEd/Nicor service territories. As a result, program participation is expected to grow steadily over EPY7/GPY4 and beyond. This is exemplified by the 152 projects already in the pipeline as of July 15<sup>th</sup>, 2014 for the coming program years.<sup>6</sup>

<sup>6</sup> Of the 152 projects in the pipeline as of 7/15/14, 89 are slated for EPY7/GPY4, 46 for EPY8/GPY5, 15 for EPY9/GPY6, and 2 for EPY10/GPY7.



**Table 3-1. EPY6/GPY3 Volumetric Findings Detail**

Project Description	Count of Projects
ComEd Only	27
Joint (electric savings only)	17
Joint (electric and therm savings)	14
Joint (therm savings only)	1
<b>Total</b>	<b>59</b>

Source: ComEd tracking data and Navigant team analysis.

### 3.2 Gross Program Impact Parameter Estimates

The evaluation team researched realization rates for a sample of projects for EPY6/GPY3. The parameters and data sources used in this research are presented in Table 3-2. The engineering review included several adjustments to the building models, algorithms and assumptions used by the program. While only energy (MWh and therm) savings are necessary for reporting, the program does track peak coincident demand (MW) savings since ComEd includes this program within their bid to PJM.

**Table 3-2. Verified Gross Savings Parameters**

Parameter	Data Source	Deemed or Evaluated
Program Model Inputs	Program supplied building models	Evaluated
Evaluated Model Inputs	Desk reviews of project documentation	Evaluated
Evaluation Model Results	Savings calculation spreadsheet ‡, eQuest/DOE2.2, IEC, TRACE700	Evaluated
Realization Rate	Program savings and evaluated savings	Evaluated

‡ The program continues to use the systems track spreadsheet to calculate savings for simple project calculations, such as lighting and HVAC.

### 3.3 Verified Gross Program Impact Results

The resulting total program verified gross savings are shown in Table 3-3 below. Table 7-1 in the Appendix shows the gross ex ante gross savings and evaluation-adjusted gross savings by project, including individual project realization rates, for the sampled projects. The verified gross savings meet 90/10 confidence, or better, for MWh, MW, peak MW, and therms.

**Table 3-3. EPY6/GPY3 Verified Gross Impact Savings Estimates by Utility**

Utility	Metric	Ex Ante Gross Savings	Gross Realization Rate	Evaluation- Adjusted Gross Savings
ComEd	MWh	27,208	101%	27,518
	Total MW	6.18	114%	7.05
	Peak MW	6.18	88%	5.46
Nicor Gas	Therms with interactive effects	259,183	95%	246,850
	Therms without interactive effects	304,131	99%	300,266

Source: Evaluation Team analysis.

## 4. Net Impact Evaluation

The NTG values for this program are deemed prospectively and used to calculate verified net savings. Table 4-1 shows the deemed NTG values and the EPY6/GPY3 verified net savings. The deemed NTGR values of 0.52 for electricity and gas were agreed to by stakeholders in discussions in the SAG.<sup>7</sup>

**Table 4-1. EPY6/GPY3 Verified Net Impact Savings Estimates by Utility**

Utility	Metric	Evaluation - Adjusted Gross Savings	NTGR	Evaluation Net Savings
ComEd	MWh	27,518	0.52	14,310
	Total MW	7.05		3.57
	Peak MW	5.46		2.84
Nicor Gas	Therms with interactive effects	246,850		128,362
	Therms without interactive effects	300,266		156,138

Source: Evaluation Team analysis.

<sup>7</sup> Provided by Nicor Gas and ComEd to the SAG summarizing the SAG-approved NTGR as negotiated in March-August 2013. Distributed in the SAG Meeting on August 5-6, 2013, which is to be found on the IL SAG web site here: <http://www.ilsag.info/net-to-gross-framework.html>

## 5. Process Evaluation

For the process evaluation of EPY6/GPY3, the evaluation team conducted interviews with program administrators, implementers, and current program participants<sup>8</sup>. Program staff reported few changes, as far as program design and implementation, over the past program year. Overall, the program is well-designed and continues to operate effectively and in accordance with the program model. Similar to past program years, participants report high levels of satisfaction with the program; specifically lauding the technical and financial assistance the program provides. Below, we summarize several findings drawn from our process evaluation. In addition, we list the verbatim responses to the process-related questions covered in these interviews in Section 7.3.

### 5.1 Program Participation

Participation in the New Construction Service fell in EPY6/GPY3. Participation decreased from 111 projects in EPY5/GPY2 to 59 projects over the past program year. There are several likely reasons for the drop in participation. First, the program has almost completely transitioned from three tracks, to one comprehensive model. The systems track and small buildings track projects will eventually be replaced with comprehensive projects. But these projects are generally larger and more complex, resulting in a longer period between initial contact with program and project completion. Along with the shift to all comprehensive projects, the New Construction Service is spending more effort targeting larger buildings. This shift has resulted in fewer, but larger and more cost-effective projects.

With fewer smaller projects being admitted to the program through the Systems and Small Buildings tracks, and the targeting of larger buildings, the average size of projects has begun to increase. The total square footage served through the program over the past program year was 8,842,843, compared with 13,992,672 square feet in EPY5/GPY2. This translates to an increase in the average size of projects by 23,819 sq. ft. over the past program year, from 126,060 sq. ft. per project in EPY5/GPY2 to 149,879 sq. ft. in EPY6/GPY3 – a 19% increase. Notably, as discussed in section 3.1, the overall incentive amount per project also increased from \$23,083 to \$49,984 over that time.

Encouraging repeat participation is a key strategy for the New Construction Service being able to interact with projects early in the design process, where they can have the most influence. More interviewees in EPY6/GPY3 were repeat customers than in prior years. These participants are more familiar with the program requirements and reported valuing the program’s technical assistance offerings and incentives.

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<sup>8</sup> Program participants targeted for our in-depth interviews are those currently in the BNC pipeline and are past the program’s reservation phase.

## 5.2 Increased Therm Savings

The program has seen a significant increase in both the overall therm savings and per-project therm savings. This is likely due to the long lead-times for new construction—that is, projects that were initiated during the first or second year of the gas program reached completion in EPY6/GPY3. In addition, the program has made concerted efforts to target specific sectors that yield high gas savings opportunities, such as healthcare, higher education, industrial, and multifamily. These efforts appear to be working as reflected by the significantly higher per-project therm savings in EPY6/GPY3.

## 5.3 Marketing and Outreach

The New Construction Service continues to build its outreach capacity by adding new staff and leveraging existing resources. New staff are reportedly focused on augmenting the program’s presence in the Chicago metro area commercial new construction market being targeted by the program. Also, the program continues to work with other Smart Ideas for Your Business programs focused on the commercial market to identify potential customers that have shown interest in other ComEd or Nicor programs, and may be a good fit for the New Construction Service.

From in-depth interviews with program staff and current program participants<sup>9</sup> we gained an understanding of how participants generally learn about the New Construction Service, the impact that specific outreach activities have on driving participation, and on which aspects of the program’s marketing and outreach efforts staff and participants find most valuable (both in terms of driving new and repeat participation). Several of the EPY6/GPY3 participants interviewed reported learning about the program via word of mouth through their own professional networks. In some cases, the design professionals leading a project were not familiar with the New Construction Service: however, their firm participated in the past and that institutional knowledge was passed on to a project design lead. Furthermore, many of the respondents cited having built relationships with a member of the New Construction Service implementation team particularly in the case of repeat participants.

The majority of respondents *did not* find education and training events to be particularly influential—both in terms of motivating them to participate and influencing their decision-making processes as to which energy savings measures were included in the project’s final design. Eighteen out of 35 participants interviewed said that they did not attend any trainings sponsored by the program or, in the event that they did attend, did not find it particularly influential during the design process.

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<sup>9</sup> Participants interviewed are currently in the pipeline and are either in, or have passed, the program’s reservation phase. Eight-nine of these projects are slated for completion during EPY7/GPY4.

## 6. Findings and Recommendations

This section summarizes the key impact and process findings by topic, and offers corresponding recommendations for each.

### Verified Gross Impacts and Realization Rate

In general, realization rates were close to 100% and few projects required significant adjustments to savings. However, our desk reviews did find several cases where the baseline parameters and as-built conditions required changes that impacted savings estimates.

**Finding 1.** The evaluation team found some errors in baseline parameters used in the building performance modeling. In general, few modifications to ex ante savings were required; however, in some instances our team found that the baseline used to calculate savings included specifications that were inconsistent with the corresponding building codes. For example, the evaluation team found one case where the baseline window to wall ratio included in the model was 47%, when in reality the IECC 2009 code used as the baseline specifies a 40% window to wall ratio. The project erroneously claimed savings for a reduction from the 47% baseline to 41% window to wall ratio in the final building plans.

**Recommendation 1.** We recommend implementation team use baseline parameters or describe any deviations from baseline assumptions in supporting documentation.

**Finding 2.** In some instances, projects had under-claimed savings due to as-built conditions differing from plans submitted by participants. In most cases, these changes were incorporated into the building models. When projects added efficient equipment later in the project's timeline, however, the evaluation team found minor discrepancies between plans submitted by participants and as-built documentation. Similarly, our team found minor discrepancies between installed equipment and what was included in the project's model. For example, our team found three projects that modeled boilers with lower efficiencies than were included in the final building plans.

**Recommendation 2.** Program and implementation staff should track and review projects' most recent building plans and include these in the project models to ensure the program claims the most accurate level of savings. If implementation staff intentionally use equipment efficiencies in their models that are lower than the published values to provide conservative savings estimates, or to reflect less than ideal equipment operation, we recommend these assumptions be documented in the project files.

**Finding 3.** For several specific measures in our sample of projects, the evaluation team found savings calculations that were inconsistent with the Illinois TRM. Savings for lighting, efficient rooftop units, boilers, demand controlled ventilation, infrared heating, and shell improvement measures were calculated using the savings calculation spreadsheet. The evaluation team recalculated savings for these measures using the Illinois TRM. The most significant effect from this was the addition of HVAC interactive effects to all lighting projects.

**Recommendation 3.** For projects where a building simulation approach is not used, consider using the Illinois TRM for ex ante savings calculations or adjust savings calculation spreadsheet to align with TRM approaches.

### Market Baseline

**Finding 4.** Understanding the baseline levels of energy efficiency in commercial new construction will be necessary to establish the extent to which the New Construction Service is affecting energy efficiency in the overall market. The evaluation team attempted to obtain baseline compliance and energy efficiency information from code enforcement officials in northern Illinois, but we found that, in most cases, these individuals were unable to provide meaningful feedback on the state of commercial buildings' compliance with the latest building energy codes. However, our interviews did show that commercial building energy code enforcement and compliance are topics of great interest to a variety of stakeholders in Illinois and in ComEd and Nicor service territories, in particular. Some code officials reported that local governments do not have adequate resources to enforce the latest building code (IECC 2012), and therefore rates of compliance may differ throughout northwestern Illinois. Currently, the state of Illinois is working with ADM Associates on a comprehensive study<sup>10</sup> to establish the state's current level of compliance with IECC 2012. In conjunction, program administrators are working with other stakeholders to develop a claimed savings program aimed at increasing building code compliance rates for new construction.

**Recommendation 4.** Upon reviewing the results of the ongoing energy code compliance study, the implementation and evaluation teams should convene to discuss the potential for assessing any effects the New Construction Service has on the commercial new construction market, the information needed to conduct such an assessment, and what the program's role may be in influencing building energy efficiency in the market.

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<sup>10</sup> The study, and the associated program in development, is referred to as the CANDI effort. The study itself will both attempt to measure the baseline of compliance with current building codes in commercial and residential new construction, and will also estimate the potential savings that would result in increased rates of compliance.

## 7. Appendix

### 7.1 Evaluation Research Impact Findings

#### 7.1.1 Evaluation Research Gross Impact Findings

The researched gross program savings for sampled projects are presented in Table 7-1 below. Realization rates below 100% indicate that energy savings were adjusted downward; those above 100% indicate that the energy savings were adjusted upward; and, those equal to 100% indicate that no changes were made. Note that all savings values (kW, kWh, and therm) include interactive effects.



**Table 7-1: Research Gross Savings for Sampled Projects**

Project ID	Ex Ante kW	Ex Post kW	Realization Rate	Ex Ante kWh	Ex Post kWh	Realization Rate	Ex Ante therms	Ex Post therms	Realization Rate	Findings
127	207.0	173.2	84%	722,837	546,376	76%	0	0	N/A	<ul style="list-style-type: none"> <li>In the original analysis, 42.3 kW and 155,514 kWh were included for reducing the window area of the building from 48% to 41%. Based on guidelines from ASHRAE 90.1, the baseline model was changed to properly account for code fenestration and the evaluation team removed 42.3 kW and 155,514 kWh of savings. Because the area was increased, the savings for insulation measures increased. As a result, the total net reduction for this measure was less than originally modeled.</li> <li>The original analysis was completed using three separate building models. Upon investigation, the evaluation team determined that there was a "mismatch" between the models and combined them into a single model. This change further reduced the savings by approximately 75,000 kWh.</li> </ul>
156	114.2	170.5	149%	831,851	1,076,547	129%	0	0	N/A	<ul style="list-style-type: none"> <li>The ex ante calculations used a demand diversity factor of 0.88, while the adjusted savings used the IL TRM defined coincidence factor of 1.0, waste heat demand factor of 1.44, and a waste heat energy factor of 1.24 to determine the lighting savings.</li> <li>The adjusted HVAC savings were found using the IL TRM savings methods, increasing the cooling capacity considered for the project from 307 tons to 428 tons, and applying savings from the heat pumps that were not counted in the ex ante savings.</li> </ul>
187	419.7	419.7	100%	1,558,343	1,558,343	100%	0	0	N/A	<ul style="list-style-type: none"> <li>No changes were made to the ex ante savings.</li> </ul>
188	281.2	299.1	106%	611,609	611,580	100%	54,379	54,381	100%	<ul style="list-style-type: none"> <li>The savings calculated by the energy modeling done by the evaluation team were very close the ex ante case, but showed a slight increase in the demand savings and nominal differences in the total energy and gas consumption reductions.</li> </ul>
202	207.8	207.8	100%	333,953	333,953	100%	0	0	N/A	<ul style="list-style-type: none"> <li>No changes were made to the ex ante savings.</li> </ul>

Project ID	Ex Ante kW	Ex Post kW	Realization Rate	Ex Ante kWh	Ex Post kWh	Realization Rate	Ex Ante therms	Ex Post therms	Realization Rate	Findings
242	313.3	312.5	100%	840,877	825,774	98%	0	0	N/A	<ul style="list-style-type: none"> <li>In the original model, the PTHP baseline performance did not appear to be consistent with IECC 2009 (9.1 EER &amp; 2.8 COP). The model was modified so that the baseline PTHP units had an EER of 11.0 and COP of 3.3. These changes caused a negligible decrease in the demand savings and a 15,103 kWh decrease in energy savings.</li> </ul>
308	209.0	210.2	101%	571,701	557,040	97%	63,166	56,935	90%	<ul style="list-style-type: none"> <li>The original model assumed that the boiler system efficiency was increased from 80% to 94%, however the verification report showed the condensing boiler model numbers, which are 95% efficient units. The boiler system that provided heat to the snowmelt system was also upgraded to 95% efficient units, and was originally modeled as 94% efficient units.</li> <li>A review of the building ventilation schedule showed that the parking garage ventilation system controlled 13,700 CFM of airflow (originally assumed to be 24,000 CFM). The energy models were modified and the savings were reduced accordingly.</li> </ul>
330	5.0	4.9	99%	24,545	26,242	107%	0	0	N/A	<ul style="list-style-type: none"> <li>The ex ante calculations used a demand diversity factor of 0.68, while the adjusted savings used the IL TRM defined coincidence factor of 0.6, waste heat demand factor of 1.12, and a waste heat energy factor of 1.07 to determine the lighting savings.</li> </ul>

Project ID	Ex Ante kW	Ex Post kW	Realization Rate	Ex Ante kWh	Ex Post kWh	Realization Rate	Ex Ante therms	Ex Post therms	Realization Rate	Findings
337	5.9	9.4	160%	18,954	25,398	134%	29,271	29,786	102%	<ul style="list-style-type: none"> <li>The ex ante calculations used a demand diversity factor of 0.74, while the adjusted savings used the IL TRM defined coincidence factor of 0.75, waste heat demand factor of 1.57, and a waste heat energy factor of 1.34 to determine the lighting savings.</li> <li>The boiler savings were recalculated according to the IL TRM method using an AFUE in the post case of 95.3 according to the boiler specifications, rather than 92.0. The remainder of the therms savings adjustment is due to using the IL TRM defined infrared heater savings of 451 therms rather than the ex ante calculated savings.</li> </ul>
344	25.0	25.2	101%	65,987	64,494	98%	8,951	8,322	93%	<ul style="list-style-type: none"> <li>Correcting the exterior lighting wattages changed the savings for this measure from 5,118 kWh to 3,625 kWh.</li> <li>The domestic hot water systems and the pool heaters installed were 96% efficient units, and in the original models the efficiencies for both were set at 95%. Increasing the efficiency on both of these units increased the savings to 3,049 therms and 557 therms.</li> <li>The savings for low flow showerheads were adjusted by using assumptions from similar studies of 12 minutes of use per day in hotels. The savings for this measure were decreased to 2,692 therms.</li> </ul>
353	19.4	19.4	100%	79,840	79,840	100%	0	0	N/A	<ul style="list-style-type: none"> <li>No changes were made to the ex ante savings.</li> </ul>
356	4.0	4.4	110%	15,053	15,053	100%	414	186	45%	<ul style="list-style-type: none"> <li>Based on the supplied documentation, the expected demand savings are 4.4 kW, but only 4.0 kW were claimed.</li> <li>Our analysis indicated the rooftop units were 82% efficient, however based on the manufacturer's literature the installed units are only 80.8% efficient.</li> </ul>

Project ID	Ex Ante kW	Ex Post kW	Realization Rate	Ex Ante kWh	Ex Post kWh	Realization Rate	Ex Ante therms	Ex Post therms	Realization Rate	Findings
366	1.7	3.0	176%	8,025	13,873	173%	2,364	2,465	104%	<ul style="list-style-type: none"> <li>The supplied model indicated that the office area of the building was approximately 4,000 sq. ft. However, per the supplied drawings, the actual floor area was approximately 5,700 sq. ft.</li> <li>These changes also greatly affected the savings for the lighting by increasing the allowable baseline wattage while not affecting the installed lighting wattage.</li> </ul>
368	83.0	83.0	100%	277,135	277,135	100%	0	0	N/A	<ul style="list-style-type: none"> <li>No changes were made to the ex ante savings.</li> </ul>
401	220.4	579.8	263%	1,850,750	2,122,541	115%	0	0	N/A	<ul style="list-style-type: none"> <li>The ex ante savings calculation used a demand diversity factor of 0.84. The savings were adjusted by using the IL TRM defined coincidence factor of 1.0, waste heat demand factor of 1.17, and a waste heat energy factor of 1.15 to determine the lighting savings. The adjusted savings were found by using the wattage controlled in each different building, and using the IL TRM methodology to determine the savings from the occupancy sensors.</li> </ul>
407	219.2	212.0	98%	1,782,024	1,752,958	98%	0	0	N/A	<ul style="list-style-type: none"> <li>The supplied tracking system information listed 219.20 kW of savings and 1,782,024 kWh of savings compared to the supplied calculations which indicate a savings of 166.20 kW of savings and 1,312,299 kWh. The remaining savings were determined to be savings due to reduced refrigeration load from the lighting savings.</li> </ul>
410	26.2	28.0	107%	187,204	187,205	100%	2,489	2,489	100%	<ul style="list-style-type: none"> <li>The proposed ex ante model has unit efficiencies with an EER of 14.27. The actual installed equipment efficiencies were not all included, but on average appeared to exceed 15, so the proposed model was adjusted to an EER of 15.</li> </ul>

Project ID	Ex Ante kW	Ex Post kW	Realization Rate	Ex Ante kWh	Ex Post kWh	Realization Rate	Ex Ante therms	Ex Post therms	Realization Rate	Findings
457	482.9	756.0	157%	2,975,172	2,893,672	97%	0	0	N/A	<ul style="list-style-type: none"> <li>The baseline model assumes no daylighting is provided. The proposed documentation does not suggest the daylighting capabilities of this system would meet specifications, so no savings were credited for the daylighting measure.</li> </ul>
461	92.6	90.6	98%	768,427	760,240	99%	68,292	68,292	100%	<p>In the original model, the installed windows were input as having a U-factor of 0.028. This appears to be a typographical error and should have been 0.28. This slightly reduces the savings.</p>
476	211.0	211.0	100%	1,974,630	1,974,630	100%	0	0	N/A	<ul style="list-style-type: none"> <li>No changes were made to the ex ante savings.</li> </ul>
479	123.5	123.4	100%	726,243	722,741	100%	15,030	15,001	100%	<ul style="list-style-type: none"> <li>No changes were made to the ex ante savings.</li> </ul>
491	166.1	134.5	81%	648,880	701,094	108%	4,280	5,617	131%	<ul style="list-style-type: none"> <li>The original analysis used a weighted average baseline cooling system efficiency of 1.22 kW/ton. However, based on the supplied HVAC system sizes it appears that this was overestimated slightly. The evaluation team used a weighted average system baseline efficiency of 1.20 kW/ton. This decreased the expected savings by approximately 0.7%.</li> <li>The savings for the refrigerated case LED fixtures and the anti-sweat heater controls were not included in the models, but were calculated using deemed values. This decreased the expected demand savings for this project by 26 kW. The savings for LED case lighting were also recalculated. The resulting savings were increased significantly, from 23,467 kWh to 80,965 kWh.</li> <li>The evaluation team did not make any changes to the model for measures affecting therm savings. It appears that the lower ex ante value was never updated after updates to the model.</li> </ul>
492	100.8	110.8	110%	1,092,426	1,092,425	100%	11,523	11,522	100%	<ul style="list-style-type: none"> <li>When the evaluation team ran the models, slight changes were noted compared the implementer verified savings. These differences are likely due to rounding in how the implementer savings were recorded.</li> </ul>

Project ID	Ex Ante kW	Ex Post kW	Realization Rate	Ex Ante kWh	Ex Post kWh	Realization Rate	Ex Ante therms	Ex Post therms	Realization Rate	Findings
519	103.1	98.3	95%	700,643	686,550	98%	0	0	N/A	<ul style="list-style-type: none"> <li>For this project, only the .inp file was provided. The evaluation savings were recalculated based on the supplied building information. These changes were consistent with the described changes in the original analysis, but resulted in slightly different savings.</li> </ul>
520	159.2	165.4	104%	1,129,055	1,117,379	99%	0	0	N/A	<ul style="list-style-type: none"> <li>For this project, only the .inp file was provided. The evaluation savings were recalculated based on the supplied building information. These changes were consistent with the described changes in the original analysis, but resulted in slightly different savings.</li> </ul>

## 7.1.2 Evaluation Research Net Impact Findings

### 7.1.2.1 *Net-to-Gross Methodology*

NTG research methods in EPY6/GPY3 combine participant and service provider survey results. Research for both groups uses a self-report method where participants and trade allies answer questions about the program. The participant survey instrument asks about awareness of the measures identified and their inclination to pursue corrective actions for those measures absent the program. Discussion in April 2013 between program implementation staff and the evaluation team inspired a new “real-time” approach for deriving the NTGR, the goal of which is to capture data as projects progress through the stages of participation. This methodology included the following components:

- 1) **Documentation Review.** The evaluation team will begin by reviewing the documentation on each sampled project provided by ECW to identify potential points of influence. This component will include:
  - a. Reviewing email correspondence for indications of program influence
  - b. Reviewing building plans from throughout the project’s participation to identify changes in efficiency throughout the construction process
  - c. Discussing the project with ECW to confirm areas where ECW believes the program was influential
- 2) **Post-Reservation Interview.** Once a sampled project reaches the reservation stage, ECW will provide the evaluation team contact information for key decision makers and the team will conduct a post-reservation interview within 30 days or as soon as possible. We will also incorporate customized questions for each project linked to the points of influence identified in the documentation review. The team will use the in-depth interview guide used in the “real time” NTGR interviews piloted in 2013.
- 3) **Post-Verification Interview.** Once the project is complete, we will conduct a post-verification interview. This interview will check for program influence not captured in the first interview. For example, in the first interview the participant may not have realized the role the program’s incentives or technical assistance would play in maintaining energy efficient design elements throughout the project. During these interviews, the team will also collect process data.

### 7.1.2.2 *Net-to-Gross Algorithm*

The net analysis creates a ratio to account for attribution of the program activities in the gross savings results—that is, it identifies how much of the gross savings are due to program activities. Our NTGR analysis of the program’s energy impacts progressed through three stages.

The researched NTGR for EPY6/GPY3 is based on in-depth interviews with representatives from program participants that are either decision-makers themselves, or have some insight into the project’s design or the decision-making process. As noted in Section 7.1.2.1, the evaluation team conducted interviews with representatives of participating projects at two different times in the project’s timeline. In some cases, our team spoke with several different representatives from projects’ design and ownership teams.

Interviewees were asked a battery of questions about how the program influenced the project’s design, and the relative efficiency of the project had the program not been available. Responses to our NTG questions are used to calculate three different scores, which, in turn, are used to calculate project-specific free ridership (FR) and NTGR. Each of these scores, the corresponding questions used to calculate them, and the overall equation for determining our NTGR is provided below in Table 7-2. Furthermore, guides for in-depth interviews with participants (both post-reservation and post-verification) are included in this appendix and can be found in Section 7.1.2.3.

**Table 7-2: Net-to-Gross Analysis Plan (Free Rider Question Concept Map)**

$$NTGR=1 - FR, \text{ where } FR = PI * ((PC+PT)/2)$$

Concept	Question	Local Customer	National Customer	Algorithm Notes
Program Influence (PI score)	FR7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>Customers who learned about the program after construction documentation or during construction phase are full Free Riders. All others PI scores are based on FR5 or FR9.</li> <li>If data collected through the IDI contradicts the assumptions regarding the phases made above, the PI scores are based on FR5 or FR9.</li> </ul>
Program Components (PC score)	FR8 a-gg	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>The max influence score is taken from across these items and counts as the PC score.</li> </ul>
Program Timing and Efficiency (PT score)	FR11	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>The max of these three will become the base PT score which may be increased by the additive items (FR13 and FR14) below.</li> <li>In all cases the final PT score will be reversed to keep it aligned with the other concepts.</li> </ul>
	FR12	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	FR10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>FR10 is factored into the PT score, however, it is not reversed.</li> </ul>
	FR13	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>These items each add either 10% or 20% to the base PT score for a possible additive range of 0 to 40%. If the respondent states that the counterfactual was “not at all likely” (score of 0-2) then the additive is 20%; if the score is 3-5, then the additive is 10%. As FR cannot fall below 0, when additives created a negative per-project FR, the value was adjusted to 0.</li> </ul>
Additives	FR14	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

### 7.1.2.3 Researched Net-to-Gross Findings

Our net-to-gross interviews reached participants representing 35 unique projects, accounting for roughly 18% of ex ante gross kWh impacts, 17% of ex ante gross KW impacts, and 31% of ex ante gross therm impacts of projects in the program’s pipeline as of July 2014. To obtain overall NTGR, the project-level NTGR values were weighted by evaluation-adjusted gross kWh savings and gross Nicor Gas therm savings (for joint projects).<sup>11</sup> The results of our analysis are included in Table 7-3 below.

The researched NTGRs presented in Table 7-3 were developed using the “real-time” approach described in Section 7.1.2.1, for which the evaluation team conducts interviews with program participants both after each project passes the reservation phase, and again after it passes the verification phase. Note that the NTGRs presented below are preliminary because they were calculated after only the first interview and these may change after the second round interviews have been completed. However, based upon the relatively few changes to responses between the first round and second round NTGR interviews conducted during the pilot phase of this new NTGR approach, we do not anticipate substantial changes to these values. The evaluation team, therefore, recommends that the researched values below be

<sup>11</sup> Only one NTGR was calculated per project. Overall NTGR was calculated by weighting each project’s NTGR by its relative contribution to total electric or Nicor Gas therm savings.



updated with any additional information provided by second interviews prior to March 1, 2015 and used as the deemed NTGRs for calculating net savings for EPY8/GPY5.

**Table 7-3: Researched Net-to-Gross Findings**

	NTGR
kWh	0.80
Therm	0.92

*Source: Navigant team analysis.*

In an attempt to identify and quantify potential cases of spillover resulting from the program, our team conducted an online survey of program participants and training participants from EPY3 through the past program year. Our engineering team followed up with eight cases of potential spillover identified through the online survey, five of whom responded to our request for interviews. In all five instances, the respondent either did not have enough information, or our team determined that there was no related spillover. The findings for each of these interviews are shown in Table 7-4. As a result, our EPY6/GPY3 evaluation found no quantifiable cases of spillover.

**Table 7-4: Spillover Findings by Respondent**

Respondent	Finding
1	The respondent was in the process of receiving a rebate for the measure identified as potential spillover.
2	The lighting project initially identified as potential spillover has not yet been implemented, and therefore no savings could be estimated.
3	The respondent did not have information on the measure identified as potential spillover and was unable and unwilling to provide more information to the evaluation team.
4	The respondent has since retired and could not be reached. The potential spillover was listed as an “insulation” project, but no other information was available to estimate savings, or to confirm that installation even occurred.
5	The respondent clarified that he had not installed anything (the survey response was “lighting” and “controls”). He also said he only recommends measures and does not actually install anything. We have no other information on the project to estimate savings, or to confirm that installation even occurred.

### 7.1.3 Resolution of GPY2 Discrepancies

After the final report for EPY5/GPY2 was issued, Nicor Gas discovered discrepancies between their internal data tracking system and that of the implementation contractor. Three projects achieved gas savings before interactive effects, but interactive effects from electric measures cancelled out the gas savings completely. Due to the way interactive effects were tracked in the implementation contractor database, gas savings from these projects were not included in the data extracts or gas savings totals provided to Navigant at the time of the evaluation even for totals excluding interactive effects.

Table 7-5 and Table 7-6 show the application of the GPY2 gas verified gross realization rate and NTG. Incorporating these additional savings to those reported on March 26, 2014 results in verified savings of 301,717 gross therms and 156,893 net therms for GPY2.

**Table 7-5. True-up of GPY2 Ex Ante and Verified Savings – Adjusted Projects Only**

Measure Type	Ex Ante Gross Savings (therms)	Verified Gross Realization Rate	Verified Gross Savings (therms)	NTG	Verified Net Savings (therms)
As Reported in GPY2	0	1.04	0	0.52	0
GPY2 True-up	34,851		36,214		18,831
Corrected for GPY2	34,851	1.04	36,214	0.52	18,831

Source: Utility tracking data and Navigant analysis.

**Table 7-6. True-up of GPY2 Ex Ante and Verified Savings – Program Totals**

Measure Type	Ex Ante Gross Savings (therms)	Verified Gross Realization Rate	Verified Gross Savings (therms)	NTG	Verified Net Savings (therms)
As Reported in GPY2	255,509	1.04	265,503	0.52	138,062
GPY2 True-up	34,851		36,214		18,831
Corrected for GPY2	290,360	1.04	301,717	0.52	156,893

Source: Utility tracking data and Navigant analysis. Columns may not sum due to rounding.

## 7.2 Data Collection Instruments

As mentioned above, our “real-time” net-to-gross method captures information from participants both after the reservation phase and after the verification phase. Both interview guides are included in the following sections.

7.2.1 Participant In-depth Interview Guide (Post-Reservation)

## Purpose

This in-depth interview guide will be used shortly after the project reaches the Reservation Phase. This interview asks questions about the participant’s experience with the program so far, including the start of the project, the program’s technical assistance, and its influence on the project’s design and planned measures. Many of these questions will be used as a baseline for the second interview conducted following the Verification Phase. Comparing responses between the two interviews will help to identify which questions may only need to be asked once in the future as well as when they should be asked.

This interview will be used to attribute the effects of the New Construction Service on the projects under the purview of the respondent. It will also support the process analysis for this program. They will be performed by Navigant and Opinion Dynamics analytical staff via the telephone. We will call the primary contact person as provided by ECW, but it may be necessary to expand our calls to include other individuals within the project if it appears that others were highly involved in the decision-making process. The numbered questions in this depth interview guide will definitely be asked, while non-numbered questions are prompts for the analyst to help ensure a complete response that adequately addresses the purpose of the numbered question. As such, not all questions in this guide will be asked as written.

<b>Respondent name:</b>	
<b>Respondent phone number:</b>	
<b>Respondent title:</b>	
<b>Respondent type: (circle one):</b>	<b>Developer/owner, A&amp;E Design Professional, Other</b>
<b>Company name:</b>	
<b>Project (in sample)</b>	
<b>Utility</b>	<b>ComEd only      ComEd/Nicor Joint</b>
<b>In Nicor Service Territory</b>	<b>Yes      No      Don’t Know</b>
<b>Incentive Amount</b>	
<b>EE Equipment Incented</b>	
<b>Interviewer:</b>	
<b>Date:</b>	
<b>Time Start:</b>	

## Introduction

Thank you for taking the time to talk with me today. The Opinion Dynamics [If joint participant, “and “Navigant”] evaluation team is currently conducting a study for ComEd [If joint participant, “and Nicor Gas”]. There are two aims of this interview: first, we’d like to get your perspective on the New Construction Service and find ways to improve it as much as possible; and second we’d like to understand the decision-making around the energy efficient design and equipment that went into

the [PROJECT NAME] project. We'd like to get your insight by asking you some questions that should take about 30 minutes.

## Role on Program Projects

Throughout this interview when I ask about the “program” or “New Construction Service” please consider your experience with the Energy Center of Wisconsin —“ECW”, ComEd, [If joint participant, “Nicor Gas”], or any combination of these as they relate to the [PROJECT NAME].

1. Please tell me about your involvement in the New Construction Service. Specifically:
  - How long have you been working with the program in relation to the [PROJECT NAME] project?
  - What is your role on the project and what are you responsible for?
  - Could you give me a brief overview of the [PROJECT NAME] project?
2. Are you involved now or were you involved in other projects that have participated in the New Construction Service?
  - Please give me a brief overview of those project(s).
3. We know there are several people involved in the project, but who is the main decision-maker for choices regarding the energy efficiency of the building design and equipment?
  - [IF NOT THE INTERVIEWEE, TAKE NAME AND CONTACT INFORMATION OF MAIN DECISION-MAKER.]
  - [IF NOT THE INTERVIEWEE, CONFIRM INTERVIEWEE HAS GOOD PERSPECTIVE ON THE DECISION-MAKING.] Although you are not the main decision maker, do you think you can still provide a lot of the rationale for choices regarding the energy efficiency of the building design and equipment?
  - [IF THE INTERVIEWEE LACKS GOOD PERSPECTIVE ON THE DECISION-MAKING, EXPLORE PROCESS QUESTIONS TO THE EXTENT POSSIBLE.]

## Project Background

4. Program records show that the program is planning to offer [INSERT INCENTIVE AMOUNT] in incentives for the [INSERT PROJECT NAME] project. Does this sound about right?
5. [ASK A or B IF ENERGY MODEL WAS DEVELOPED] Program records also show that:
  - A. the program provided energy modeling or calculations for the project before one existed for the project. Is that true?
  - B. the program helped refine an existing energy model or calculations. Is that true?
  - (If necessary, “This would have been a computerized whole-building energy model ECW used to represent the building energy consumption for a baseline design scenario and the energy efficient design scenario in order to highlight potential savings through system interactions.”)

6. Is this project intended to be a LEED project? (If no, “Was it ever intended to be at an earlier point in the design?”)
7. Were items cut from the project to control up-front project costs? (i.e. value engineering)?  
- (If no, follow up with, “Were design items ever cut due to budget shortfalls?”)

## **NET-TO-GROSS (Attribution) SECTION**

### ***Free Ridership Factor (FR)***

Now I'd like to ask a few questions about the design process that resulted in the energy efficient design or installations (i.e., HVAC, envelope, and lighting) that will be incented by the program. We need to understand how you (and your client) thought about energy efficiency and what influenced you (and your client) to incorporate energy efficient design or installations into this project.

- FR1.** So first could you give me an overview of how the energy efficient design or installations incented by the program were initiated? What were the main reasons they became or have stayed a part of this project?
- FR1a.** What were the roles of natural gas and electricity prices in the decision-making around energy efficient design or equipment if any?
- FR1b.** The program records show that the following types of measures are planned into the project and the program provided the following technical assistance. [READ MEASURES/ASSISTANCE] Is this correct? Were any other measures included or assistance provided?
- FR2.** Now could you give me an overview of the influence, if any, of the program on the energy efficiency components of the building design?
- What are the main ways the program has helped you bring energy efficiency into the project, if any?
  - [If nothing specific described, then ask] Can you provide me with specific examples of the ways the program helped bring energy efficiency into the project?
  - How would the energy efficiency of the project be different if it had not been submitted to the program?
- FR3.** Would you say you have worked with the program staff more around changes to design or changes to specific equipment? We know that design changes often mean equipment changes, but simple equipment changes do not tend to have extensive changes in design (if any).

[NOTE: we need to then ask the attribution questions in line with the answer to this question, i.e., a design change or equipment changes (by Measure #1, Measure #2).]

### **[ASK FR3a IF LEED PROJECT]**

- FR3a.** Since the project is intended to meet LEED standards, we are interested in knowing how the program may have helped support or enhance the LEED goal. Please answer yes or no to the following questions.

- i. Did the program help to refine an existing energy model?
- ii. Did program staff provide technical assistance that highlighted ways to achieve LEED design plans?
- iii. Did program incentives or technical assistance help the project to receive more energy and atmosphere credits than was originally planned?

**[SKIP IF KNEW ABOUT THE PROGRAM FROM PREVIOUS PROJECT]**

**FR7. When did you first learn about the New Construction Service and the incentives available for energy efficient installation and design? Was it during the...**

- 1. pre-design?
- 2. schematic design?
- 3. design development?
- 4. construction documentation? (Total free rider, SKIP TO S01)
- 5. construction phase? (Total free rider, SKIP TO S01)
- 8. Don't know

**FR7b. And in what phase is the project now?**

- 1. pre-design?
- 2. schematic design?
- 3. design development?
- 4. construction documentation?
- 5. construction phase?
- 8. Don't know

**FR7c. When do you anticipate construction will be complete for this building?**

**FR8. Next, I'm going to ask you to rate the influence of the program as well as other factors that might have influenced the decision to include the [per FR3: energy efficient design/Measure #1] that will be incented by the program. Please think of a scale from 0 to 10, where 0 means 'no influence at all' and 10 means 'extremely influential'. If something did not pertain to your project please let me know. [FOR FR8a-g, RECORD 0 to 10; 96=Not Applicable; 98=Don't Know; 99=Refused]**

(If needed: "How influential was/were \_\_\_\_\_ in the DECISION to include the energy efficient design/Measure #1 in the project(s)?)

Q	Question	Response
FR8a	[ASK IF PARTICIPANT ATTENDED TRAINING] Training sponsored by the program	
FR8b	The availability of financial incentives	
FR8c	The program's technical assistance and building performance modeling	
FR8d	Recommendations from a program representative	
FR8e	Program information from program forms/website	
FR8f	Program outreach including Lunch & Learns, press releases, email or phone calls from ECW	

FR8g. Were there any other program factors we haven't discussed that were influential in the decision to [per FR3: use this design/install Measure #1]?

- 1. Yes; "please specify": \_\_\_\_\_
- 96. Nothing else influential
- 98. Don't Know

[ASK IF FR8g = YES]

FR8gg. Using the same zero to 10 scale, how would you rate the influence of this factor on the decision to [per FR3: use this design/install Measure #1]? [RECORD 0 to 10; 98=Don't Know]

[ASK IF VALUE ENGINEERING HAS OCCURRED OR IS ANTICIPATED]

FR10. How influential, if at all, do you think the program (i.e., incentives, ComEd [if joint participant, "and Nicor Gas"] or ECW recommendations) was/will be in keeping [per FR3: energy efficient design/Measure#1] on the table when aspects of the original design were being cut to control costs? Please use a 0 to 10 scale where, where 0 is "Not at all influential" and 10 is "Extremely influential." [RECORD 0 to 10; 98=Don't know, 99=N/A]

Now I want to ask you a few questions about how this project may have been different if the program had not existed.

FR11. Using a likelihood scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if the program had not existed, what is the likelihood that the project would have included the same level of energy efficiency in the [per FR3: design/ Measure #1]? [RECORD 0 to 10; 98=Don't know]

FR12. Using the same scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if the program had not existed, what is the likelihood that the project would have included [[per FR3: the same number of energy efficient design features in the final project/ the same number of energy efficient (Measure #1)]? [RECORD 0 to 10; 98=Don't know]

[ASK IF ECW DEVELOPED THE FIRST ENERGY MODEL FOR THE PROJECT ]

FR13A. Using the same scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if the program had not existed, what is the likelihood that an energy model would have been used as a design tool? [RECORD 0 to 10; 98=Don't know]

[ASK IF ECW HELPED REFINE AN EXISTING ENERGY MODEL]

FR13B. Using the same scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if the program had not existed, what is the likelihood that the final energy model would have included as many efficiency savings as it did? [RECORD 0 to 10; 98=Don't know]

FR14. And using the same scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", what is the likelihood that independent, third party data supporting the design vision would have been available if the program had not been involved in this project? [RECORD 0 to 10; 98=Don't know; NOTE: This could include financial and energy data]

[For projects with multiple measures ask:]

**FR15.** Now I'd like to ask you about [Measure #2]. In terms of how the program or other factors influenced its selection or installation, would you say that this measure reflected the same or nearly the same decision-making as [Measure #1]?

1. Yes (Continue to Process Section)
2. No (Ask FR16)

**FR16.** [If measure 1 and 2 are different fuels] Did the fuel type (electricity or natural gas) of [Measure #2] affect the decision-making at all?

1. Yes (Ask FR5 to FR14 for Measure #2)
  - [If so] How?
2. No (Ask FR5 to FR14 for Measure #2)

## **Process Section**

### **Awareness of Program**

8. How did you first hear about the New Construction Service?

### **Motivation to Participate**

9. Why did you or your team decide to participate in the program?  
- [If necessary] **Who on your team first decided to participate in the program?**
10. What was your team's initial perception of the program?  
- **What did they believe to be valuable about participating in the program?**
11. Has your team's perception of the program changed as you participated in it?  
- [If so] **How?**

### **Satisfaction**

12. Overall, how satisfied are you with the program so far? Please use a scale where 0 is 'not satisfied at all' and 10 is 'extremely satisfied'.  
- [If <7, ask] **Why are you not more satisfied with the program?**

### **Training**

13. Have you or any of your colleagues attended any program-related training events, such as classroom events, webinars or lunch and learns hosted by ECW?

**[ASK IF THEY HAVE NOT ATTENDED]**

14. Are you aware of any training events available through the program?

**[ASK IF AWARE OF, BUT NOT ATTENDED A TRAINING EVENT]**



15. Why have you or any of your colleagues not attended any training events? Under what conditions might you or any of your team members attend one in the future?

**[ASK IF ATTENDED]**

16. How did you hear about the event?
17. Did you attend the first training before or after you had submitted a project to the program?
18. Did you learn anything in the training that helped you design or build energy efficiency into the project? If so, please describe.  
 - **[If interviewee is connected with other program projects, ask] How about for other projects? Did you share anything you learned with your workplace colleagues?**

## **Program Processes**

19. Have the program requirements been clearly explained to you?
20. Are there any ways you think the program can explain requirements or participation more clearly to participants in the future?
21. Do you think there are any requirements the program should adjust or change?  
 - **If so, which ones and how?**
22. Did you fill out the program application for the project? If so, what do you think of it?  
 - **Do you have any suggestions for how to improve it?**
23. How would you describe your experience with the technical assistance component of the program?  
 [If necessary, "Technical assistance refers to the range of analysis, advice and support ECW provided and may have included energy modeling; design assistance; technology and system recommendations; and an analysis of preliminary savings estimates and incentive levels."  
 - **Do you have any suggestions for how to improve it?**
24. Could you describe the program staff's knowledge of energy efficient design?

**[ASK IF ENERGY MODEL WAS DEVELOPED]**

25. Could you describe the role the program's whole building energy modeling (simulation) played in your project?
26. Throughout your involvement with the program, has your communication with program staff been what you wanted?  
 - **If no, what were your expectations for communication with program staff and how did communication differ from your expectations?**
27. When you called or emailed staff, did they respond to you quickly?
28. Were they able to communicate with you effectively?

## Alignment of Program Design with Participant New Construction Practices

29. Based on how you normally conduct your **business** in the new construction industry, which aspects of the program did you find:
  - **Especially valuable? Why?**
  - **Especially efficient or smooth? Why?**
  - **Especially difficult or tedious? Why?**
  
30. Based on your standard new construction **design processes**, which aspects of the program did you find:
  - **Especially valuable? Why?**
  - **Especially efficient or smooth? Why?**
  - **Especially difficult or tedious? Why?**
  
31. Is the evaluation of energy efficiency a component of your standard new construction design process? If so, how?
32. At what point in your standard new construction design process do you consider participating in energy efficiency programs?
33. If you were to participate in the program again, do you think you or your project team would contact the program earlier in the design process? Why or why not?
34. Considering future projects, how could the program engage you or your peers in the new construction industry earlier during the project’s pre-design phase?
35. Will you use ECW for future projects? If not, why not?

### CLOSING SECTION

36. Is there anything else that you would like to let us know based on the topics we covered today, including any ways to improve the program if possible or how the program has affected your use of energy efficient measures or design in projects?
  
37. As part of this study, the evaluation team may seek to inspect the facilities and equipment for which the program incentives were received. Is there a site-level staff person you can refer me to who might be able to work with the evaluation site lead? This might be a facilities manager or a site engineer?

**Name**

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**Role**

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**Contact Information**

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On behalf of ComEd (If joint project, “and Nicor Gas”), we thank you for your time today. If in reviewing my notes, I discover a point I need to clarify, is it all right if I follow-up with you by phone or email?

**Time End**

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7.2.2 Participant In-depth Interview Guide (Post-Verification)

## Purpose

This in-depth interview guide will be used following the Verification Phase. Participants will have already been interviewed shortly after the Reservation Phase. This interview asks many of the same questions as the first interview to verify or update the original responses. Comparing responses between the two interviews will also help to identify which questions may only need to be asked once in the future as well as when they should be asked.

As with the first interview, this interview will be used to attribute the effects of the New Construction Service on the projects under the purview of the respondent. It will also support the process analysis for this program. They will be performed by Navigant and Opinion Dynamics analytical staff via the telephone. We will call the primary contact person we interviewed after the reservation phase. If this contact is not with the firm anymore, we will ask the contact or ECW for a new contact to interview. The numbered questions in this depth interview guide will definitely be asked, while non-numbered questions are prompts for the analyst to help ensure a complete response that adequately addresses the purpose of the numbered question. As such, not all questions in this guide will be asked as written.

<b>Respondent name:</b>	
<b>Respondent phone number:</b>	
<b>Respondent title:</b>	
<b>Respondent type: (circle one:)</b>	<b>Developer/owner, A&amp;E Design Professional, Other</b>
<b>Company name:</b>	
<b>Project (In sample)</b>	
<b>Utility</b>	<b>ComEd only      ComEd/Nicor Joint</b>
<b>In Nicor Service Territory</b>	<b>Yes      No      Don't Know</b>
<b>Project Type (circle one:)</b>	<b>System      Comprehensive</b>
<b>Incentive Amount</b>	
<b>EE Equipment incented</b>	
<b>Interviewer:</b>	
<b>Date:</b>	
<b>Time Start:</b>	

## Introduction

Thank you for taking the time to talk with me today. The Opinion Dynamics [If joint participant, “and “Navigant”] evaluation team is currently conducting a study for ComEd [If joint participant, “and Nicor Gas”]. This interview is a follow up to our conversation in the Fall of 2013. I would like to ask you about the decision-making around the energy efficient design and equipment that went into [PROJECT NAME] project and any changes in the project since we last spoke. We’d like to get your insight by asking you some questions that should not take any longer than about 30 minutes.

Many of the questions I have are similar to what we discussed in our first conversation, but I am interested in learning if your experience has changed over the course of the project.

## Role on Program Projects

Throughout this interview when I ask about the “program” or “New Construction Service” please consider your experience with the Energy Center of Wisconsin —“ECW”, ComEd, [If joint participant, “Nicor Gas”], or any combination of these as they relate to the [PROJECT NAME].

1. Has your involvement in the New Construction Service changed at all since the reservation phase? [If needed, probe for current role and responsibilities.]
2. Are you involved now or were you involved in other projects in this program?
  - Please give me a brief overview of those project(s).
3. When we last spoke, you identified [NAME/yourself] as the primary decision maker for this project? Has this changed at all since the reservation phase?
  - [IF NOT THE INTERVIEWEE, TAKE NAME AND CONTACT INFORMATION OF MAIN DECISION-MAKER.]
  - [IF NOT THE INTERVIEWEE, CONFIRM INTERVIEWEE HAS GOOD PERSPECTIVE ON THE DECISION-MAKING.] Although you were not the main decision maker, can you still provide a lot of the rationale for choices regarding the energy efficiency of the building design and equipment?
  - [IF THE INTERVIEWEE LACKS GOOD PERSPECTIVE ON THE DECISION-MAKING, EXPLORE PROCESS QUESTIONS TO THE EXTENT POSSIBLE.]

## Project Background

4. Program records show that the program provided [INSERT INCENTIVE AMOUNT] in incentives for [INSERT PROJECT NAME] project. Does this sound about right?
5. In our previous conversation, you said that the project [WAS/WAS NOT] intended to be a LEED project. Did the project end up receiving LEED certification?

## NET-TO-GROSS (Attribution) SECTION

### *Free Ridership Factor (FR)*

In our previous conversation, you answered a number of questions about the design process that resulted in the energy efficient design or installations (i.e., HVAC, envelope, and lighting) that were incented by the program. The next set of questions will help us see if there have been any changes to your decision making process and, if so, what influenced you (and your client) to incorporate energy efficient design or installations into this project.

- FR1. Could you first give me an overview of how the energy efficient design or installations incented by the program that changed over the course of the project? What were the main reasons they changed? [PROBE FOR ANY CHANGES FOUND IN PROJECT REVIEW]
- FR2. Now could you give me an overview of the influence, if any, of the program on the energy efficient components of the building design?

- What were the main ways that the program helped you bring energy efficiency into the project, if any?
- [If nothing specific described, then ask] Can you provide me with specific examples of the ways the program helped bring energy efficiency into the project?
- How would the energy efficiency of the project be different if it had not been submitted to the program?
- [ASK ABOUT ANY SPECIFIC ASSISTANCE IDENTIFIED BY ECW OR IN THE REVIEW OF THE PROJECT]

**[IF FR1 and FR2 INDICATES THAT THERE HAS BEEN NO CHANGE IN THE DESIGN OR INSTALLATIONS OR THE INFLUENCE OF THE PROGRAM OVER THE COURSE OF THE PROJECT, SKIP TO SPILLOVER MODULE. IF CHANGES OCCURRED, ASK THE REMAINING FREE RIDERSHIP QUESTIONS.]**

**FR3.** Would you say you worked with the program staff more around changes to design or changes to specific equipment? We know that design changes often mean equipment changes, but simple equipment changes do not tend to have extensive changes in design (if any).

[NOTE: we need to then ask the attribution questions in line with the answer to this question, i.e., a design change or equipment changes (by Measure #1, Measure #2).]

**[ASK FR3a IF LEED PROJECT]**

**FR3a.** Since the project was intended to meet LEED standards, we are interested in knowing how the program may have helped support or enhance the LEED goal. Please answer yes or no to the following questions. [PROBE FOR REASONS FOR DIFFERENCES, IF ANY, FROM FIRST INTERVIEW]

- iv. Did the program help to refine an existing energy model?
- v. Did the program staff provide technical assistance that highlighted ways to achieve LEED design plans?
- vi. Did program incentives or technical assistance help the project receive more energy and atmosphere credits than was originally planned?

**FR8.** Next, I'm going to ask you to rate the influence of the program as well as other factors that might have influenced the decision to include the [per FR3: energy efficient design/Measure #1] that was incented by the program. Please think of a scale from 0 to 10, where 0 means 'no influence at all' and 10 means 'extremely influential'. If something did not pertain to your project please let me know. [FOR FR8a-g, RECORD 0 to 10; 96=Not Applicable; 98=Don't Know; 99=Refused]

(If needed: "How influential was/were \_\_\_\_\_ in the DECISION to include the energy efficient design/Measure #1 in the project(s)?)

Q	Question	Response
FR8a	[ASK IF PARTICIPANT ATTENDED TRAINING] Training sponsored by the program	
FR8b	The availability of financial incentives	

Q	Question	Response
FR8c	The program's technical assistance and building performance modeling	
FR8d	Recommendations from a program representative	
FR8e	Program information from program forms/website	
FR8f	Program outreach including Lunch & Learns, press releases, email or phone calls from ECW	

FR8g. Were there any other program factors we haven't discussed that were influential in the decision to [per FR3: use this design/install Measure #1]?

1. Yes; "please specify": \_\_\_\_\_
96. Nothing else influential
98. Don't Know

[ASK IF FR8g = YES]

FR8gg. Using the same zero to 10 scale, how would you rate the influence of this factor on the decision to [per FR3: use this design/install Measure #1]? [RECORD 0 to 10; 98=Don't Know]

[ASK IF VALUE ENGINEERING OCCURRED]

FR10. How influential, if at all, was the program (i.e., incentives, ComEd [if joint participant, "and Nicor Gas"] or ECW recommendations) in keeping [per FR3: energy efficient design/Measure#1] on the table when aspects of the original design were being cut to control costs? Please use a 0 to 10 scale where, where 0 is "Not at all influential" and 10 is "Extremely influential." [RECORD 0 to 10; 98=Don't know, 99=N/A]

Now I want to ask you a few questions about how this project may have been different if the program had not existed.

FR11. Using a likelihood scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if the program had not existed, what is the likelihood that the project would have included the same level of energy efficiency in the [per FR3: design/ Measure #1]? [RECORD 0 to 10; 98=Don't know]

FR12. Using the same scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if the program had not existed, what is the likelihood that the project would have included [[per FR3: the same number of energy efficient design features in the final project/ the same number of energy efficient (Measure #1)]? [RECORD 0 to 10; 98=Don't know]

[ASK IF ECW DEVELOPED THE FIRST ENERGY MODEL FOR THE PROJECT ]

FR13a. Using the same scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if the program had not existed, what is the likelihood that an energy model would have been used as a design tool? [RECORD 0 to 10; 98=Don't know]

[ASK IF ECW HELPED REFINE AN EXISTING ENERGY MODEL]

FR13b. Using the same scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if the program had not existed, what is the likelihood that the final energy model

would have included as many efficiency savings as it did? [RECORD 0 to 10; 98=Don't know]

FR14. And using the same scale from 0 to 10, where 0 is “Not at all likely” and 10 is “Extremely likely”, what is the likelihood that independent, third party data supporting the design vision would have been available if the program had not been involved in this project? [RECORD 0 to 10; 98=Don't know; NOTE: This could include financial and energy data]

[For with multiple measures ask:]

FR15. Now I'd like to ask you about [Measure #2]. In terms of how the program or other factors influenced its selection or installation, would you say that this measure reflected the same or nearly the same decision-making as [Measure #1]?

1. Yes (Continue to Spillover Module)
2. No (Ask FR16)

FR16. [If measure 1 and 2 are different fuels] Did the fuel type (electricity or natural gas) of [Measure #2] affect the decision-making at all?

1. Yes (Ask FR5 to FR14 for Measure #2)
  - [If so] How?
2. No (Ask FR5 to FR14 for Measure #2)

[ASK IF LARGE DIFFERENCE BETWEEN FREE RIDERSHIP RESPONSES BETWEEN 1<sup>st</sup> and 2<sup>nd</sup> INTERVIEW]

FR16. It seems that you are attributing [MORE/LESS] influence of the program on the project than when we first spoke. Can you please describe why this changed?

### ***SPILLOVER MODULE***

S01. Was there any other energy efficient design or equipment installation that took place on this project that was influenced by the program but did not receive incentives? [IF YES, “COULD YOU PLEASE DESCRIBE IT?”]

S02. Since participating in the New Construction Service, have you (or your client) incorporated any energy efficient systems or equipment you into other new construction projects in ComEd or Nicor territory?

[ASK IF S02=YES]

S03. [Has it or will it/ Have they or will they] receive incentives through the program?

[ASK IF S03=NO]

S04. Why not?

[ASK IF S03=NO]



**S05. How influential was the program in incorporating energy efficient systems or equipment into these other new construction projects? Please use a 0 to 10 scale where 0 is 'not influential at all' and 10 is 'extremely influential'.**

**[ASK IF S03=NO AND PARTICIPANT ATTENDED TRAINING]**

**S06. How influential was the training in incorporating energy efficient systems or equipment into these other new construction projects? Please use a 0 to 10 scale where 0 is 'not influential at all' and 10 is 'extremely influential'.**

## ***Process Section***

### **Motivation to Participate**

6. Did your team's perception of the program change as you participated in it?  
- [If so] How?

### **Satisfaction**

7. Overall, how satisfied are you with the program now? Please use a scale where 0 is 'not satisfied at all' and 10 is 'extremely satisfied'.  
- [If <7, ask] Why are you not more satisfied with the program?

### **Training**

**[ASK IF THEY HAD NOT ATTENDED TRAINING AS OF THE FIRST INTERVIEW]**

8. Have you or any of your team members attended any program-related training events, such as classroom events, webinars, or lunch and learns hosted by ECW?

**[ASK IF THEY HAVE NOT ATTENDED]**

9. Are you aware of any training events available through the program?

**[ASK IF AWARE OF, BUT NOT ATTENDED A TRAINING EVENT]**

10. Why have you or any of your colleagues not attended any training events? Under what conditions might you or any of your team members attend one in the future?

**[ASK IF ATTENDED]**

11. How did you hear about the event?

12. Did you attend the first training before or after you had submitted a project to the program?

13. Did you learn anything in the training that helped you design or build energy efficiency into the project? If so, please describe.

- [If interviewee is connected with other program projects, ask] How about for other projects? Did you share anything you learned with your workplace colleagues?

## Program Processes

14. Do you think there are any requirements the program should adjust or change?
  - If so, which ones and how?
15. How would you describe the verification process (post-installation on-site inspection or document review) of the program?
  - Do you have any suggestions for how to improve it?
16. Following the project verification, did the program provide the incentive in a timely manner? [If no,] When did the incentive arrive?
  - Do you have any suggestions for how to improve it?
17. Throughout your involvement with the program, was your communication with program staff what you wanted?
  - If not, please describe why not.

## Barriers

18. What are the main drawbacks of the program, if any?
  - What do you think others like you may find to be barriers to participating in the program?
  - Is it a challenge to meet the 10%-against-baseline level of savings?
  - What might prevent others from participating?
19. Has participating in the New Construction Service impacted your project's design delivery process or timeliness?
  - If so, how?
20. Can you think of any ways the program could improve?
  - Do you see any ways that the program could help realize greater potential energy saving in the market?
  - Are the program incentives appropriate?
  - If you could change one thing about the program what would it be?
21. Would you work with the program again in the future?
  - If no, why not?

## CLOSING SECTION

22. Is there anything else that you would like to let us know based on the topics we covered today, including any ways to improve the program if possible or how the program has affected your use of energy efficient measures or design in projects?
23. As part of this study, the evaluation team may seek to inspect the facilities and equipment for which the program incentives were received. Is there a site-level staff person you can refer me to who might be able to work with the evaluation site lead? This might be a facilities manager or a site engineer?

**Name**

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**Role**

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**Contact Information**

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On behalf of ComEd (If joint project, “and Nicor Gas”), we thank you for your time today. If in reviewing my notes, I discover a point I need to clarify, is it all right if I follow-up with you by phone or email?

**Time End**

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### 7.3 Verbatim Responses

The following table presents verbatim responses to process-related questions from participants in the ComEd and Nicor Business New Construction Service. We organized the responses into three main categories: Application/Program Requirements, Future Projects, General, Most/Least Valuable Aspects of the Program, and Program Staff.

- Comments on the application process and program requirements generally pertained to administrative aspects of the program. Out of 31 total interviews, 30 respondents were happy with the application process, and all respondents were generally happy with the program’s requirements.
- The majority of comments provided below discuss what respondents found most and least valuable about the program. Most respondents mentioned that the financial incentives played a large role in their decision to participate in the program, particularly from owners’ perspectives. Other comments mentioned technical assistance or building performance modeling. The vast majority of feedback was positive; however, some comments provide constructive criticism.
- Responses in the “Future Projects” category, generally pertained to the respondents’ interest in participating in the program in the future and, in some cases, how they thought the program may be impactful for future projects. The vast majority of respondents (30 of 31) said they plan, or are already planning, to participate in the future.
  - Some of these comments also were related to when, in the design process, the project was signed up. Only 3 projects in PY6 signed up for the program after design development. All three of these respondents were either first time participants, or were not involved in their respective project from the beginning. All three also stated that their firms are now making more of an effort to sign future projects up earlier in the design process.
- Comments on program staff were overwhelmingly positive. Specifically, respondents were happy with ECW’s presence in Chicago, and several mentioned the role that ComEd and Nicor account representatives played in making them aware of the program.
- General comments ranged from thoughts on how the program could be improved, to anecdotal feedback on the value that the New Construction Service provided.

**Table 7-7. Participant Verbatim Responses to Process Questions**

Topic	Response
Application/ Program requirements	“No, I don’t think so. It is all pretty straightforward for New Construction.”
Application/ Program requirements	“It’s becoming a little bit more routine for us to be using [the program whenever we get new construction projects]. They’re fantastic.”
Application/ Program requirements	“I thought it was very straightforward, and, frankly, the results were very clean and understandable.”
Application/ Program requirements	“Amazingly enough, everything makes pretty good sense.”
Application/ Program requirements	“I remember them being more cumbersome, but now it is pretty whittled down, which is nice.”
Application/ Program requirements	“Everything seemed pretty straightforward.”
Application/ Program requirements	“It is pretty straightforward. Sometimes getting the final information is kind of a search effort.”
Application/ Program requirements	“Our only concern is that we still have not seen the final rebate number yet...My level of satisfaction is always tied to getting the same amount of rebate in the end that was planned for in the beginning.”
Application/ Program requirements	“I actually think the New Construction program is actually clearer and easier to understand than the Smart Ideas, from an administrative perspective.”
Application/ Program requirements	“It is actually pretty straightforward now. It started out a little more tedious when we first started doing them, but it seems like it has gotten more streamlined.”
Application/ Program requirements	“The form is so stupid, I am very sorry. [The ComEd website] is bad...[For the application], there are two...the initial application and the final application, you re-submit the same thing all over again. I think it is very confusing. If you do at least one [project] though, the next time it is very straightforward.”
Application/ Program requirements	“It was easy.”
Application/ Program requirements	“Very straightforward and easy to follow. Any time I had a question it was quickly answered by the team up there.”
Application/ Program requirements	“I find them easier to understand and look at than some of the others.”
Future Projects	“I didn’t know what to expect, and [the program] is better than what I expected; and, as a result, I am kind of in the process of bringing maybe 4 or 5 more projects to the program.”
Future Projects	“We are already signed up for our next project.”
Future Projects	“The inclusion of [People’s Gas] for city projects is very helpful.”
Future Projects	“We will definitely work with them in the future, but would defiantly start earlier, from the beginning of the project.”
Future Projects	“The decisions-making process was very slow [on our side]...If we could have convinced the ownership that the LED fixtures were the way to go earlier on, it would have been much better, but that was all on our side, not the program.”
Future Projects	“Thought it was really helpful. I wish we would have...started the process earlier in the design and better utilized the extra modeling help. We ended up having a lot of the same ideas, but it would have been nice to utilize that free service a little bit more.”
Future Projects	“Since the Energy Center came in and talked about what they have, any time we have new construction. We [now] always need to ask ourselves if we can use these incentive programs for the client.”
General	“I would recommend that [the utility] promote this program more”

Topic	Response
General	“I wonder if there was a minimum beyond baseline [that designs needed to achieve], if that would exclude projects and would put more funds towards projects that were willing to make greater efficiencies.”
General	“I am curious as to why the program requires invoices for the light fixtures that were purchased.”
General	“I am proud that the program was involved, because for whatever the life-span of the building we’ve got a more energy efficient structure instead of using the HAD lights...It is a very worthwhile process, I thought.”
Most valuable/least valuable	“For the savings to the client. I want to say our client signed up for this program, and I think he needed to do so to get a rebate.”
Most valuable/least valuable	“It’s really the dollars and being able to get things that we wouldn’t normally get, like a better envelope or a more efficient chiller. It’s the dollars back that help us get to that point.”
Most valuable/least valuable	“The iteration testing. To be able to look at each strategy and isolate how much that contributed to energy savings made it easier for us to share that information with the client. It helped them make the cost benefit decisions that much easier.”
Most valuable/least valuable	“For me, it was just primarily providing...the specific incentives/dollars that the strategies would provide.”
Most valuable/least valuable	“The incentive to design professionals is...probably a very useful tool...It makes the effort that is put into by the design team much more worth it by getting that extra 10%.”
Most valuable/least valuable	“For schools, in general, one of the issues is that the energy usage is so low that it becomes difficult under the overall incentive program to even justify anything. Whereas for a building that has a higher process use, or just more operating hours...it’s more effective. [For schools] it’s not always the greatest fit, in terms of just ‘bang for your buck.’”
Most valuable/least valuable	“We had a skylight issue that their model completely helped us manage...The client wanted the skylight, but in the prescriptive energy code you cannot have a skylight that is above 4% of the roof area, or you fail...The Energy Center is really what helped us collaborate to pull that model together to meet permit and the energy code and to also see the building performance as a whole, so that we could get that skylight to work.”
Most valuable/least valuable	“I think it is the collaborative effort. Obviously the energy modeling is just a huge help...It felt like we were on the same project together. It changes the perception of how the project is run...because they are trying to do the best for your project. It is not as administrative as some of the other programs.”
Most valuable/least valuable	“It was certainly helpful to get another set of eyes, you know, some feedback on the design decisions that we made. I think that was the most helpful aspect of it.”
Most valuable/least valuable	“These type of utility rebates, and things like that, have always been a little ‘behind the curtain’, and this program is different...At least with my experience, over the last 10 years, having a group like the Energy Center of Wisconsin be able to be a point of contact for that info has been awesome.”
Most valuable/least valuable	“The financial incentives.”
Most valuable/least valuable	“I think it’s a good program, I think it could be a little more robust...From an owner’s perspective, what [ECW] present[s] is very easy to understand, but the design and engineering team would look for something a little bit more technical and involved. But then again, I think the program is really directed towards owners.”

Topic	Response
Most valuable/least valuable	“The incentive value itself. That is what really pushes the project forward, getting the extra money.”
Most valuable/least valuable	“The energy model is a nice bonus, especially for clients who would not have done this otherwise.”
Most valuable/least valuable	“It saves us some time if we know we are going to have to do one, to baseline off of theirs. We lowered our fee because we knew that ECW would be providing a model...because we didn’t have to start from zero basically.”
Most valuable/least valuable	“[The incentives are the most valuable]. That is what drives the projects, just knowing they are going to get extra money to reduce the cost of it.”
Most valuable/least valuable	“It helped provide a good check of the LEED energy model. It helped us as an owner and as a developer understand the incremental value for these various measures in a way that we just don’t get out of the LEED model.”
Most valuable/least valuable	“I appreciate the thoroughness of the verification inspection.”
Most valuable/least valuable	“We’re always looking for funding”
Most valuable/least valuable	“They could make more money available. [Other than that] it was fine.”
Most valuable/least valuable	“There modeling. The summary that [ECW] came up with...was a very helpful user friendly summary of everything.”
Most valuable/least valuable	“I think it is a great program and [ECW] is great to work with.”
Most valuable/least valuable	“I think it is very clear. The iterations that it has gone through over the past program years has definitely made it very clear to understand.”
Most valuable/least valuable	“The Chicago presence is very helpful... it makes things a lot better because not only can we have these conversations over email, but if [ECW] needs to stop by, it is very close.”
Most valuable/least valuable	“I would definitely say it would be the analysis that was performed. Providing the baseline versus the proposed energy usage; I think that was very valuable.”
Most valuable/least valuable	“[The energy modeling and] being able to verify some of the assumptions and opportunities that are out there [as far as energy savings] and are consistent with what we are thinking.”
Most valuable/least valuable	“Milestone ‘check ins’ would be helpful...during the beginning we had a couple of meetings and conversations [and then they were reduced a bit]...it would have been nice to know what was coming so that we can have a chance to influence [ECW’s] report a bit.”
Most valuable/least valuable	“The goal is to try and get the best rebate we can possibly get...it gets better and better with each building.”
Most valuable/least valuable	“To take a ‘swipe’ at some of those first costs. It helps the payback period...and makes it look more attractive to the client. Otherwise they wouldn’t necessarily install these ECMs.”
Most valuable/least valuable	“The energy model, and them doing it, is huge.”
Most valuable/least valuable	“The amount of incentives is less than it should be give the cost to capital for this equipment, and given how much we pay in our utility bills every month to pay for these programs.”
Most valuable/least valuable	“I personally like their energy model that they give us in the end because it’s a nice summary...it all shows up on one convenient spreadsheet.”
Most valuable/least valuable	“Well I think the most value is just getting some money for the work that you are doing...The rebate is really not that big, when you compare the cost of the building, but it is nice when you can get a bunch of them for the work you are doing and lump them together.”

Topic	Response
Most valuable/least valuable	“Just get gas and electric together on new construction [for the City of Chicago projects].”
Most valuable/least valuable	“Would be stupid [not to take advantage] when they are offering something like this...The amount of money is helpful...but they also offer lots of valuable information, for the future projects too.”
Most valuable/least valuable	“Valuable information provided by engineers [at ECW]. The analysis [was also] very valuable.”
Most valuable/least valuable	“I think it was the financial impact. I know that really got the owner’s attention, and more so the owner’s pay back, than what the design’s payback was...any money that could be found or saved, was a big plus.”
Most valuable/least valuable	“I was hesitant at first. I didn’t really know what to expect, and found that it was extremely helpful. Everyone was very educated. I learned a lot through the process too. I absolutely thought it was the right move.”
Most valuable/least valuable	“Cash. It’s like finding \$7,000 on the street.”
Most valuable/least valuable	“I think the program could have provided more input [along the way]...about how to increase your energy efficiency or up your incentives.”
Most valuable/least valuable	“It could be a great value, I just think there could be more outreach to people letting them know it is actually a program.”
Most valuable/least valuable	“If they offered kind of an energy modeling, that would be great as well.”
Program Staff	“My interaction with ECW was good. They were knowledgeable about what they’re doing and the modeling. For a project like this, there is a lot of non-standard types of equipment and we were able to work with them to get those things accounted for.”
Program Staff	“They had the right level of involvement. It wasn’t overly burdensome for the AE team to accommodate them.”
Program Staff	“I get the email blasts...but have not felt compelled to attend...but regularly have one on one interactions with ECW.”
Program Staff	“Many of the people involved in [other programs in Chicago] don’t know anything...on the other hand, at ECW I was very pleasantly surprised with the knowledge, the research, [and] the commitment of the staff, [particularly their experience with lighting projects].”
Program Staff	“They were very friendly and helpful”
Program Staff	“They made a great effort to be flexible whenever we hit a snag. They made the extra effort to make it work.”
Program Staff	“They were all knowledgeable, easy to work with, and very accessible.”
Program Staff	“They have a basic understanding. They are not...skilled enough to do the sort of design or energy efficiency that is really done on these buildings...but they have enough skills [and experience] to figure out what they need to find.”
Program Staff	“They were actually pretty helpful, keeping us informed of what needed to happen, and asking questions when needed.”
Program Staff	“Our account manager at ComEd, and Nicor...were both very informative and actually facilitated the meeting with the Energy Center...in both cases the account representatives played a key role in making sure that [the customer] was aware of the program, how it worked, and how the relationship with ECW would work.”
Program Staff	“ECW was very knowledgeable, prompt, and, when asked questions, were able to communicate tradeoffs. I thought the overall detail in the energy model was very good.”



Topic	Response
Program Staff	"I think on the whole, they probably have a very good understanding of energy efficiency. They are definitely responsive. They usually remind me when I need to get them stuff."
Program Staff	"They were very helpful going through the process."
Program Staff	"They were very helpful and knowledgeable."
Program Staff	"They had a general knowledge of energy efficient design. They would not be a resource that I would look to for energy efficiency design knowledge."
Program Staff	"They are accessible and actually humanized that way, makes it more a friendly program."
Program Staff	"[Program staff] really are very proud of their program...they really like what they do."
Program Staff	"I see [the program] as stronger...It seems like [the folks at ECW] are project managing the process a lot better now."
Program Staff	"They understand what we are trying to do, and they stay out of our way...They work with us as a team, not as their team and our team."