

Nicor Gas Economic Redevelopment Program GPY3 Evaluation Report

Final

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

Presented to
Nicor Gas Company

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E. Executive Summary

This report presents a summary of the findings and results from the limited scope impact evaluation of the GPY3¹ (Gas Program Year 3) of the Nicor Gas Economic Redevelopment Program (ERP), as well as process results from Navigant’s GPY2 evaluation effort². The ERP targets existing commercial, industrial, and commercial-sized multifamily facilities and properties undergoing major renovation in established “redevelopment areas” and encourages that they incorporate energy efficiency measures into the renovation process. The program provides technical assistance and enhanced incentives to render energy efficiency projects more affordable within these economically challenged communities.

The ERP experienced slow participation uptake rates in GPY1 but, after a successful marketing and outreach campaign, significantly increased program participation from one project in GPY1 to 15 projects in GPY2 and 13 projects in GPY3. The ERP will be discontinued as a separate program after GPY3, with additional future projects directed to Nicor Gas’ Business New Construction (BNC) program. Details behind and reasons for the ERP’s discontinuation are outlined in the process evaluation section of this report.

E.1. Program Savings

Table E-1 summarizes the natural gas savings from the ERP.

Table E-1. GPY3 Total Program Natural Gas Savings

Savings Category	Energy Savings (Therms)
Ex-Ante Gross Savings	118,910
Net to gross ratio (NTGR) ‡	0.70
Ex-Ante Net Savings	83,237
Verified Gross Savings	84,889
Verified Gross Realization Rate §	0.71
Verified Net Savings	59,422

Source: Utility tracking data and Navigant analysis.

‡ A deemed value.

§ Based on evaluation research findings.

¹ The GPY3 program year began June 1, 2013 and ended May 31, 2014.

² As the final evaluation report for a discontinued program, no process research was conducted for GPY3. Navigant added process findings from GPY2 to provide context for the final impact findings from GPY3.

E.2. Project Savings

The following table summarizes the savings results by project.

Table E-2. GPY3 Program Results, Project Level

Project Code	Verification Method			Ex-Ante Gross Savings (therms)	Verified Gross Savings (therms)	Realization Rate
	Billed-to-Savings Comparison	eQUEST Model Review	Billing Analysis			
ERP_168593	X			717	717	100%
ERP_168594	X			5,800	5,800	100%
ERP_168595	X			2,465	2,465	100%
ERP_168596	X			887	887	100%
ERP_168597	X	X		26,674	6,740	25%
ERP_168598	X			3,058	3,058	100%
ERP_168599	X		X	22,243	17,196	77%
ERP_168600	X	X		13,058	5,408	41%
ERP_555122	X			4,579	4,579	100%
ERP_555123	X			16,621	16,621	100%
ERP_555124	X			19,639	19,639	100%
ERP_555125	X			1,299	1,299	100%
ERP_555126	X		X	1,870	480	26%
Total				118,237	84,889	71%

Source: Utility tracking data and Navigant analysis.

E.3. Participation Information

The program had 13 participants in GPY3. These participants included multi-family, retail, offices, and warehouses. The gas efficiency measures included HVAC equipment upgrades, building envelope enhancements, HVAC controls improvements, and a pool heater upgrade.

E.4. Findings and Recommendations

Navigant conducted a limited scope impact evaluation of the GPY3 projects by comparing the annual billed therms to the claimed savings of each project. For projects that did not show a reasonable savings-to-billed gas ratio, Navigant leveraged other verification methodologies such as billing analysis and eQUEST model reviews. The implementation contractor’s (IC’s) savings calculation methodologies were generally reasonable, as shown by nine out of 13 projects resulting in a reasonable savings-to-billed gas ratio.

Midway through GPY2, Nicor Gas determined that the ERP was not cost-effective and discontinued the program, deciding to complete only the remaining projects in the pipeline and to redirect any additional incoming projects to Nicor Gas’ BNC program. The demise of the program was attributed to (1) lack of upfront capital to fund energy efficiency projects by the customers and (2) longer implementation time periods required by the customers in order to afford energy efficiency projects.

The following provides insight into key program findings and recommendations³.

Program Savings Goals Attainment

Finding 1. The ERP did not have a GPY3 ex-ante gross savings goal due to the program’s discontinuation.

Gross Realization Rates

Finding 2. Navigant’s GPY3 ERP impact evaluation resulted in a realization rate of 0.71.

Finding 3. Nine out of 13 projects resulted in a reasonable savings-to-billed gas ratio.

Finding 4. The remaining four projects showed unreasonably high savings relative to the sites’ annual billed consumption. Navigant verified the savings for these projects using either billing analysis or model reviews, and all four of these projects resulted in low realization rates.

Recommendation 1. Prior to approving incentive payment for a major renovation project with no building additions, Navigant recommends that Nicor Gas compare the claimed savings to the site’s billed energy usage to assess the reasonableness of the claimed savings.

Recommendation 2. Navigant recommends that the IC calibrate their eQUEST models to billing data on major renovation projects.

Process Evaluation Findings

Finding 5. The two main factors that likely led to the discontinuation of the ERP were:

1. Customers lacked the upfront capital to fund energy efficiency projects; and
2. Customers needed longer implementation periods to complete energy efficiency projects.

Recommendation 3. Navigant recommends that future programs aimed at community-based organizations increase the incentive amounts and/or restructure the program so that customers receive incentives earlier in the project timeline.

Recommendation 4. Navigant recommends that future programs aimed at community-based organizations allow for extended multi-year project timelines, granting these organizations more time to collect funding to install energy efficiency measures.

Finding 6. Lack of upfront capital was more of a barrier for community-based organizations, such as churches, YMCAs, homeless shelters, community assistance centers, and other community-based organizations, than for multifamily facilities located in Tax Increment Financing (TIF) districts or enterprise zones. This was because community-based organizations prioritized their funds for community service and day-to-day operations rather than management staff of multifamily facilities who prioritize budget for facility improvement projects in order to retain tenancy.

Recommendation 5. Navigant recommends that Nicor Gas consider implementing a shared savings program for these types of customers, providing upfront financial assistance and allowing the customer to pay back the investment with the savings associated with the project.

Finding 7. The most successful outreach strategy to customers was through utilization of CNT Energy’s personal relationships with non-profit organizations to directly contact the people most involved in the energy efficiency investment decisions of these projects.

³ For future reference, Findings and Recommendations are numbered sequentially. Numbering in the Executive Summary matches Section 6.

Recommendation 6. Navigant encourages Nicor Gas to continue this method of outreach to these customer types as future potential ERP projects are absorbed into other Nicor Gas programs.

Finding 8. Economic development agencies did not provide a significant number of leads to potential customers because they typically focused on assisting large commercial customers to relocate their business rather than on commercial entities planning to renovate their existing facilities.

1. Introduction

1.1 Program Description

The Economic Redevelopment Program (ERP) targeted existing commercial, industrial, and commercial-sized multifamily facilities and properties undergoing major renovation in established “redevelopment areas” and encouraged that they incorporate energy efficiency measures into the renovation process. The program provided technical assistance and enhanced incentives to render energy efficiency projects more affordable within these economically challenged communities. Seventhwave, formerly the Energy Center of Wisconsin (ECW), is the implementation contractor (IC) for this program. CNT Energy (a non-profit organization founded by the Center for Neighborhood Technology), located in Chicago, conducted marketing and outreach for the program, including recruiting qualified potential participants. The target audiences for outreach included chambers of commerce, economic development departments, building owners, architecture firms and contractors.

The ERP experienced slow participation uptake rates in GPY1 but, after a successful marketing and outreach campaign, significantly increased program participation from one project in GPY1 to 15 projects in GPY2 and 13 projects in GPY3. However, the ERP was discontinued as a separate program after GPY3, and only the remaining projects in the pipeline were completed; additional projects will be directed to another Nicor Gas program. Details behind and reasons for the ERP’s discontinuation are described in the process evaluation section.

1.2 Evaluation Objectives

The Evaluation Team identified the following key researchable questions for GPY3:

1.2.1 Impact Questions

1. What is the level of gross annual energy (therm) savings induced by the program?
2. What are the net impacts from the program?
3. Are the assumptions and calculations in compliance with standard engineering best practices? If not, what changes are required?

1.2.2 Process Questions (Completed in GPY2)

1. Is this program’s eligibility criterion clearly defined or does it need additional detail for customer understanding?
2. How does the program appeal to state and/or local agencies (e.g. economic development agencies, chambers of commerce, cities, towns, etc.)?
3. Is the program’s current structure compelling participants to engage in Comprehensive projects if they would not otherwise do so?
4. What are the sources of program awareness for “hard to reach customers” and how can the program implement marketing and outreach activities to engage these target markets?
5. Are customers and program partners satisfied with the program?
6. How effective are program design and processes? What opportunities exist for program improvement?

2. Evaluation Approach

This evaluation of the Economic Redevelopment Program reflects the third full-scale year of program operation. During GPY3, 13 customers participated in the ERP. These customers either were located in Tax Increment Financing (TIF) districts or planned to implement projects that had the potential to create jobs and/or create other positive community impacts.

2.1 Primary Data Collection

2.1.1 Overview of Data Collection Activities

The core data collection activities included onsite measurement and verification (M&V), billing analysis validation, and program manager and implementer staff interviews. The full set of data collection activities is shown in the following table.

Table 2-1. Core Data Collection Activities

N	What	Who	Target Completes	Completes Achieved	When	Comments
<i>Impact Assessment</i>						
1	Saved-to-Billed Ratio Analysis	Participants	13	13	July 2015	Ratio analysis for all GPY3 projects
2	File Review/ Model Review/ Billing Analysis	Participants	N/A	4	July – August 2015	Only conducted on projects that showed unreasonable saved-to-billed gas ratio.
<i>Process Assessment</i>						
3	In Depth Interviews	Program Manager/ Implementer Staff	2	2	May – Sept 2013	Completed in GPY2

Source: Navigant analysis.

2.1.2 Verified Gross Program Savings Analysis Approach

Navigant performed saved-to-billed ratio analysis for all 13 projects, billing analysis for two projects, and eQUEST model reviews for two projects. The evaluation approaches for these methods are outlined below.

Saved-to-Billed Ratio Analysis:

1. Navigant reviewed the project files to understand the measures implemented.
2. Navigant obtained gas billing data for each project and calculated the annual billed consumption for 12 months prior to the project start date. Navigant recognized that this time period is different for each project, and year-to-year differences in weather also affect this annual roll-up.
3. Navigant calculated the ratio of gross ex-ante savings to annual billed consumption.
4. Navigant considered this ratio in the context of the implemented measures to determine if the gross ex-ante were reasonable.
5. If the saved-to-billed ratio was unreasonable (e.g., the claimed savings are higher than the annual billed consumption data), Navigant leveraged alternative verification methods.

eQUEST Model Review Activities:

1. Navigant reviewed the eQUEST model results to ensure the savings match the gross ex-ante savings.
2. Navigant then compared the model savings results to the sites' billed consumption to determine if the model was properly calibrated.
3. Navigant reviewed the input assumptions to the model to determine their reasonableness.
4. Navigant used the outputs of the model as a proxy for the percent savings for this project to calculate the verified savings.
5. Navigant applied the percent savings to the billing data to calculate verified gross savings.

Billing Analysis (for heating measures):

1. Navigant determined the validity of using billing analysis as a savings calculation method for heating measures using the following factors, where possible: sufficient pre- and post-implementation data was available, the measures represented a significant portion of the energy bill, no other savings measures were implemented separate from the project, no outside factors affected energy consumption, and the use and occupancy of the building did not significantly change from the pre- to the post-implementation periods.
2. Navigant subtracted out the average summer gas use (i.e. non-heating gas use) to disaggregate the heating and non-heating portions of the gas bills and then normalized the pre- and post-implementation data to actual weather data (heating degree-days (HDDs)).
3. Navigant then subtracted the post- from the pre-implementation heating gas use per HDD and multiplied by the HDDs in a typical meteorological year (TMY3), representing the gas savings in a typical year.

2.1.3 Verified Net Program Savings Analysis Approach

Navigant did not perform NTG analysis of the ERP in GPY3 because the NTGR for GPY3 was deemed at 0.70 per the SAG⁴ and Nicor Gas ended discontinued the program at the end of GPY3.

2.1.4 Process Evaluation Approach

Navigant mainly utilized interviews with the program manager and implementation contractor in GPY2 to gather information on the key process evaluation questions. The evaluation team originally planned to interview participating and non-participating agencies (e.g., chambers of commerce, cities/towns, economic redevelopment agencies, etc.) to attempt to better understand how these agencies reached out to potential ERP customers, why customers who learned about the ERP did or did not participate, what external factors may or may not have affected customer participation, and other program process-related issues. However, due to Nicor Gas' decision to discontinue the ERP after GPY3, this effort was withdrawn for better utilization of evaluation resources within Nicor Gas' energy efficiency program portfolio.

⁴ Document provided by Nicor Gas to the SAG summarizing the SAG-approved NTGR for Nicor Gas for GPY1-GPY3 in March-August 2013. Distributed in the SAG Meeting on August 5-6, 2013.
http://ilsagfiles.org/SAG_files/Meeting_Materials/2013/August_5-6,2013/Meeting/Nicor_Gas_NTG_Results_and_Application_GPY1-3.pdf.

3. Gross Impact Evaluation

Navigant evaluated 13 ERP projects completed in GPY3 between June 1, 2013 and May 31, 2014 as part of this impact evaluation. Navigant’s review found a realization rate of 71%, which yielded research findings gross savings totaling 84,889 therms. Applying the deemed net-to-gross ratio (NTGR) of 0.70 resulted in net research findings savings of 59,422 therms. Navigant used saved-to-billed ratio analysis, eQUEST model review, and billing analysis to verify savings.

3.1 Tracking System Review

Navigant reviewed the program tracking system and determined that the system properly tracked the data necessary for evaluation. The tracking system included:

- Project Name
- Program Year
- Project Address
- Process Step
- Project Track
- Acceptance Status
- Project Description
- Project Criteria
- Ex-Ante Annual Gas Savings
- Estimated Completion Date
- Primary Contact: Account Name
- Primary Contact: Name
- Primary Contact: Phone
- Primary Contact: Mailing Address

3.2 Program Volumetric Findings

The following table compares the savings and participation goals of GPY1, GPY2, and GPY3. In general, the program performed a fairly successful ramp-up of participation and savings in GPY2 and leveled off in GPY3 as the program was discontinued.

Table 3-1. Savings and Participation Goals of GPY1, GPY2, GPY3

Metric	GPY1	GPY2	GPY3
Participation Goal (# of customers)	4	20	N/A
Participation Actual (# of customers)	1	15	13
Ex-Ante Savings Goal (therms)	11,554	255,872 ⁵	N/A
Ex-Ante Savings Actual (therms)	893	132,207	118,910
Verified Gross Savings (therms)	893	112,363	84,889
Verified Realization Rate	1.00	0.85	0.71

Source: Navigant EM&V analysis

⁵ ECW revised the ex-ante savings goal at the beginning of GPY2 from 255,872 therms to 379,070 therms.

3.3 Development of the Verified Gross Realization Rate

Navigant developed the gross realization rate by comparing the verified gross savings to the ex-ante gross savings as outlined in the algorithm below:

$$\text{Realization Rate} = \frac{\text{Verified Gross Savings}}{\text{Ex Ante Gross Savings}}$$

Navigant used engineering file reviews and billing analysis to determine the verified gross savings. Navigant used the tracking system, cross-checked with information in the project files, to determine the ex-ante gross savings.

3.4 Verified Gross Program Impact Results

The resulting total program verified gross savings is 84,889 therms as shown in Table 3-2.

Table 3-2. GPY3 Program Results, Project Level

Project Code	Verification Method			Ex-Ante Gross Savings (therms)	Verified Gross Savings (therms)	Realization Rate
	Billed-to-Savings Comparison	eQUEST Model Review	Billing Analysis			
ERP_168593	X			717	717	100%
ERP_168594	X			5,800	5,800	100%
ERP_168595	X			2,465	2,465	100%
ERP_168596	X			887	887	100%
ERP_168597	X	X		26,674	6,740	25%
ERP_168598	X			3,058	3,058	100%
ERP_168599	X		X	22,243	17,196	77%
ERP_168600	X	X		13,058	5,408	41%
ERP_555122	X			4,579	4,579	100%
ERP_555123	X			16,621	16,621	100%
ERP_555124	X			19,639	19,639	100%
ERP_555125	X			1,299	1,299	100%
ERP_555126	X		X	1,870	480	26%
Total				118,237	84,889	71%

Source: Utility tracking data and Navigant analysis.

3.5 Gross Impact Evaluation Research Findings

Because the ERP is discontinued after GPY3, Navigant performed a *limited* impact evaluation on the results. Navigant first conducted an initial check on the reasonability of the ex-ante savings compared to each project’s annual billed gas consumption. The results of this analysis are summarized in Table 3-3 below.

Table 3-3. Results of Initial Savings-to-Billed Ratio Reasonability Check

Project Number	Types of Measures	Ex-Ante Therm Savings	Annual Billed Therm Consumption*	Savings-to-Billed Ratio	Result
ERP_168593	Window replacement	717	7,145	10%	Reasonable
ERP_168594	Steam distribution system retrofit	5,800	20,549	28%	Reasonable
ERP_168595	Boiler room improvements; Boiler tune-up	2,465	6,457	38%	Reasonable
ERP_168596	Boiler	887	11,955	7%	Reasonable
ERP_168597	HVAC; Lighting	26,674	23,154	115%	Further investigation required
ERP_168598	HVAC; Envelope; Process	3,058	15,658	20%	Reasonable
ERP_168599	Envelope; HVAC; Lighting	22,243	47,174	47%	Further investigation required
ERP_168600	Insulation; Demand control ventilation	13,058	22,588	58%	Further investigation required
ERP_555122	Pool heater; Windows	4,579	70,030	7%	Reasonable
ERP_555123	Boilers; Controls	16,621	80,804	21%	Reasonable
ERP_555124	HVAC; Lighting	19,639	124,802	16%	Reasonable
ERP_555125	RTU	1,299	8,010	16%	Reasonable
ERP_555126	Boiler; Hot water tank; Insulation and caulking	1,870	3,343	56%	Further investigation required

*12 months prior to project; not weather normalized

Navigant further investigated the results of ERP_168597, ERP_168599, ERP_168600, and ERP_555126 as a result of the relatively high savings-to-billing ratios.

ERP_168597 Verification Results

The project involved two measures: energy recovery ventilation on two makeup air units and programmable thermostats. The reported savings were 26,674 therms, whereas the utility bills showed the facility consuming 23,154 therms. The reason why the reported savings are so close to the billing data is because the eQUEST model that was used to generate the savings was not calibrated to the building's actual energy use. The project files showed the baseline model consuming 93,234 therms per year and the efficient model consuming 66,530 therms per year, resulting in savings of 26,704 therms per year, which matches the verification report but not the savings in the database. Upon re-running the models in the project files, Navigant calculated the baseline energy consumption of 93,234 therms and a post-retrofit consumption of 66,094 therms, which results in energy savings of 27,140 therms (1.7% different than reported), or 29%. Navigant used the outputs from the models as a proxy to the savings reflected in the bills and then applied the 29% savings to the billing data to calculate the project savings of 6,740 therms.

The first energy conservation measure (ECM) involved turning on the recovery exhaust feature of two of the makeup air units. This involves re-heating and re-cooling the exhaust air so that the makeup air units consume less energy conditioning the outdoor air. Navigant agrees with the approach used to model this parameter in eQUEST.

The second ECM involved savings from programmable thermostats, which were modeled in eQUEST by shutting off the fan for three hours during the day. The baseline case assumed that the fans were on from 8 am to 10 pm and the efficient case assumed that they were on from 11 am to 10 pm. The savings come from the fan being shut off for 3 hours per day as compared to the baseline case. The new schedule seems somewhat contradictory to the operation of this type of facility. However, Navigant did not have enough information to change the measure therefore Navigant did not change the parameter assumptions in the model.

ERP_168599 Verification Results

Navigant conducted linear regression analysis of heating degree-days (HDD65s) and gas billing data and found an R^2 of 0.87 and 0.98 for the pre- and post-implementation periods, respectively. Navigant then used the regression equations ($therms = a * HDD65 + b$) to calculate the pre- and post-implementation weather-normalized gas consumption using the annual HDD65s in a TMY3 year for O'Hare International Airport in Chicago, IL, resulting in a pre-implementation consumption of 40,528 therms and a post-implementation consumption of 23,332 therms. Therefore, the verified gross annual gas savings for this project is 17,196 therms.

ERP_168600 Verification Results

The project involved energy efficiency improvements to the following components: windows, skylight windows, overhead doors, and HVAC systems. The reported savings were 13,058 therms, whereas the utility bills showed the facility consuming 22,588 therms. The reason why the reported savings are so close to the billing data is because the eQUEST model that was used to generate the savings was not calibrated to the building's actual energy use. The project files showed the baseline model consuming 54,537 therms per year and the efficient model consuming 41,479 therms per year, resulting in savings of 13,058 therms per year, which matches the verification report and the savings in the database. Upon re-running the models in the project files, Navigant calculated the baseline energy consumption of 54,537 therms and a post-retrofit consumption of 41,479 therms, which results in energy savings of 13,058 therms (29%) which aligns with the project files exactly. Navigant used the outputs from the models as a proxy to the savings reflected in the bills and then applied the 29% savings to the billing data to calculate the project savings of 5,408 therms. Navigant did not make any changes to the parameters in the model, but instead used the outputs of the model as a proxy for the percent savings for this project.

The following energy conservation measures (ECM) were involved in this project:

- Window improvements: upgraded window u-value from 0.55 to 0.32, upgraded the window solar heat gain coefficient from 0.40 to 0.2820
- Skylight window improvements: upgraded the glass conductance from 1.1 to 0.81, upgraded the shading coefficient from 0.71 to 0.56
- Overhead door (south facing, ground level) improvements: upgraded the u-value of the single layer uninsulated metal door from 2.08 to 0.5, upgraded the infiltration rate from 0.4 air exchanges per hour to 0.36 air exchanges per hour
- HVAC improvements: added demand-controlled ventilation return sensors on all sales floor rooftop units.

Navigant reviewed the baseline and energy efficient models and verified that the adjustments were correctly imputed into the model. Navigant did not have any reasons to change these values based on findings in the review of the models therefore the parameters were left as is. Navigant believes the assumptions are reasonable and defensible.

ERP_555126 Verification Results

Navigant conducted linear regression analysis of heating degree-days (HDD65s) and heating gas billing data and found an R^2 of 0.85 and 0.94 for the pre- and post-implementation periods, respectively.

Navigant then used the regression equations ($therms = a * HDD65 + b$) to calculate the pre- and post-implementation weather-normalized gas consumption using the annual HDD65s in a TMY3 year for O'Hare International Airport in Chicago, IL, resulting in a pre-implementation consumption of 2,799 therms and a post-implementation consumption of 2,318 therms. Therefore, the verified gross annual gas savings for this project is 480 therms.

4. Net Impact Evaluation

NTGR was deemed by the SAG⁶ at 0.70 to be used to calculate GPY3 verified net savings.

⁶ Document provided by Nicor Gas to the SAG summarizing the SAG-approved NTGR for Nicor Gas for GPY1-GPY3 in March-August 2013. Distributed in the SAG Meeting on August 5-6, 2013.
[http://ilsagfiles.org/SAG_files/Meeting_Materials/2013/August 5-6, 2013 Meeting/Nicor_Gas_NTG_Results_and_Application_GPY1-3.pdf](http://ilsagfiles.org/SAG_files/Meeting_Materials/2013/August%205-6,%202013/Meeting/Nicor_Gas_NTG_Results_and_Application_GPY1-3.pdf).

5. Process Evaluation

Navigant’s process evaluation, conducted for the GPY2 evaluation, focused on the reasons for Nicor Gas’ discontinuation of the ERP and answering the key process questions outlined in Section 1.2.2. The evaluation team interviewed the program manager and the implementer to gather this insight.

Towards the end of GPY2, Nicor Gas determined that the ERP was not achieving a desirable amount of savings in return for the resources allocated to the program and discontinued the ERP, deciding to complete only the remaining projects in the pipeline and to redirect any additional incoming projects to another Nicor Gas program. The demise of the program was attributed to two main factors:

1. **Customers lacked the upfront capital to fund energy efficiency projects.** These customers, such as churches, YMCAs, homeless shelters, community assistance centers, and other community-based organizations, operate on tight budgets and often prioritize spending on community service rather than on renovating their facilities for energy efficiency. Since incentives were not paid until after the project was completed, customers could not benefit from the incentive program in the initial investment period. Lack of upfront capital was more of a barrier for community-based organizations than for multifamily facilities located in TIF districts or enterprise zones because management staff of multifamily facilities prioritize budget for facility improvement projects in order to retain tenancy.
2. **Customers needed longer implementation periods to complete energy efficiency projects.** Community-based participants often relied on rounds of fundraising or grants to fund energy efficiency projects. As a result, these customers were only able to implement a small portion of the suggested measures in GPY2 before needing additional funding.

Navigant’s answers to the key process questions outlined in Section 1.2.2 are included below, with the key questions *in italics*:

1. *Is this program’s eligibility criterion clearly defined or does it need additional detail for customer understanding?*

Eligibility criterion was clearly defined: customers located in TIF or enterprise zones, or who offer community benefits were eligible to participate in the ERP.

2. *How does the program appeal to state and/or local agencies (e.g. economic development agencies, chambers of commerce, cities, towns, etc.)?*

CNT Energy utilized a number of personal relationships with non-profits and community assistance agencies to attract projects. Direct contact with projects’ decision-makers using these existing relationships appeared to be the most successful method of outreach for the ERP. Economic development agencies did not provide a significant number of customer leads because they were better suited to assist large commercial customers planning to relocate their business rather than commercial entities planning to renovate their existing facilities.

3. *Is the program's current structure compelling participants to engage in Comprehensive projects if they would not otherwise do so?*

In GPY2, the program exclusively offered Comprehensive track projects, discontinuing its offering of Systems track projects.

4. *What are the sources of program awareness for "hard to reach customers" and how can the program implement marketing and outreach activities to engage these target markets?*

The most successful way to reach customers was utilizing personal relationships with various non-profits and community assistance agencies. CNT Energy also contacted chambers of commerce and economic development agencies, but these entities focused on assisting large commercial customers planning to relocate their business, which was not a target audience for the ERP. Additional funding and promotions would have been needed to influence these agencies to assist outside of their area-of-expertise.

5. *Are customers and program partners satisfied with the program?*

Navigant did not conduct customer or program partner surveys to assess program satisfaction. However, ECW (Seventhwave) self-reported that customers expressed high satisfaction with the technical assistance. Customers who received technical assistance but did not implement energy efficiency measures still benefited from technical assistance reports because they can consider ECW's (Seventhwave) suggestions in future investment decisions.

6. *How effective are program design and processes? What opportunities exist for program improvement?*

The program design and processes proved to be effective for multifamily facilities located in TIF and enterprise zones and some commercial organizations. However, for many community-based organizations (e.g., churches, YMCAs, homeless shelters, etc.), the incentive amounts were either not enough or were not delivered early enough in the project timeline. Since upfront capital was likely the largest barrier to completing these projects, the incentives paid at the completion of the project was not sufficient influence on the initial decision-making process.

The program could have been improved with higher incentives or alternative financing approaches that delivered incentives to customers earlier in the project timeline. Because of the program's planned discontinuation, other opportunities for program improvement were not explored in detail.

6. Findings and Recommendations

This section summarizes the key impact and process findings and recommendations.

Impact Findings:

Program Savings Goals Attainment

Finding 1. The ERP did not have a GPY3 ex-ante gross savings goal due to the program's discontinuation.

Gross Realization Rates

Finding 2. Navigant's GPY3 ERP evaluation resulted in a realization rate of 0.71.

Finding 3. Nine out of 13 projects resulted in a reasonable savings-to-billed gas ratio.

Finding 4. The remaining four projects showed unreasonably high savings relative to the sites' annual billed consumption. Navigant verified the savings for these projects using either billing analysis or model reviews, and all four of these projects resulted in low realization rates.

Recommendation 1. Prior to approving incentive payment for a major renovation project with no building additions, Navigant recommends that Nicor Gas compare the claimed savings to the site's billed energy usage to assess the reasonableness of the claimed savings.

Recommendation 2. Navigant recommends that the IC calibrate their eQUEST models to billing data on major renovation projects.

Process Findings:

Process Evaluation Findings

Finding 5. The two main factors that likely led to the discontinuation of the ERP were:

1. Customers lacked the upfront capital to fund energy efficiency projects; and
2. Customers needed longer implementation periods to complete energy efficiency projects.

Recommendation 3. Navigant recommends that future programs aimed at community-based organizations increase the incentive amounts and/or restructure the program so that customers receive incentives earlier in the project timeline.

Recommendation 4. Navigant recommends that future programs aimed at community-based organizations allow for extended multi-year project timelines, granting these organizations more time to collect funding to install energy efficiency measures.

Finding 6. Lack of upfront capital was more of a barrier for community-based organizations, such as churches, YMCAs, homeless shelters, community assistance centers, and other community-based organizations, than for multifamily facilities located in Tax Increment Financing (TIF) districts or enterprise zones. This was because community-based organizations prioritized their funds for community service and day-to-day operations rather than management staff of multifamily facilities who prioritize budget for facility improvement projects in order to retain tenancy.

Recommendation 5. Navigant recommends that Nicor Gas consider implementing a shared savings program for these types of customers, providing upfront financial assistance and allowing the customer to pay back the investment with the savings associated with the project.

Finding 7. The most successful outreach strategy to customers was likely through utilization of CNT Energy’s personal relationships with non-profit organizations to directly contact the people most involved in the energy efficiency investment decisions of these projects.

Recommendation 6. Navigant encourages Nicor Gas to continue this method of outreach to these customer types as future potential ERP projects are absorbed into other Nicor Gas programs.

Finding 8. Economic development agencies did not provide a significant number of leads to potential customers because they typically focused on assisting large commercial customers to relocate their business rather than on commercial entities planning to renovate their existing facilities.