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Energy Efficiency
Nicor Gas Plan Year 1
(6/1/2011-5/31/2012)

Evaluation Report:
Building Performance with Energy Star

Final

Presented to
Nicor Gas Company

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nicor GAS

An AGL Resources Company

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E. Executive Summary

This document presents the findings of the evaluation of the Nicor Gas Building Performance with ENERGY STAR® (BPwES) program. This evaluation covers Nicor Gas Plan Year 1 (GPY1) and focuses on program processes. The program launched in early 2012 and did not claim any savings in the GPY1 plan year. For this reason, Navigant did not conduct a full impact evaluation this year.

E.1 Evaluation Objectives

The primary objectives of the GPY1 BPwES evaluation were to (1) identify key early process-related pilot strengths and weaknesses and (2) to help program designers and managers identify ways in which the program can be improved. The pilot did not achieve any savings in GPY1 and a permanent tracking system was not yet in place; as a result, there was no need for a full impact evaluation in GPY1.

E.2 Evaluation Methods

The evaluation team based their findings on reviews of program documentation and on in-depth interviews with Nicor Gas program staff and the implementation contractor. Navigant used these sources to create a logic model for the program, to describe a program theory, to conduct a preliminary review of planned tracking system and due diligence procedures, and to make process recommendations. Since the final tracking system was still in development, the evaluation team also developed some early program effectiveness tracking recommendations.

E.4 Key Process Findings and Recommendations

After reviewing the program materials and conducting interviews with program and implementation contractor staff, Navigant has the following key process findings and recommendations:

- **Finding.** The program currently does not have any key performance indicators (KPIs) outlined in program operations documents.
    - **Recommendation.** Establish clear key performance indicators and tracking plans to help track and determine program effectiveness and to identify potential avenues for enhancing program performance. This will also help provide future evaluation efforts with key data for evaluating program effectiveness.

- **Finding.** Though Nicor and ComEd share potential participants in their respective versions of the program, there is no official coordination of program efforts or co-branding between the two utilities.
    - **Recommendation.** The evaluation team recommends Nicor Gas assess the potential benefits and challenges of running this program jointly with ComEd since both utilities target many of the same clients with their respective versions of this program effort.[1] A joint utility effort could result in implementation cost savings and it could increase useful data sharing.

[1] ComEd treats its version of this pilot as a feeder program for its Prescriptive Program.

- **Finding.** Though the current implementation contractor is running the same program for ComEd for some of the same potential participants as Nicor, it does not share data between the two utilities in cases where they have mutual participants.
    - Whether utilizing a shared implementation contractor, running the program jointly, or through alternative agreed upon means, the evaluation team encourages data sharing between the utilities in cases where they share participants in their respective versions of this program. Both utilities my benefit from better understanding shared participants' proposals and projects on both the electric and gas sides. For instance, Nicor may benefit from understanding whether potential participants considering both utility programs are more inclined to pursue electric measure projects rather than gas ones due to differences in electric and gas energy costs.

- **Finding.** Program marketing and outreach materials are currently limited to an informational leaflet. The evaluation team sees opportunity to develop additional materials to help promote the program and drive participation.
    - **Recommendation.** The evaluation team recommends looking into expanding program informational materials. This could include developing more informational materials and case studies, both online and print. Since the Nicor Gas program does not yet have customer experiences to profile, profiles of peer businesses in the hospitality and assisted living sectors that participated in other utilities' comparable programs could stand in until such are available. Concrete examples of these programs in action and details of related energy and non-energy benefits have proven to be very powerful in motivating participation.

- **Finding.** While ComEd's BPwES program is open to customers for whom the implementation contractor does not provide billing support, the Nicor program is not, which potentially limits its outreach and growth potential.
    - **Recommendation.** The evaluation team recommends that Nicor assess the potential of opening the program to clients to which the implementation contractor does not provide billing services. If Nicor were to establish lead-generating processes to refer potential participants to the implementation contractor, program participation could potentially be increased. Furthermore, opening the program up to customers that the implementation contractor does not handle billing for could allow for trade ally involvement in promoting the program.

1. Introduction to the Program

1.1 Program Description

The Building Performance with ENERGY STAR® (BPwES) program is a two-year strategic energy management pilot program. The program offers customers in the hospitality and assisted living markets a year or more of benchmarking and consulting services to help them set and track energy performance improvement targets. The BPwES pilot has three primary objectives: 1) to penetrate and secure energy savings in the hospitality and assisted living markets; 2) to pilot the viability of an integrated program approach to target gas and electric energy savings for the implementation contractor's hospitality and assisted living clients that are also customers of both Nicor Gas and ComEd; and 3) to pilot the Building Performance with Energy Star benchmarking initiative in order to investigate the value of benchmarking for customers. A secondary objective of the BPwES pilot is to identify energy saving opportunities to channel to other Nicor Gas programs.

The program launched in early 2012 and did not claim any savings in the first plan year. The budgets and energy savings goals from Nicor Gas' approved energy efficiency plan are detailed in Table 1.

Table 1. Building Performance with Energy Star Planning Estimates

Segment	Program Budget	Planned Gross Therms
Total	$42,853	20,000

Source: Nicor EEP Final – Revision for Compliance Filing 05-27-2011 FINAL

The BPwES pilot was initially administered by Wisconsin Energy Conservation Corporation (WECC) before Nicor Gas staff took over management. The pilot is implemented by Ecova, whose staff conduct client and market analyses, recruit participants, organize target facility opportunity assessments, and submit rebate paperwork to Resource Solutions Group (RSG) for approval and payment for completed projects.

1.2 Implementation Strategy

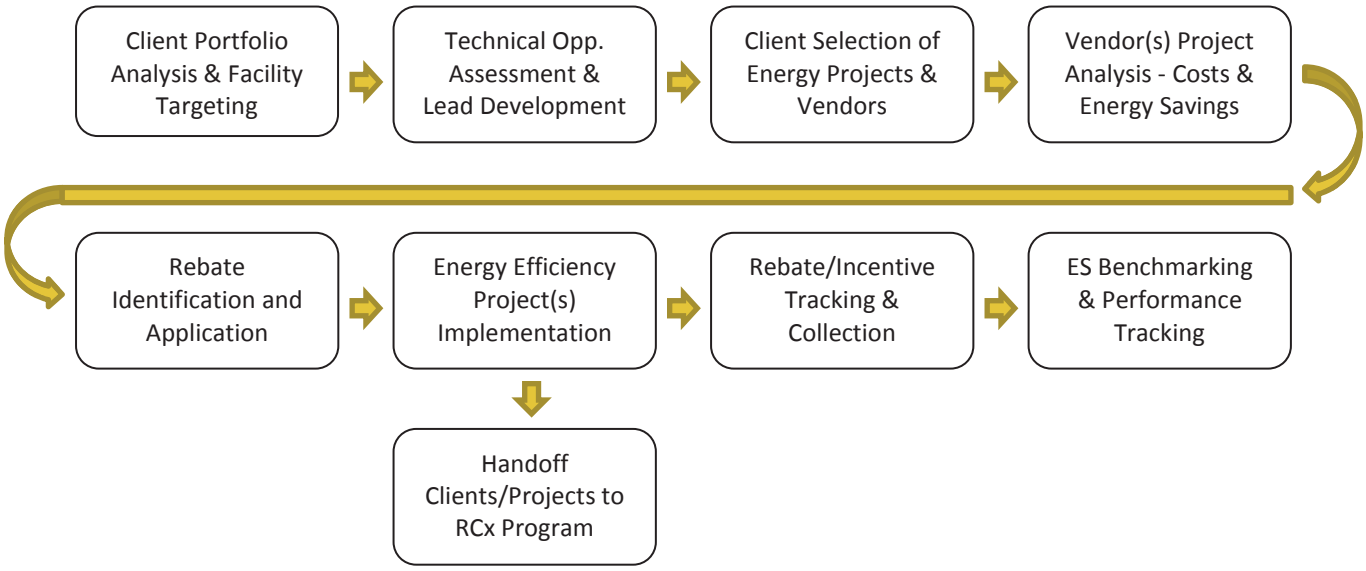
Ecova reports that it handles the billing data for Nicor customers exceeding certain usage levels. As a result, Ecova leverages its existing client billing management data in the program to conduct client and market analyses of energy savings potential in the targeted hospitality and assisted living segments. Ecova targets clients with facilities that have the highest potential energy savings relative to their peers. Since Ecova also runs ComEd's version of this program, if a customer already has a program agreement signed with ComEd, Ecova offers additional gas-based savings opportunities on behalf of Nicor Gas.

Upon gaining participation interest from a client, Ecova or a participating vendor conducts an opportunity assessment at the participant's facility. Once potential projects are identified, Ecova or the selected vendor creates a report outlining recommendations, energy savings, implementation cost, and return on investment (ROI) and payback estimates customized to the facility. Alternatively, if a client

has existing project ideas in mind, Ecova works with them to create a package of recommendations customized to their investment criteria and priorities.

In the final phase of the project, Ecova's energy managers coordinate with the client and the client's installation vendors to manage and track the pipeline of projects and opportunities. Once project purchase orders are released by vendors, Ecova completes rebate applications to submit to Resource Solutions Group (RSG), the Nicor implementation contractor responsible for the Business Energy Efficiency Rebate and Custom programs, for approval and funding. Ecova may also feed participants to the Nicor Gas retro-commissioning program, when applicable.

Figure 1. Process Flow Chart



Source: BPwES Program Operations Manual

The BPwES pilot also includes a pilot Department of Energy (DOE) Energy Star benchmarking component specific to the Nicor Gas version of this program that will be implemented with two clients participating in the program. The benchmarking component is only being tested on two participants initially and will allow Ecova to present monthly-updated data to the clients outlining the improvement of individual sites and the overall portfolio over time. Ecova initiates the benchmarking upon completion of a project's installations and assigns benchmarking scores based on data collected over twelve months.

1.3 Measures and Incentives

Eligible program measures include all prescriptive, custom, and direct install gas measures available through other Nicor Gas programs and will be suggested depending on the client's needs. In addition, the BPwES program offers Ozone Laundry upgrades when applicable to a participant's needs. Rebate amounts correspond to Nicor Gas's overall Business Energy Efficiency Rebate Program and Custom Program incentive offerings.

1.4 Evaluation Questions

1.4.1 Process Evaluation Research Questions

The GPY1 evaluation sought to answer the following key researchable process questions:

1. What is the effectiveness of program ramp up, design and processes?
2. What is the effectiveness of program implementation and outreach?
3. What are customer and program partner experience and satisfaction with the program?
4. What are the key performance indicators?
5. What are overall early program strengths and weaknesses?
6. Are there any opportunities for program improvement?

Given that no participation was achieved in GPY1, question three will not be addressed in this evaluation.

2. Evaluation Methods

2.1 *Primary Data Collection*

The purpose of the process evaluation was to develop a complete understanding of how the program operates, to conduct a review of program marketing and outreach materials to identify potential areas for improvement, and to verify that the program tracking plans are sufficient for tracking program effectiveness. The evaluation team relied heavily on in-depth interviews with the implementation contractor and Nicor Gas program staff. We reviewed all program marketing and outreach materials and verified whether these documents were consistent with standard industry best practices. Furthermore, we developed a program logic model and theory, where we identified potential performance indicator tracking suggestions. Since there was no impact evaluation this year, the process evaluation was the primary focus of the data collection.

Table 2 below provides a summary of the principal data sources contributing to the evaluation of the BPwES program.

Table 2. Principal Data Sources

Collection Method	Subject Data	Quantity	Gross Impact	Net Impact	Process
In-Depth Interviews	Program administrator and implementation contractor staff	4	N/A	N/A	X
Program Literature Review	Program Manual and Outreach Material	All	N/A	N/A	X

2.2 *Additional Research*

The Navigant evaluation team also reviewed internal studies of similar programs to identify best practices that could benefit the program. The findings from the research are referenced in the process section findings and recommendations.

3. Evaluation Results

3.1 Process Evaluation Results

This section presents the evaluation team's process findings for the BPwES pilot program. The process component of the pilot evaluation addressed program administration and processes, program implementation and barriers, and program key performance indicator tracking plans.

3.1.1 Program Ramp Up, Design, and Outreach Effectiveness

The BPwES pilot program is designed to leverage the implementation contractor's existing relationships, expertise, and customer data to promote energy efficiency among Nicor's hospitality and assisted living customers. During program ramp up, Ecova used its market position and data from its expense management business to identify high savings-potential hospitality and assisted living clients and to secure meetings with these otherwise difficult-to-reach customers. Ecova conducted outreach to and met with several major hotel chain operators in PY1 to present its savings-potential findings, but it was not able to implement any projects before the end of the program year.

Ecova was not able to meet ramp up goals despite reported customer participation interest. The implementation contractor reports that it takes about six months to secure participation. Since the program began in February, it was difficult to secure participation before the end of PY1. Programs such as the BPwES program benefit from long, deep relationships that are developed over several years with participants. Given this fact, it is not surprising that it was not able to generate savings in GPY1 (ending May 31, 2012) due to the February, 2012 start date. Similarly-modeled projects at other utilities have shown that it can take several years of relationship-building to deliver significant savings.

Though the program did not achieve savings in PY1, its design conforms to best practices. The BPwES pilot relies on two methods to secure hospitality and assisted living participants that have been effective in similar best-practice C&I programs: 1) Ecova aims to establish close relationships with clients to understand their energy efficient measure eligible project pipelines and to promote energy efficient options that cater to the clients' long-term savings potential; and 2) Ecova uses its data to compare facilities against their peers to drive participation.

Ecova is currently running the same program for ComEd as for Nicor and at times with the same clients; however there is no official coordination of program efforts or co-branding between the two utilities. The evaluation team believes that there are potential benefits and efficiencies from running this program jointly with ComEd since both are implemented by Ecova for many of the same clients. A joint program would allow for both potentially lower program costs as well as greater data sharing for program optimization.

Furthermore, the program currently targets only Nicor hospitality and assisted living customers that Ecova is handling billing for, which may be limiting the amount of eligible participants the program could reach. Ecova reports its eligible customer base should account for most large hospitality and assisted living customers in the Nicor territory. However, they also note that there could be room to

expand the program to eligible customers for which Ecova does not handle billing. The implementation contractor reports that ComEd's program is currently allowing ComEd customers that it isn't handling billing for to participate in the utility's version of the program and it has led to more participation. If Nicor established lead-generating processes to refer potential participants to Ecova, program participation could potentially be increased. Furthermore, opening the program up to customer that Ecova does not handle billing for could allow for trade ally involvement in promoting the program.

Overall, Ecova has shown flexibility in response to the challenges of a new program ramp up in a weak economy in a region with relatively low energy prices. The implementation contractor has indicated that its experience from the pilot program has provided insights into how to make adjustments to program planning estimates, administration, and implementation in GPY2. Ecova indicated that they will outline lessons learned in a document they will be drafting for Nicor Gas in GPY2. Some of their reported findings are discussed in the barriers to participation section.

3.1.2 Program Process Effectiveness

The program's processes generally appear well setup to make participation easy for customers throughout all participation phases. Ecova conducts walkthrough assessments and creates measure recommendations for customers that do not have clear energy efficiency goals in mind. If participants do not have preferred contractors to do project work, Ecova recommends contractors for the participant. Once projects are complete, Ecova manages the paperwork to secure rebates for the participant in order to reduce their paperwork burdens. The PY2 evaluation will be able to further gauge participant satisfaction with program processes once participants are secured.

3.1.3 Potential Barriers to Participation

The evaluation team reviewed Ecova's program documentation and conducted interviews with the program implementer to assess participation barriers. Generally, non-participation was reported to almost always stem from ROI and payback-related concerns. A one year payback period is viewed very favorably, a project with a two year payback is still considered, but beyond that Ecova reports that it becomes difficult to convince participants to invest in the projects. Ecova noted the following barriers to participation in its project documentation and in interviews with evaluation staff:

- Multiple decision makers in franchise operations can delay project approval and result in long lead times, which allows for other barriers inherent in the industry to present themselves (such as hotel acquisitions stalling all pre-approved project plans);
- National chains view projects in Chicago as lower priority than other regions in the U.S. because energy prices are lower in the Chicago area; and
- Unionized labor in the region increases project costs which affects ROI rates and thus the cost-effectiveness of measure recommendations

Ecova reports that it is attempting to deal with these barriers by working closely with customers to understand technologies they are interested in pursuing across their portfolio in order to "tip" them into implementation with utility incentive support. Furthermore, they are promoting quick payback measure opportunities such as Ozone Laundry. They are also targeting management more directly, going beyond facility engineers, to overcome decision maker delays.

3.1.4 Program Key Performance Indicator Tracking

The program does not have any key performance indicators (KPIs) outlined. As a result, the evaluation team interviewed the program implementer and relied on our program theory and logic model review to suggest some KPIs (see Appendix 5.3 for a complete list of KPIs and data sources). If tracked, these KPIs will help the evaluation team gauge program effectiveness in future evaluations. The following are some suggested potential KPIs:

- Number of meetings with facility managers
- Number of analyses conducted
- Number of projects that follow through and install measures after analyses
- ROI and payback criteria for proposed and implemented measures (to determine which ROI criteria and measure combinations are most commonly implemented)
- Percent of incremental costs paid by incentives
- Total annual therms saved per project and that facility's annual therm consumption
- Savings claimed per participant as a percentage of total program planned savings
- Number of participants participating in other Nicor Gas programs as a result of this one
- Number of participants that pursue more/other projects as a result of benchmarking reports
- Percent of program eligible target sector customers participating
- Percent of the Nicor Gas territory target sector's energy usage saved

The program could also ensure records are kept of print and other outreach materials developed, including the content of the Nicor webpage for the program.

3.1.5 Overall Program Strengths and Weaknesses

Overall, the program design and processes appear to be well-suited for engaging the hospitality and assisted living markets. Ecova's customer data and relationships with its large hospitality and assisted living clients allow the program to efficiently identify and target potential participants. However, since this is a new program, there will be opportunities to make the program more robust over time. In order to identify areas for improvement, the program could benefit from more formal and detailed tracking of data- such as participants' program energy efficiency project goals for the future- that could be used to improve the program's success. Since this program has few participants, it provides a great opportunity to track detailed data about participants and non-participants alike that could be used to gain insights about customer decision-making and sources of program success.

4. Findings and Recommendations

4.1 Key Process Findings and Recommendations

At this stage in the program's development, Navigant finds that program processes are generally well-planned and well-positioned to penetrate the hospitality and assisted living sectors. Nonetheless, since the program is in its early pilot stages, there is room for improvement as the program matures. Navigant's key process findings and recommendations present potential opportunities to improve the program:

- **Finding.** The program currently does not have any key performance indicators (KPIs) outlined in program operations documents.
    - **Recommendation.** Establish clear key performance indicators and tracking plans to help track and determine program effectiveness and to identify potential avenues for enhancing program performance. This will also help provide future evaluation efforts with key data for evaluating program effectiveness.

- **Finding.** Though Nicor and ComEd share potential participants in their respective versions of the program, there is no official coordination of program efforts or co-branding between the two utilities.
    - **Recommendation.** The evaluation team recommends Nicor Gas assess the potential benefits and challenges of running this program jointly with ComEd since both utilities target many of the same clients with their respective versions of this program effort.[2] A joint utility effort could result in implementation cost savings and it could increase useful data sharing.

- **Finding.** Though the current implementation contractor is running the same program for ComEd for some of the same potential participants as Nicor, it does not share data between the two utilities in cases where they have mutual participants.
    - Whether utilizing a shared implementation contractor, running the program jointly, or through alternative agreed upon means, the evaluation team encourages data sharing between the utilities in cases where they share participants in their respective versions of this program. Both utilities my benefit from better understanding shared participants' proposals and projects on both the electric and gas sides. For instance, Nicor may benefit from understanding whether potential participants considering both utility programs are more inclined to pursue electric measure projects rather than gas ones due to differences in electric and gas energy costs.

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    - **Recommendation.** The evaluation team recommends looking into expanding program informational materials. This could include developing more informational materials

[2] ComEd treats its version of this pilot as a feeder program for its Prescriptive Program.

and case studies, both online and print. Since the Nicor Gas program does not yet have customer experiences to profile, profiles of peer businesses in the hospitality and assisted living sectors that participated in other utilities' comparable programs could stand in until such are available. Concrete examples of these programs in action and details of related energy and non-energy benefits have proven to be very powerful in motivating participation.

- **Finding.** While ComEd's BPwES program is open to customers for whom the implementation contractor does not provide billing support, the Nicor program is not, which potentially limits its outreach and growth potential.
    - **Recommendation.** The evaluation team recommends that Nicor assess the potential of opening the program to clients to which the implementation contractor does not provide billing services. If Nicor were to establish lead-generating processes to refer potential participants to the implementation contractor, program participation could potentially be increased. Furthermore, opening the program up to customers that the implementation contractor does not handle billing for could allow for trade ally involvement in promoting the program.

5. Appendix

5.1 Glossary

GPY1, GPY2, etc. – Gas Program Year where GPY1 is June 1, 2011 to May 31, 2012, GPY2 is June 1, 2012 to May 31, 2013.

5.2 Early Program Benchmarking

Since the evaluation team did not conduct a formal due diligence and tracking system review because a tracking system wasn't finalized, the team only conducted an early benchmarking of the program operation plans against national best practice standards[3] for criteria applicable to the current state of the pilot. The evaluation team largely selected best practices from the Non-Residential HVAC program best practices sheet as the BPwES program best approximates that program type since it is an extension of the Nicor Standard and Custom programs.

Table 3. Best Practices Benchmarking Results

ID	Best Practice	Score*
1	Develop a sound program plan; if possible have a clearly articulated program theory	Meets best practice.
2	Leverage national efforts to increase efficient product availability	Meets best practice.
3	Clarify requirements for implementation through the application and contracting processes	Meets best practice.
4	Articulate the data requirements needed to measure success	Needs some improvement.
5	Minimize documentation requirements	Meets best practice.
6	Assemble and use information about the target consumer demographics	Meets best practice.
7	Market energy efficiency options directly to large end-users at the earliest decision-making stages of major equipment or facility modifications	Meets best practice.
	* Scores are based on the metric definitions contained in the tool.	

[3] "Best Practices for Energy Efficiency Programs" benchmarking tool is available at: http://www.eebestpractices.com/benchmarking.asp

1. *Develop a sound program plan; if possible have a clearly articulated program theory.*
   - Meets best practice.
   - Ecova has a sound program plan that was initially developed for ComEd and modified for use with Nicor Gas's version of the program, which included adding the Department of Energy's Energy Star Benchmarking tool program component. The program also has a well-detailed market characterization and energy analysis report.
2. *Leverage national efforts to increase efficient product availability.*
   - Meets best practice.
   - The program utilizes the Department of Energy's Energy Star benchmarking tool to help participants understand their energy efficiency progress over time, and to promote further efficiency projects.
3. *Clarify requirements for implementation through the application and contracting processes.*
   - Meets best practice.
   - Ecova works closely with participants to cater the program to their needs. As part of this close relationship, the implementation contractor ensures that participants understand the participation process. Given that the program involves multiple decision makers at the participating companies with long lead times, the evaluation team recommends that Nicor Gas and the implementation contractor develop formal participation procedure documents beyond the marketing fact sheet that currently exists.
4. *Articulate the data requirements needed to measure success.*
   - Needs some improvement.
   - The evaluation team recommends that Nicor Gas and the implementation contractor develop clearer plans for tracking key performance indicators as part of the new tracking system that is being developed for the program.
5. *Minimize documentation requirements.*
   - Meets best practice.
   - For projects recommended by Ecova and selected by the client for implementation, Ecova will complete and submit rebate and incentive applications.
6. Assemble and use information about the target consumer demographics.
   - Meets best practice.
   - Ecova developed a comprehensive market characterization and potential report that includes industry data and utilizes Ecova's internal data to identify potential target participants.
7. *Market energy efficiency options directly to large end-users at the earliest decision-making stages of major equipment or facility modifications.*
   - Meets best practice.
   - The program is structured to take advantage of customers' equipment and facility upgrade plans when available and to promote efficient options by incentivizing their implementation.

5.3 *Program Theory Logic Model Review*

Nicor - R30 - BPwES -
Program Theory and

5.4 *Data Collection Instruments*

Interview Guides.zip

5.14 Economic Redevelopment

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Economic Redevelopment Program

FINAL

Presented to:
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E. Executive Summary

E.1 Evaluation Objectives

The objectives of the Nicor Gas GPY1 Economic Redevelopment Program evaluation were to: (1) quantify gross and net savings impacts from the program; (2) determine process-related program strengths and weaknesses and opportunities for program improvement; (3) provide preliminary, early feedback about useful information to incorporate into project file documentation for the purpose of documenting program influence for some comprehensive projects.

E.2 Evaluation Methods

Navigant conducted an engineering desk review for the systems project that qualified for a completion incentive to analyze program impacts for this evaluation. For the process evaluation, Navigant interviewed the ERP program implementation contractors, reviewed the program's operations manual, customer outreach and marketing materials. Navigant used these efforts to write a program theory and logic model memo and verification, due diligence and tracking system review memo, both of which are included in the appendix of this evaluation report. Navigant interviewed a representative of the systems project team that received an incentive in GPY1 to verify installation and assess customer satisfaction.

The NTG Framework allows for the NTG to be established prospectively if *"the savings and benefits of the program are not sufficient to devote evaluation resources necessary to better estimate a NTG ratio."*[1] The EM&V team determined this was appropriate for GPY1 for the ERP program and so did not independently estimate the NTG ratio. Navigant determined that the associated savings and benefits with the one systems project completed in GPY1 were not sufficient to devote the evaluation resources necessary to better estimate a NTG ratio.

E.3 Key Impact Findings and Recommendations

Finding: The ERP program began implementation in January 2012. In GPY1, the ERP program recruited 27 projects, including 20 comprehensive projects. Many of the projects initially recruited by the ERP program were still in progress at the end of GPY1, including 26 projects with estimated gross annual energy savings of 250,836 therms, amounting to 66 percent of the program's GPY2 gross energy savings goals of 379,070 therms.

Finding: The program induced Ex-Ante Gross Savings of 893.0 therms from one systems project that qualified for completion incentives in GPY1, achieving 5 percent of its GPY1 gross energy savings goal of 17,117 therms. Navigant applied the program planned Net-to-Gross (NTG) ratio of 0.8 per the NTG

[1] "Proposed Framework for Counting Net Savings in Illinois." Memorandum March 12, 2010 from Philip Mosenthal, OEI, and Susan Hedman, OAG. "*For existing and new programs not yet evaluated, and previously evaluated programs undergoing significant changes — either in the program design or delivery, or changes in the market itself*[1] *— NTG ratios established through evaluations would be used retroactively, but could also then be used prospectively if the program does not undergo continued significant changes. Deeming a NTG ratio prospectively, may be appropriate if: the program design and market are understood well enough to reasonably accurately estimate an initial NTG (e.g. based on evaluation programs elsewhere); or it is determined that the savings and benefits of the program are not sufficient to devote the evaluation resources necessary to better estimate a NTG ratio.*"

Framework[2], resulting in an Evaluation Research Findings Net Savings of 714.4 therms. Table E-1 presents GPY1 program impacts.

Table E-1. Nicor Gas GPY1 Economic Redevelopment Program Impacts

Savings Estimates	Energy Savings (Therms)
Ex-Ante Gross Savings	893.0
Ex-Ante Net Savings	893.0
Evaluation Research Findings Gross Savings	893.0
Evaluation Research Findings Net Savings	714.4

Source: Navigant analysis of program tracking system and file review

- **Recommendation:** No improvements needed.

Finding: The program Operations Manual doesn't include guidance or definitions for when a site inspection should occur, other than when a project is "substantially complete."

- **Recommendation:** Navigant recommends that program staff consider establishing criteria for conducting site inspections for projects during the construction process and incorporate the criteria into the Operations Manual. Examples of projects that might require multiple site visits to mark project milestones and document project compliance could include: 1) projects with a large amount of energy savings, 2) projects with a high level of uncertainty for construction-related measure implementation or 3) projects with a first-time participant.

Finding: The project file selected for engineering review was missing documentation for some factors that may influence energy savings estimates, including baseline efficiency, equipment load profile and schedule, equivalent full load hours of the operating climate zone, replacement specifications and proof of purchase of the equipment.

- **Recommendation:** Navigant recommends that the ERP program develop a project file checklist with important documentation for each project file and add a data field to the program tracking database that indicates whether or not a project file checklist has been completed. The purpose of the project file checklist would be to include consistent documentation for participating projects, including important information relating to engineering assumptions and other factors that may influence energy savings estimates, as indicated in the finding above.

Finding: The ERP program's Systems Project template uses a different algorithm for a water heating system replacement than a similar measure found in the Illinois TRM[3].

[2] Nicor Monthly Report – PY1_2012 May.xlsm

[3] State of Illinois Energy Efficiency Technical Reference Manual, Final version, September 14, 2012, effective June 1, 2012. Section 7.4.2: Gas Water Heaters.

- **Recommendation:** Navigant recommends that the ERP program review TRM algorithms and assumptions for consistency in estimating annual energy savings. The ERP program should conduct a periodic review of applicable Illinois TRM values and algorithms for compliance with standard engineering best practices.

E.4 Key Process Findings and Recommendations

Finding: The ERP program's implementation contractors appear to have a clear understanding of their roles and responsibilities and comprise a well-qualified team that understands their roles and responsibilities in order to successfully implement this program.

- **Recommendation:** No improvements needed.

Finding: The ERP program reported marketing and outreach to 69 unique contacts within the program's target markets. Additionally, the program appeared in 12 unique marketing efforts with program partners.

- **Recommendation:** Consider including specific goals and metrics for ERP program marketing and outreach efforts, such as number of attendees at workshops, number of unique contacts or other metrics.

Finding: The participating customer interviewed by Navigant for this evaluation report displayed a high level of customer satisfaction about the technical assistance services and customer service provided by the program. The customer reported that, in their opinion, the associated rebate with this measure did not justify the expenses incurred by the customer associated with implementing the measure and would like to see higher rebates for similar measures from the program in the future.

- **Recommendation:** Navigant recommends investigating customer satisfaction with systems project rebates in future evaluations and reviewing system projects rebate amounts accordingly.

1. Introduction to the Program

1.1 Program Description

The Nicor Gas Economic Redevelopment Program (ERP) offers financial incentives and technical assistance for energy efficiency projects, focusing on communities in need of economic redevelopment or projects that achieve a social benefit. The program assists owners of commercial, industrial, and multi-family buildings in deciding which energy efficiency measures to implement and financing those improvements. The primary objective of the ERP is to achieve annual net energy savings of 660,000 therms through qualified projects by the end of GPY3. A secondary objective is to promote economic redevelopment by reducing energy costs for businesses and organizations that are located in economically vulnerable areas or that create jobs, offer social services, or provide affordable housing.

The Wisconsin Energy Conservation Corporation (WECC) is the program administrator for the Nicor Gas Rider 30 Portfolio. Through a competitive-bid RFP process, The Energy Center of Wisconsin (ECW) was chosen as the implementation contractor for the ERP. ECW provides technical resources and customer support for participants. CNT Energy (a non-profit organization founded by the Center for Neighborhood Technology), located in Chicago, conducts marketing and outreach for the program, including recruiting qualified potential participants. The target audiences for outreach include chambers of commerce, economic development departments, building owners, architecture firms and contractors. Once potential participants send in their application, program staff determines which offerings are suitable for the project. After a project is accepted into the program, ECW becomes the primary customer contact for technical support through the project lifecycle.

The ERP program offers customers technical and enhanced financial resources to incent project teams to design and build projects that are more energy efficient than standard practice. The program seeks to build capacity and encourage adoption of energy efficiency measures and practices within target markets. The program offers greater incentives and resources than are typically available through other Nicor Gas programs because the program targets hard-to-reach markets. Projects accepted into the ERP program may qualify for the following services:

- **Technical Assistance Services** to provide capabilities that are not yet fully adopted in the market. Services may include facilitation in the design process, reviewing plans and construction documents, assisting with research and product selections, and analyzing lifetime energy savings.
- **Design Incentives** to the design team to help offset the costs of developing designs that provide as-built performance that is more energy efficient that standard practice designs.
- **Enhanced Energy Performance Incentives** to owners and developers to help reduce cost barriers to adopting electric and gas energy saving measures that have not yet been accepted as standard practice for construction.

Two types of incentive tracks, (1) systems and (2) comprehensive, are available to qualifying projects based on project need determined by program staff.

Under the systems track, the ERP program provides technical support and enhanced financial resources for specific measures, such as HVAC measures or water heating measures. In some cases, the program may provide technical or financial resources through the systems track for more complex projects that are further along in the project lifecycle. Incentives for specific technologies are based upon potential energy savings and depend upon equipment size and efficiency. The ERP program generally offers fewer technical resources to projects in the systems track due to the limited scope of influence available in these projects.

Under the comprehensive track, the ERP program promotes integrated design solutions, providing projects with flexibility to meet program energy performance goals through the most cost-effective means. The comprehensive track is generally reserved for projects that are larger than 50,000 square feet and are early in the design process. Comprehensive track projects enable the ERP program to influence project design and construction through technical resources (such as whole-building energy modeling) and/or financial incentives. Once the design team and ERP program staff finalize the measures that the design team intends to incorporate into a project, the project owner or developer signs a Measure Incentive Agreement, and incentive funds are reserved for the project. After the project is substantially complete, the program verifies the installed measures by conducting a site inspection.

1.2 Evaluation Questions

The program evaluation was designed to answer the following key researchable questions over the course of the program's three-year implementation. Navigant will address some evaluation questions *(designated in italics)* in future evaluation reports because the ERP program had limited projects complete the program in GPY1.

1.2.1 Impact Questions

1. What was the level of gross annual energy (therm) savings induced by the program?
2. *What were the net impacts from the program?*
3. *What was the level of free ridership associated with this program and how could it have been reduced?*
4. *What was the level of spillover associated with this program?*
5. Did the program meet its therm savings goal? If not, why not?
6. Were the assumptions and calculations in compliance with standard engineering best practices? If not, what changes were required?
7. What were the program benefits, costs, and cost effectiveness?

1.2.2 Process Questions

1. Was this program's eligibility criteria clearly defined, or did it need additional detail?
2. How could the program tailor its implementation and outreach activities to increase recruitment into the program during or before the project design phase?
3. What percentage of program projects were "comprehensive" projects and what percentage were "systems" projects?
4. *Did the program's current structure enable participants to engage in comprehensive projects if they would not have otherwise done so?*

5. What were the sources of program awareness for "hard to reach customers" and how did the program implement marketing and outreach activities to engage these target markets?
6. Were customers and program partners satisfied with the program?
7. How effective were program design and processes? What opportunities exist for program improvement?
8. *Did participating projects create market effects? If so, what were they? What were the most effective methods for the program to track and measure market effects from projects?*
9. *How was the program preparing for the adoption of IECC 2012 as the new commercial energy code in Illinois?*

2. Evaluation Methods

2.1 *Primary Data Collection*

2.1.1 Data Collection Methods

Navigant's data collection methods for this evaluation are summarized in Table 2.

Table 2-1. Primary Data Collection

Method	Subject	Quantity	Date	Gross Impacts	Net Impacts	Process
Telephone Interview	Program Administrator, Implementation Contractors	2	May 2012	X		X
Telephone Interview	Program Participant	1	October 2012	X		X
Engineering File Review	Completed Projects	1	July 2012	X	X	
File review	Projects in Progress	3	July 2012			X
Program Tracking Database Review	Tracking System	1	September 2012	X		X
Program Documentation Review	Operations, Marketing	All	May - September 2012			X

Source: Navigant

2.1.2 Sampling

One systems project qualified for a completion incentive in GPY1. Navigant conducted an engineering review of this project, achieving a census for this program evaluation.

2.2 *Impact Evaluation Methods*

2.2.1 Gross Savings Approach

For the impact evaluation, Navigant evaluated gross savings by reviewing the program tracking database and conducting an engineering file review of the systems project that qualified for a completion incentive. Navigant's engineering file review included the following steps:

- Verify if customer completed, signed and submitted required documentation
- Verify that the proposed project qualifies for the program

- Verify that the program adequately documented the basis for establishing the project's baseline, the algorithm used, and input assumptions to determine the project's estimated energy savings
- Verify that adequate proof of project completion exists in the project file, such as equipment invoices, purchase order, or documentation of verification through site inspection
- Verify that inputs to the program tracking system were consistent with those found in the project file

2.2.2 Net Savings Approach

The NTG Framework allows for the NTG to be established prospectively if *"the savings and benefits of the program are not sufficient to devote evaluation resources necessary to better estimate a NTG ratio."*[4] The EM&V team determined this was appropriate for GPY1 for the ERP program and so did not independently estimate the NTG ratio. Navigant determined that the associated savings and benefits with the one systems project completed in GPY1 were not sufficient to devote the evaluation resources necessary to better estimate a NTG ratio. Navigant applied the program planned Net-to-Gross (NTG) ratio of 0.8 per the NTG Framework[5], resulting in an Evaluation Research Findings Net Savings of 714.4 therms.

2.3 *Process Evaluation Methods*

Navigant obtained information for the process evaluation from telephone interviews with ERP program team (including representatives of WECC, ECW and CNT Energy) to gain a complete understanding of program goals and processes. Navigant interviewed a representative from the systems project that qualified for a completion incentive in GPY1 to verify information in the project file and to gauge the customer's satisfaction with the ERP program. Navigant reviewed three project files for projects currently in progress to gain a better understanding of how the ERP program provides technical resources to comprehensive projects.

Navigant reviewed program documentation, including the ERP Operations Manual, program marketing and outreach materials, and the program's customer application and other program participation materials. A complete list of documents reviewed and survey instruments are included in Section 5of this report.

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[4] "Proposed Framework for Counting Net Savings in Illinois." Memorandum March 12, 2010 from Philip Mosenthal, OEI, and Susan Hedman, OAG. "*For existing and new programs not yet evaluated, and previously evaluated programs undergoing significant changes — either in the program design or delivery, or changes in the market itself[4] — NTG ratios established through evaluations would be used retroactively, but could also then be used prospectively if the program does not undergo continued significant changes. Deeming a NTG ratio prospectively, may be appropriate if: the program design and market are understood well enough to reasonably accurately estimate an initial NTG (e.g. based on evaluation programs elsewhere); or it is determined that the savings and benefits of the program are not sufficient to devote the evaluation resources necessary to better estimate a NTG ratio.*"

[5] Nicor Monthly Report – PY1_2012 May.xlsm

3. Evaluation Results

3.1 Impact Evaluation Results

3.1.1 Verification and Due Diligence Procedure Review

Navigant reviewed the ERP Operations Manual and other relevant program documents. The Operations Manual includes policies and procedures that generally meet or exceed minimum standards set forth in the program's scope of work. Based on Navigant's review, it appears that ERP program staff is complying with the policies and procedures set forth in the program's Operations Manual. The ERP program's quality assurance and verification activities, as outlined in the program's Operations Manual, do not appear to require streamlining or simplification at this time. Navigant's Verification, Due Diligence and Tracking System Review memorandum (dated September 7, 2012) is included in Section 5.4 of this report.

Navigant compared the program's operations to the *Best Practices Self-Benchmarking Tool*[6] from the *National Energy Efficiency Best Practices Study* to conduct a benchmarking review Table 3-1 includes a summary of Navigant's findings for the Quality Control and Verification criteria.

Table 3-1. Quality Control and Verification Benchmarking

ID	Best Practice	Score
1	Develop inspection and verification procedures during the program design phase.	Meets best practice
2	Provide technical assistance to help applicants through the application process.	Meets best practice
3	Keep the application process and forms from being overly complex and costly to navigate while at the same time not being over-simplified.	Meets best practice
4	Develop a cadre of trade allies who can then assist customers through the process.	Meets best practice
5	Require pre- and post-inspections and commissioning for all large projects and projects with highly uncertain baseline conditions that significantly affect project savings.	Meets best practice
6	Conduct either in-program measurement or measurement through an impact evaluation on the very largest projects and those that contribute most to uncertainty in overall program savings.	Meets best practice

Source: Navigant Verification, Due Diligence and Tracking System Review Memorandum

[6] Best Practices Self-Benchmarking Tool developed for the Energy Efficiency Best Practices Project: http://www.eebestpractices.com/benchmarking.asp

3.1.2 Tracking System Review

Navigant reviewed the data fields and data inputs from a year-end spreadsheet report extracted from the ERP's tracking system. Overall, the program tracking system appears to contain sufficient information to enable accurate tracking of the program's activities and claimed savings. Key project outreach, marketing and communications activities are reported. Project metrics, including customer applications, estimated energy savings and reserved incentive amounts are included in the tracking system.

Navigant compared information found in our engineering file review for the systems project that qualified for a completion incentive in GPY1 with corresponding entries in the program tracking system. While the tracking system has the capability to track key program metrics, Navigant found that there were some missing data entry fields from the project file that would be helpful to include in the program tracking system. For example, while the project file included information about the project's baseline and replacement equipment specifications, Navigant did not find corresponding information in the program tracking system. Additionally, while the program provided photos of the installed equipment as proof of installation, the program tracking system did not include documents that provided proof of purchase (e.g. purchase order or invoice) for the qualified equipment. Navigant included recommendations to add data entry fields in the program tracking system in Section 4.

Navigant compared the program's operations to the *Best Practices Self-Benchmarking Tool*[7] from the *National Energy Efficiency Best Practices Study* to conduct a benchmarking review. Table 3-2 includes a summary of Navigant's findings for the Reporting and Tracking Benchmarking criteria.

Table 3-2. Reporting and Tracking Benchmarking

ID	Best Practice	Score
1	Define and identify key information needed to track and report early in the program development process	Meets best practice
2	Use automated or otherwise regularly scheduled notification to achieve close monitoring and management of project progress.	Meets best practice
3	Design program tracking system to support the requirements of evaluators as well as program staff.	Meets best practice
4	Integrate or link with other appropriate systems such as cross-program databases, customer information systems (CIS) and marketing or customer relationship management (CRM) systems.	Meets best practice
5	Verify accuracy of rebates, coupons, invoices to ensure the reporting system is recording actual product installations by target market.	Needs some improvement

Source: Navigant Verification, Due Diligence and Tracking System Review Memorandum

[7] Best Practices Self-Benchmarking Tool developed for the Energy Efficiency Best Practices Project: http://www.eebestpractices.com/benchmarking.asp

3.1.3 Gross Program Impact Parameter Estimates

The program staff appropriately used the ERP Systems Track Template to calculate annual energy savings for the systems project that qualified for a completion incentive in GPY1. This section includes the algorithm and input parameters used to estimate gross energy savings for the project. Figure 3-1 describes the methodology used by the ERP program to calculate savings for the completed GPY1 systems project.

Figure 3-1. ERP Systems Track Algorithm for Water Heater Replacement[8]

$$\begin{aligned} &Annual\ Natural\ Gas\ Savings\ [therms] \\ &\quad = Water\ Heater\ Input\ Capacity\ \left[\frac{Mbtu}{hr}\right] * Capacity\ Factor\ by\ Building\ Type \\ &\quad * EFLH\ \left[\frac{hrs}{yr}\right] * 0.01\ [\frac{therms}{Mbtu}] * Existing\ Water\ Heater\ Efficiency \\ &\quad * (New\ Water\ Heater\ Efficiency - Existing\ Water\ Heater\ Efficiency) \\ &\quad * (\frac{1}{Oversizing\ Factor}) \end{aligned}$$

Source: ERP Systems Track Template

The ERP program used the following inputs for the project, summarized in Table 3-3:

Table 3-3. Inputs to Energy Savings Algorithm of Completed GPY1 Project

Input	Units	Input Value	Input Source
Water Heater Input Capacity	Mbtu/hr	200	Water heater specifications
Capacity Factor by Building Type	%	35%	ASHRAE 90.1-2010 User's Manual page G44, Multifamily building type
Equivalent Full Load Hours (EFLH)	Hours/year	8760	Program assumption
Conversion Factor	Therms/Mbtu	0.01	Conversion Factor
Existing Water Heater Efficiency	EF	70%	Program assumption
New Water Heater Efficiency	EF	96%	Water heater specifications
Oversizing Factor	N/A	1.25	Program assumption

Source: Navigant analysis of ERP Project File

3.1.4 Gross Program Impact Results

Using the Systems Track Template algorithm and inputs described above, the ERP program reported Ex-Ante Gross Savings of 893.0 therms for the systems project that qualified for a completion incentive in GPY1. Navigant was able to replicate the project impacts using the ERP template and inputs and therefore assigned a 100% realization rate to the Ex-Ante Gross Savings.

[8] Algorithm replicated from Systems Track Template Nicor ER v1.xlsx

3.1.5 Net Program Impact Parameter Estimates

As indicated in Section 2, Navigant determined that the associated savings and benefits with the one systems project completed in GPY1 were not sufficient to devote the evaluation resources necessary to better estimate a NTG ratio. The NTG Framework[9] allows for the NTG to be established prospectively if *"the savings and benefits of the program are not sufficient to devote evaluation resources necessary to better estimate a NTG ratio."*

3.1.6 Net Program Impact Results

The ERP program reported Ex-Ante Net savings impacts of 893.0 therms in GPY1. Navigant did not conduct a free ridership or spillover analysis for the program. Navigant applied the program planned Net-to-Gross (NTG) ratio of 0.8 per the NTG Framework[10], resulting in an Evaluation Research Findings Net Savings of 714.4 therms.

[9] Proposed Framework for Counting Net Savings in Illinois." Memorandum March 12, 2010 from Philip Mosenthal, OEI, and Susan Hedman, OAG. "*For existing and new programs not yet evaluated, and previously evaluated programs undergoing significant changes — either in the program design or delivery, or changes in the market itself[9] — NTG ratios established through evaluations would be used retroactively, but could also then be used prospectively if the program does not undergo continued significant changes. Deeming a NTG ratio prospectively, may be appropriate if: the program design and market are understood well enough to reasonably accurately estimate an initial NTG (e.g. based on evaluation programs elsewhere); or it is determined that the savings and benefits of the program are not sufficient to devote the evaluation resources necessary to better estimate a NTG ratio."*

[10] Nicor Monthly Report – PY1_2012 May.xlsm

3.1.7 Key Performance Indicators Results

Table 3-4 summarizes the Key Performance Indicators based on the outputs specified in the Program Theory and Logic Model included in Section 5.6.

Table 3-4. Key Performance Indicators Based on Program Outputs

Key Performance Indicator	Outputs	Findings
Number of comprehensive projects that receive technical support	Technical support	20/20 projects in GPY1 are designated as receiving technical support through the comprehensive track in the program tracking database
Documented influence of the program on comprehensive projects	Technical support	Information not available in GPY1
Number of systems projects that receive technical support	Technical support	5/5 projects are designated as receiving technical support through the systems track in the program tracking database[11]
Number and type of design incentives paid by the program	Design incentives	No design incentives were paid by the program in GPY1
Number and type of measure incentives paid by the program	Measure incentives	The program paid one systems project incentive in GPY1

Source: Program Theory and Logic Model Memo and Navigant Analysis

[11] Two projects in the technical assistance process step have been accepted into the program in PY1 but have not yet been designated as systems or comprehensive or have not been updated in the "Nicor Gas PY1 Final ERP Report 2012 06 04.xlsx" tracking database.

Table 3-5 summarizes the Key Performance Indicators based on the immediate outcomes specified in the Program Theory and Logic Model included in Section 5.6.

Table 3-5 indicates that the ERP program had 125 attendees at educational workshops, including 25 contractors attending the Midwest Energy Efficiency Alliance Building Operator Certification (MEEA BOC) meeting and 100 representatives from municipalities, chambers of commerce, and economic redevelopment departments attending the Chicago Southland Economic Development Corporation Quarterly Meeting. The four program training events co-sponsored by key stakeholders include Chicago Southland Economic Development Corporation Quarterly Meeting, Interfaith Green Network – EE Programs, ITIA 2012 Spring Conference, and MEEA BOC Meeting.

Table 3-5. Key Performance Indicators Based on Immediate Program Outcomes

Key Performance Indicator	Immediate Outcomes	Findings
Number of attendees at educational workshops	Increased program awareness and knowledge of energy efficiency in target markets	125 attendees attended educational workshops
Number of program training events co-sponsored by key stakeholders	Key stakeholders promote the program	Four program training events were co-sponsored by key stakeholders
Number of key stakeholder communications that include ERP program information	Key stakeholders promote the program	12 unique communication methods to key stakeholders included ERP information
Number of unique entities submitting leads for eligible projects	Key stakeholders promote the program	69 unique entities were identified in the ERP tracking system as submitting leads for eligible projects
Number of referred projects accepted to program	Key stakeholders promote the program	Information not available in GPY1

Source: Program Theory and Logic Model Memo and Navigant Analysis

Table 3-6 summarizes the Key Performance Indicators based on the intermediate outcomes specified in the Program Theory and Logic Model included in Section 5.6.

Table 3-6. Key Performance Indicators Based on Intermediate Program Outcomes

Key Performance Indicator	Intermediate Outcomes	Findings
Number of participating projects recruited by design phase (e.g. conceptual, schematic, early design)	Program recruits customers early in project design phase	Information not available in GPY1
Average energy savings per completed comprehensive project (as designed)	Program recruits customers early in project design phase	Information not available in GPY1
Number of participating projects increases each year	Increased program participation	Information not available in GPY1
Number of comprehensive projects increases	Increased program participation	Information not available in GPY1

Source: Program Theory and Logic Model Memo and Navigant Analysis

Table 3-7 summarizes the Key Performance Indicators based on the ultimate outcomes specified in the Program Theory and Logic Model included in Section 5.6.

Table 3-7. Key Performance Indicators Based on Ultimate Program Outcomes

Key Performance Indicator	Ultimate Outcomes	Findings
Energy savings attributed to the program	Program achieves long term energy savings and participation goals	The ERP program reported 5% of its GPY1 energy savings goal (893.0/17,117 therms). However, program tracking includes approx. 66% of its GPY2 energy savings goal (250,836/379,070) therms in the program pipeline as of the end of GPY1
Number of participating projects in target markets	Program contributes to economic development and market transformation	All 27 applications received in GPY1 were classified as "community benefits" or "economic redevelopment zones"
Financial value of participating projects in target markets	Program contributes to economic development and market transformation	Information not available in GPY1
Estimated number of construction jobs created by participating projects in target markets	Program contributes to economic development and market transformation	Information not available in GPY1
Estimated number of non-construction jobs created by participating projects in target markets	Program contributes to economic development and market transformation	Information not available in GPY1
Estimated number of affordable housing units developed by participating projects in target markets	Program contributes to economic development and market transformation	Information not available in GPY1

Source: Program Theory and Logic Model Memo and Navigant Analysis

3.2 *Process Evaluation Results*

Navigant performed a process evaluation to answer the process questions presented in Section 1.2.2 through telephone interviews and review of program and project documentation.

1. Was this program's eligibility criteria clearly defined, or did it need additional detail?

   The Project Acceptance Guidelines, found in the Operations Manual, appear to provide reasonable program eligibility criteria.

2. How could the program tailor its implementation and outreach activities to increase recruitment into the program during or before the project design phase?

   The program successfully recruited 20 comprehensive projects in GPY1. The program appears to be recruiting projects early enough to qualify for comprehensive project acceptance. At this time, no improvement is needed. Navigant will include additional comments in future evaluations.

3. What percentage of program projects were "comprehensive" projects and what percentage were "systems" projects?

   In GPY1, the ERP program received 27 applications. One systems project qualified for a completion incentive in GPY1. One project was cancelled. The ERP program reports six systems projects (23%) and twenty comprehensive projects (77%) within the remaining projects in the program's pipeline.

4. *Did the program's current structure enable participants to engage in comprehensive projects if they would not have otherwise done so?*

   Not addressed in GPY1

5. What were the sources of program awareness for "hard to reach customers" and how did the program implement marketing and outreach activities to engage these target markets?

   The ERP program conducted marketing and outreach activities directed toward economic redevelopment agencies, municipalities and mission-driven organizations to engage target markets. The representative from the systems project that qualified for a completion incentive in GPY1 reported learning about the program through CNT Energy, the program's marketing and outreach contractor.

6. Were customers and program partners satisfied with the program?

   Navigant interviewed a representative from the systems project that qualified for a completion incentive in GPY1. The representative indicated high levels of customer satisfaction with the ERP program's technical resources and customer service. The

customer reported that, in their opinion, the associated rebate with this measure did not justify the expenses incurred by the customer associated with implementing the measure and that they would like to see higher rebates for similar measures from the program in the future.

7. How effective were program design and processes? What opportunities exist for program improvement?

   The ERP program overall appears to be designed in an effective manner with logical program processes and activities to promote the program's goals. Navigant's review of the ERP program's Operations Manual found that the document provides detailed quality assurance and quality control standards for the program to administer technical resources and financial incentives to qualified customers. In addition, the program implementation contractors report that they have established an effective collaboration to meet the program's requirements.

   Navigant will provide additional feedback on program design and processes as additional projects qualify for completion incentives.

   Navigant found potential opportunities for program improvement in the project file review and tracking system review. Our recommendations are included in Section 4.

8. *Did participating projects create market effects? If so, what were they? What were the most effective methods for the program to track and measure market effects from projects?*

   Not addressed in GPY1

9. *How was the program preparing for the adoption of IECC 2012 as the new commercial energy code in Illinois?*

   Not addressed in GPY1

4. Findings and Recommendations

4.1 *Key Impact Findings and Recommendations*

Finding: The ERP program began implementation in January 2012. In GPY1, the ERP program recruited 27 projects[12], including 20 comprehensive projects. Many of the projects initially recruited by the ERP program were still in progress at the end of GPY1, including 26 projects with estimated gross annual energy savings of 250,836 therms[13], amounting to 66 percent of the program's GPY2 gross energy savings goals of 379,070 therms.

Finding: The program reported Ex-Ante Gross Savings of 893.0 therms from one systems project that qualified for completion incentives in GPY1, achieving 5 percent of its GPY1 gross energy savings goal of 17,117 therms. Navigant applied the program planned Net-to-Gross (NTG) ratio of 0.8 per the NTG Framework[14], resulting in an Evaluation Research Findings Net Savings of 714.4 therms. Table 4-1 presents GPY1 program impacts.

Table 4-1. Nicor Gas GPY1 Economic Redevelopment Program Impacts

Savings Estimates	Energy Savings (Therms)
Ex-Ante Gross Savings	893.0
Ex-Ante Net Savings	893.0
Evaluation Research Findings Gross Savings	893.0
Evaluation Research Findings Net Savings	714.4

Source: Navigant analysis of program tracking system and file review

- **Recommendation:** No improvements needed.

Finding: The program Operations Manual doesn't include guidance or definitions for when a site inspection should occur, other than when a project is "substantially complete."

- **Recommendation:** Navigant recommends that program staff consider establishing criteria for conducting site inspections for projects during the construction process and incorporate the criteria into the Operations Manual. Examples of projects that might require multiple site visits to mark project milestones and document project compliance could include: 1) projects with a large amount of energy savings, 2) projects with a high level of uncertainty for construction-related measure implementation or 3) projects with a first-time participant.

[12] Does not include one project that submitted its application in PY2

[13] Includes one project still under review with a savings estimate of 5828 therms

[14] Nicor Monthly Report – PY1_2012 May.xlsm

Finding: The project file selected for engineering review was missing documentation for some factors that may influence energy savings estimates, including baseline efficiency, equipment load profile and schedule, equivalent full load hours of the operating climate zone, replacement specifications and proof of purchase of the equipment.

- **Recommendation:** Navigant recommends that the ERP program develop a project file checklist with important documentation for each project file and add a data field to the program tracking database that indicates whether or not a project file checklist has been completed. The purpose of the project file checklist would be to include consistent documentation for participating projects, including important information relating to engineering assumptions and other factors that may influence energy savings estimates, as indicated in the finding above.

Finding: The ERP program's Systems Project template uses a different algorithm for a water heating system replacement than a similar measure found in the Illinois TRM[15].

- **Recommendation:** Navigant recommends that the ERP program review TRM algorithms and assumptions for consistency in estimating annual energy savings. The ERP program should conduct a periodic review of applicable Illinois TRM values and algorithms for compliance with standard engineering best practices.

4.2 Key Process Findings and Recommendations

Finding: The ERP program's implementation contractors appear to have a clear understanding of their roles and responsibilities and comprise a well-qualified team that understands their roles and responsibilities in order to successfully implement this program.

- **Recommendation:** No improvements needed.

Finding: The ERP program reported marketing and outreach to 69 unique contacts within the program's target markets. Additionally, the program appeared in 12 unique marketing efforts with program partners.

- **Recommendation:** Consider including specific goals and metrics for ERP program marketing and outreach efforts, such as number of attendees at workshops, number of unique contacts or other metrics.

Finding: The participating customer interviewed by Navigant for this evaluation report displayed a high level of customer satisfaction about the technical assistance services and customer service provided by the program. The customer reported that, in their opinion, the associated rebate with this measure did not justify the expenses incurred by the customer associated with implementing the measure and that they would like to see higher rebates for similar measures from the program in the future.

[15] State of Illinois Energy Efficiency Technical Reference Manual, Final version, September 14, 2012, effective June 1, 2012. Section 7.4.2: Gas Water Heaters.

Recommendation: Navigant recommends investigating customer satisfaction with systems project rebates in future evaluations and reviewing system projects rebate amounts accordingly.

5. Appendix

5.1 Glossary

Gas Program Year 1 (GPY1) - June 1, 2011 to May 31, 2012
Ex-Ante Gross Savings – Energy savings as recorded by the program tracking system, unadjusted by realization rates, free ridership, or spillover
Ex-Ante Net Savings – Savings as recorded by the program tracking system, after adjusting for realization rates, free ridership, or spillover and any other factors the program may choose to use
Evaluation-Verified Gross Savings – Gross program energy savings after applying adjustments based on evaluation findings for only those items subject to verification review for the Verification Savings analysis.
Evaluation-Verified Gross Realization Rate – Verified gross savings divided by tracking system gross savings
Research Findings Gross Savings – Gross program savings after applying adjustments based on all evaluation findings
Research Findings Net Savings – Research findings gross savings times NTGR
Research Findings Gross Realization Rate – Research findings gross savings divided by ex-ante gross savings
Net-to-Gross Ratio (NTGR) = 1 – Free-Ridership + Spillover

5.2 GPY1 Economic Redevelopment Program Documents Reviewed

Table 5-1 includes the ERP program documents reviewed by Navigant for this evaluation.

Table 5-1. GPY1 Nicor Gas Economic Redevelopment Documents Reviewed

Document Name	Document Date
ERP Operations Manual, Version 1	April 27, 2012
Tracking System, GPY1 Final ERP Report	June 4, 2012
"South Court" Project: Nicor Gas Economic Redevelopment Program Application	February 27, 2012
"South Court" Project: Water Heater Proposal from Galewood Mechanical Contractors, Inc.	March 15, 2012
"South Court" Project: Scope of Work Spreadsheet	March 21, 2012
"South Court" Project: Summary Report from ERP Staff	March 15, 2012
"South Court" Project: Site Verification Report	May 11, 2012
Systems Track Template Nicor ER v1 Spreadsheet Model	N/A
ER Project File: 415 S Taylor – ERP Analysis	March 16, 2012
ER Project File: Dynomax Incentive Report	March 1, 2012
ER Marketing Plan Summary Page (Powerpoint file)	N/A
Program Theory and Logic Model Memo	August 26, 2012
Verification, Due Diligence and Tracking System Review (VDDTSR) Memo	September 7, 2012
Nicor Gas ER Application Initiation Process Diagram	N/A
Nicor Gas ER Reservation Process Diagram	N/A
Nicor Gas ER Technical Assistance Process Diagram v2	N/A
Nicor Gas ER Verification Process Diagram	N/A
Energy Center of Wisconsin Scope of Work	December 21, 2010

Source: Navigant

5.3 GPY1 Ex-Ante Gross Savings Algorithm

The ERP program used the following algorithm to calculate energy savings from the systems project that completed in GPY1, which was a gas water heater replacement project. Figure 5-1 includes the algorithm.

Figure 5-1. ERP Systems Track Algorithm for Water Heater Replacement[16]

$$\begin{aligned} &Annual\ Natural\ Gas\ Savings\ [therms] \\ &\quad = Water\ Heater\ Input\ Capacty\ \left[\frac{Mbtu}{hr}\right] * Capacity\ Factor\ by\ Building\ Type \\ &\quad * EFLH\ \left[\frac{hrs}{yr}\right] * 0.01\ [\frac{therms}{Mbtu}] * Existing\ Water\ Heater\ Efficiency \\ &\quad * (New\ Water\ Heater\ Efficiency - Existing\ Water\ Heater\ Efficiency) \\ &\quad * (\frac{1}{Oversizing\ Factor}) \end{aligned}$$

Source: ERP Systems Track Template

The savings algorithm for the completed GPY1 project resulted in Ex-Ante Gross Energy Savings of 893 therms per year and used the following input values, summarized in Table 5-2.

Table 5-2. Inputs to Energy Savings Algorithm of Completed GPY1 Project

Input	Units	Input Value	Input Source
Water Heater Input Capacity	Mbtu/hr	200	Water heater specifications
Capacity Factor by Building Type	%	35%	ASHRAE 90.1-2010 User's Manual page G44, Multifamily building type
Equivalent Full Load Hours (EFLH)	Hours/year	8760	Assumes year-long operation
0.01	Therms/Mbtu	0.01	Conversion Factor
Existing Water Heater Efficiency	%	70%	Assumed baseline
New Water Heater Efficiency	%	96%	Water heater specifications
Oversizing Factor	N/A	1.25	Assumed

Source: Navigant analysis of ERP Systems Track Template

[16] Algorithm replicated from Systems Track Template Nicor ER v1.xlsx

5.4 *Engineering File Review*

Customer: **GPY1_1**

Project Status: **Systems**

Business Type: **Multifamily**

Project Type: **Water Heater System Replacement**

Engineering File Review Approach

Navigant used the following approach for engineering file reviews.

- Verify if customer completed, signed and submitted all required ERP documentation
- Verify the type of technical assistance provided by the ERP implementation contractor
- Verify baseline selection and if the proposed measure/project qualify for the program
- Verify baseline and gas savings methodology, algorithms, assumptions and cost calculation
- Verify invoices, equipment purchase, installation dates, and onsite inspections.
- Verify program tracking system

Documentation Review

- The participant completed, signed and submitted an application that included project and contact information, facility type, measures, the desired program assistance, the ERP project criteria, and the entity the project serves. Application dated February 27, 2012.
- Project file included adequate description of the baseline as the existing equipment with lower efficiency, upgraded with a new water heater system with higher efficiency.
- Project files included baseline and proposed equip specs collected from onsite visit including the make, model, serial #, photos, age of existing equip, measure efficiencies, and application.
- The onsite verification report adequately provided the project history, site inspection findings, savings and incentives calculation.
- The project file did not appear to include copies of an invoice or other proof of purchase, purchase/installation dates or records of the incentive payment to the customer. The ERP program provided photo documentation that the equipment was installed.

Review Savings/Cost Assumptions and Algorithm

- ERP program performed Systems Track analysis and upgraded 70% efficient boiler to 96% efficient modulating boiler and an insulated storage tank. Savings calculation applied ERP Systems Track Template to estimate therms savings and incentives.
- Baseline efficiency of 70 percent is stated assumption in project file. Project file indicates 8760 annual hours of use.
- Navigant did not find information in the project file about the equipment operating load or equivalent full load hours (EFLH) in the operating climate zone.
- Navigant did not find documentation in the project file about project cost assumptions, invoices or other proof of purchase.

- Navigant was able to replicate first year savings estimates based on project inputs using ERP systems track template. Savings claim of 893 therms is reasonable based on the current assumptions. Project adequately applied the incentive offering ($2.75/MBH for multifamily) to achieve the approved $550 incentive.

Comments/Recommendations:

- ERP program should consider whether to incorporate Illinois TRM algorithms and assumptions in Systems Track template for measures where the TRM is applicable (e.g. water heater systems).
- ERP Program should document whether equipment load profile and schedules and equivalent full load hours EFLH were factored into input assumptions in project file. Navigant found that the Illinois TRM uses EFLH for similar measures.
- Recommend that ERP program include documentation of project cost and installation date(s), including invoice or other proof of purchase, in project file.

5.5 *Verification, Due Diligence and Tracking System Review (VDDTSR) Memo*

TO: **James Jerozal, Dan Rourke; Nicor Gas**
Scott Dimetrosky, Apex Analytics LLC

CC: **David Brightwell, Jennifer Hinman; Illinois Commerce Commission Staff**
Randy Gunn, Julianne Meurice, Laura Agapay; Navigant

FR: **Josh Arnold, Charles Ampong and Tim Stanton; Navigant**

DA: **September 7, 2012 (REVISED October 26, 2012)**

RE: **Nicor Gas Economic Redevelopment Program**
GPY1 Verification, Due Diligence and Tracking System Review

The purpose of this document is to provide the findings and recommendations from Navigant's Verification, Due Diligence and Tracking System Review of the Nicor Gas Program Year One (GPY1) Economic Redevelopment Program (ERP). The ERP program offers financial incentives and technical assistance to projects in target markets, such as economic development zones, and to projects with significant community benefits, such as affordable housing. In GPY1, the ERP program was implemented by the Energy Center of Wisconsin (ECW) and CNT Energy. The Wisconsin Energy Conservation Corporation (WECC) administers this program on behalf of Nicor Gas.

The primary purpose of Navigant's review was to determine:

- Whether project eligibility criteria have been properly adhered to and backed with supporting documentation;
- Whether savings were calculated correctly and project information entered in an accurate and timely manner in the program tracking system;
- If key quality assurance and verification activities were adequately implemented; and
- If any quality assurance and verification activities may be streamlined or simplified.

Overview of Findings

Verification and Due Diligence

In GPY1, the ERP program received 27 applications. One systems project was completed and received payment during the program year. Navigant reviewed the ERP program Operations Manual and other relevant program documents. The Operations Manual includes policies and procedures that generally meet or exceed standards set forth in the program's scope of work. The ERP program's quality

assurance and verification activities, as outlined in the program's Operations Manual, do not appear to require streamlining or simplification at this time.

As additional ERP program projects are completed in future years, Navigant may include additional review and comments on whether the program staff are applying criteria for project eligibility and collecting sufficient supporting documentation to establish program influence through technical support and financial incentives.

Reporting and Tracking

- The program's tracking system is based on a SalesForce CRM platform that appears able to capture the requisite information necessary to accurately track the program's actions. At this time, program's current tracking system appears to be sufficient to meet reporting and tracking requirements. As additional ERP program projects are completed in future years, Navigant may include additional review and comments on the program's reporting and tracking performance.

- The program's Operations Manual indicates that an on-site inspection would occur when a project is "substantially complete." Navigant notes that program staff may want to consider establishing criteria for making additional site visits when warranted, such as the amount of energy savings from a project, level of uncertainty for construction-related measure implementation or with a new customer.

- Navigant reviewed a GPY1 project file for a completed systems project that did not appear to have project invoices or purchase orders as proof of purchase. Program staff sent photos of the installed equipment as proof of installation.

Summary of Recommendations

Due to limited program participation in GPY1, Navigant has limited our recommendations to the ERP program's reporting and tracking system. Navigant will include additional recommendations as more projects are completed in future years.

Reporting and Tracking

- Navigant recommends that the program staff consider reviewing the current tracking system fields for completeness. For example, based on our initial review, it did not appear that the program's tracking system included specifications for both baseline and replacement measures and pre- and post-installation inspection findings.
- Navigant recommends that program staff consider establishing criteria for conducting additional on-site inspections for projects during the construction process, as necessary. Examples may include projects with a large amount of energy savings, a high level of uncertainty for construction-related measure implementation or with a new customer.
- Navigant recommends that program staff review project files to verify that customer invoices and/or purchase orders are included in the files.

- As additional projects are completed, Navigant recommends that program staff review data inputs to the program' tracking system to provide sufficient evidence of program influence to claim energy savings. This approach could also assist in accelerating early feedback and help avoid significant adjustment during the program impact verification and evaluation.

Data Collection

Navigant collected data for this verification and due diligence task through interviews with program implementation staff and reviewing program documentation covering the period from April through June 2012. Navigant's findings and recommendations were based on reviewing the following program activities and materials:

- Program Staff interviews
- Program Documentation Review
- Review of Program Operating Procedures
- Project File Engineering Desk Review
- Review of Program Tracking System
- Comparison of Program Activities and Materials to National Best Practices

Program Staff Interviews

Navigant conducted a telephone interview with representatives from ECW, CNT Energy and WECC to review the program's accomplishments and challenges to date. The telephone interview included prepared questions on such topics as program administration, program outreach and marketing, program delivery mechanisms, customer satisfaction, and implementation challenges. Additionally, Navigant conducted individual follow-up telephone interviews with program staff.

Program Documentation Review

Navigant reviewed the ERP program's Operating Plan[17], Operations Manual[18], Implementation Scope of Work[19], and Nicor Gas Compliance Filling[20]. Other materials reviewed included the program tracking database (dated on 6/4/2012), Applications Forms, Incentive and Design Agreement Forms, marketing and outreach activities and monthly program delivery report. The ERP program's Operations Manual and Implementation Scope of Work appear to adequately describe program key performance indicators. The ERP program's Operations Manual outlines how to verify project eligibility, review project application, provide technical assistance, reserve and process incentives, and conduct onsite verification and incentive payment.

Navigant reviewed the ERP program's Application Forms and the Measure and Design Incentive Agreement Forms. These materials are made available through the Nicor Gas website or from program staff to interested program participants. The project information required in the Application Form includes contact information of the program participant, project team (including architect, engineers, contractors or others), a description of the project area, design and construction start and completion dates, account and meter numbers, facility type, measures to be installed, desired program assistance,

17 Nicor Gas Rider 30 EEP Program Portfolio Operating Plan (Version 1.1)

18 SOP_Manual_Version_1.0_FINAL_compressed.pdf

19 Nicor Gas Economic Redevelopment Program – Implementation Scope of Work (SOW22DEC2011_Partial.pdf)

20 Nicor Gas EEP 2011-2014 Revised Plan Filed Pursuant to Order Docket No. 10-0562 (May 24, 2011)

and the current project specifications. The ERP program's Application Forms and Measure and Design Incentive Agreement Forms appear to be organized to capture essential information required in order for the program to engage project teams and access project information to provide technical services to customers.

Navigant may include additional review and comments on the program's application forms as additional projects complete the ERP program in future years.

Review of Program Operating Procedures and Tracking System
Navigant examined the ERP program's operating procedures as outlined in the program Operations Manual. The following process flows of the operating procedures are provided in the program's Operations Manual:

- Application Initiation
- Technical Assistance
- Incentive Reservation
- Project Verification
- Incentive Payment

Application Initiation
The program staff determines project eligibility, based on the Project Acceptance Guidelines found in the program's Operations Manual. In some cases program staff may assist potential participants with completing their program application. Upon project approval, the project is considered for potential technical assistance. If a project does not qualify for the ERP program, the project may be referred to another Nicor Gas program or other program, such as those sponsored by ComEd or Illinois Department of Commerce and Economic Opportunity (DCEO).

Technical Assistance
Projects accepted into the program receive technical assistance to determine potential energy savings and corresponding incentives. Technical assistance is provided through two program tracks (Systems or Comprehensive) based upon the nature and complexity of the project and energy efficiency measures.

Under the Systems Track, technical assistance is based on project need including recommendations for measure upgrade, identification of multiple system savings resulting from a system or technology upgrade, or preliminary estimate of savings and incentive levels (included on Measure Incentive Agreement) developed through spreadsheet analysis of project information provided.

Under the Comprehensive Track, technical assistance is determined by program staff based on individual project need. Technical assistance may include such services as: energy modeling, measure recommendations provided to owner/design team, and savings and incentives estimates. Program staff may participate in project design meetings to provide input or present recommendations.

Incentive Reservation

The program staff develops a Measure Incentive Agreement that indicates the measures that will receive incentives from the program if they are ultimately incorporated into a project. Incentives are estimated until the project is verified upon completion. The program reserves incentive funds for a project upon receiving a signed Measure Incentive Agreement from the participant.

Project Verification

The ERP program Operations Manual directs program staff to actively communicate with participating customers for status updates and to determine a project's completion date. Navigant confirmed that program staff conducts this communication through telephone interviews with program staff. After the project is substantially complete, program staff conducts an onsite inspection to verify that measures in the Measure Incentive Agreement were installed as previously agreed. The program generates a site report with photos of the measures installed at the project. If necessary, the program staff may adjust the project's incentive to match the as-built results.

Incentive Payment

Upon completion of verification, a request is made to pay the Measure Incentives to the owner or developer. If a comprehensive project involved a design team, Design Incentives are processed for payment to the design team lead. The maximum funding per project is $300,000, subject to program manager discretion, or incentives are tiered based on achieved therms savings: (i) For System Track projects, incentives for the specific technologies are provided for up to $0.60/therm saved, based upon equipment size and performance; in the case for Comprehensive Track (ii) measure incentive of $0.60/therm saved (based on comparison to baseline) with a maximum of $300,000 per project; and (iii) design incentive of $0.05/therm saved (payable to the owner with recommended distribution to the design team). The program also seeks to identify incentives for electric utility programs and other known energy programs. Once payment of the incentives is approved by Nicor Gas, the project is closed out. Additionally, the final project files are uploaded to a central .ftp site for access to the evaluators, Nicor Gas, and program staff. From this database, savings and project status reports are generated and sent to Nicor Gas and key stakeholders.

Project File Engineering Desk Review

Navigant assessed the Systems and Comprehensive Track templates and reviewed the assumptions and algorithms used for estimating savings and incentive calculations. We verified that the assumptions and savings appear to be reasonable, and the calculated incentives are within program approved incentive offerings for the Systems and Comprehensive tracks. The ERP program also seeks to identify incentives for electric measures and other known sources. The program is coordinating with ComEd's Commercial New Construction and Commercial Prescriptive programs to access such incentives where feasible.

Navigant reviewed four project files, including three comprehensive projects currently enrolled in the program but had not yet completed the program and one systems track project that had completed the program. In GPY1, one project received an incentive payment through the Systems Track category for installing water heater measures. Based on our review, it appears that the program staff is collecting necessary documentation to establish project qualification and document program influence on the project.

Navigant found documentation in the project files including:

- Photos (showing before/after efficient measure and baseline condition/equipment)
- Program forms (Application, Project History, Incentive Agreements, Payment Request)
- Project correspondence folder (meetings, phone contacts and emails with participants and contractors)
- Projects plans and specifications (building drawings/scope, equipment specs, model, serial number, measure types, building envelop info, etc.)
- Technical assistance (baseline assumptions, installed measures, energy models, software used and modeler name, project milestones and communications, spreadsheet of energy analysis and summary reports)
- Verification (site visit report and other field inspection materials).

Navigant performed a brief engineering review of the energy analysis and modeling data for the for the four sample files reviewed. Navigant's initial verification indicates that the energy analysis algorithms and methodologies appear reasonable. Navigant may perform a more detailed engineering review in future evaluation efforts.

Navigant may include additional review and comments on program files as additional projects complete the ERP program in future years.

Reporting and Tracking

Navigant reviewed the data fields and data input into the ERP program SalesForce CRM tracking database (spreadsheet extracts from 6/4/2012). We compared information included in the tracking database with corresponding entries in the four sample project files to determine the accuracy of information documented in the tracking database. We found that overall, the program tracking database contains sufficient information to enable accurate tracking of the program's activities and claimed savings. Key project outreach, marketing, and communications, as well as program applicant metrics, milestones and therm savings are captured in the SalesForce CRM tracking database. Also included are the technical assistance projections, safety and complaint resolution records, and a summary spreadsheet for each project. Program reports are generated from this data.

Technical Assistance Services

Navigant reviewed the technical assistance services from the ERP program staff for design review, energy modeling, selection, installation and operations of energy- efficiency improvements measures. We verified that technical assistance is provided on two program tracks: (1) Systems or (2) Comprehensive, depending on the nature and complexity of the project and energy efficiency measures. Systems and Comprehensive tracks are defined in greater detail in the "Technical Assistance Process" section of this memo. Assignment of project track involves consideration of multiple criteria and judgment (outlined in the Operations Manual) to result in the best possible outcome for the customer and the program. Navigant reviewed the scoring category and the Criteria Worksheet that project team uses to identify potential community impacts that individual projects may offer. Our initial review found that program inputs and definitions appeared to be reasonable.

Navigant may include additional review and comments on the program's technical assistance activities as additional projects complete the ERP program in future years.

Benchmarking

Overall, the Nicor Gas ERP program has written procedures that meet many aspects of national best practices for similar programs. Navigant noted that the program has only been implemented for one year and there was limited project data to review. Therefore, Navigant may make additional comments and recommendations as additional projects complete the ERP program in future years.

To conduct the best practices benchmarking assessment, the evaluation team compared the program implementer's practices (shown in bulleted form) with the *Best Practices Self-Benchmarking Tool*[21] from the *National Energy Efficiency Best Practices Study*, which are the numbered items in *italic* font below.

Quality Control and Verification

Table 5-3 summarizes the scores as determined by the Self-Benchmarking Tool criteria in the "Quality Control and Verification" section.

Table 5-3. Quality Control and Verification Benchmarking

ID	Best Practice	Score
1	Develop inspection and verification procedures during the program design phase.	Meets best practice
2	Provide technical assistance to help applicants through the application process.	Meets best practice
3	Keep the application process and forms from being overly complex and costly to navigate while at the same time not being over-simplified.	Meets best practice
4	Develop a cadre of trade allies who can then assist customers through the process.	Meets best practice
5	Require pre- and post-inspections and commissioning for all large projects and projects with highly uncertain baseline conditions that significantly affect project savings.	Meets best practice
6	Conduct either in-program measurement or measurement through an impact evaluation on the very largest projects and those that contribute most to uncertainty in overall program savings.	Meets best practice

Source: Best Practices Self-Benchmarking Tool and Navigant analysis

1. *Develop inspection and verification procedures during the program design phase.*

- Meets best practice.
- Navigant reviewed the inspection and verification protocols detailed in the ERP program's Operations Manual and verified that the Operations Manual includes a thorough description of tasks and responsibilities related to inspection and verification. Navigant reviewed the Site Inspection Report from the Systems project that completed the program in GPY1 and compared

[21] See the Best Practices Self-Benchmarking Tool developed for the Energy Efficiency Best Practices Project: http://www.eebestpractices.com/benchmarking.asp

the Site Inspection Report with the protocols in the Operations Manual. Navigant concluded that the ERP program's inspection and verification procedures are sufficient based on our comparison of the Site Inspection Report and the Operations Manual.

2. *Provide technical assistance to help applicants through the application process.*

- Meets best practice.
- The ERP program uses multiple scoring categories and a criteria worksheet to identify potential community impacts that individual projects may offer.
- Navigant reviewed the technical assistance guidelines found in the ERP program's Operations Manual and verified that the Operations Manual includes a detailed outline of methods by which the ERP program can provide technical assistance to eligible projects. Technical assistance can include such actions as supporting a project's application to the ERP program or other programs sponsored by Nicor Gas or other utilities. In some cases, the ERP program may also assist a project in applying for government-sponsored programs.

3. *Keep the application process and forms from being overly complex and costly to navigate while at the same time not being over-simplified.*

- Meets best practice.
- The ERP program participation procedures and documentation requirements appear to be reasonable at this time.

4. *Develop a cadre of trade allies who can then assist customers through the process.*

- Meets best practice.
- The ERP program staff is tasked with providing technical assistance to assist customers in the program. In addition, the ERP program has organized outreach activities to publicize the program to potential participants and trade allies by educating them about the program and providing them with information about how to help eligible customers potentially participate in the program.

5. *Require pre- and post-inspections and commissioning for all large projects and projects with highly uncertain baseline conditions that significantly affect project savings.*

- Meets best practice.
- The ERP program may perform pre-installation inspection prior to project approval based on the project scope and types of measures or level of technical assistant required. Post-installation inspections are required for all projects regardless of size or baseline conditions. The program may revise financial incentives based on as-built conditions found in the post-installation inspection.

6. *Conduct either in-program measurement or measurement through an impact evaluation on the very largest projects and those that contribute most to uncertainty in overall program savings.*

- Meets best practice.

- The ERP program conducts measurement and verification for all projects to reconcile design-intent versus as-built conditions and adjusts financial incentives for projects based on estimated energy savings from as-built conditions.
- Navigant plans to conduct an impact evaluation as additional projects complete the ERP program in future years.

Reporting and Tracking Benchmarking

In order to evaluate the reporting and tracking procedures of the ERP program, Navigant compared their methods to best practices in the "Reporting and Tracking" section of the Self-Benchmarking Tool. Table 5-4 summarizes the scores as determined by the benchmarking criteria, and the bulleted list below provides additional descriptions of the chosen rating.

Table 5-4. Reporting and Tracking Benchmarking

ID	Best Practice	Score
1	Define and identify key information needed to track and report early in the program development process	Meets best practice
2	Use automated or otherwise regularly scheduled notification to achieve close monitoring and management of project progress.	Meets best practice
3	Design program tracking system to support the requirements of evaluators as well as program staff.	Meets best practice
4	Integrate or link with other appropriate systems such as cross-program databases, customer information systems (CIS) and marketing or customer relationship management (CRM) systems.	Meets best practice
5	Verify accuracy of rebates, coupons, invoices to ensure the reporting system is recording actual product installations by target market.	Needs some improvement

Source: Best Practices Self-Benchmarking Tool and Navigant analysis

1. *Define and identify key information needed to track and report early in the program development process*

- Meets best practice.
- The ERP program documents include detailed data requirements in the program's Operations Manual and application forms. Navigant reviewed the tracking and reporting procedures and they appear to be sufficient at this time.
- Navigant may include additional review and comments on the program's tracking and reporting mechanisms as additional projects complete the ERP program in future years.

2. *Use automated or otherwise regularly scheduled notification to achieve close monitoring and management of project progress.*

   - Meets best practice.
   - Navigant's review of the ERP Operations Manual indicates that the program staff is directed to actively communicate with projects to monitor their progress and address issues that arise. Navigant confirmed that ERP staff conducts this communication through telephone interviews with program staff.

3. *Design program tracking system to support the requirements of evaluators as well as program staff.*

   - Meets best practice.
   - The tracking system, as currently designed, appears to be sufficient to meet the evaluation team's needs.
   - Navigant may include additional comments on the program's tracking system as additional projects complete the ERP in future years.

4. *Integrate or link with other appropriate systems such as cross-program databases, customer information systems (CIS) and marketing or customer relationship management (CRM) systems*

   - Meets best practice.
   - The ERP program maintains customer information on a SalesForce CRM platform. This tracking system appears to be sufficient to enable the program to track customer information and manage customer relationships. Currently, the ERP database is not linked to other Nicor Gas programs.

5. *Verify accuracy of rebates, coupons, invoices to ensure the reporting system is recording actual product installations by target market*

   - Needs some improvement
   - The ERP Operations Manual includes detailed requirements for participants to submit to submit copies of all invoices or other reasonable documentation of the costs associated with purchasing the incentivized equipment as part of the program terms and conditions. In addition, participants are required to allow program staff to conduct pre- and post-installation inspections. The ERP's procedures appear to be reasonable at this time.
   - However, Navigant reviewed the project file for the project that completed the ERP in GPY1 and did not find copies of the project's invoices or purchase orders. The ERP team submitted photos of the installed equipment as proof of installation. While photos are helpful, Navigant also recommends including proof of purchase.

5.6 *Program Theory Logic Model Review*

Program Theory

Program theory is essentially a structured description of the various elements of a program's design: goals, motivating conditions/barriers, target audience, desired actions/behaviors, strategies/rationale, and messages/communications vehicles. The following subsections describe the Economic Redevelopment (ERP) program in these terms.

Program Goals

The goal of the ERP program is to produce natural gas energy savings by providing design incentives and measure incentives to owners and developers of qualifying economic redevelopment projects who would not have implemented energy efficiency measures in the absence of the program. The ERP program coordinates with electric utilities for projects that include electric energy savings measures. The program also seeks to influence participant behavior to build program awareness within participating target communities through its technical assistance services and education promoting the benefits of integrated design for eligible projects.

Motivating Conditions/Barriers

Potential barriers for the ERP program include a lack of awareness of/demand for energy efficiency opportunities through project design (e.g., integrated design), professionals and trade allies without capacity or resources to promote energy efficiency in target markets, cost barriers to promoting energy-efficient design, and cost barriers to implementing energy-efficient measures.

Target Audience

The target audiences for the ERP program include: building design and construction professionals, such as architecture, engineering firms, or contractors; local government agencies; economic redevelopment authorities; and Chambers of Commerce. Targeted projects include those in a TIF Zone or Enterprise Zone, or projects for a non-residential Nicor Gas customer that create a "positive community impact," such as a brownfield redevelopment or rehabilitation of a vacant structure.

Desired Actions/Behaviors

The ERP program seeks to recruit participants to achieve energy savings through the design and construction of energy-efficient projects (the "comprehensive" track) and the installation of energy-efficient replacement equipment (the "systems" track) in qualifying commercial and industrial properties. The ERP program promotes financial incentives and technical assistance to conduct outreach and education for target audiences. Additionally, the program promotes economic redevelopment for target audiences by reducing costs of energy consumption through financial incentives, technical support education, and outreach.

Strategies/Rationale

The main strategy of the ERP program is to conduct outreach to market actors to recruit potential customers into the program. Market actors may include architects, contractors, engineers, local government agencies, economic redevelopment authorities, and chambers of commerce. The ERP provides training and education to target audiences to increase program awareness and knowledge of energy-efficient design and construction at new facilities and system replacement projects for non-residential Nicor Gas customers. Projects may qualify for one of two tracks offered by the ERP program.

The 'comprehensive track' promotes the use of integrated design to the project team and includes design incentives and technical assistance to meet performance criteria through whole-building energy simulations. The 'systems track' provides measure incentives to meet performance criteria for building envelope improvements, natural gas-fired heating and ventilation, lighting power density and mechanical equipment. The program offers measure and design incentives and technical resources for customers based on each individual project with the goal of using program resources effectively to achieve energy savings and influence behavior.

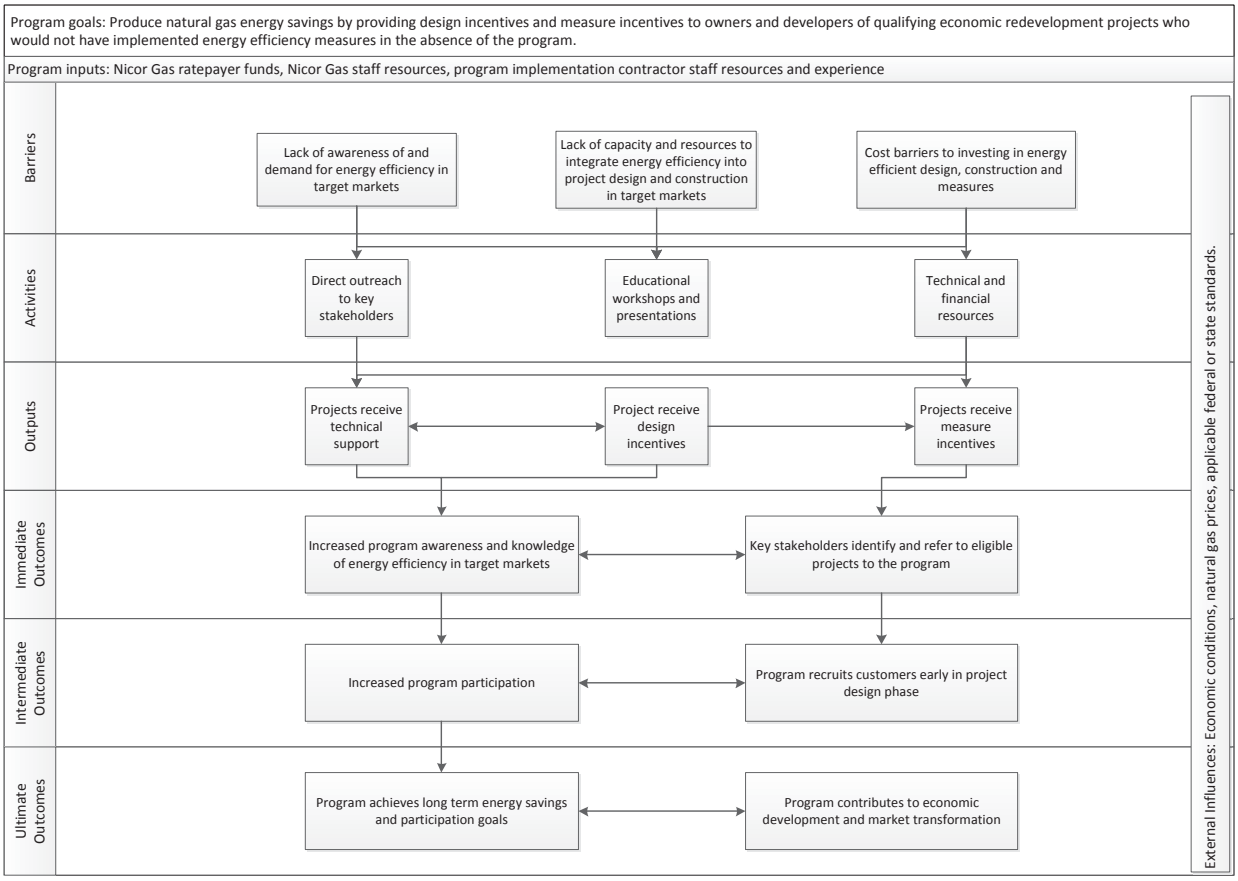
Messages/Communications Vehicles

The ERP program offers education opportunities and direct outreach to target customers. Communications vehicles include electronic materials located on the Nicor Gas and CNT Energy websites and distributed through email marketing, print materials delivered at education and training events, and direct outreach activities, such as presentations to target audiences or trade shows. Messaging focuses on the features and benefits offered through the program, including the program's technical support and financial incentives.

Program Logic Model

This section presents how the ERP program activities logically lead to desired program outcomes. Figure 5-2 presents the ERP program logic model diagram showing the linkages between activities, outputs, and outcomes, and identifying potential external influences. The diagram presents the key features of the program. The logic diagram presented here is at a slightly higher level than the tables in the report, aggregating some of the outcomes in order to provide an easier-to-read logic model.

Figure 5-2. Nicor Gas Economic Redevelopment Program Logic Model



Source: Navigant

The remainder of this chapter presents the resources, activities, outputs, outcomes, and associated measurement indicators associated with the ERP program.

Resources

The ability of the ERP program to generate the outputs and outcomes likely to result in the program reaching its goals depends in part on the level and quality/effectiveness of inputs (resources) that go into these efforts. There are also external influences that can help or hinder achieving anticipated outcomes. Key program inputs and potential external influences are shown in Table 5-5.

Table 5-5. Program Resources

Program Inputs
• Nicor Gas ratepayer funds • Nicor Gas staff resources • Implementation contractor staff resources and experience
External Influences and Other Factors
• Economic conditions • Natural gas prices • Applicable federal and state standards

Source: Navigant

Activities

The purpose of the ERP program is to educate and provide technical support to eligible non-residential customers when designing and building energy-efficient new construction projects and installing energy-efficient replacement equipment. The program reaches eligible customers through activities designed to generate energy savings over the longer term, as outlined in Table 5-6.

Table 5-6. Program Activities

Direct outreach to key stakeholders
• Develop materials to market program to key stakeholders • Contact key stakeholders in target areas • Educate key stakeholders about ERP program and other Nicor Gas programs
Educational workshops and presentations
• Raise program awareness among workshop and presentation attendees • Offer technical support to comprehensive projects including integrated design, project design review and energy modeling for comprehensive projects • Educate target audiences to promote design and implementation of cost effective efficiency measures
Technical and financial resources to program participants
• Program provides technical support to build capacity in target markets • Program provides financial incentives to overcome cost barriers of energy-efficient design and construction in target markets

Source: Navigant

Outputs, Outcomes, and Associated Measurement Indicators

It is important to distinguish between outputs and outcomes. For the purposes of this logic document, outputs are defined as the immediate results from specific program activities. These results are typically easily identified and can often be counted by reviewing program records. Outcomes are distinguished from outputs by their less direct (and often harder to quantify) results from specific program activities. Outcomes represent anticipated impacts associated with Nicor Gas' program activities and will vary

depending on the time period being assessed. An example would be therm savings. On a continuum, program activities will lead to immediate outputs that, if successful, will collectively work toward achievement of anticipated short, intermediate, and long-term program outcomes.

The following tables list outputs (Table 5-7) and outcomes (Table 5-8), taken directly from the logic model, and associated measurement indicators. For each indicator, a proposed data source or collection approach is presented.

Table 5-7. Program Outputs, Indicators and Data Sources

Outputs	Indicators	Data Sources
Technical support	Number of comprehensive projects that receive technical support Documented influence of the program on comprehensive projects Number of systems projects that receive technical support	Program tracking data Comprehensive project files Interviews with participating customers Interviews with program staff
Design incentives	Number and type of design incentives paid by the program	Program tracking data Interviews with program staff
Measure incentives	Number and type of measure incentives paid by the program	Program tracking data Interviews with program staff

Source: Navigant

Table 5-8. Program Outcomes

Outcomes	Key Performance Indicators	Data Sources
Immediate		
Increased program awareness and knowledge of energy efficiency in target markets	Number of attendees at educational workshops	Program tracking data Customer surveys from educational workshops Interviews with program participants Interviews with program staff
Key stakeholders promote the program	Number of program training events co-sponsored by key stakeholders Number of key stakeholder communications that include ERP program information Number of unique entities submitting leads for eligible projects Number of referred projects accepted to program	Program tracking data Comprehensive project files Interviews with program participants Interviews with key stakeholders Interviews with program staff
Intermediate		
Program recruits customers early in project design phase	Number of participating projects recruited by design phase (e.g. conceptual, schematic, early design) Average energy savings per completed comprehensive project (as designed)	Program tracking data Comprehensive project files Interviews with program participants Interviews with program staff
Increased program participation	Number of participating projects increases each year Number of comprehensive projects increases	Program tracking data Comprehensive project files Interviews with program participants Interviews with program staff
Ultimate		
Program achieves long term energy savings and participation goals	Energy savings attributed to the program Program participation	Program tracking data Comprehensive project files Interviews with program staff
Program contributes to economic development and market transformation	Number of participating projects in target markets Financial value of participating projects in target markets Estimated number of construction jobs created by participating projects in target markets Estimated number of non-construction jobs created by participating projects in target markets Estimated number of affordable housing units developed by participating projects in target markets	Program tracking data Project files Economic reports Market research Interviews with program participants Interviews with program stakeholders Interviews with program staff

Source: Navigant

5.7 Data Collection Instruments

Nicor Gas
Program Implementation Contractor
In-Depth Interview Guide
April 17, 2012 FINAL

Name of Interviewee: _____ Date: _____

Title: _____ Company: _____

Role in Program: _____

[Note to Reviewer] The Interview Guide is a tool to guide process evaluation interviews with utility staff and implementation contractors. The guide helps to ensure the interviews include questions concerning the most important issues being investigated in this study. Follow-up questions are a normal part of these types of interviews. Therefore, there will be sets of questions that will be more fully explored with some individuals than with others. The depth of the exploration with any particular respondent will be guided by the role that individual played in the program's design and operation, i.e., where they have significant experiences for meaningful responses. Where possible, interview date/times will be arranged in advance. The interviews may be audio taped.

Introduction
My name is ___ and I'm calling from Navigant Consulting, we are part of the team hired to conduct an evaluation of the _____program. We're conducting interviews with implementation contractors in order to improve our understanding of the program. At this time we are interested in asking you some questions about the _____ program. The questions will only take about an hour. Is this still a good time to talk? [IF NOT, SCHEDULE A CALL BACK.]

Roles and Responsibilities

1. Can you briefly summarize your role in the _____ Program: What are your main responsibilities? For how long have you carried these out, including the planning phase? Has your role changed over time?

2. Can you explain who is involved in the program implementation, and what their roles are? *[Probe for all significant actors with responsibility in program delivery including implementer, **account managers**, and program allies.]*

3. What other departments /Who is responsible for the program services?
   - Rebate Processing?
   - Manage Data? / Tracking Targets?
   - Planning and oversight

4. Roughly, how many people are assigned to work on this program? What are your near-term plans for adding staff? From your perspective, is staffing adequate for this program to meet its goal? (If not): What areas/functions do you feel are not adequately staffed?

5. What are the formal and informal communication channels between these groups Do you feel information is shared in a timely manner?

6. Are there any documents, other than what has been provided on the SharePoint site, that outline the roles and responsibilities of program staff for the program? Operations manual, policies and procedures guide?

Overall Goals and Objectives

7. According to the most recent monthly report, you are [ahead/behind] on GPY1 goals. Why do you think this is? Do you think you feel the GPY2 goals are realistic? Why or why not?

8. Outside of the quantitative goals (e.g., $, $/kWh, savings and participation rates), in your own words, what are the key goals and objectives of this program?

Marketing and Promotion

9. Please describe your program marketing campaign in your own words *[If necessary: Do marketing activities vary by prescriptive, custom, government/non-profit? By customer size?]*
   - What are the marketing channels that are used?
     - (bill inserts, TV, newspaper, radio, workshops, community events?)
   - How often does each activity occur?
   - Who is in charge of developing materials?
   - Who is in charge of marketing activities?
   - Do you have a written marketing plan?

10. Is there any additional marketing material that has not been provided on the SharePoint site? If so, can we arrange to get copies of marketing collateral you have used?

11. Do you anticipate making any changes to marketing efforts for GPY2 (starting June 1 2012)? If so, please describe these changes.

Trade Allies

12. Could you talk a bit about the program efforts that specifically target trade allies?

13. Is there one staff member that oversees the program trade ally network? Or staff that specialize in different equipment markets? Lighting, HVAC, Motors, etc.?

14. How are trade allies recruited for the program(s)? Which types of trade allies are choosing to participate in the program(s) and which are not?

15. Do you have a sense of trade allies' satisfaction with their participation in the trade ally program?

16. What kind of training is provided to them as part of the registration process? What role do they have in marketing the program(s)? What kind of support, if any, is provided to them for marketing the program(s) to their customers?
17. Have allies requested any other types of support/collateral, etc. If so, what have they requested and how are you responding to their requests?

18. Are there any quality control procedures in place for trade allies? What is done if a complaint is received, for example? Are there any situations where they would be dropped from the program for poor performance?

Program Participation

We are also trying to learn of any process related issues that may arise from the current design of the program(s).

19. Could you briefly describe the process for participation in the program(s) from the customer perspective?
    Questions include:
    a. Who drives participation: customer, trade ally, account managers?
    b. Are customers submitting pre-approval applications even when not required?
    c. Role of utility account managers and customer service?

20. Have you received any feedback from customers on various aspects of the program?

21. What do customers do if they have questions about the participation process? Is there a systematic process in place for responding to customer inquiries? How quickly are their questions answered? What improvements can be made?

22. What is the target review time between receipt of the pre-approval application and letter of approval? What is the average review time? What, if anything, slows down review time?

23. Is there a process in place for communicating to customers the status of their application? Is there any system in place to track project progress? If so, please describe.

24. What is the target processing time between final documentation and payment? What percent of applications are actually processed within that amount of time? What, if anything, slows down processing time?

Incentives

25. What do you perceive to be the level of satisfaction among program participants with the current incentive amounts (if applicable, and technical study incentive limit caps)? Are the technical study incentive limit caps being checked for all projects?

26. How do trade allies perceive the incentive levels? What specific feedback have they given? Have you heard any feedback from trade allies about the percent of total project cost caps, and if so, what have you heard?

Call Center

27. Are customers/contractors making use of the phone number to program staff listed on the application form? *[Probe for call volume.]* What are the main issues raised by customers/contractors?

Data Tracking

28. What systems are in place for data tracking? Who captures the data and how?

29. Can you briefly describe what data are tracked for the program(s)? What about application attachments and calculations? What about review history and revisions to savings or incentive amount?

30. Do you feel all important information is captured and stored in a way to best support program efforts? Is the information accurate and current? Are there additional types of reports or information that you would find beneficial? Is there a process for requesting additional data?

31. Is the system used for data tracking linked with any other systems such as databases with customer account information or ones that track marketing activities?

Quality Assurance and Quality Control

32. Is there any additional documentation, other than what you have provided on the SharePoint site, that describes the quality assurance procedures? If so, can we obtain a copy?

33. Can you provide a brief description of your quality procedures? What kind of quality procedures are in place to verify equipment quantities and eligibility? Project completion? What is the process for verifying savings?

34. Approximately, what percentage of all projects is pre-inspected and post-inspected? How do you determine if a project requires inspection (both pre and post)?

35. Who conducts pre and post inspections and how are they documented? Do they use standardized data collection forms? How can we arrange to obtain these documents?

36. When are on-site measurements conducted as part of the pre and post verification? Which measures and business types?

Program Adjustments and Enhancements

37. From your experience to date, are there elements in design, structure, and/or operation that should be modified to make the program(s) work better? If so, what would you recommend? Why do you think this change is needed?

38. Do you feel that free-ridership is a major concern for the program(s)? *[Please explain.]*

39. Do you see this program is leading participants to undertake still additional energy savings projects outside of other programs? If so, what types of measures or projects?

40. Is the program having any impacts on non-participants – driving any increased energy efficient projects or behaviors - that you are aware of?

41. Do you think the current economic conditions are affecting the program? If so, how?

Wrap Up and Thank You

42. We are also planning on talking to _____and _____ about this program. Are there any additional people with key roles that we should talk to?

43. Do you have any other comments or suggestions for us?

Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process.

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NICOR GAS ECONOMIC REDEVELOPMENT PROGRAM
PARTICIPATING CUSTOMER SURVEY INSTRUMENT
October 12, 2012 FINAL

Purpose of this Survey Guide (not to be read to Participants)

The purpose of this survey guide is to collect information from participating customers in the Nicor Gas Economic Redevelopment Program. Questions in this survey guide are designed to provide interviewers with prepared questions to ask participating customers about their experience with the program. The table below outlines the sections, topics and questions of the interview guide to cross-reference them with the goals and objectives of the Nicor Gas Economic Redevelopment Program.

Survey Guide: Topics and Corresponding Questions

Section	Topics	Questions
Screening Questions	Is the property serviced by any of the following energy utilities: Nicor Gas and/or Commonwealth Edison Company?	S0-S2
Sources of Program Awareness	How did the program contact learn about the program? What were the primary motivations for participating? Does the customer have a corporate mandate or other policy that is driving participation in the program?	SR2-SR4
Measure Verification/Free Ridership	Verification of measure installation. How significant was participating in the Nicor Gas ERP on the decision-maker's choice to install the measure?	CMV1-CMV11
Participant Spillover & Other Properties	Since participating in the ERP, has the program contact implemented energy efficiency measures that did not receive a rebate? Has the program contact adopted new measures or practices at other facilities that did not receive a rebate? How significant was participating in the Nicor Gas ERP on the program contact's choice to implement the measure(s) or practice(s)?	CA1-CA11
Customer Satisfaction	How satisfied was the program contact with technical assistance provided by the Nicor Gas ERP? How satisfied was the program contact with the incentives provided by the Nicor Gas ERP? How satisfied was the program contact with the customer service provided by the Nicor Gas ERP? Did the program contact make referrals to the program? What are potential barriers to additional participation? Does customer wish to share any additional information about program participation?	CS9-CS14
Project Information	Is the property located within an Economic Development zone? Does the project meet the definition of a "community benefit" as outlined in the ERP documents?	F1-F2

Source: Navigant

INTRODUCTION AND SCREEN

[NOTE TO INTERVIEWER: Cross-reference names from program tracking database to ensure you indicate the property utilities.]

INT1. Hello, this is **[INTERVIEWER'S NAME]** calling from Navigant on behalf of your local natural gas and electric utilities. ***This is not a sales call.*** We are contacting people who have participated in the Nicor Gas Economic Redevelopment Program, where your firm may have received technical assistance and financial incentives to implement energy efficiency measures.

INT2. The purpose of this call is to ask you about your satisfaction with the Nicor Gas Economic Redevelopment Program as it pertains to your property [PNAME] at [LOCAT]. We are conducting an independent study to evaluate the Nicor Gas Economic Redevelopment Program and would like to include your opinions. Your answers will be included with answers from other program participants and used to help evaluate the effectiveness of the program and to design future programs. *We would be grateful for your participation in our research.*

Are you the person who is most familiar with your participation in this program?

1. YES [GO TO INT5]
2. NO [GO TO INT3]
3. REQUESTS MORE INFORMATION [GO TO INT4]
4. DON'T KNOW [GO TO INT3]
5. REFUSED [GO TO INT3]

INT3. Is there someone who may be more knowledgeable about the upgrades that I could speak with?

1. YES AND AVAILABLE [GO BACK TO INT1]
2. YES AND BUSY [SCHEDULE CALLBACK]
3. YES AND BUSY [SCHEDULE GENERAL CALLBACK]
4. NO [TERMINATE – REFUSAL]
5. DON'T KNOW/REFUSED [TERMINATE]

INT4. Your local gas and electric utilities sponsor the Nicor Gas Economic Redevelopment Program. The Illinois Commerce Commission (ICC) requires certain utilities to submit such a report each year. These utilities hired our firm to prepare an independent evaluation of their energy efficiency programs. The information that we gather will help the ICC determine if existing programs should continue while assisting in the design of future programs.

1. SATISFIED WITH INFORMATION – CONTINUE [GO TO INT5]
2. WANTS TO VERIFY STUDY [SCHEDULE CALLBACK]
3. WANTS TO VERIFY STUDY [GENERAL CALLBACK]
4. REFUSED [TERMINATE]

INT5. In this survey, I will refer to the project that participated in the Nicor Gas Economic Redevelopment Program as "project."

(**IF NEEDED:** It will take about 30 minutes.)

S2. The program records show that you installed <measure> at <property>. Please confirm that this is correct. Did you receive….**(READ ANSWERS FROM INSTALLATION LIST ON CUSTOMER RECORD)** [**1=YES, 2=NO, 7=NA, 8=DON'T KNOW, 9=REFUSED**]

SOURCES OF PROGRAM AWARENESS/REASONS FOR PARTICIPATING

SR1. [OMITTED]

SR2. How did you become aware of the Nicor Gas Economic Redevelopment Program? (READ LIST) **[RANDOMIZE, MULTIPUNCH]**

1. Field technician visit
2. Mass media (newspaper, internet, TV/Radio)
3. Phone call to property
4. Part of larger corporate decision
5. Trade organization and events
0. (OTHER, SPECIFY)
98. (DON'T KNOW)
99. (REFUSED)

SR3. What was your primary reason for participating in the program? (READ LIST) **[RANDOMIZE, MULTIPUNCH]**

1. Rebate for installing measure
2. Technical assistance from program
3. To meet project goals
4. Marketing
5. Corporate decision
0. (OTHER, SPECIFY)
98. (DON'T KNOW)
99. (REFUSED)

SR4. About how many months after you first became aware of the program was it that you decided to participate in the program?

1. Within six months
2. More than six months, but less than a year later
3. More than a year, but less than two years later
4. More than two years later
88. (Don't know)
99. (Refused)

SR5. [OMITTED]

CUSTOMER SATISFACTION

CS1 – CS8a. [**OMITTED]**

CSINT. I'll now ask you to rate your experience with the on-site visit and the program in general on a scale from 0 to 10, where 10 is a high rating and 0 is a low rating. For example, if I ask about your level of satisfaction, 0 would mean "very dissatisfied" and 10 would mean "very satisfied." If you are unsure about the meaning of the scale for any of the questions, just let me know.

CS9. On a scale of 0 to 10, how would you rate your overall satisfaction with… (PROMPT IF NECESSARY: Remember 0 means "very dissatisfied" and 10 means "very satisfied") **[SHOW ON SEPARATE PAGES RANDOMIZED WITH QUESTION TEXT AND PROMPT ON EACH PAGE][SCALE 0-10, DK, REF] [RANDOMIZE]**

a. …the technical assistance resources provided by the Economic Redevelopment Program to your project
b. …the financial incentives
c. …the customer service of the program representative(s)
d. …the ease of participating in the Economic Redevelopment Program
e. …the Economic Redevelopment Program as a whole

[IF CS9a-e<3, ASK CS10a-e DIRECTLY AFTER IT IS RATED LOW]

CS10a-e. Why did you rate it that way?

00. OPEN END
98. (DON'T KNOW)

CS11. On a scale from 0-10, with 10 being very influential, how influential has Economic Redevelopment Program been at helping your property…? **[GRID] [RANDOMIZE] [SCALE 0-10, DK, REF]**

a. Achieve its energy efficiency goal(s) if applicable?
b. Achieve its community benefits goal(s) if applicable?
c. Decrease property utility expenses?
d. Decrease maintenance expenses?

C11f. Has the Economic Redevelopment Program been helpful in any other way at your property?

0. YES **[OPEN END]**
1. NO
88. DON'T KNOW
99. REFUSED

CS12. OMITTED

CS13. What barriers, if any, are there to referring other properties to the Economic Redevelopment Program? [Select all that apply] **[RANDOMIZE 1-4] [MULTIPUNCH]**

1. I don't know any other projects that would qualify for this program
2. I don't have time to refer the program to my colleagues
3. There is no incentive for me to refer the program to my colleagues
4. I'm not convinced that the program saves me money
5. OTHER (SPECIFY)
8. (DON'T KNOW)
7. (REFUSED)

CS14. Do you have any specific stories for potential program case studies that you wish to share with the program?

1. YES **[OPEN END]**
2. NO
8. (DON'T KNOW)
9. (REFUSED)

Project Information

I have just a few questions left for background purposes.

F1. To your knowledge, is the project that we discussed located in an Economic Redevelopment Zone?
1. YES
2. NO
3. OTHER (SPECIFY)
4. (DON'T KNOW)
5. (REFUSED)

F2. To your knowledge, does the project that we discussed include one or more goals for COMMUNITY BENEFITS?
1. YES (PLEASE DESCRIBE or IF WRITTEN, ASK FOR COPY)
2. NO
3. OTHER (SPECIFY)
4. (DON'T KNOW)
5. (REFUSED)

OUTRO. Those are all the questions I have. On behalf of the Nicor Gas Economic Redevelopment Program, thank you very much for your time.

5.15 Emerging Technologies

Energy Efficiency
Nicor Gas Plan Year 1
(6/1/2011-5/31/2012)

Evaluation Report:
Emerging Technologies Program

FINAL

Presented to:
Nicor Gas Company

January 17, 2013

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E. Executive Summary

The goal of this report is to present a summary of the findings and results from the evaluation of Nicor Gas' Rider 30 2011-12 Energy Efficiency Emerging Technologies Program (ETP). The ETP is unique among energy efficiency programs (EEP) because instead of providing rebates to customers to adopt energy efficient technologies, the ETP's objective is to "identify emerging technologies and/or practices that are new or underutilized and have the potential for energy savings and possible future integration into the Nicor Gas energy efficiency programs. ETP will achieve energy savings while being transparent, cost-effective, scalable, and developing the needed data to transition measures into the EEP."

E.1 Evaluation Objectives

The primary objectives of the process evaluation effort are to determine key process-related program strengths and weaknesses and help program designers and managers improve the identification, screening, vetting and transfer of emerging technologies to programs. This evaluation does not include an impact evaluation because the program is too new to have measurable impacts. The evaluation team will conduct an evaluation of program impacts in subsequent program years.

The Emerging Technologies Program is administered by the Wisconsin Energy Conservation Corporation (WECC) and implemented by the Gas Technology Institute (GTI). Due to the nature of this program, there are no established goals for energy savings or program participation. However, starting in the second year of the program, the evaluation team will evaluate the quantifiable impacts of the ETP.

E.2 Evaluation Methods

The focus of the process evaluation was a review of the program's marketing and technology idea generation, idea screening, program implementation and barriers, and administration and delivery. The purpose was to develop a complete understanding of how the program works and identify areas for process and implementation improvements.

To conduct this evaluation, the team collected data through comprehensive review of the ETP planning documentation (including operating manuals and tracking systems), and through in-depth interviews with the program administrator and the implementation contractors to research issues of program design, administration and delivery.

E.3 Key Impact Findings and Recommendations

This evaluation for Gas Program Year 1 (GPY1) does not include an impact evaluation. The program is too early in its implementation to have measurable impacts.

E.4 Key Process Findings and Recommendations

Although Gas Program Year 1 (GPY1) ran from June 1, 2011 to May 31, 2012, the ETP however was not operational until December 2011. Therefore, the program was still in the early stages of the

implementation process at the end of GPY1. Nonetheless, Nicor Gas and the ETP program team together have effectively designed and implemented many of the important processes to build a successful program in this short period. The evaluation team recognizes that since the end of GPY1, the ETP has likely evolved further, and may have made progress to address some of the issues discussed in this evaluation. However, based on the research conducted at the time for this evaluation, the evaluation team has concerns about a few program areas, starting with insufficiently defined program objectives. With some focused effort to improve the objective, and to address the recommendations below, in particular those focused on technology transition to EEP, the evaluation team expects the ETP to perform well.

Navigant's key process findings and recommendations are as follows:

- ***Program Objective is Limited*** – The ETP's stated program objective is too limited to assure an effective program. GTI has taken steps beyond the stated objectives that will address this issue and help assure success; however, to be effective, the program objectives and goals should be expanded and more clearly defined. In particular, the objective does not address the actual transition to EEP, which is fundamental to a successful program. Navigant recommends that Nicor Gas and the ETP expand the objective to incorporate a successful technology transition to the EEP. Nicor Gas and the ETP may benefit from additionally defining the ETP's intentions with regards to either long-term or near-term technical and economic savings potential and overall portfolio energy efficiency or end-use therm savings.

- ***Risk Mitigation in Technology Transfer/Deployment to EEP*** – The current deployment process may be insufficiently well defined, potentially putting the success of each technology deployment in jeopardy; a more clearly defined, robust deployment process can help ensure that the technology deploys successfully and contributes expected levels of energy savings to the EEP portfolio. Navigant recommends clearly defining a set of deliverables, including a new market/business assessment and any relevant findings from the pilot, that will enable effective information transfer for the technology, and by assigning responsibility to specific personnel (both in ETP and EEP) to oversee the transition of each technology.

- ***Comprehensive Central Tracking*** - The ETP's technology tracking process does not currently extend beyond the program's 4S selection process to include information on pilot assessment testing or the transition to EEP. This process is an interim solution as they intend to transition to Nexant's TrakSmart software platform, which all EEP-programs plan to adopt. Navigant recommends that the ETP employ a central tracking system that extends from application submission to technology transfer to EEP (or rejection from further analysis) that will enable comprehensive performance assessment. The monthly Project Scorecard and other deliverables should ideally be linked to such a system automatically. It is currently unclear whether TrakSmart will contain the necessary functionality to successfully track the ETP through each process.

- ***Documentation and Re-Evaluation of Promising Technologies*** – The ETP has not defined a process by which they can revisit promising technology applications which do not currently meet all the necessary criteria, but may be viable options in the future. Navigant recommends that the ETP consider recording the summary of reason(s) for not going further (with a date). For some ideas, the ETP may want to set a target date to revisit the status (e.g., in 6 months or two years), including a threshold for improvements which would trigger a re-evaluation.

1. Introduction to the Program

This section includes a brief description of the Nicor Gas Energy Efficiency Program's Emerging Technologies Program (ETP), including the program's implementation strategy, technologies under consideration, and researchable questions for this assignment.

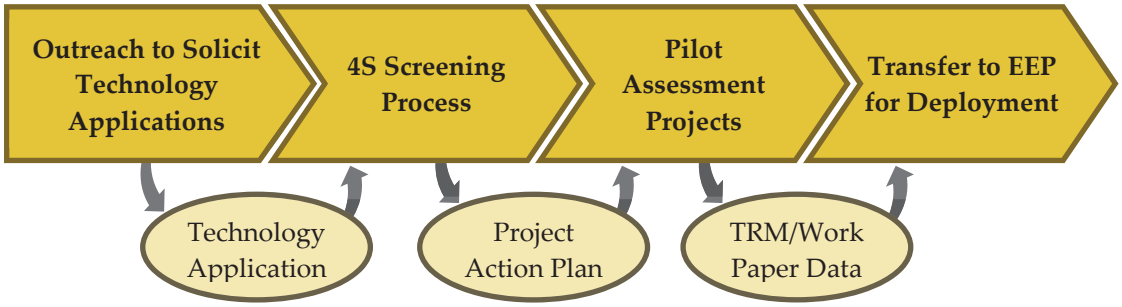
1.1 Program Description

The ETP is designed to identify energy efficient emerging technologies or practices (i.e., measures) that Nicor Gas can incorporate into their EEP to achieve greater program savings and provide better value to their customers. The program's stated objective is to:

> "Identify emerging technologies and/or practices that are new or underutilized and have the potential for energy savings and possible future integration into the Nicor Gas energy efficiency program (EEP). ETP will achieve energy savings while being transparent, cost-effective, scalable, and developing the needed data to transition measures into the EEP."

The ETP finds potential energy-saving technologies by soliciting applications from trade allies, manufacturers, implementation contractors, and other stakeholders. Figure 1-1 shows the overall steps of the ETP process. Section 1.1.1 details each step of the process.

Figure 1-1: Overall ETP Process Steps



The ETP does not have a standardized measure list or gas savings goals as found in other EEP programs. Participation in the program is tracked through the number of initial applications. The ETP measures therm savings through pilot assessment projects. The Gas Technology Institute (GTI) manages the ETP as the implementation contractor with sub-contractor support from Livingston Energy Innovations (LEI). As detailed in the ETP Program Operations Manual, LEI provides program support for a variety of ETP activities, including: program design, development, and launch; transfer of technologies into programs; and business development with stakeholders.[1]

Gas Program Year 1 (GPY1) ran from June 1, 2011 to May 31, 2012, however the ETP was not operational until December 2011. Therefore, the program is still in the early stages of the implementation process. By the end of GPY1, the ETP accepted 21 applications for new emerging technologies, identified 11

[1] From "Nicor Gas ETP Program Operations Manual Final to WECC 03-29-12." The complete list of activities that the ETP identifies as areas in which LEI will contribute can be found on page 8.

applications for further evaluation after screening through the *4S: Ready, Set, Go* process, and has yet to initiate pilot assessment projects to validate energy savings. Therefore, the program evaluation is based primarily on design intent of the program, with little implementation experience to evaluate.

Unlike typical EEP rebates which encourage utility customers to purchase previously identified energy efficiency technologies, the ETP only provides incentives to encourage site-host participation in pilot assessment projects. Incentives are on an as needed basis only, and typically come in the form of program staff time, materials, labor, manufacturer discounts, or direct financial equipment buy-downs. Each pilot assessment project enables the ETP to conduct verification and due diligence of manufacturer-claimed therm savings for each technology.

Table 1-1 lists the Rider 30 budget components associated with each portfolio support function for each of the three program years.

Table 1-1: Program Budget and Allocation

Measure	GPY1	GPY2	GPY3	Total	% of Total
Contract Administration	$40,000	$70,150	$80,450	$190,600	4.8%
Marketing (Advertising & Promotion)	$140,400	$140,000	$150,000	$394,400	9.8%
Incentives	$51,100	$178,850	$346,050	$576,000	14.3%
ET Program Development	$207,500	$50,000	$65,000	$322,500	8.0%
ET Project Selection	$136,000	$123,000	$45,000	$304,000	7.6%
ET Project Execution/ Management	$50,000	$399,500	$603,500	$1,053,000	26.2%
ET Project M&V Costs	$194,000	$370,500	$618,000	$1,182,500	29.4%
Total	$783,000	$1,332,000	$1,908,000	$4,023,000	100%

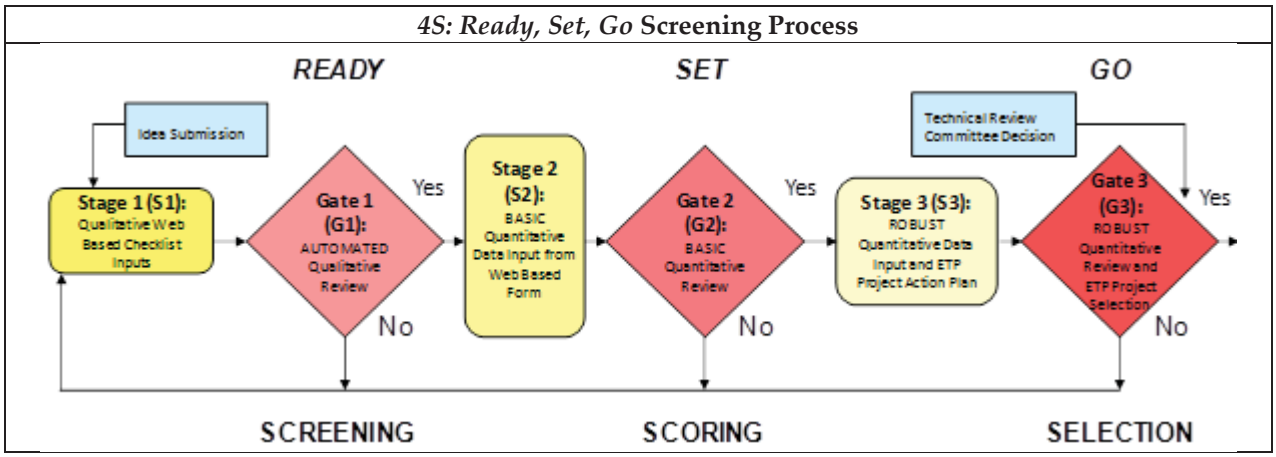
Source: Nicor Gas ETP Operations Manual (March 2012), page 21

1.1.1 Implementation Strategy

The ETP targets manufacturers who will ultimately provide the technologies and processes that lead to higher energy savings. To solicit technology applications from stakeholders, the ETP has a presence in select trade shows, seminars, and in other energy-efficiency-themed forums and industry events. Nicor Gas launched the ETP with an email to stakeholders, directing them to Nicor Gas' ETP website, and encouraging them to apply with any potential emerging technologies through Nicor Gas' online application system. Therefore, the program relies on targeted emails to communicate with stakeholders for most C&O activities.

The ETP uses a technology screening, scoring, and selection system, referred to as *4S: Ready, Set, Go*, to identify pilot assessment projects from technology applications. Figure 1-2 provides details on the 4S process.

Figure 1-2: 4S and Its *Ready, Set, Go* Stage/Gate Process[2]



The ETP screens the applications based on the basic functionality, features, and level of market readiness (*Ready* Stage). For those technologies that meet minimum requirements, the ETP staff request more data from the applicants to conduct a preliminary quantitative analysis of the technology (*Set* Stage). ETP conducts both of these two steps (*Ready* and *Set* stages) on an ongoing basis.

For the most promising technologies, ETP staff conducts a robust quantitative analysis of the application, and then recommends technologies for further evaluation. The Technical Review Committee (TRC) reviews the recommendations and approves select technologies for pilot assessment projects (Go Stage). Go decisions are made collaboratively and are made on an as needed basis coordinated with the TRC, after action plans are presented.

ETP staff then works closely with the applicant and other stakeholders to manage pilot assessment projects for those approved technologies. ETP presents project results in a presentation or project report to EEP staff, and transfers the information to EEP staff in a form that is easily accommodated in a Technical Reference Manual (TRM) or technical work paper. It is then the individual EEP implementation contractor's (IC) responsibility to prepare technical and marketing materials for the measure.

The degree of trade ally involvement during the screening and pilot assessment process varies for each technology. The ETP may call upon trade allies for professional expertise and judgment, such as during the quantitative review process, for TRC decision making, or during pilot assessments to meet contractor needs.

In order to ensure data integrity from manufacturer-submitted applications, the ETP also uses Quality Assurance/Quality Control (QA/QC) procedures to assess the quality of data used in the *4S: Ready, Set, Go* process for project decision making, and the quality of data generated during the pilot assessment. During the *4S: Ready, Set, Go* screening process, the ETP uses automated web-based checklists to screen technologies, and uses rigorous analysis methods and external subject matter experts to verify and validate applicant-submitted information. During the pilot assessments, the ETP clearly defines project goals to address market and EEP needs, performs shakedown of installed data acquisition systems to

[2] Flowchart source: ETP program document: "Nicor ETP Screening Scoring and Selection System Final to WECC 03-19-12-MT-CORRECTION.docx," p. 8.

review data quality and verify measurements, and uses an independent GTI staff member to review all formulas and results to resolve any inconsistencies. ETP also solicits feedback from applicants and other pilot assessment participants through surveys to improve the screening and pilot assessment process. At the end of the technology pilot assessment, the ETP presents the data collected in a format compatible with EEP work paper and TRM documentation requirements to ensure consistency and ease of information access.

Appendix B contains the evaluation team's Logic Model and Program Theory Memorandum, which provide additional details on the program's processes.

1.1.2 Technologies and Incentives

Table 1-2 lists all the technologies that the ETP screened in GPY1 and that the ETP recommended for further evaluation in GPY2. Table 1-3 lists all the technologies that the ETP screened in GPY1 which failed to pass through the 4S screening process; this table also indicates the reasoning for not proceeding further with each measure.

Table 1-2: ETP Technologies under Evaluation

Technology	Technology Status
High Efficiency Heating Rooftop Unit	Under Continued Evaluation - Draft Action Plans presented to Technical Review Committee at June 7, 2012 meeting
ShowerStart Hot Water Saver	
Multi-Family On-Demand Water Heating Pump	
Ozone Commercial Laundry	
Combined Space and Water Heating Systems	
Industrial Air Barrier	
Boiler Control System	
Advanced Boiler Heat Recovery	
Programmable Thermostat/Feedback	
Commercial Pilotless Range	

Source: Email from WECC dated Oct 5, 2012.

Table 1-3: ETP Technologies no Longer Under Evaluation

Technology	Key Failed Criteria & Reason for Not Proceeding with Evaluation
Solar Collector System	Product is not commercially available and will not be in the next 6 months.
Home Energy Management System	Insufficient data available to proceed past Set stage; awaiting additional information on therm savings potential based on an ongoing program trial.
Commercial Energy Management System	Insufficient data available to proceed past Set stage; awaiting additional information to serve as possible basis for Go stage evaluation.
Green Steam Boiler	Applicant has been unresponsive to phone and email inquiries for further information to proceed beyond Ready stage
High Efficiency Commercial Water Heater	High first cost premium for engine driven heat pump water heater currently limits cost effectiveness and application potential.
Advanced HVAC Proposal	This proposal is still under draft revision by the applicant.
MF Heat Reflectors	ETP is awaiting additional information to confirm Set stage finding and decision.
Home Energy Management System Consultant	Company is a consultant for the home energy management system and does not have a separate product they would like to submit.
Natural Gas Cooling	Exclusion of fuel switching technologies from ETP excludes it from further consideration.
Water Heater Vent Heat Recovery	Product has issues with: National Fuel Gas Code compliance, uncorroborated performance projections, and non-commercialized prototype status.
Commercial Food Service Boilerless Steamer	ETP team has followed up with the food service rebate program implementation contractor and they are considering adding 10-pan model to their existing steamer incentive.

Source: Email from WECC dated Oct 5, 2012.

1.2 Evaluation Questions

The evaluation sought to answer the following key researchable process questions.

1.2.1 Marketing and Technology Idea Generation

1. How effective is the ETP's outreach for soliciting new, high-quality technology applications from industry?
2. In what areas could the program improve to create a more cost-effective process for identifying potential technology ideas? Should Are there any indications that the selection processes need to be more rigorous? Should metrics be changed or added to address any obvious limitations or shortfalls in the program design?
3. Will the established processes be sufficient to successfully deploy top technologies to the EEP in GPY2?

1.2.2 Program Characteristics and Barriers

1. Is the technology screening process effective, efficient, and does it contain the appropriate criteria filters?

2. Do information tracking processes document the technology development stage for promising technologies that are not yet program-ready (but may be in the future) for the appropriate stakeholders? Do the tracking processes monitor ETP evaluation status? Do the tracking processes monitor potential value to the portfolio and the program?
3. Is the technology transitioning process (from ETP to the EEP) clearly established to ensure success of deployed technologies? Do the processes sufficiently mitigate high risk issues for transitioning technologies?

1.2.3 Administration and Delivery

1. What challenges have occurred in initial program implementation and how were they handled?
2. Has the ETP's approach been consistent with the program design? If not, how and why did it differ?
3. Are the program processes effective for identifying and vetting new technologies?
   a. Program tracking and information management systems
   b. Internal and external program communications
   c. Program delivery organization and staffing
4. Is Nicor Gas pleased with the way the program has proceeded to date?
5. What aspects of the program seem to be operating effectively? Are there any significant areas in which the program needs to be improved?

2. Evaluation Methods

This section describes the analytic methods and data collection activities implemented as part of the process evaluation of the program. The process evaluation included a review of the program's administration and delivery.

2.1 *Primary Data Collection*

The purpose of the process evaluation was to develop a complete understanding of how the program works and identify potential barriers to program success. The evaluation team conducted in-depth interviews with the program administrator (WECC) and the program implementation contractor (Gas Technology Institute - GTI). Opportunities for improvement, if noted, were identified and communicated to the program team as soon as practicable via email or telephone communication.

Telephone interviews included prepared question topics such as program administration, program outreach and marketing, program delivery and customer satisfaction, along with the opportunity for a "free-flowing" conversation between the evaluation team and participants in order to pursue relevant issues raised during the discussion.

Tracking data analysis, used first in the Verification, Due Diligence and Tracking System Review Memo (VDDTSR - See Appendix A), included review of tracking systems structure and methodology. The ETP did not provide an extract of actual project data for review of their in-use tracking system because they had not yet initiated program tracking at the completion of GPY1. Instead, the ETP provided their intended tracking template (i.e., tracked fields and structure) for the evaluation team to review.

Table 2-1, listed below, provides a summary of the principal data sources contributing to the evaluation of the ETP.

Table 2-1: Principal Data Sources Contributing to the ETP Program Evaluation

Data Collection Type	Targeted Population	Sample Frame	Sample Design	Sample Size	Timing
Tracking Data Analysis	Program Projects	Tracking Spreadsheet and Software	-	All	June-July 2012
Literature Review	Program Documents	Program Documents	-	All	May-July 2012
In-Depth Telephone Interviews	Program Administrator (WECC)	Contacts from Nicor Gas	WECC Program Administrator Staff	1	April 2012
	Implementation Contractor (GTI)	Contacts from Nicor Gas	GTI Implementation Staff	2	April 2012

2.2 *Additional Research*

The evaluation team did not conduct any additional research for this process evaluation.

2.3 *Impact Evaluation Methods*

This GPY1 evaluation does not include an impact evaluation. The program is too early in its implementation to have measurable impacts.

3. Evaluation Results

This section presents the evaluation team's process findings for the Nicor Gas Emerging Technologies Program (ETP). These findings address the evaluation questions presented in the ETP Evaluation Plan, and in Section 1.2, above.

3.1 Impact Evaluation Results

This GPY1 evaluation does not include an impact evaluation.

3.2 Process Evaluation Results

The process component of the program evaluation is focused on marketing and technology idea generation, idea screening and selection, pilot assessment processes, program administration, and transfer of results to EEP. Each area is addressed in the subsections below. Nicor Gas initiated the ETP in December 2011, half way through GPY1, and the ETP spent much of GPY1 designing the processes necessary to implement the program. Even so, by the end of GPY1 (May 31, 2012), the ETP had accepted 21 applications for new emerging technologies and processed the technologies through their *4S: Ready Set Go* screening, scoring, and selection system. Table 1-2, above, lists the 11 technologies that have advanced to the "Set" stage for further evaluation and GTI expects to initiate pilot assessment projects to validate energy savings for at least four of these technologies. The majority of this process evaluation focuses on the program design and adherence to said program design, rather than the effectiveness of implementation, which is still in its early stages.

The evaluation team prepared a detailed Verification and Due Diligence and Tracking System Review (VDDTSR) memorandum delivered to Nicor Gas on August 2, 2012. This section includes key findings from that memorandum as well as findings from review of non-VDDTS processes, such as marketing and outreach. The entire VDDTSR memorandum is included in Appendix 5.1. As indicated in the VDDTSR memorandum, many of the issues raised during the data collection and in-depth interview phase are currently being addressed by the program team for prompt implementation.

3.2.1 Marketing and Technology Idea Generation

In GPY1, the ETP's communications and outreach was successful in soliciting new technology applications from industry during the portion of GPY1 in which they conducted outreach. They received 21 technology applications, 11 of which they presented to the Technical Review Committee (TRC) for further evaluation. The TRC approved four technologies for pilot assessment testing. It is difficult to discern the relative quality of the technologies at this stage of process implementation. After ETP completes these projects, ETP will be better suited to characterize the quality of the original idea submissions.

The ETP is aware that technology idea generation may prove to be increasingly difficult in future program years as the ETP exhausts the opportunities for well-known candidate technologies ("low-hanging fruit"). ETP needs to actively combat this expected trend and prevent a reduction in application rates. Navigant expects that internal research and industry intelligence will play a larger role in years to come as the ETP exerts greater efforts to identify emerging technologies. Based on discussions with

the ETP staff, and past experience with emerging technology programs, proactive research and market scans may be required to supplement the pipeline of ideas.

Outreach for the ETP is a particularly unique component in comparison to other EEP programs, and Navigant expects that the ETP will have to invest heavily in this area to continue to be successful, as there exists no perfect blueprint for them to follow. With greater time and effort available in GPY2 to dedicate to soliciting ideas, the ETP should work to refine this process and expand their reach to new companies, industries, and technology types. Two areas of potential focus include: the ability to attract large organizations for which the ETP may not represent a large market opportunity, and the ability to avoid getting bogged down with marginal applications

Initial screening and selection processes appear to be sufficiently rigorous based on GPY1 technology outputs. A too-rigorous primary screening process can filter out viable technologies for which insufficient data is available but may still be worth pursuing; this does not appear to be an issue for the Nicor Gas ETP.

3.2.2 Program Characteristics and Barriers

Based on the documents reviewed, it appears that the implementation contractor is performing well at screening technologies for eligibility and potential impact on the EEP through the 4S process.

Because the ETP has not yet implemented technology-validation steps beyond the 4S process, it is still to-be-determined whether the remaining steps of the program design will provide the outputs that the EEP expects; however, the level of preparation and quality of program design that the ETP has undertaken point to strong program performance in GPY2.

The ETP established an internal tracking system to document screening progress for each technology submitted to the program. The process is an interim solution as they intend to transition to Nexant's TrakSmart software platform, which all EEP-programs plan to adopt.

The ETP employs "4S Summary Spreadsheets" in Microsoft Excel for tracking individual project progress. This tracking is limited to the 4S process, and does not cover any pilot assessment activities. Each workbook is structured to mirror each 4S Selection process step. The ETP creates a new workbook for each technology when a new technology application is received. The 4S Summary Spreadsheet documents the technology scoring criteria and the actual scores, but does not track the calculations and assumptions used to determine many of the scores. ETP calculates the inputs outside of the spreadsheet and copies the necessary outputs into the 4S Summary Spreadsheet.

The ETP uses a monthly "Project Scorecard" as the primary program tracking document. The Project Scorecard "provides a high-level summary that allows users to quickly locate important and salient project information."[3] To date, ETP has created this scorecard manually by aggregating data from each

[3] From "Nicor Gas ETP Program Operations Manual Final to WECC 03-29-12" under "Reporting: Project Scorecard."

technology's 4S Summary Spreadsheet. As the program grows, manual scorecard generation may prove to be a potential source of error and undue effort to complete. Navigant recommends that the ETP estimate the level of activity at which a transition from manual to automated tracking will be cost-effective. With the transition to a centralized tracking system, which includes all information from each 4S Summary Spreadsheet, the ETP should be able to automatically generate the Project Scorecard each month.

The ETP's current tracking system notably does not document each measure's stage of development, appropriateness for ETP evaluation, or reason(s) for discontinuing evaluation. Such documentation is important both to understand in the future if a technology may be worth revisiting, but also, and perhaps more importantly, to understand when not to revisit a technology that has been previously deemed inappropriate for the program.

To date, pro-active relationship building by the ETP with the implementation contractors of other EEP programs has helped strengthen ETP process development and, most importantly, will facilitate transitions of technologies from the ETP into the EEP in the future. Such active relationships promote frequent communication which will enhance the effectiveness of the transition process by enabling a strong feedback loop to help the ETP to learn what is necessary for successful technology deployment.

However, the ETP has not established a robust process for deploying technologies successfully into the EEP that mitigates all potential high-risk issues. Additionally, mention of a successful transition is not included in the program objectives. The existing process does not address three different high-risk issues:

- *Clarity on data requirements:* The ETP will "provide Nicor Gas EEP teams with data necessary to prepare Work Papers and/or Technical Reference Manual (TRM) documentation for a new EEP measure," but the ETP does not specifically define what these data include.[4] Navigant recognizes that defining data requirements is particularly challenging for the ETP because it may vary for each technology. For each new technology, a preliminary list of data requirements could include the following for each of the baseline technology and the energy efficient technology: detailed description, effective useful life, material and labor costs, energy savings (independently for each configuration or distinct application), and methodology or calculation justification for each of the cost and savings values.
- *Roles and responsibilities:* Without clearly identified responsibilities for deploying a technology, EEP runs the danger of having no clear champion to drive and facilitate the transition and deployment. Additionally, no specific individual, either inside or outside of the ETP, has been identified with ultimate responsibility for drafting technical work papers and other necessary documentation.
- *Business/Marketing information:* The ETP omits any mention of information transfer on each technology related to marketing and business. The existing project-completion process addresses only the technical aspects of each technology, but understanding the market is fundamental to successfully identifying and incorporating new technologies into the EEP. The ETP identifies the value of market acceptance information in the 4S process with the "Ease of implementation and market adoption" metric, but then does not identify any market

[4] From "Nicor Gas ETP Program Operations Manual Final to WECC 03-29-12" page 1.

information for transfer to the EEP.[5] Market information that is vital to a successful deployment include: detailed product description, value proposition, target customer/market, customer need, key benefits, barriers to adoption, and primary differentiation.

The evaluation team did not have the opportunity to speak with any ETP applicants (manufacturers). However, through interviews with the program administrator and program implementation contractor staff, the evaluation team understands that there are no inherent barriers to participation for prospective applicants due to program design or delivery. There is no indication that the program documentation and administrative requirements create an undue burden for manufacturers to participate in the program. To the contrary, the ETP implementation contractor has developed a very low-barrier program that provides every motivation for technology suppliers to participate, requiring only that the technology is commercially available and complies with local, state, and national codes. The ETP's marketing and outreach approach should emphasize that EEP adoption of a manufacturer's technology will open up a large market of potential customers, including an established sales force to help drive sales.

3.2.3 Administration and Delivery

The ETP's challenges come from two key areas: inherent challenges associated with planning and executing a new program, and the uncharted territory that is unique to an emerging technology program. Through a rigorous program design, the ETP has successfully addressed the key challenges of designing the primary operating processes, including communication pathways, tracking systems, marketing and outreach programs, screening, and pilot assessment plans.

The ETP implementation contractor's expertise with emerging technologies has helped them to overcome the challenges of navigating uncharted territory of emerging technology programs. Building on their emerging technology experience, the ETP effectively tailored their administrative processes during program ramp-up to accommodate the numerous unique aspects of the ETP, relative to the other EEP programs, while interfacing effectively with WECC staff through the traditional channels and methods.

[5] The "Ease of implementation and market adoption" is detailed in "Nicor ETP Screening Scoring and Selection System Final to WECC 03-19-12-MT-CORRECTION," page 15

4. Findings and Recommendations

This section describes the evaluation team's recommendations from the Rider 30 evaluation of the Nicor Gas Emerging Technologies Program.

The ETP however was not operational until December 2011, six months into GPY1. Therefore, the program was still in the early stages of the implementation process at the end of GPY1. Nonetheless, Nicor Gas and the ETP program team together have effectively designed and implemented many of the important processes to build a successful program in this short period. The evaluation team recognizes that since the end of GPY1, the ETP has likely evolved further, and may have made progress to address some of the issues discussed in this evaluation. However, based on the research conducted at the time for this evaluation, the evaluation team has concerns about a few program areas, starting with insufficiently defined program objectives. With some focused effort to improve the objective, and to address the recommendations below, in particular, those focused on technology transition to EEP, the evaluation team expects the ETP to perform well.

In GPY2, pilot assessment execution and potentially the deployment to EEP of one or more technologies will shed more light on the effectiveness of the program process design. With few industry best practices to follow, the Nicor Gas' ETP is charting new territory, and with a few enhancements as described in the recommendations, below, the evaluation team believes the ETP is well positioned for success.

4.1 Key Impact Findings and Recommendations

This GPY1 evaluation does not include an impact evaluation.

4.2 Key Process Findings and Recommendations

4.2.1 General

- ***Program Objective is Limited***

  Finding:

  The ETP's stated program objective is too limited to assure an effective program. In particular, the objective does not address the actual transition to EEP, which is fundamental to a successful program. GTI has already taken steps beyond the stated objectives that will aid in achieving success.

  Recommendation:

  Navigant recommends that Nicor Gas and the ETP expand the objective to incorporate a successful technology transition to the EEP. Responsibility for execution of this objective may be shared with Nicor Gas and other ICs (i.e., not limited to GTI staff). Identification of viable technologies is only step one in an ETP, and deployment is often the more difficult and risk-ridden step for ETP.

  Additionally, Nicor Gas and the ETP may benefit from defining the ETP's intentions with regards to either long-term or near-term technical and economic savings potential and overall

portfolio energy efficiency or end-use therm savings. Defining these, and other similar portfolio-level goals of the program, will help the ETP screen technologies more effectively.

4.2.2 Process Tracking, and Reporting Findings

- ***Central Tracking***

  Finding:

  The ETP's technology tracking process does not currently extend beyond the 4S selection process, to include information on pilot assessment testing or the transition to EEP. The current system tracks each technology in a separate Microsoft Excel workbook. This process is an interim solution as they intend to transition to Nexant's TrakSmart software platform, which all EEP-programs plan to adopt.

  Recommendation:

  Navigant recommends that the ETP employ a central tracking system for all technology applications that extends from application submission to technology transfer to EEP (or rejection from further analysis). The monthly Project Scorecard and other deliverables should ideally be linked to such a system automatically. The use of a comprehensive technology tracking system may enable enhanced documentation of justifications for not pursuing technologies further (see Section 4.2.3). Additionally, this may enable greater accessibility and transparency into project progress for both Nicor Gas and ETP's internal purposes. Such a system will also facilitate third-party measurement and verification by aggregating all necessary data into a single, auditable database.

4.2.3 Marketing and Outreach and Technology Identification Findings

- ***Technology Inclusion in EEP is a Sales Opportunity***

  Finding:

  When conducting marketing and outreach to solicit technology applications, the ETP can further leverage the fact that EEP adoption of a technology will open up a large market of potential customers for the manufacturer.

  Recommendation:

  Navigant recommends that, during program outreach and marketing, the ETP place substantial emphasis on the fact that inclusion in the Nicor Gas EEP will open up a new, subsidized market for selected technologies, including a new, experienced sales force within the EEP ICs to promote the technology. Promoting the vast sales benefits of the EEP program to manufacturers as a way to jumpstart a national sales initiative will help to increase the volume of applications. Additionally, by showing manufacturers the potential benefits, the ETP may find that the manufacturers are more willing to provide data and provide assessment support as needed. However, the ETP should also recognize that Nicor Gas's territory is small in the context of a national market opportunity for a large manufacturer, which may hesitate to participate due to preconceptions of slow utility bureaucracies and limited market potential.

- ***Documentation and Re-Evaluation of Promising Technologies***

  Finding:

  The ETP has not defined a process by which they can revisit promising technology applications which do not currently meet all the necessary criteria, but may be viable options in the future.

  Recommendations:

  Navigant recommends that the ETP consider recording a summary of reason(s) for not going further with each technology (including a date). For each promising technology for which the ETP discontinues evaluation (excluding technologies which are clearly not viable for the EEP), the ETP should consider setting a target date to revisit the status (e.g., in 6 months or two years), and one or more market or technology trigger (i.e., threshold) that indicates, upon revisiting, whether the technology should be re-assessed by the ETP. Incorporating a process for re-evaluating promising technologies in future years can help ensure that the ETP does not overlook technologies that may be close to program-ready, but still require small developmental improvements.

  Further, such a process keeps in focus the need to avoid re-visiting those other technologies which have been discarded for good reason and are not worthy of additional investment by ETP. If the program does not clearly understand and document reasons for specific decisions on each technology, poor ideas can continue to resurface and distract the program from top contenders.

4.2.4 Screening Process Findings

- ***Quantitative Scoring Documentation***

  Finding:

  The 4S Summary Spreadsheet does not include templates for calculating the quantitative scores. Instead, it is up to the ETP staff to calculate each value and input it into the spreadsheet. The ETP uses these calculations to evaluate the technology's value to Nicor Gas' portfolio and to verify manufacturer-claimed savings within Nicor Gas' service territory.

  Recommendation:

  Navigant recommends including pre-established lists of input/output variables and methodologies (and calculations, where possible) in the 4S Process Microsoft Excel Spreadsheets, for determining scores for as many metrics as possible. Consistency in savings calculations, in conjunction with savings verification through pilot assessments, will boost confidence in ETP outputs and accelerate program throughput by reducing the time necessary to manually conduct data analysis. Further, such consistent documentation may prove valuable in the transition process as a starting point for the EEP to generate a technical work paper. Navigant recognizes that at times, a unique approach may be required for technologies with unique characteristics or if reliable data is not available, however, Navigant believes that the ETP can maintain consistency between analyses by developing a template that outlines the methodology.

- ***Technology Pilot Assessment Bypass Process***

  Finding:

  The ETP has not yet defined a process for bypassing pilot assessments for near-program-ready technologies, i.e., those that do not need independent testing before they are ready to be deployed in Nicor Gas's portfolio.

  Recommendation:

  Navigant recommends that the ETP design and implement a bypass procedure that identifies technologies in the ETP that can be promptly deployed in the EEP. The evaluation team expects that this should be straight forward to implement because it is primarily about how to identify near-program-ready technologies and about understanding the simplified process by which those technologies can be transferred to the EEP. In recent communications, the ETP stated that they are "currently implementing an 'engineering algorithm' approach for near program ready technologies to utilize existing validated datasets and bypass the need for its own pilot in the Nicor Gas ETP." The ETP's early awareness of the issue and prompt action to define this new process will help facilitate rapid technology deployment wherever possible.

4.2.5 Technology Deployment Findings

- ***Risk Mitigation in Technology Transfer/Deployment to EEP***

  Finding:

  The current transition process may be insufficiently well defined, potentially putting the success of each technology deployment in jeopardy. Few aspects of the transition have been defined and no specific individuals are assigned to manage the transition.

  Recommendations:

  Navigant recommends that Nicor Gas and the ETP consider assigning ultimate responsibility of technology transfer to a specific individual in the EEP (and a second individual within the ETP, if appropriate) to ensure that the process is appropriately managed and guided as necessary. Ideally, the EEP leader is involved with the technology as early as pilot assessment design. Having EEP/IC staff involved builds ownership and helps ensure that the pilot assessment addresses the core questions of the program people. Identifying a leader or champion with specific responsibilities can provide assurance that the transition will not stall or otherwise fail because the manager will be ultimately responsible over the success of the transition.

  Navigant recommends that the ETP consider more clearly defining a set of deliverables that the ETP will provide to the EEP IC that is to deploy the technology. The specific set of deliverables should provide comprehensive information transfer, containing all necessary information for the IC. A more clearly defined, robust set of deliverables can enhance the transition process and help ensure successful technology deployment. This can facilitate rapid incorporation into the rebate portfolio since all the necessary information on the technology will be included in one location.

- ***Market Assessment***

  Finding:

  Currently, ETP objectives and final deliverables put minimal focus on market factors for each technology. Understanding the market is fundamental to successfully identifying and deploying new technologies for the EEP.

  Recommendation:

  Navigant recommends that the ETP consider adding a focused market/business assessment, based on any lessons learned as part of the technology evaluation and pilot assessment, as a deliverable at the completion of a technology assessment for use by the EEP IC(s) that will be deploying the measure. The beginnings of such an assessment, including discussion of the ease of market implementation/adoption and technology maturity, are included in the PAP, which the ETP completes prior to each pilot assessment. A focused market/business assessment could additionally capture the value proposition, target customer/market, customer need, key benefits, barriers to adoption, and primary differentiation. The information needed for this level of basic market assessment should be gathered through any available previously conducted research, any relevant findings from the pilot, and through discussions with the EEP ICs that are familiar with the target market(s).

  By adding a market/business assessment, the EEP may be able to capitalize on the ETP's extensive institutional knowledge on each technology. While the EEP ICs are knowledgeable in the markets in which they work, the ETP is best suited to provide insights into the new technologies, thereby facilitating the development of a stronger business plan for the EEP to implement. This market/business assessment may enable a rapid transition, and provide the best opportunity for success.

5. Appendix

5.1 VDDTSR Memorandum

To: Janet Lynch-Eisenhut (WECC), Doug Kosar (GTI), Scott Dimetrosky (Apex), Jim Jerozal (Nicor Gas)

Copy: Jennifer Hinman (ICC), David Brightwell (ICC), Dan Rourke (Nicor Gas), Ted Weaver (First Tracks), Julianne Meurice (Navigant), Randy Gunn (Navigant)

From: Matt Guernsey (Navigant)

Date: August 2, 2012 (Revised for inclusion in Final EM&V Report Appendix)

Re: Verification, Due Diligence and Tracking System Review (VDDTSR) of Nicor Gas' Emerging Technology Program

The Emerging Technology Program (ETP), a program within Nicor Gas' Energy Efficiency Program (EEP), is unique in that it does not deliver products or services to customers in the typical fashion for an EEP. Instead, the program delivers recommendations and supporting datasets to the EEP for new technologies to be integrated into the program portfolio. The program's stated objective is to:

> "Identify emerging technologies and/or practices that are new or underutilized and have the potential for energy savings and possible future integration into the Nicor Gas energy efficiency program (EEP). ETP will achieve energy savings while being transparent, cost-effective, scalable, and developing the needed data to transition measures into the EEP."

If successful in achieving goals, the ETP facilitates expansion of the EEP and improvements to program offerings.

This document provides the results from our review of the tracking system and quality control processes for Nicor Gas' ETP. Typically, the VDDTSR also documents EM&V savings verification; however, the entire ETP is an exercise in savings quality control and verification of manufacturers' claimed savings. As such, Navigant will include evaluation of verification activities as part of the final evaluation report.

The primary areas of inquiry for this memo were to determine whether:

- Appropriate tracking is in place that facilitates both program operations and EM&V activities
- QA/QC processes are appropriate and sufficient for accurate technology analysis

The ETP was not initiated until midway through Gas Program Year 1 (GPY1), so ETP efforts have focused on program design and the team is still in the early stages of program implementation. By the end of GPY1 (May 31, 2012), the ETP had accepted 21 applications for new emerging technologies and processed the technologies through their "4S: Ready Set Go" screening, scoring, and selection system. The ETP identified 11 of the 21 technologies for potential further evaluation and expects to initiate pilot assessment projects to validate energy savings for a still-undetermined subset of these technologies.

Accordingly, this review is based primarily on design intent of the program, with very little implementation experience to evaluate. This memo defers to GPY2 on inquiry of the following items, which are typically included in the GPY1 VDDTSR:

- Whether appropriate eligibility criteria have been properly adhered to and applications are appropriately reviewed
- Whether project scoring and evaluation information was entered in an accurate manner in the tracking system, including accurate calculation of scored criteria
- Whether verification activities and processes provide the necessary rigor for preparing a technology to transition to the EEP
- Whether savings were calculated correctly for ETP pilot assessment projects

5.1.1 Overview of Findings

5.1.1.1 Due Diligence

The ETP conducts their own savings verification and due diligence (VDD) in two stages: during the 4S Selection Process to determine the validity of manufacturer claims and develop independent savings estimates, and then again during technology pilot assessments to collect primary data on each technology. The ETP did not fully complete either verification step by the end of GPY1, so Navigant will conduct comprehensive review of the implementation of these procedures in GPY2 and GPY2.

Much of the VDD review in GPY2 and GPY2 will confirm the validity of in-place QA/QC practices. However, based on review of existing QA/QC documentation it appears that the ETP has articulated the necessary processes to an appropriate level of rigor given the unique characteristics of each technology evaluation.[6] Two important QA/QC activities that ETP has articulated to enable rapid and error-free identification of top technologies include:

1. Automated filtering of technology applications, where possible, to quickly screen out unviable technologies without excessive staff time investment
2. Clearly characterized screening metrics to facilitate identification of top technologies that could be beneficial to the EEP portfolio

5.1.1.2 Reporting and Tracking

The ETP expects to use Nexant's TrakSmart tools to track program activities. However, Nicor Gas had not yet scheduled the ETP for training by the end of GPY1. Accordingly, ETP staff uses their own excel-based tracking tools, and expands these tools only on an as-needed basis. Presumably, ETP staff will have to work with Nexant to tailor TrakSmart to better suit the unique structure of the ETP. In June 2012 the ETP met with Nicor Gas personnel to discuss TrakSmart capabilities. After additional training in August 2012 the ETP can begin planning a comprehensive and long-term tracking system.

Review of the existing tracking system, though not comprehensive, gives insights into how the ETP may implement a long-term tracking solution. The ETP's current tracking spreadsheets are structured to

[6] Review of QA/QC documentation focuses on the ETP document titled: "GTI 21279 Nicor Gas ETP QA-QC Plan to WECC 02-16-12"

mirror the 4S Selection process steps. The ETP creates a new "4S Summary Spreadsheet" workbook for each technology, starting upon receipt of the technology application. This tracking workbook then follows the technology through the evaluation process.

5.1.1.3 Summary of Recommendations

Based on review of the ETP's planning documents[7], the current tracking system implementation, and general best practices for program management[8], Navigant offers the following observations and recommendations:

- *Quantitative scoring documentation* - The 4S Summary Spreadsheet does not include templates for calculating the quantitative scores. Instead, it is up to the ETP staff to calculate each value and input it into the spreadsheet. The ETP uses these calculations to evaluate the technology's value to Nicor Gas' portfolio and to verify manufacturer-claimed savings within Nicor Gas' service territory.

  Navigant recommends including pre-established methodologies and algorithms (and calculations, where possible), for determining scores for as many metrics as possible. For example, to determine cost-effectiveness, the 4S Summary Spreadsheet could include inputs for material and labor costs, then use the gas savings estimates to calculate the simple payback period and return on investment, both of which are used to determine the cost-effectiveness score. Navigant recognize that at times, a unique approach may be required given the characteristics of the technology or the availability of reliable data; however, Navigant believe that by developing a template that outlines the methodology (which ETP personnel expect to deliver in GPY2/GPY2), the ETP can maintain consistency between each analysis. Consistency in savings verification will boost confidence in ETP outputs and accelerate program throughput.

- *Central tracking and reporting automation* - The ETP's detailed technology tracking does not currently extend beyond the 4S selection process. Further, the high-level monthly Project Scorecard, which ETP uses to communicate program progress to Nicor/WECC, must be created manually each month.

  Navigant recommends that, as the ETP transitions to a long-term tracking solution, the ETP employ a central, detailed tracking mechanism that extends from application submission to technology transfer to EEP (or rejection from further analysis). The monthly Project Scorecard and other deliverables should be dynamically linked to such a system to automatically aggregate reporting information, wherever possible. This avoids undue errors in manually transferring information and reduces preparation time.

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[7] The ETP documents tracking-system planning in multiple documents, including: "Nicor Gas ETP Program Operations Manual Final to WECC 03-29-12," "Nicor ETP Screening Scoring and Selection System Final to WECC 03-19-12-MT CORRECTION," and "Nicor ETP Project Implementation Guidelines Final to WECC 03-29-12"

[8] Evaluation of Emerging Technology Programs, as part of utility Energy Efficiency Programs, is relatively new, and few best-practices exist outside of typical program-management practices. The Benchmarking section provides details on applicable best practices for energy efficiency programs.

- *Key Performance Indicator (KPI) tracking* - The ETP defined seven KPIs for GPY1 to quantify program performance. The KPIs were generally difficult to quantify, and were focused solely on project management activities.

  Navigant recommends adding and tracking additional KPIs that monitor quantifiable performance relative to ETP-specific objectives (i.e., to identify top emerging technologies). The ETP is already in the process of developing draft KPIs for GPY2/GPY2, and will work with Navigant for feedback and recommendations on specific KPIs to incorporate as the program moves forward.

5.1.2 Data Collection

For this VDDTSR, the evaluation team relied on in-depth interviews with program and implementation staff and review of program process documentation, including the:

- ETP Program Operations Manual
- Screening, Scoring and Selection System
- Nicor Gas ETP QA-QC Plan
- 4S Summary Spreadsheet template (blank)
- Nicor Gas ETP Project Scorecard template (blank)

The ETP has completed draft versions of both the 4S Summary Spreadsheets and the Nicor Gas ETP Project Scorecard, but did not provide versions of these or any other program implementation deliverables for review because the documents are not yet finalized. Accordingly, data collection focused solely on design documentation and tracking plans. For the GPY2/3 evaluations, the VDDTSR will focus primarily on the following key program implementation deliverables:

- A sample of technology applications, as documented in completed 4S Summary Spreadsheets
- A sample of monthly ETP Project Scorecards (including the most recent)
- All tracking system components

In addition to tracking-system-design evaluation, as documented here, such additional documentation will enable the GPY2/3 VDDTSR to cover comprehensive ETP due diligence on in-process technology assessments and review of a more comprehensive and long-term tracking system.

To conduct the best practices benchmarking assessment of the tracking system, the evaluation team consulted the *Best Practices Self-Benchmarking Tool* from the *National Energy Efficiency Best Practices Study*.[9] This memo does not document a verification benchmarking assessment because technology savings verification is a primary function of the program itself which Navigant will evaluate in the GPY1 evaluation final report.

[9] "Best Practices for Energy Efficiency Programs" benchmarking tool is available at: http://www.eebestpractices.com/benchmarking.asp

5.1.3 Review of Program Operating Procedures and Tracking System

The evaluation team examined the operating procedures and tracking system used by Nicor Gas' ETP to process new emerging technology applications. The program documentation provides detailed procedures and a flow diagram (see Figure 5-1) of the following steps in the process:

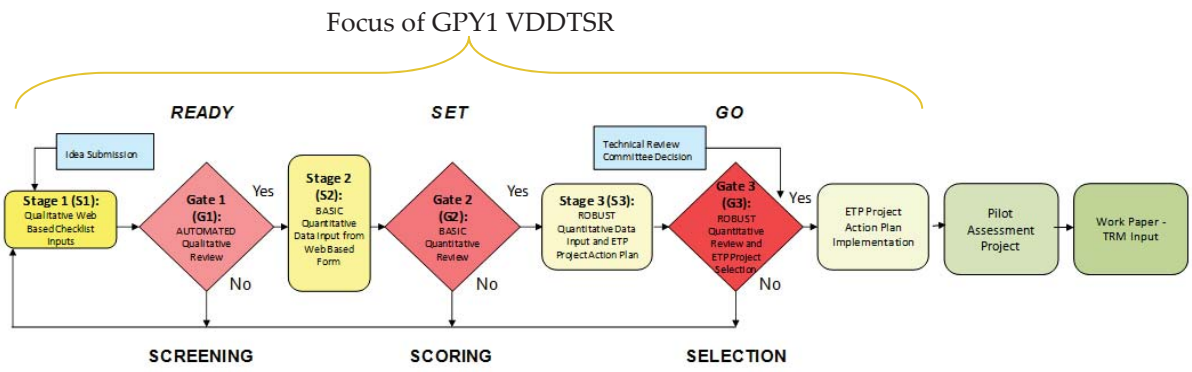
Completed in GPY1:

1. Communications and Outreach (omitted from ETP flowchart Figure 5-1)
2. Idea (application) submission
3. Screening (4S process)
4. Basic quantitative data input
5. Scoring (4S process)
6. Robust quantitative data input
7. Selection (4S process)
8. Project Action Plan (PAP) creation and technical review by committee

To be conducted in GPY2:

9. Pilot assessment project implementation
10. Reporting (e.g., Work Paper), and handoff to EEP

Figure 5-1: Screening, Scoring, and Selection flowchart from ETP Documentation[10]



By the close of GPY1, the ETP had reached step 8: PAP creation and technical review by committee. Accordingly, the subsections below cover verification, due diligence, and tracking systems as they relate to steps 2 through 8 (omitting step 1 because it includes no relevant activities for the VDDTSR). The GPY1 process evaluation report will additionally include comprehensive assessment of the other steps, such as communications and outreach, and process design for those steps not yet implemented (i.e., pilot assessment project implementation, reporting and handoff to EEP).

5.1.3.1 Application Review

Any manufacturer or technology vendor is eligible to apply to, and participate in, the ETP with one or more technologies. Unlike other EEP programs, which provide rebates to Nicor Gas customers, the ETP

[10] Flowchart extracted from "Nicor ETP Screening Scoring and Selection System Final to WECC 03-19-12-MT-CORRECTION"

identifies technologies for use in the EEP, and therefore limits participation to any company that manufactures or sells an applicable energy efficiency technology (as also presented in the ETP promotional flyer).

The ETP closely evaluates each viable technology application, so quality control of each application is important to avoid wasting time and budget on technologies that should already have been screened out. At the close of GPY1, the ETP was implementing an automated quality assurance system, for GPY2 and beyond, which will notify applicants of missing or incorrect entries. For example, if a manufacturer applies to the ETP with a technology that provides electric savings, but no gas savings, the system will prevent further processing of the application because it does not meet fundamental project criteria. The ETP recognizes that such a system cannot prevent all incorrect entries – only those which are blatantly incorrect or do not meet program criteria.

The application process must inherently rely heavily on trust in each applicant's inputs to avoid overlooking a potential viable technology due to poor application quality. The ETP staff believes that this system could lead to 'gaming' of the system, i.e., submission of incorrect information/data solely to advance in the automated screening process. The ETP views this as unavoidable to a certain extent, and will be vigilant in their review of applications to quickly identify such information.

As part of the "Go" stage of the 4S process, the ETP conducts extensive quality control in the form of rigorous quantitative secondary research and analysis of each technology. They use literature review and engineering analysis to validate claimed costs and savings. This ensures that their decisions on which technologies to further evaluate are based on concrete, accurate data. The individual QA/QC steps vary depending on the technology under investigation.

5.1.3.2 Tracking System

As described in "Overview of Findings," above, the ETP expects to transition to an EEP-wide tracking platform by Nexant called TrakSmart for comprehensive tracking during GPY2 and beyond. Given this process is still in transition, the ETP has developed tracking processes on an as-needed basis, and does not utilize a centralized technology tracking system.

Currently, the ETP employs "4S Summary Spreadsheets" in excel for tracking individual project progress. This tracking is limited to the 4S process, and does not cover any pilot assessment activities. Each workbook is structured to mirror each 4S Selection process step. The ETP creates a new excel workbook for each technology upon receipt of the technology application. Each workbook includes the following worksheets:

- Ready Stage Responses
- Set Stage Data Inputs
- Set Stage Scoring Summary
- Go Stage Scoring Summary
- Criteria Definitions

The 4S Summary Spreadsheet documents the technology scoring criteria and the actual scores, but does not track the calculations and assumptions used to determine many of the scores. ETP calculates the inputs elsewhere and copies the necessary outputs into the 4S Summary Spreadsheet.

As their primary program-level tracking document, the ETP currently uses a monthly "Project Scorecard" that "provides a high-level summary that allows users to quickly locate important and salient project information."[11] It serves the needs of what the program documentation describes as "a master summary sheet that will include project ID, their location within the 4S process, results from each gate/decision, dates of key decisions, and reasons for removal of the submission from consideration, if applicable".[12]

The Project Scorecard includes tracking of many key metrics, including:

- *4S data:* Title, application submission date, stage completion dates, cause of failure to proceed(if applicable), if ETP recommends pilot testing, if the Technical Review Committee has reviewed the Project Action Plan, and if the project will proceed to pilot testing
- *Pilot data:* Title, location, pilot test dates, project size, savings, and result dissemination channels
- *Summary metrics:* Number of technologies that have completed the following activities: application, each stage of the 4S, pilot testing, and transition to EEP

To date, ETP has created this scorecard manually by aggregating data from each technology's 4S Summary Spreadsheet. As the program grows, manual scorecard generation may prove to be a potential source of error and undue effort to complete. At that time, the implementation of a more robust "master summary sheet" will become necessary.

5.1.4 Reporting and Tracking Benchmarking

To conduct the best practices benchmarking assessment, the evaluation team compared the ETP practices (shown in bullet form) with the "Reporting and Tracking Best Practices" portion of the *Best Practices Self-Benchmarking Tool*[13] from the *National Energy Efficiency Best Practices Study*, which are the numbered items in italic font. Given the nature of the ETP program, Navigant excluded best practices that do not apply, most specifically, the "Quality Control and Verification" portion which EM&V reports typically reference.

Table 5-1 summarizes the scores as determined by the Self-Benchmarking Tool criteria in the "Reporting and Tracking" section. Each practice is rated with one of three potential scores: Meets best practice, Needs some improvement, Needs significant improvement. Navigant recognizes that the ETP is still in its infancy, and accordingly, this review is based on rapidly changing tracking and reporting processes.

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[11] From "Nicor Gas ETP Program Operations Manual Final to WECC 03-29-12" under "Reporting: Project Scorecard."

[12] From "Nicor ETP Screening Scoring and Selection System Final to WECC 03-19-12-MT CORRECTION," page 10, under 4S Process Details: Recordkeeping.

[13] See the Best Practices Self-Benchmarking Tool developed for the Energy Efficiency Best Practices Project: http://www.eebestpractices.com/benchmarking.asp.

Table 5-1: Reporting and Tracking Benchmarking Scores

ID	Best Practice	Score*
1	Define & identify key information needed to track & report early in program development	Needs some improvement
2	Clearly articulate the data requirements for measuring program success	Needs some improvement
3	Design program tracking system to support requirements of evaluators as well as program staff	Needs some improvement
4	Use Internet to facilitate data entry & reporting; build in real time data validation systems	Meets best practice
5	Automate, as much as is practical, routine functions (e.g., monthly program reports)	Needs some improvement
6	Develop electronic application processes	Meets best practice
7	Develop accurate algorithms & assumptions on which to base savings estimates	Needs some improvement
8	Conduct regular checks of tracking reports to assess program performance	Meets best practice
9	Balance the level of tracking planned against program resource availability	Meets best practice
10	Document tracking system & provide manuals for all users	Needs some improvement

1. *Define & identify key information needed to track & report early in the program development process*
    - The ETP clearly laid out necessary metrics in the Project Scorecard to monitor throughout the 4S selection process. Plans for additional information tracking during pilot assessment testing are less clearly defined, partly due to the fact that each pilot assessment project is a unique activity.

2. *Clearly articulate the data requirements for measuring program success*
    - In lieu of established therm savings goals, which, in the conventional sense, are not practical in an emerging technology program, the ETP has seven Key Performance Indicators (KPI), scored on a 0-5 scale, for measuring program performance relative to contractual obligations (focused on GPY1 program design).
    - The KPIs include work product timeliness and quality, schedule and budget, process development, process integrity, project progress, project diversity, and safety. These KPIs are difficult to quantify in some cases, but perhaps more importantly, do not indicate performance relative to the program's objective. The ETP is currently in the process of developing new KPIs for the implementation phase of the program in GPY2/3 that better track performance relative to program objectives. It is still to be determined whether the new KPIs include sufficient data requirements to measure program success.

3. *Design program tracking system to support the requirements of evaluators as well as program staff*
    - The long-term tracking system is still in development. The current, temporary tracking system does not comprehensively track activities beyond the 4S Selection Process (e.g., pilot assessment projects), nor does it document progress toward program KPIs.

- The ETP documents progress on some key metrics in the monthly scorecard deliverable, but they do not currently monitor ongoing progress in a centralized tracking system.

4. *Use Internet to facilitate data entry & reporting; build in real time data validation systems that perform routine data quality functions*
    - The ETP conducted GPY1 data entry manually. Starting in late GPY1 (May 2012), they published the live application process on the Nicor Gas website. The system facilitates application validation by notifying applicants promptly of missing or incorrect data, thereby alleviating some manual review by ETP staff.

5. *Automate, as much as is practical, routine functions (e.g., monthly program reports)*
    - Monthly reports are not automated. While the ETP has limited options for automation due to the unique nature of most deliverables and activities, the monthly Project Scorecard is a good candidate for automation. The new tracking system, to be implemented in PY2, may provide ample opportunity for automating routine functions.

6. *Develop electronic application processes*
    - The electronic application went live on the Nicor Gas website in late GPY1 (May 2012). As such, the ETP processed the first set of technologies manually. The first complete test of the electronic process will come with GPY2 technology applications.

7. *Develop accurate algorithms & assumptions on which to base savings estimates*
    - As of the close of GPY1, the ETP was still in the process of finalizing savings estimates for the top selected technologies. Of 21 technology applications, ETP evaluated 11 in depth. The ETP has not completed this evaluation.

8. *Conduct regular checks of tracking reports to assess program performance*
    - The ETP IC meets twice monthly with the WECC program manager for regular status updates. The ETP submits monthly Project Scorecards to concisely present the progress on technology evaluations, including both the 4S process and pilot assessment projects.

9. *Balance the level of tracking planned against program resource availability*
    - The ETP has appropriately balanced the need for tracking with resource availability. As this program has a smaller volume of applications than the typical Energy Efficiency Program (i.e., with rebate applications), the tracking needs are reduced. The ETP has adjusted accordingly, focusing up front instead on processes.

10. *Document tracking system & provide manuals for all users*
    - The ETP has not fully documented their tracking system as their tracking system is currently a temporary solution until TrakSmart is implemented (see Summary of Findings, above).

See "Overview of Findings: Summary of Recommendations" on page 3, above, for a list of recommendations from these findings.

5.2 *Logic Model and Program Theory*

5.2.1 Program Theory

Program theory is essentially a structured description of the various elements of a program's design: goals, motivating conditions/barriers, target audience, desired actions/behaviors, strategies/rationale, and messages/communications vehicles. The following subsections describe the Emerging Technology Program (ETP) in these terms.

5.2.1.1 Program Goals

The goal of the Nicor Gas ETP is to identify emerging technologies and/or new or underutilized practices that have the potential to save energy within Nicor Gas' energy efficiency program (EEP). ETP aims to provide Nicor Gas' EEP with sufficient information on identified energy savings opportunities for the EEP to incorporate the technologies into their portfolio of incentivized technologies. The ETP's ultimate outputs are the necessary data for transitioning technologies into the EEP. It is then the responsibility of the EEP and the implementation contractor for the relevant EEP program(s) to integrate the technology into their portfolio of technologies, including creation of technical work papers and other program-specific documentation.

5.2.1.2 Motivating Conditions/Barriers

Steadily tightening building energy codes and appliance efficiency standards improve overall energy efficiency of Nicor Gas' customer base, but in doing so they limit the energy savings that the utility can achieve through the EEP. As codes and standards improve, and as market penetration of high-efficiency technologies increases (and costs come down), the high-efficiency technologies become the new baseline, thereby requiring the utility to find new sources of energy savings to fill this gap and help meet their energy-savings targets. The ETP serves to identify emerging technologies that could feed the EEP pipeline. However, there exist several market barriers to widespread use of such emerging technologies, such as lack of a) reliable technical data, b) technology demonstration and development, and c) robust processes for screening best emerging technologies for future application in the EEP. ETP screens and demonstrates potential energy (natural gas) saving technologies to address these barriers, and provides EEP with the technical data and analysis necessary for implementing new technology measures.

5.2.1.3 Target Audience

There are two target audiences for ETP: stakeholders (upstream), and Nicor Gas' EEP staff and implementation contractors (downstream). The ETP reaches out to upstream stakeholders, both existing participants and potential participants, to solicit new technology ideas (in addition to utilizing the ETP team's own in-house emerging technology expertise). The downstream audience, Nicor Gas' EEP staff and implementation contractors, receives the energy savings data and information outputs from the ETP and incorporates the measure(s) into their portfolio. Awareness of EEP needs and regular communication with Nicor Gas' EEP staff and implementation contractors enable successful transition of technologies from the ETP to the EEP.

5.2.1.4 Desired Actions/Behaviors

The program encourages participation from potential stakeholders via application to the ETP with viable energy (natural gas) saving technologies, and/or practices. ETP screens technology applications to identify high-potential technologies. ETP encourages collaboration with selected applicants to further research and demonstrate energy savings within Nicor Gas' territory.

5.2.1.5 Strategies/Rationale

The program will identify potential future measures for Nicor Gas' EEP by broadly soliciting ideas, conducting rigorous quantitative review, selecting applications for pilot assessments, and sharing the results with EEP staff and implementation contractors and other key stakeholders to enable the transition of high quality emerging technologies to EEP.

In order to maximize the chances of project success, ETP provides support to applicants with viable technologies. ETP may provide program funding during pilot field testing, in the form of program staff time, contributions of materials, labor, and/or other project services, manufacturer discounts, and/or direct financial equipment buy-downs. In some cases, ETP may also offer incentives to encourage site-host participation; while pilot test hosts enjoy the benefit of energy savings, pilot assessments can also be intrusive due to installation, baseline and post-installation monitoring, and survey participation.

5.2.1.6 Messages/Communications Vehicles

To solicit technology applications from stakeholders, the ETP has a presence (with ETP/EEP personnel and/or informational literature) at trade shows, seminars, and other energy-efficiency-themed forums. Nicor Gas launched the ETP with an email to key stakeholders and presentations to trade ally groups, directing them to Nicor Gas' ETP website, and encouraging them to apply with any potential emerging technologies through Nicor Gas' online application system.

At each stage of the ETP's screening process, known as "4S: Ready, Set, Go", the ETP sends an email to applicants outlining the reason(s) that the application will or will not proceed to the next stage. Communication after the first (i.e., "Ready") stage is automated and based on simple, yes or no screening criteria. For technologies that make it to the scoring (i.e., "Set") stage, the ETP communicates with applicants via personalized emails and/or one-on-one meetings to obtain additional data, and to discuss potential future field testing. In the third (i.e. "Go") stage, the ETP communicates with the applicant the intent to prepare a pilot assessment Action Plan and present it to the Technical Review Committee for endorsement to move forward. In the pilot assessment, ETP facilitates specialized training and/or other communication on an as-needed basis depending on technology complexity, and communicates the demonstration project progress and outcomes through progress reports, a final report, presentations, papers, and/or articles.

The ETP has implemented a formal feedback loop for the program. After both the "Ready" (if screened out) and "Set" stages of the 4S process, and then again after the pilot assessment, the ETP will conduct a survey of applicants to obtain feedback on the application process. The first two feedback forms have quantitative questions with scores between 1 and 5, as well as open-ended questions with suggestions for process improvement.

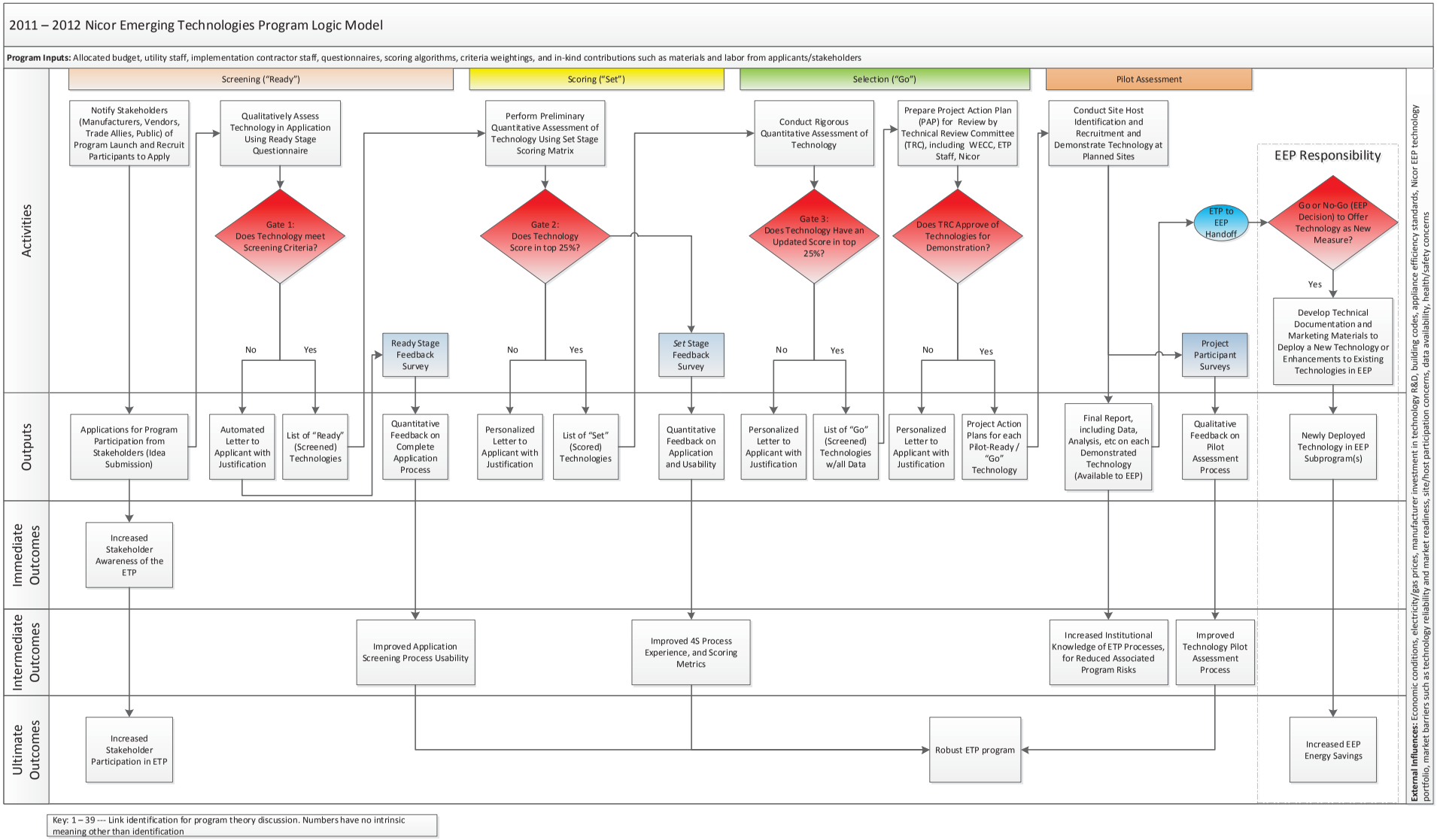
After completion of the pilot assessment phase, the applicant feedback form will be qualitative and focus on the ability to improve the pilot testing process.

5.2.2 Program Logic Model

The following section describes how the ETP activities lead to achieving the program goal of identifying viable emerging technologies and developing the needed data to transition technologies into the EEP. Figure 5-2 presents the Nicor Gas ETP logic model diagram showing the linkages between activities, outputs and outcomes, and identifying potential external influences. The diagram presents the key features of the program.

The remainder of this chapter presents the resources, activities, outputs, outcomes and associated measurement indicators associated with ETP. Tables in the subsections below include detailed descriptions of the logic model components.

Figure 5-2: Program Inputs and Potential External Influences



5.2.2.1 *Resources*

The ability of the ETP to successfully generate outputs depends in part on the level and quality/effectiveness of inputs (resources) that go into these efforts. The program budget supports the contract administration, communications, program development, pilot project selection, pilot project implementation and management, and project measurement & verification activities. The budget also supports limited site host incentives, and funds to help purchase equipment or partially fund installers for pilot testing. Table 5-2 shows key program inputs and potential external influences.

Table 5-2: Program Inputs and Potential External Influences

Program Inputs
• Nicor Gas ratepayer funds (i.e., ETP budget) • Qualitative questionnaire, scoring algorithms and criteria weightings used in *4S: Ready, Set, Go* technology selection process • Nicor Gas, ETP, and WECC staff resources, knowledge and program management experience • ETP collaboration with Nicor Gas EEP implementation contractors, other utility EEP staff , and external stakeholders to foster identification of emerging technologies • Technical Review Committee review of 4S findings and recommendations for pilot projects • ETP implementation contractor (IC) staff resources and program implementation experience • In-kind contributions such as materials and labor from applicants, and other stakeholders during technology demonstration
External Influences and Other Factors

• Current economic conditions
• Electricity and gas prices
• Manufacturer, and trade ally investment in technology research and development
• Building codes and appliance efficiency standards
• Existing Nicor Gas EEP technology portfolio
• Ability to identify host-site for pilot assessment, and host-site willingness to facilitate processes and work with ETP
• Market barriers such as:
  ➢ Reliability / market readiness of technologies
  ➢ Site/host participation concerns (e.g., extent of site intrusion during field testing phase)
  ➢ Extent of available and verifiable data on emerging technologies
  ➢ Health and safety concerns for technology demonstration

5.2.2.2 *Activities*

The purpose of the ETP is to identify technologies and/or practices that are new or underutilized and have the potential for energy savings and possible future integration into the Nicor Gas Energy Efficiency Program (EEP). This requires maximizing stakeholder participation in the program and also developing an efficient technology selection and data collection process that is transparent, cost-effective, and scalable.

Table 5-3 outlines the key program activities, including:

- Communicating program availability to stakeholders to recruit applicants to participate in the program
- Conducting qualitative assessment of the technology (Ready Stage)
- Performing preliminary quantitative assessment of technology using a scoring matrix (Set Stage)
- Conduct rigorous quantitative assessment of technology, and prepare a Project Action Plan (PAP - outlines the steps to complete pilot assessment, including a timeline, budget estimate, and other planning details) for review by Technical Review Committee (TRC), made up of WECC and Nicor Gas staff (Go Stage)
- Demonstrate the selected technology and prepare project report(s) to document the performance of the technology in a format directly compatible with WP/TRM documentation requirements

Table 5-3: Emerging Technology Program Activities

Notify Stakeholders of Program Launch and Recruit Participants to Apply to the ETP
• Distribute one-page e-mail to key, previously-identified stakeholders to solicit applications • Announce program kick-off on both Nicor Gas' public website and IC website(extranet), including complete details and link to application system • Present at regional and national conferences, as well as trade shows • Sponsor an open-forum for applicants to present their technology to an audience through a five-minute presentation (Proposed but not yet implemented as of the close of PY1)
Conduct Qualitative Assessment of the Technology (Ready Stage)
• Screen technologies via web-based qualitative screening process using basic yes/no questions; assesses preliminary technology readiness, energy savings, and potential market barriers • Automatically send email to applicants – inform unsuccessful applicants of key areas of concern, and inform successful applicants of the next steps in the process • Collect responses from online Feedback Survey for feedback on application screening process and usability (unsuccessful applicants only) • Track response rates from communications activities
Perform Preliminary Quantitative Assessment of Technology (Set Stage)
• Collect additional technology information from applicant • Collect responses from online Feedback Survey for feedback on application screening process and usability • Assess applications quantitatively, based on a pre-determined scoring matrix that scores each question on a rating of 1 to 5 and determine a final score with appropriate weighting to each question. • Provide email response to unsuccessful applicants stating justification

Conduct Rigorous Quantitative Assessment of Technology (Go Stage)
• Conduct an in-depth applicant data review using third party data sources for verification • Re-assess the application using scoring matrix (values entered by ETP staff) in the Set stage • Prepare a Project Action Plan (PAP) for review by the Technical Review Committee (TRC) if technology nominally scores in the top 25% of the currently assessed technologies, or as ETP budget constraints dictate • Obtain approval for creating a demonstration project for technology from Technical Review Committee(TRC), made up of Nicor Gas and WECC staff • Provide email response to unsuccessful applicants stating justification
Perform Technology Pilot Assessment and Prepare Project Report(s)
• Using PAP pilot site criteria, recruit site participants in coordination with Nicor Gas and other EEP ICs and obtain site host "buy in" for technology assessment • Manage pilot assessment logistics, and day-to-day activities, data collection, and QA/QC of data • Identify market barriers, and/or other issues observed during pilot assessment process • Present pilot assessment project results in a project report, or some other presentation form to EEP staff • Hand-off all collected data to EEP staff to prepare technical and marketing/communications materials for technology • Collect responses from Feedback Survey for feedback on the technology pilot assessment process

5.2.2.3 Outputs, Outcomes and Associated Measurement Indicators

The following section distinguishes between outputs and outcomes. In this document, outputs are defined as the immediate results from specific program activities. Examples for this program would be the list of technologies obtained from applications, technologies identified in each stage of the selection process, or the results obtained from technology demonstration projects.

Outcomes are distinguished from outputs by their less direct (and often harder to quantify) results from specific program activities. Outcomes represent anticipated impacts associated with Nicor Gas' ETP activities and will vary depending on the time period being assessed. Program activities will lead to immediate outputs that, if successful, will collectively work toward achievement of anticipated intermediate and ultimate program outcomes.

The following tables list outputs (Table 5-4) and outcomes (Table 5-5) directly taken from the logic model and associated measurement indicators for the program evaluators. For each key performance indicator, the table presents a proposed measurement data source or collection approach. These metrics will not be evaluated in PY1.

Table 5-4: Program Outputs, Associated KPIs and Potential Data Sources

Program Outputs from Logic Model	Key Performance Indicators for Program Evaluators	Data Sources and Potential Collection Approaches
Applications for program participation from stakeholders	Number of applications	Complete list of technologies from applications including end-uses & applicable sectors
	Application diversity across end-uses and sectors	
List of "Ready" (screened) technologies with application information	Quality of applications based on percentage that clear "Ready" screening stage	Number of technologies that pass "Ready" stage
List of "Set" (scored) technologies	None at this time	
List of "Go" (screened) technologies	None at this time	
Project Action Plans for pilot-ready technologies	Number of PAPs presented to Technical Review Committee (TRC)	Program Tracking - Complete list of PAPs
	Value to portfolio of PAP-technologies based on review of technical/economic savings potential	Sample of PAPs presented to TRC
Final report, including performance results, documents, and data for demonstrated technology (available to EEP team)	Number of technology demonstration projects completed	Program Tracking - Complete list of technologies with completed pilot assessments
	Accuracy of 4S screening results, based on comparison of expected annual therm savings results (pre-pilot) to final results (post-pilot)	Sample of pilot assessment results/final report
Letters to applicants with justification for rejection of technology	Quality of applications based on number of reasons for rejection (per technology) and frequency of individual reasons (portfolio-wide)	Complete list of reasons for rejection decision on rejected technologies
Quantitative applicant feedback from 1."Ready" stage survey 2."Set" stage survey	Average scores for survey questions	Applicant feedback survey results
Qualitative applicant feedback after pilot assessment	None at this time	
Newly deployed technologies in EEP (EEP responsibility)	Number of ETP-demonstrated technologies transferred to EEP	Program Tracking – List of technologies transferred
	Number of ETP-demonstrated technologies deployed in programs	Program Tracking – List of technologies deployed

Table 5-5: Program Outcomes, Associated KPIs and Potential Data Sources

Outcomes from Logic Model	Key Performance Indicators for Program Evaluators	Data Sources and Potential Collection Approaches
Immediate Outcomes		
Increased stakeholder awareness of ETP	Change over time in stakeholder awareness	Qualitative interview with ETP and program administrator
Intermediate Outcomes		
Improved application screening process usability	Change over time in "Ready" stage survey scores	"Ready" stage feedback survey results
Improved 4S process applicant experience, and scoring metrics	Change over time in "Set" stage survey scores	"Set" stage feedback survey results
Improved technology pilot assessment process	Change in number over time of areas of high performance (and underperformance) as identified through qualitative pilot feedback surveys	Sample of qualitative pilot assessment feedback surveys or aggregated results
	Change in number over time of pilot assessment projects completed (including, if available, number completed on time and on budget)	Sample of technology PAPs and pilot assessment reports (for the same technologies)
Increased institutional knowledge of ETP processes, for reduced associated program risks	ETP output quality, based on percentage of ETP-piloted technologies transferred to EEP and deployed in programs	Program Tracking – List of technologies transferred to EEP and, if different, list of technologies deployed
Ultimate Outcomes		
Increased stakeholder participation in ETP	Change over time in number of technology applications	Program Tracking – Complete list of technologies from applications
Robust ETP Program	Change in technology performance in ETP pilot assessment compared with EEP-deployed performance	ETP and EEP Program Tracking – Savings for a sample of deployed technologies
Increased EEP energy savings	Therms saved for each deployed ETP technology	ETP and EEP Program Tracking – Savings for deployed technologies