AMEREN ILLINOIS UTILITIES
2008-2010 BUSINESS ENERGY EFFICIENCY SOLUTIONS PROGRAM
EVALUATION WORK PLAN

Draft

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1. OVERVIEW OF APPROACH

Ameren Illinois Utilities (AIU) has hired the team of Opinion Dynamics Corporation (ODC), Itron, Summit Blue Consulting (SBC), and Michaels Engineering to evaluate its 2008-2010 Act On Energy Business portfolio. Ultimately, the evaluation will cover the following six programs targeting AIU business customers (the "Programs"):

- C&I Custom Incentive Program
- C&I Prescriptive ("Standard") Incentive Program
- C&I Retro-commissioning Program
- Commercial New Construction Program
- Street Lighting Program
- Commercial Demand Response Program

The programs have a three year cost of $26,122,293 and an ex ante[1] savings of 245,165 MWh and 63,424 kW. The evaluation budget is 3% of program costs, spread across the three years to be 3% of the program implementation budget each year.

This document provides a three year plan to meeting the evaluation objectives. It has specific information for the evaluation of program year one (PY1)[2] and broad plans for PY2 and PY3. At the beginning of each program year, we will review this document, specify the upcoming years' evaluation efforts to a similar level as provided herein for PY1, and adjust the budget as needed. This approach gives the evaluation flexibility to best assess the overall portfolio.

1.1 Portfolio and Program Specific Approach

Illinois law stipulates an annual independent evaluation of the utility's portfolio of measures at a cost not to exceed 3% of the portfolio resources in any given year[3]. We have created our work plan to provide portfolio level results at the highest level of rigor possible while keeping within the cost constraints. We are first assessing the programs within the portfolio with an eye towards applying the evaluation budgets to those programs with the highest ex ante savings. This provides assurance to the state of verified net impacts for the majority of the portfolio. To the extent possible, each year our team will assess those programs that collectively represent at least 85% of the overall portfolio of net energy impacts on an ex ante basis. We have chosen to assess the portfolio impacts by program as opposed to by measure because the differences in how programs are structured and run are critical in the net analysis.

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[1] Ex ante savings are the program forecasted savings used for portfolio planning purposes.

[2] A program year is from June 1 to May 31 of the following year. For example the 2008 program is in place from June 1, 2008 to May 31, 2009.

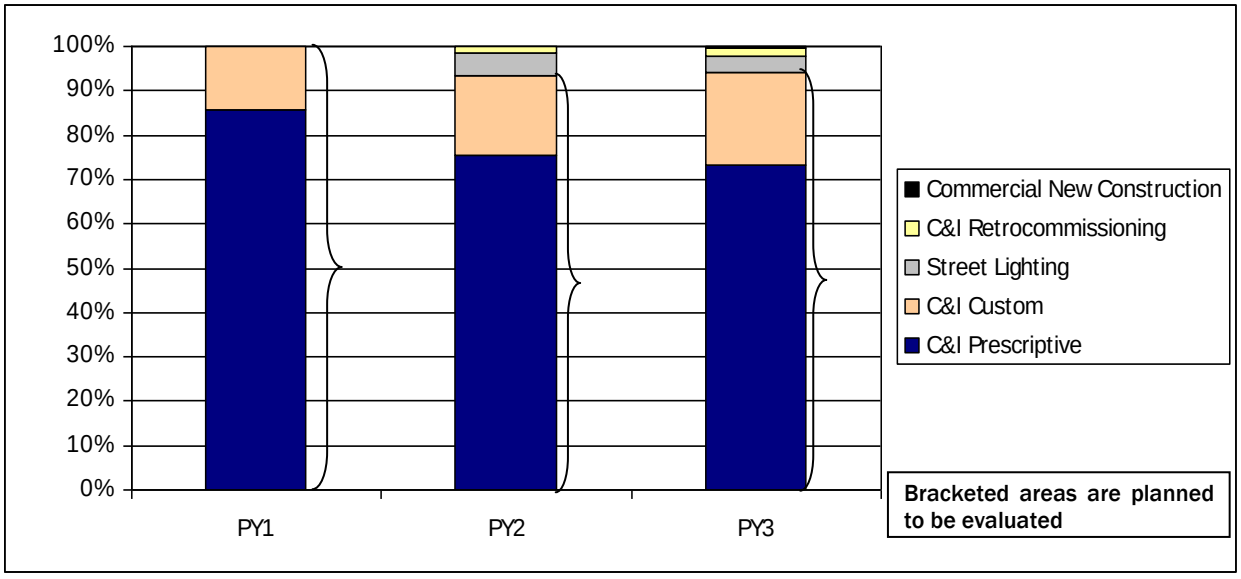
[3] SB1592 Enrolled, Section 12-103.f.7.

As of March, 2008, there are four programs that have been implemented – C&I Prescriptive, C&I Custom, C&I New Construction and C&I Retro-commissioning. The Street Lighting and Demand Credit programs are still in the planning phase. Our review of the program tracking data through March 20, 2009 indicates that, while the programs have been implemented there are currently no projects in the tracking database under the new construction or retro-commissioning programs[4]. We believe that any forthcoming projects within these two programs that may be paid in PY1 will have negligible savings and thus these programs will not be included in the top 85% if ex ante savings.

For PY1, we will conduct a process evaluation of the four active programs. The impact evaluation activity will follow the aforementioned plan of assessing programs accounting for the top 85% of ex ante savings at the portfolio level and focus on two programs - C&I Prescriptive and C&I Custom. As shown in Figure 1, by evaluating these two programs over the three years (based on the ex ante estimates), we will encompass from 93% to 100% of the entire portfolio for energy, depending on the program year. We will review the available program tracking data to reassess the portfolio mix of savings by program in early May 2009 to confirm that our plan to estimate impacts for C&I Prescriptive and C&I Custom only is still appropriate. We will adjust our strategy as necessary at that time.

In PY2 and PY3 we will track program tracking data to determine which programs account for the top 85% of portfolio savings and thus will be included in the impact evaluation. We will conduct an annual process evaluation of all active programs, regardless of ex ante savings estimates.

Figure 1. Ex Ante MWh Planned to be Evaluated

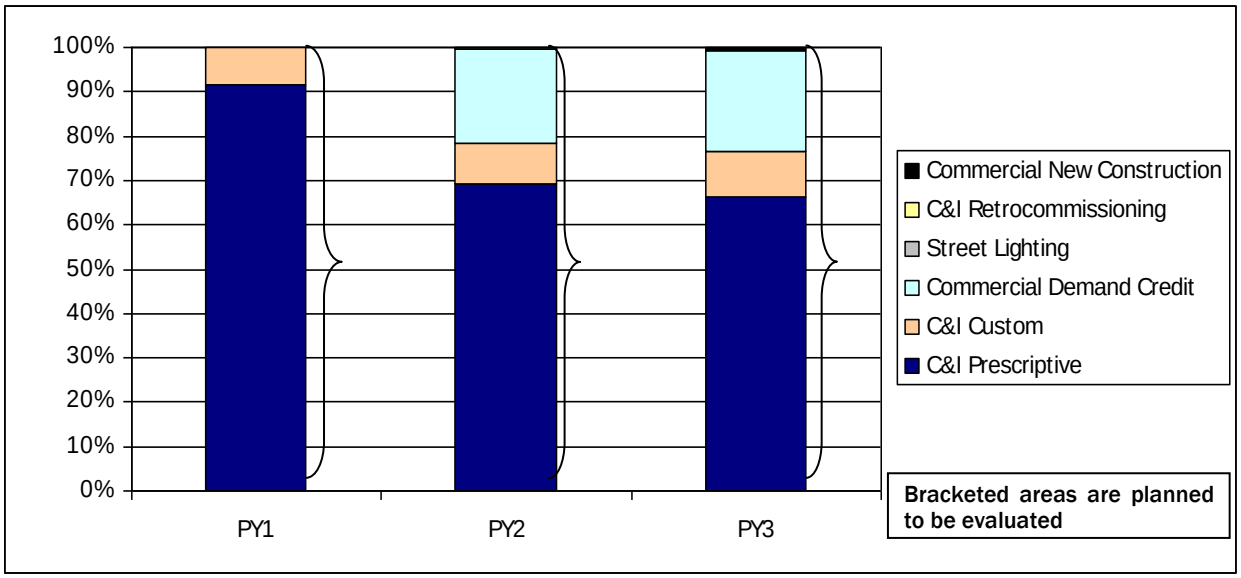


To thoroughly assess the demand component of the portfolio requires that the Commercial Demand Credit program be included (as shown in Figure 2.). Assuming that this program

[4] The February Program Status Report indicates that the retro-commissioning program pilot has been rolled out on a limited basis. Two potential pilot projects have been identified.

begins in June of 2009 as currently slated, we will provide more details about the evaluation of this program in the PY2 work plan update.

Figure 2. Ex Ante kW Planned to be Evaluated



This document does not include any evaluation plans for the programs that have not yet been launched other than what was provided in our original proposal as it is speculative on our part as to the program design and areas of assessment. The evaluation plans for the two programs not yet launched have been included in Appendix A.

1.2 Evaluation Questions

The overall evaluation objectives are to:

1. Consider and analyze demand-side management and energy efficiency measures and document the gross and net energy and demand savings associated with the Act On Energy Business portfolio;
2. Provide verification and due diligence of project savings as reported by Implementer – through due-diligence audits and inspections of a sample of project documentation and sites, respectively;
3. Suggest improvements to the design and implementation of existing and future Programs through process evaluations;
4. Support AIU in developing a best of class evaluation infrastructure for the Act On Energy Business portfolio.

All assessment activities tie directly to one or more of these objectives.

1.3 Outline of Plan Document

Information in this document is as shown in Table 1.

Table 1. Document Structure

Section	Section Name	Information in this Section
1	Overview of Approach	Discussion about portfolio approach and the evaluation questions to be answered through this research effort.
2	Evaluation Methodology	Details about the methods planned for the process and impact assessments.
3	Evaluation Data Sources and Sampling	Specifics about where data will be gathered and the samples used. Sample sizes are included here.
4	Detailed Work Plan, Schedule, and Budget	Details about how the evaluation team will carry out the five specific tasks within our contract. The evaluation schedule and budget are in this section.
Appendix A	Broad Evaluation Plans	High level evaluation plans of the two programs not included in the PY1 evaluation.

2. EVALUATION METHODOLOGY

2.1 Process Analysis

There is one evaluation objective covered by the process analysis:

- Suggest improvements to the design and implementation of existing and future Programs through process evaluations.

In order to fulfill this objective, we will analyze data from three data collection methods; depth interviews, structured quantitative telephone survey, and review of secondary data. We will synthesize the unstructured information obtained from the depth interviews and review of secondary data with the structured information from the telephone survey to provide cohesive and actionable design and/or implementation recommendations.

Depth Interviews. Depth interviews give a deeper understanding of the program than a structured survey. They will be carried out by technically knowledgeable staff and will have several open ended questions to allow for expansion on topics. A guide will be created for each type of depth interview to assure that all relevant questions are answered during the conversation. Depth interviews will occur with program managers, implementation contractors, and trade allies. Analysis will be through an iterative process where we create structure from the data in terms of themes expressed during the interviews, check it against the unstructured data and revise as necessary.

Structured Telephone Surveys. Our computer aided telephone interview (CATI) will allow for a structured survey to be performed very cost effectively. This does not preclude using open ended questions, but the survey will ask for very few such responses. We will create a Uses and Sources chart for this survey to show the topics covered by specific questions. We will field a CATI to AIU participants that will encompass questions for both the process and impact analyses. Analysis of the data from this data collection method will output descriptive statistics (i.e., frequencies, averages, etc.).

Review of Secondary Data. We have already received much, if not all, of the program materials from inception to February 2009. This includes marketing materials, application forms, and presentations to trade allies. Included in this review will be the program website. The review and description of this data gives context to the evaluation. This data will come into play in multiple ways – as corroboration of information available to customers, types of interactions between the program and trade allies, and clarity of the messages put out by the implementer. Additionally, while discussed separately in Section 4.3, review of the tracking database is included under this approach.

2.2 Impact Analysis

There are two evaluation objectives covered by the impact analysis:

- Consider and analyze demand-side management and energy efficiency measures and document the gross and net energy and demand savings associated with the Act on

Energy portfolio.

- Provide verification and due diligence of project savings as reported by Implementer – through due-diligence audits and inspections of a sample of project documentation and sites.

These two objectives are closely linked since the verification activities can be part of the impact assessment. During our PY1 evaluation, we will provide answers for these two objectives through engineering review, engineering modeling, database and hardcopy verification, CATI surveys, and a limited number of on-site audits. We expect to add more on-site audits and end-use metering to our data collection activities and analysis through calibrated energy simulation modeling for PY2 and PY3.

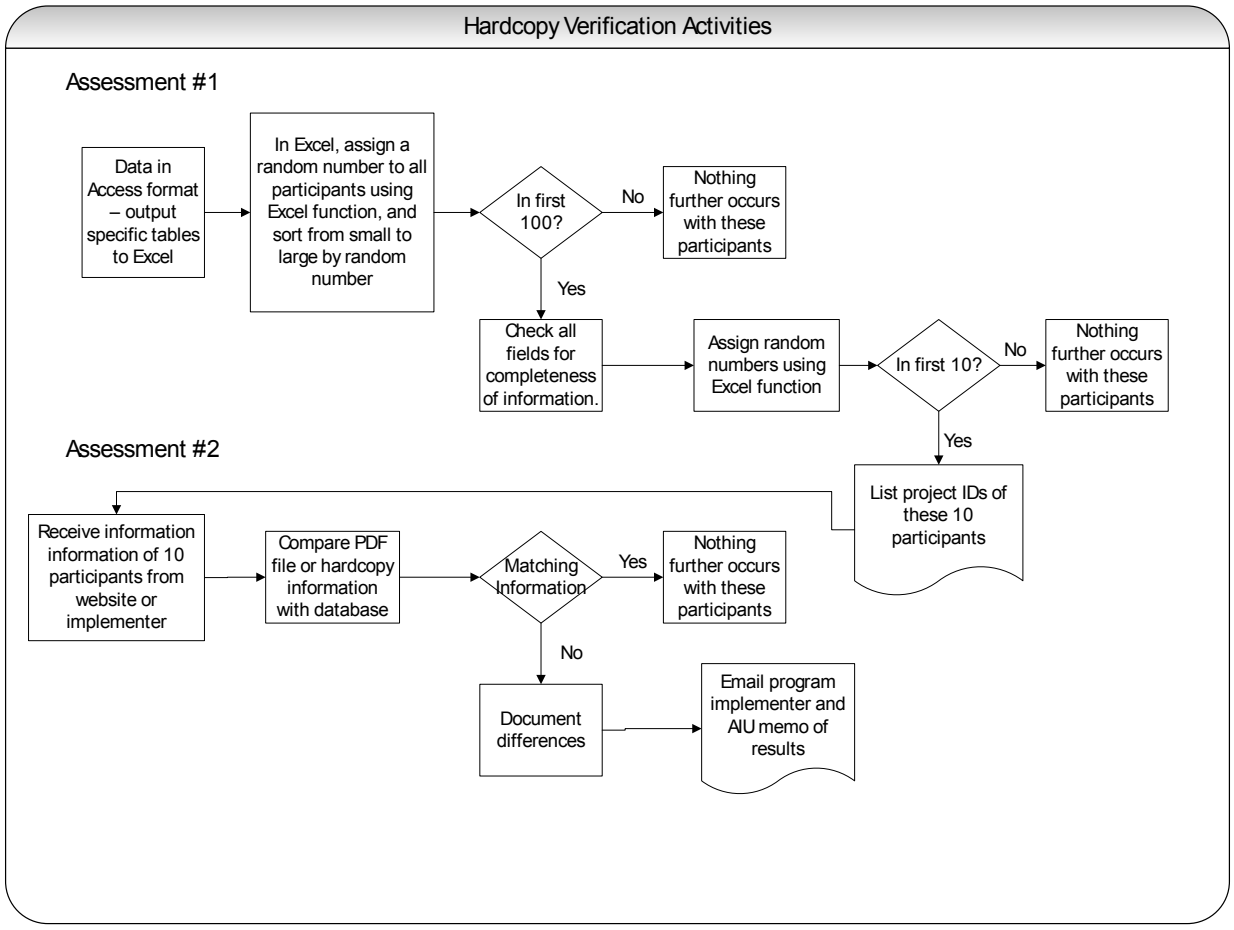
Engineering Review. This activity consists of an engineer reviewing written documentation around impacts and assessing whether the inputs are reasonable and in line with standard practice. We will perform an engineering review of the Technical Reference Manual (TRM) for measures that have been implemented through the programs as well as paperwork associated with custom projects.

Engineering Modeling. Engineering modeling occurs when calculations of energy and/or demand impacts occur within a spreadsheet. These typically are relatively straightforward calculations that may or may not use data collected through spot-metering or other longer-term metering. We will use engineering modeling for all the standard prescriptive and standard revised measures installed in PY1.

Database and Hardcopy Verification. Program tracking for the Act on Energy Business Portfolio occurs through an on-line sequel database maintained by a third party. Our evaluation team has access to this database as a read-only user. Additionally, we received the entire database as an Access file on February 13, 2009. We will perform an engineering review of the inputs and outputs of the energy and demand impacts within the database. That is, we will compare the inputs to the TRM and follow the calculations used within the database to verify that the database is providing correct information. We will also assess the database in terms of completeness of inputs and inclusion of relevant variables.

Hardcopy verification is a desk review of the information input into the database. We will perform hardcopy verification on a sample of projects in the database. See Figure 3 for how this assessment will occur.

Figure 3. Hardcopy Verification Assessment



The next section covers where we will collect data for our evaluation and the number of data points associated with each activity.

3. EVALUATION DATA SOURCES AND SAMPLING

The evaluation will collect data from multiple sources as specified below. We will use a census approach for PY1 as the current participation values are relatively low and we can cost-effectively attempt to contact all participants via a quantitative telephone survey.

3.1 Data Sources

To the extent possible we will use all data sources and data collection efforts to support both process and impact analyses.

3.1.1 C&I Custom Incentive Program

The custom program underwent a change in September 2008 when the prescriptive program became over-subscribed. At that point, many of the measures within the prescriptive program shifted to the custom program and were subject to the more rigorous review that is part of this program. The database followed this shift by calling these measures "standard revised" in the measure type variable.

As of March 20, 2009, there are 9 projects specified as custom for which incentives have paid and another 47 that are designated as pre-approved or under review. Based on the available data, participants appear to be a mix of commercial and industrial sites. There are 24 projects designated as "standard revised" for which incentives have been paid or approved and another 115 projects designated as pre-approved or under review.

The data sources for the evaluation of this program are:

- Process Analysis
  - Program implementers (depth interviews)
  - Customers (CATI survey)
  - Trade allies (CATI survey or depth interviews)
  - Program tracking database (engineering review, hard copy review)
  - Program information (review of secondary data)
  - Benchmarking website (http://www.eebestpractices.com/index.asp)
- Impact Analysis
  - Program implementers (depth interviews)
  - Customers (CATI survey, engineering modeling)
  - Trade allies (CATI survey or depth interviews)
  - Program tracking database (engineering review)
  - TRM Manual (engineering review)

3.1.2 C&I Prescriptive Incentive Program

The prescriptive program stopped taking in new applications in September 2008 due to over-subscription. As of March 20, 2009, these projects are in the payment stages as shown in Table 2.

Table 2. C&I Prescriptive Participation
(number of projects)

Type	Check Cut or Approved	Pre-Approved
Standard Lighting	46	3
Standard HVAC	3	1
Standard Motor	2	0
Standard Refrigeration	0	3
Total	51	7

The data sources for the evaluation of this program are identical to the custom program, except that the information will be gathered specifically for this program.

- Process Analysis
  - Program implementers (depth interviews)
  - Customers (CATI survey)
  - Trade allies (CATI survey or depth interviews)
  - Program tracking database (engineering review, hard copy review)
  - Program information (review of secondary data)
  - Benchmarking website (http://www.eebestpractices.com/index.asp)
- Impact Analysis
  - Program implementers (depth interviews)
  - Customers (CATI survey, engineering modeling)
  - Trade allies (CATI survey or depth interviews)
  - Program tracking database (engineering review)
  - TRM Manual (engineering review)

3.1.3 C&I New Construction Program

The New Construction program began, as a program, late in PY1. While the portfolio allowed new construction projects to occur under the custom program, we will evaluate them under that program and not include those early projects here. Because of the known long lead time for new construction projects, we have no expectations of customers participating (i.e., obtaining incentives) between now and the end of PY1.

The data sources for the evaluation of this program are:

- Process Analysis for PY1
  - Program implementers (depth interviews)
  - Design Professionals (depth interviews)
  - Program information (review of secondary data)

For later program years, if an impact evaluation occurs, the following data sources are expected:

- Impact Analysis in later program years
  - Program implementers (depth interviews)
  - Customers (CATI survey, engineering modeling, onsite audits)
  - Design professionals (depth interviews)
  - Program tracking database (engineering review)
  - Secondary sources consisting of relevant building codes

3.1.4 Retro-Commissioning Program

The retro-commissioning program began late in PY1. As of March 20, 2009, two pilot programs have been initiated through the program. Because of an expected long lead time for these projects and the need to identify, recruit and train commissioning professionals we have no expectations of any additional customers participating (i.e., obtaining incentives) between now and the end of PY1.

The data sources for the evaluation of this program are:

- Process Analysis for PY1
  - Program implementers (depth interviews)
  - Market actors (depth interviews)
  - Program participants (depth interviews)
  - Program information (review of secondary data)

For later program years, if an impact evaluation occurs, the following data sources are expected:

- Impact Analysis in later program years
  - Program implementers (depth interviews)
  - Customers (depth interviews, engineering modeling, onsite audits, one-time measurements, short-term trend logging)
  - Design professionals (depth interviews)
  - Program tracking database (engineering review)

- Secondary sources consisting of manufacturers' specifications

3.2 Sampling Plan

As noted above, PY1 data collection activities for the impact and process evaluations include qualitative and quantitative interviews, a review of program records and secondary data sources, and a limited number of on-site audits. A review of program tracking data through March 20, 2009 indicates that a total of 84 unique projects have been completed with incentives paid or approved through the Custom and Prescriptive programs. The program implementation contractor indicates that two pilot programs are being implemented through the Retro-Commissioning program, and no projects have been implemented through the New Construction program. Based on the level of program participation to date, we expect the total number of projects to be completed through the four active AIU commercial programs in PY1 to be less than 200 unique projects. As such, in PY1 we plan to attempt a census of all completed projects in our data collection efforts.

We expect program participation in PY2 and PY3 to warrant selecting a sample of projects for inclusion in the evaluation. For the gross analysis, we expect to sample the measures across the programs included in the impact evaluation to obtain precision for the portfolio. Because we believe there may be differences between the programs due to incentive levels, the net analysis will be sampled at the program level. We expect to leverage all impact data collection efforts to gather data necessary for the process evaluation. As such, the needs of the impact evaluation will dictate sample sizes and designs.

.Below we outline our PY1 sampling plan by program

3.2.1 C&I Custom Incentive Program

This program has two groups – those projects that are custom projects and those that are standard revised projects (i.e., prescriptive projects incented under the custom program). Based on the level of program participation in PY1 we do not expect to need to select a sample of custom or standard revised projects for the impact evaluation. We will perform a census of all completed projects. We will conduct an on-site visit for the six largest projects in terms of ex-ante savings while all other projects will receive an engineering desk review and telephone survey.

For our qualitative interviews with program staff and market actors, we will use non-probability purposeful sampling approach. We will review the roster of program staff and participating market actors and determine the most valuable respondents.

3.2.2 C&I Prescriptive Incentive Program

As indicated above, based on the level of program participation in PY1 we do not expect that it will be necessary to select a sample of standard projects for the impact evaluation. We will perform a census of all completed projects. We will conduct an on-site visit for the three largest projects in terms of ex-ante savings while all other projects will receive an engineering desk review and telephone survey.

For our qualitative interviews with program staff and market actors, we will use non-probability purposeful sampling approach.

3.2.3 C&I New Construction Program

The qualitative assessment that will occur in PY1 will use a non-probability purposeful sampling approach.

3.2.4 Retro-Commissioning Program

The qualitative assessment that will occur in PY1 will use a non-probability purposeful sampling approach.

4. Detailed Work Plan, Schedule, and Budget

4.1 Task 1 – Develop Portfolio/Program Evaluation Work Plans

Effort for this task has, as its outcome, this document and any future updates. As indicated previously, we will assess the programs at the beginning of each program year and adjust our work efforts as needed. It is possible that we may perform some process assessment on programs that have no impact assessment.

4.2 Task 2 – Establish Verification & Due Diligence Procedures for Implementer

The C&I Custom program implementer currently performs an engineering review on each project that requests incentives through the program. They perform an onsite audit of installed measures for any project over $25,000 regardless of geographical location as well as projects over $2,500 if the project is within 60 miles of Peoria, Champaign, or East St. Louis (the locations of the program implementer). The C&I Prescriptive program requires the application to include an invoice of the incented equipment. These are available hardcopy, but are currently being scanned and entered into the program tracking database. As indicated here, the program implementer already has several quality assurance (QA) activities in place.

Under this task, through depth interviews, we will determine all QA activities already in place and discuss the process with the implementers. We will determine if there are any other actions that should be in place and make recommendations if so. Through depth interviews, a review of the tracking database, and other program information (such as project specific files), we will assess whether any of the QA actions are superfluous and time-consuming and recommend dropping them, if so. This activity will determine;

- Whether appropriate customer eligibility criteria have been properly adhered to and that rebate applications are appropriately completed;
- If any QA activities are biased (i.e., incorrect sampling that may inadvertently skew results, purposeful sampling that is not defendable, etc.); and
- Whether there was correct application of savings to program activity.

The output of this task will be a memo to Ameren with a description of the current QA and due diligence in place for both the C&I Custom and C&I Prescriptive programs along with our team's recommendations for streamlining the process and/or adding to the activity. In PY2, we may perform a "ride-along" with the program implementer to observe one or more quality assurance verifications as performed by the program. This will occur if we find issues with the tracking database or systematic issues that arise from the PY1 gross

impact analysis.

4.3 Task 3 – Review Implementer's Tracking Systems and Program Theories

Complete program tracking data is a cornerstone of effective program evaluation since these systems will be mined in future program years to provide key inputs to the estimation of ex-ante and ex-post program savings, such as numbers of program participants, pre- and post-participation operating conditions, numbers and types of measures installed, estimated energy and demand savings for program applications, milestone dates, and quality control information. Additionally, data from program tracking databases provide the population frame for developing our samples for participant survey and on-site efforts. Given that this evaluation effort will focus on new programs, a central element of the process evaluation will be gathering information to determine if program tracking database implementation is consistent with the program design and on track to ensure future program success.

The tracking systems for each program have been developed and are being populated and managed by the implementation contractor. Under this task, we will perform our own verification of the program tracking database and determine level of input, outliers, missing values, and potentially missing variables. The purpose of the tracking system review is to ensure these systems gather the data required to support future evaluation and allow program managers to monitor key aspects of program performance at regular intervals. In PY2 and PY3, the ongoing process component will focus on ensuring that tracking data systems are populated in a complete and consistent manner.

There are no program logic models for the programs under assessment in PY1. While we believe that discussion and development of a sound program theory and logic model can benefit the program, given the limited evaluation resources available this activity is not included in the PY1 evaluation plan. Evaluators will explore elements of the underlying program theory during depth interviews with program staff and implementers. Information gleaned from these discussions will inform the overall process evaluation effort.

4.4 Task 4 – Implement Work Plans

This section covers the detailed tasks we plan for the evaluation between now and May 31, 2009. It references much of the previous writing regarding methods and sampling.

4.4.1 C&I Custom Incentive Program

Task 4a – Data Collection

Process Evaluation. For the process evaluation, we will perform in-depth interviews with 1 program manager, 3 contract implementers, and 4 trade allies. Based our review of program activity as of March 20, 2009, there are a total of 33 custom or standard revised projects for which incentives have been paid or approved. As such, we expect to attempt data collection from a census of program participants. We will mesh our process and impact questions for customers into either an in-depth interview (for the largest projects

based on KWh savings, including custom and standard revised projects) or a CATI survey (all but the largest custom standard revised projects based on KWh savings). We will gather all program marketing material and obtain electronic shots of the website. We will also run the self-benchmarking tool specific to this custom program.

We will target our data collection to enable us to answer the following study questions:

- Process Questions
  1. Has the program as implemented changed from the plan filed on November 17, 2007? If so, how, why, and was this an advantageous change?
  2. What challenges have occurred in PY1 implementation and how were they handled?
  3. What are the characteristics of the customers and trade allies participating in the programs and is this the expected group for participation?
  4. Is the program outreach to customers and trade allies effective in increasing awareness of the program opportunities?
     a. What is the format of the outreach?
     b. How often does the outreach occur?
     c. Are the messages within the outreach clear and actionable?
  5. Are the program processes effective for smoothly providing incentives to customers?
     a. Has the participation process and program requirements been clearly explained to customers and trade allies?
     b. What is the timing from start to finish for projects that go through this program?
     c. How quickly are customers questions answered?
     d. What was expected from the trade allies and are they fulfilling that role?
     e. Are customers and trade allies satisfied with the program processes in which they were involved?
     f. How good are the Ameren and the program implementer interactions? (both Ameren Key Account and program staff)
     g. Is the application process and process participation onerous? Does the process present any barriers to program participation?
  6. What areas could be improved to create a more effective program for customers and/or trade allies and increase the net energy and demand savings for the program?

Impact Evaluation. For the impact evaluation, available methods for estimating gross savings range from end-use monitoring to calibrated simulation models, calibrated

engineering analysis, engineering review, and billing analysis. Factors that must be considered in matching these approaches to different measures include the size of the expected impact, the degree of site-by-site variation in per unit savings, the aggregate size of the measure's impact at the program level, the cost of applying the savings estimation method, the sampling size and associated sampling error (if sampling occurs), and the reliability of the measured data.

- Impact Questions
  1. What are the gross impacts from this program?
  2. What are the net impacts from this program?
     a. To what degree has the program influenced participating customers' decisions to install energy efficient equipment? What are the primary non-program factors in their decision making? How has the program's presence affected the overall market for energy efficient equipment in AIU territory?
     b. Has the experience of participating in AIU's program led the participant to adopt other energy efficiency measures in their facilities without receiving a rebate? How significant are the savings from these adoptions?
  3. Did the program meet its net energy and demand goals? If not, why not?

Ex-Post Gross Savings Impacts.

Custom projects. In PY1 our approach for determining the program's gross savings impacts for projects involving installation of custom measures will primarily rely on an engineering desk review of application data for all custom projects and a site-specific review of the three largest custom projects based on ex ante savings estimates. Theoretically, a wide variety of data collection methods are available, such as phone surveys, on-site audits and verification, and end-use metering. We plan to expand the type of data collection for PY2 and PY3 and will adjust our data collection method based on the complexity and expected level savings associated with a particular project. For PY1, we will utilize telephone surveys to gather the data required to estimate gross savings for most projects, reserving on-site audits for the three largest and most complex custom projects.

Standard Revised projects. The focus of our impact evaluation effort will be on verifying assumptions in the algorithms used by the program to calculate energy savings, as-installed operating conditions (such as hours of use) and installation rates. The majority of PY1 projects in the AIU tracking database involve lighting retrofits, which lend themselves well to this approach.

Our engineering review of the algorithms used by the program to calculate energy savings and the assumptions that feed those algorithms will seek to place the assumptions in one of two categories, 1) reasonable and acceptable, or 2) needs revision based on program experience and evaluation. The review will also make a preliminary judgment to identify those assumptions with higher uncertainty or potential to influence the program savings estimate.

To estimate PY1 ex-post gross savings estimates we will conduct a telephone survey with a census of program participants to verify installed measure inventory and characteristics,

hours of operation, and characteristics of replaced equipment. We will also conduct on-site verification audits of measures for the three largest standard revised projects.

Ex-Post Net Savings Impacts.

Net-To-Gross (NTG) values will be based on an Enhanced self-report method which relies on data and information from multiple sources and uses "triangulation" of results to establish each sampled project's net-to-gross ratio. Projects are assigned to certain rigor levels based on their size. The largest and most strategically important projects receive the most detailed inquiry, while smaller, simpler projects receive a more rudimentary investigation. Both free ridership and participant spillover will be considered when establishing NTG values, however, spillover will be investigated and calculated only in cases where two conditions are met: (1) Significant savings impacts are expected, (e.g., unrebated adoption by a chain of stores or hotels of specific energy efficiency measures or classes of measures); and, (2) Where the customer has indicated that the level of program influence in their decision making was significant.

For both free ridership and spillover, the primary data sources are participating customer and trade ally surveys.

- The participating customer surveys contain a battery of questions to establish free ridership levels to support the calculation of net savings, and a separate question sequence to support an estimate of participant spillover.
- For projects in which the customer indicates significant trade ally influence in their decision to install the energy efficiency measure(s), the trade ally(ies) are also interviewed to determine their level of influence. In addition, they are asked about their sales of program measures before and after the program inception, and this is used to determine the program's effect on measure adoption.
- Utility account representatives are also interviewed to learn about the project history and their role in project inception.

Participant spillover questions focus on whether additional measure installations have occurred or are being planned as a result of their participation in AIU's programs, whether they intend to apply for rebates for these measures through the programs and the likely level of program influence they attribute to their installation decision.

Task 4b – Data Analysis

Process Analysis. The process analysis will consist of pulling together the qualitative data obtained from depth interviews and material review along with the quantitative data from CATI surveys. The output of the analysis will be a mix of descriptive statistics and narrative. For areas in which we provide an assessment of the activity (versus simply describing an activity), we will use a variety of criteria to judge whether the results of the analyses are good, bad, or indifferent. For example, we will probably use the satisfaction of customers and other process evaluation results that have timing of incentive checks to state whether the current timing is satisfactory or could be improved.

Ex-Post Gross Savings Impact Analysis. For both **Custom** and **Standard Revised** projects, a variety of measures will be implemented through this program including lighting, HVAC,

refrigeration, motors and custom process measures. Each of these measure categories requires a somewhat different analytic and measurement and verification approach.

Impact analyses for each category except custom process measures will be completed using the following general approaches:

- Lighting measures – Lighting measures generally fall into the category of lower performance uncertainty and variability and can thus be examined with basic engineering algorithm based models using baseline and measure performance characteristics, operating hours and other adjustment factors. HVAC interaction is an important factor in lighting analyses and the project team will use results of analyses involving hourly simulation models to adjust gross savings estimates for interactive effects. Data resources will include findings from phone surveys (measure counts, installation rates, and run-time hours) and on-site inspections[5].

- HVAC measures – As a general guide, HVAC measures are more time and performance variable due to weather and internal load dependences and need to be analyzed with tools that take this variation into account. For a sample of PY1 HVAC projects, HVAC equipment replacement measures will be analyzed with building energy simulation models. Inputs to the models will be drawn from the participation data and outdoor temperature readings.

- Refrigeration measures – The refrigeration measures included in the program are relatively constant load/constant output technologies that are typically located in climate-controlled indoor environments, and can thus be analyzed with algorithm-based engineering models. The primary inputs to the models will be participation data, self-reported as-installed characteristics from phone surveys.

- Motors measures – Motor measures include high-efficiency motors and variable-speed drive motor controls. Constant load high-efficiency motors can be effectively analyzed with algorithm-based engineering models. The primary inputs to the models will be participation data, phone survey findings regarding as installed conditions (nameplate data, hours of use, baseline equipment data, etc.). Variable-speed drives and any motors operating under other types of variable load conditions will be modeled.

For custom process measures, gross savings will be calculated on a site-specific basis if the project is deemed to be one of the largest projects in terms of ex ante savings. A review of program tracking data to date indicates that custom measures account for approximately 7 percent of total program savings and thus no single project is likely to be selected for on-site evaluation or merit evaluation following IPMVP protocols. For PY2 and PY3, it is possible that custom projects would be selected for on-site visits. The engineering analysis methods and degree of monitoring will vary from project to project, depending on the complexity of the measure, the size of the associated savings and the availability and reliability of existing data. Methodologies for on site work will be based on IPMVP protocols.

[5] Based on our review of program tracking data as of March 20, 2009, the three largest standard revised projects in terms of ex ante savings include lighting measures.

Ex-Post Net Savings Impact Analysis. For free ridership, the NTG value is calculated using a standard scoring algorithm which calculates and averages three scores from data obtained through the Self-Report phone surveys. These are: a timing and selection score, a program influence score, and a no-program score. The latter captures the likelihood of various actions the customer might have taken at this time and in the future if the program had not been available.

For the largest and most strategically important projects in terms of our evaluation will receive Enhanced rigor NTG inquiry, additional qualitative information from the other sources noted above may also incorporated into the calculation if contradictions are found between qualitative and quantitative information (obtained from the phone surveys). Judgments will have to be made in deciding which information is more compelling when there are contradictions. Before scores are revised, at least two analysts will independently review the supplemental data and determine whether and by how much a score should be changed. The analysts then go over their cases together and come to an agreement on how to proceed.

Any significant participant spillover findings from the net-to-gross phone surveys are passed back to the evaluation engineer for further investigation and analysis. The results of this process are reflected in upward revisions to net savings impact estimates.

The criteria for evaluating program performance with respect to energy and demand impacts will be a comparison of ex-post net savings to the PY1 goals for the program and the portfolio.

Task 4c – Reporting

For PY1, reporting will consist of informal memos during the evaluation period as well as an annual report which will verify Implementer data from PY1 and provide interim estimates of the net energy impacts achieved as well as any other evaluation findings, observations, and recommendations regarding the Programs. The timing of the reports will be as shown in Section 4.6. The outline of the reports will be as follows:

1) Executive Summary
2) Introduction to Portfolio and Programs
3) Evaluation Methods
4) Portfolio and Program Level Results
    a) Portfolio Level Results
    b) C&I Custom
    c) C&I Prescriptive
    d) C&I New Construction
    e) Retro-Commissioning
5) Conclusions and Recommendations

6) Appendices

a) Data Collection Instruments

b) Survey Frequencies

c) Other appendices as needed

In PY2 and PY3, reporting will follow the outline established for PY1.

4.4.2 C&I Prescriptive Incentive Program

Because many of the same measures are within both programs, there is little to no difference between the tasks below for the C&I Prescriptive program and what was written in Section 4.4.1, C&I Custom Program.

Task 4a – Data Collection

Process Evaluation. For the process evaluation, we will perform depth interviews with 1 program manager, 3 contract implementers, and 4 trade allies. As these depth interviews are expected to overlap with the Custom program, we will ensure that our data collection instruments address both programs. We will mesh our process and impact questions for customers into a CATI survey. We will gather all program marketing material and obtain electronic shots of the website. We will also run the self-benchmarking tool specific to this prescriptive program.

We will target our data collection to enable us to answer the following study questions (which are identical to the Custom program questions):

- Process Questions

1. Has the program as implemented changed from the plan filed on November 17, 2007? If so, how, why, and was this an advantageous change?
2. What challenges have occurred in PY1 implementation and how were they handled?
3. What are the characteristics of the customers and trade allies participating in the programs and is this the expected group for participation?
4. Is the program outreach to customers and trade allies effective in increasing awareness of the program opportunities?
    a. What is the format of the outreach?
    b. How often does the outreach occur?
    c. Are the messages within the outreach clear and actionable?
5. Are the program processes effective for smoothly providing incentives to customers?
    a. Has the participation process and program requirements been clearly explained to customers and trade allies?

b. What is the timing from start to finish for projects that go through this program?

c. How quickly are customers questions answered?

d. What was expected from the trade allies and are they fulfilling that role?

e. Are customers and trade allies satisfied with the program processes in which they were involved?

f. How good are the Ameren and the program implementer interactions? (both Ameren Key Account and program staff)

g. Is the application process and participation process onerous? Does the process present any barriers to program participation?

6. What areas could be improved to create a more effective program for customers and/or trade allies and increase the energy and demand savings for the program?

Impact Evaluation. Impact data collection methods will mirror those for the Standard Revised component of the C&I Custom Incentive program. The primary gross impact method used will be Engineering Review. Primary data sources will include tracking data and findings from phone surveys of program participants. The self-report approach will be used to assess program free ridership and participant spillover. (See the Standard Revised component of the C&I Custom Incentive program for a detailed description of the evaluation approach.)

Impact study questions are identical to the Custom program:

- Impact Questions

1. What are the gross impacts from this program?
2. What are the net impacts from this program?

    a. To what degree has the program influenced participating customers' decisions to install energy efficient equipment? What are the primary non-program factors in their decision making? How has the program's presence affected the overall market for energy efficient equipment in AIU territory?

    b. Has the experience of participating in AIU's program led the participant to adopt other energy efficiency measures in their facilities without receiving a rebate? How significant are the savings from these adoptions?

3. Did the program meet its energy and demand goals? If not, why not?

Task 4b – Data Analysis

Process Evaluation. The process analysis will consist of pulling together the qualitative data obtained from depth interviews and material review along with the quantitative data from CATI surveys. The output of the analysis will be a mix of descriptive statistics and narrative. For areas in which we provide an assessment of the activity (versus simply describing an activity), we will use a variety of criteria to judge whether the results of the analyses are good, bad, or indifferent. For example, we will probably use the satisfaction of

customers and other process evaluation results that have timing of incentive checks to state whether the current timing is satisfactory or could be improved.

Impact Evaluation. Impact analysis methods will be the same as those for the Standard Revised component of the C&I Custom Incentive program. The primary gross impact method used will be Engineering Review. The evaluation will focus on verifying and updating assumptions used in engineering based savings formulas based on findings from phone surveys and a limited number of on-site audits. The self-report approach will be used to assess program free ridership and participant spillover.

See the impact analysis discussion for the Standard Revised component of the C&I Custom Incentive program for a detailed description of the approach. The criteria for judging the impacts will be the PY1 goals for the program and the portfolio.

Task 4c – Reporting

As there will be a single report for the portfolio of programs, see the write up under Section 4.4.1 for reporting.

4.4.3 C&I New Construction

Task 4a – Data Collection

Process Evaluation. Given that the engagement of the professional building design community is a critical element to the success of this program, the initial emphasis of the process evaluation will be an assessment of program outreach strategies. The effort will include in-depth interviews with 1 program staff, 1 to 2 implementation contractors, and up to 5 design professionals. A central element of the design professional interviews will be the exploration of potential barriers to participation and methods for addressing these issues and perceptions of program outreach efforts. As the program matures in PY2 and PY3, our efforts will expand to include interviews with participating and non-participating trade allies and customers.

In addition to depth interviews, we will gather all program marketing material and obtain any electronic shots of the website relevant to this program. We will target our data collection to enable us to answer the following study questions:

- Process Questions
  1. Has the program as implemented changed from the plan filed on November 17, 2007? If so, how, why, and was this an advantageous change?
  2. What challenges have occurred in PY1 implementation and how were they handled?
  3. Are the program processes effective for smoothly providing incentives to customers through the design professionals?
     a. Has the participation process and program requirements been clearly explained to design professionals?
     b. How quickly are design professional questions answered?

c. What was expected from the design professionals and are they fulfilling that role?

d. Are design professionals satisfied with the program processes in which they were involved?

e. How good are the Ameren and the program implementer interactions?

f. Is the application process and participation process onerous? Does the process present any barriers to program participation?

4. What areas could be improved to create a more effective program for customers and/or design professionals and increase the energy and demand savings for the program?

Task 4b – Data Analysis

Process Evaluation. The process analysis will consist of pulling together the qualitative data obtained from depth interviews and material review. The output of the analysis will be a mix of descriptive statistics and narrative. For areas in which we provide an assessment of the activity (versus simply describing an activity), we will use a variety of criteria to judge whether the results of the analyses are good, bad, or indifferent. For example, we will probably use the satisfaction of design professionals as well as other answers under the Q3 questions to state whether the program is smoothly being implemented.

Impact Evaluation. There is no independent impact assessment planned for this program in PY1. All ex ante impact estimates included in the program tracking database will be assigned a realization rate of 1 and included in the estimate for total portfolio savings. If PY2 and PY3 ex ante impacts for this program such that program savings are included in the top 85% of portfolio impacts, we will perform an impact evaluation. If evaluated, because of the custom nature of this program, our approach will primarily rely on site-specific measurement and verification combined with calibrated building simulation modeling. For a small sample of projects, we will compare and analyze as-built conditions with baseline conditions constructed based on a combination of code-compliance and self-reported information. The primary analysis method will be re-running building simulation models and other engineering models to compare the energy use resulting from as-built conditions with evaluated baseline conditions. Gross energy savings will be calculated based on differences between these model runs. Net savings will be calculated using a self-report approach similar to that discussed in the Custom section.

Task 4c – Reporting

As there will be a single report for the portfolio of programs, see the write up under Section 4.4.1 for reporting.

4.4.4 Retro-Commissioning

Task 4a – Data Collection

Process Evaluation. We expect this program to take longer to ramp up due to the need to identify, recruit and train commissioning professionals. As such, the process evaluation in PY1 will include an assessment of the trade ally outreach based on interviews with 1 program staff, the implementation contractor, up to 5 market actors providing commissioning services and a review of program materials. To assess the customer perspective of the program we will attempt to conduct in-depth interviews with the two pilot project participants identified in the program tracking data. For PY1, we will target our data collection to enable us to answer the following study questions:

- Process Questions
  1. Has the program as implemented changed from the plan filed on November 17, 2007? If so, how, why, and was this an advantageous change?
  2. What challenges have occurred in PY1 implementation and how were they handled?
  3. What are the characteristics of the customers (if any for PY1) and market actors participating in the programs and is this the expected group for participation?
  4. What recommendations for program improvements arise from the two pilot projects being implemented in PY1?
  5. Is the program outreach to customers and market actors effective in increasing awareness of the program opportunities?
     a. What is the format of the outreach?
     b. How often does the outreach occur?
     c. Are the messages within the outreach clear and actionable?

Future evaluations will expand the process research questions.

Task 4b – Data Analysis

Process Evaluation. The process analysis will consist of pulling together the qualitative data obtained from depth interviews and material review. The output of the analysis will be a mix of descriptive statistics and narrative.

Impact Evaluation. There is no independent impact assessment planned for this program in PY1 as we expect that only two pilot projects will be implemented. All ex ante impact estimates included in the program tracking database will be assigned a realization rate of 1 and included in the estimate for total portfolio savings. If evaluated, we will use a site specific approach in which the most appropriate analysis method will be determined on a case-by-case basis. For the simplest, smallest measures, the analysis plan would simply verify that a measure is done, in which case we would accept the program estimate of savings. For the larger, more significant measures, we would take appropriate short-term measurements and perform a detailed engineering analysis to assess savings. We anticipate that three levels of analytical rigor will be applied to measures in the sampled projects, with the highest level of rigor—the "detailed" analysis consistent with IPMVP Option B—applied to the majority of the claimed savings. Reviewing program baseline data

will be a key element of developing plans. The final site-specific evaluation results will then be extrapolated to the program population using a ratio estimation method to yield ex post gross energy savings. Gross realization rates will also be developed for each energy metric (kW and kWh). Net savings will be determined using the self-report method.

Task 4c – Reporting

As there will be a single report for the portfolio of programs, see the write up under Section 4.4.1 for reporting.

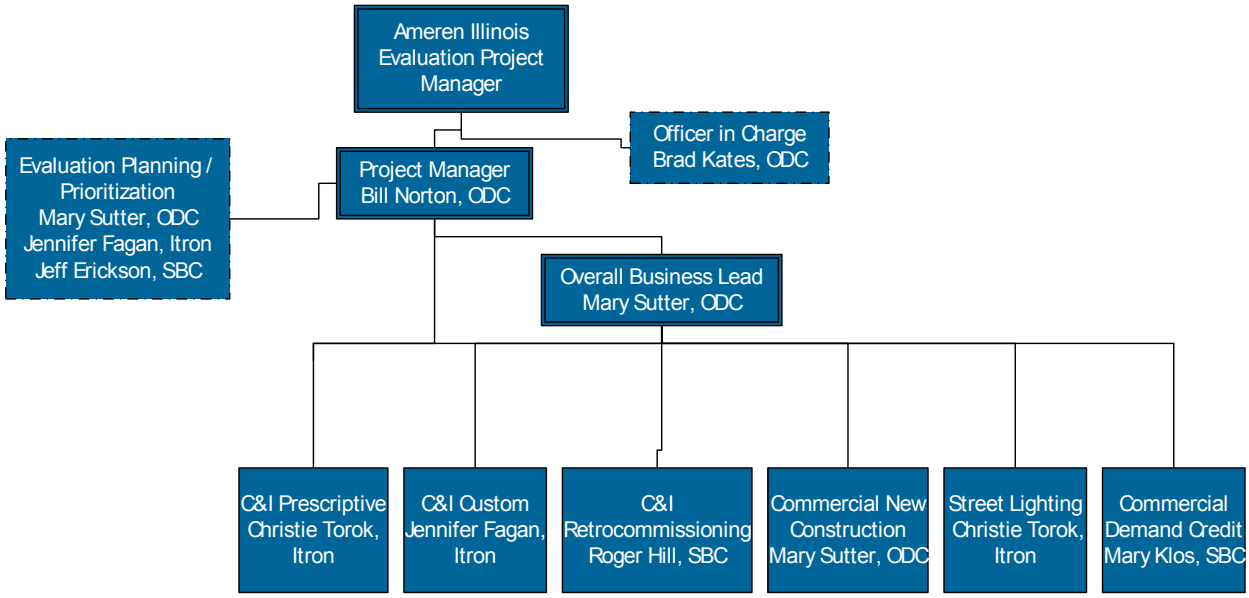
4.5 Task 5 – Project Management

The project management task is highlighted by the structure of communication within the evaluation team and the activities that occur under this task.

4.5.1 Structure

Our project management approach is collaborative, involving frequent communications with AIU and senior members of the ODC team. We will maintain regular contact with SAG and program implementers as deemed necessary and directed by the AIU project manager. Figure 4 shows the structure of the ODC team for this effort.

Figure 4. Project Management Structure



The portfolio management and planning roles at the top of the organizational chart provide the leadership and strategic support for this evaluation.

As ***Officer in Charge***, **Brad Kates** (ODC) will ensure that the evaluation team works closely with the Ameren Illinois Evaluation Lead to create the best evaluation plans possible, and then implement them using the highest industry standards. He will also ensure that team resources are allocated to meet all of the needs of each evaluation. Mr. Kates will carry out ODC's mission of providing high quality data and analysis, and communicating this

information in a way that allows our clients to make informed, rational decisions on key issues. He will also conduct a final review of all external reports.

As overall ***Project Manager,*** **Bill Norton** (ODC) will manage all day-to-day details of the project. In this role, Mr. Norton will clearly communicate to the subcontractors the specific tasks, timelines, deliverables and budgets for each assigned area. He will closely monitor their progress on assigned tasks and take steps to resolve any issues or bottlenecks that occur.

The ***Business Lead***, **Mary Sutter** (ODC) will assure that methods used across the portfolio are similar and/or comparable. In her dual roles of business lead and evaluation planning, she will work closely with Bill Norton to assure the expeditious use of evaluation resources. Additionally, in her role here and as a member of the ComEd portfolio evaluation, Ms. Sutter will be cognizant of and coordinate methods across the two evaluations.

For the purposes of assigning the program-specific resources, we have provided a ***Program Lead*** to each program. Each of these leads will be responsible for the day-to-day evaluation activities of the programs and will directly report to the Business Lead. Our Program Leads are **Christie Torok and Jennifer Fagan** (Itron), **Mary Sutter** (ODC), and **Roger Hill and Mary Klos** (SBC).

Topic lead staff will perform key "overarching" functions for all programs in the Portfolio. While the program-specific staff – by design and necessity – will focus on only the programs to which they are assigned, cross-cutting staff will perform key methodological and operational roles on all six commercial programs. The topics and the individuals assigned to them as leads are shown in Table 3.

Table 3. Portfolio Topic Leads

Topic	AIU Lead
Process	Bill Norton, ODC
Engineering Analysis	Floyd Keneipp and Adam Knickelbein; SBC
Stipulated or Deemed Savings Analysis	Roger Hill, SBC
Econometric and Billing Analysis	Jean Shelton, Itron
Net-to-gross Analysis (Self-Report)	Mary Sutter, ODC and Jennifer Fagan, Itron
Market Effects	Mary Sutter, ODC
Sampling	Corina Jump, Itron
Survey Data Collection	Riley Newbert, ODC
Field Data Collection	Roger Hill, SBC

In addition to these key methodological and operational roles, a pool of analyst staff across all three companies will work closely with the Program Leads in executing the various process and impact evaluation tasks.

4.5.2 Activities

As part of the project management and reporting tasks, the ODC Team will conduct monthly conference calls with AIU. These calls are designed to keep the AIU project manager informed of progress during the past period, resolve issues, and coordinate upcoming activities. The calls will include key team members involved in activities on the critical path. They will be initiated by Mr. Norton and may use the Internet Go-to-Meetings as a way to discuss written items such as surveys. This project management tool has been very effective in (1) ensuring project continuity; (2) developing ongoing mutual understanding of the project's progress; and (3) identifying future project issues and resolutions.

In addition to conference calls, written status reports will be prepared and delivered each month. These status reports will coincide with the invoicing period and will include the following elements:

(1) summary of accomplishments in period (previous month);
(2) survey disposition (if appropriate);
(3) outstanding data requests;
(4) near-term activities/plans (following month);
(5) commentary on tasks progress, issues, and solutions; and
(6) variances in schedule and commentary on variances (including timeline).

Key members of the team will attend in person the project initiation and final "close-out" meetings as well as all important meetings in between. While our team is located throughout the nation, we will be in Illinois when needed.

4.6 Schedule & Budget

A schedule of PY1 evaluation activities is outlined in Table 4.**Error! Reference source not found.**

Table 4. Schedule of PY1 Evaluation Activities

Evaluation Taks	Schedule
Develop Evaluation Plan	2/09 – 4/09; Finalized Plan 4/15/09
Data Collection	4/09 – 6/09
Analysis of Process and Impact Data	7/09
Draft Annual Report I	8/09
Final Annual Report I	9/09

The specific date for key deliverables is presented in Table 5.

Table 5. Date of Key Deliverables

Deliverable	Schedule
Monthly Updates	On the 10th business day of each month

Deliverable	Schedule
Quarterly Updates	10 days after close of Quarter
Ad-hoc	As needed
Draft Annual Report I	8/09
Final Annual Report I	9/09
Draft Annual Report II	8/10
Final Annual Report II	9/10
Draft Annual Report III	8/11
Final Annual Report III	9/11
Final Project Report—Draft	11/11
Final Project Report	2/12

Table 6 presents our initial thoughts of the evaluation budgets by program and program year. These estimates are subject to revisions upon review of program tracking data in PY2 and PY3 and any program design changes.

Table 6. Budgets

Task	Description	PY1	PY2	PY3
1	Evaluation Plan	$ 27,253	$ 15,815	$13,075
2	Verification and QA/QC Plan	$ 15,732	$ -	$ -
3	Review Tracking	$ 13,285	$ 9,451	$ -
4	Implement Plan	$ -	$ -	$ -
	a. Prescriptive	$ 43,616	$104,515	$157,257
	b. Retrocommissioning	$ -	$ 18,712	$ 46,455
	c. New Construction	$ -	$ 28,246	$ 42,675
	d. Street Lighting	$ -	$ -	$ -
	e. Custom	$ 26,098	$ 82,800	$144,433
	f. Demand Credit	$ -	$ -	$ -
5	Report/Manage	$ 12,190	$ 32,265	$ 42,026
6	Evaluation Support	$ 4,578	$ 3,928	$ 6,311
Total		$142,753	$295,733	$452,232

Appendix A. Broad Evaluation Plans for Programs in PY2 or PY3

This appendix provides completeness of the work plan. Because the two programs included here have not yet begun, we provide the plans as originally in our proposal for this work effort. As the portfolio finalized the design and implements these programs and we include them in our assessment of the portfolio, we will specify the exact evaluation efforts in work plan updates.

Street Lighting

Evaluation Overview: Engineers from the evaluation team will review the algorithms used by the program to calculate savings and recommend appropriate changes, if any. They will review the appropriateness and accuracy of the key inputs and assumptions, including but not limited to the hours of operation.

The process evaluation will leverage the efforts of the evaluation of the prescriptive program to the extent possible. A scaled down effort is proposed for this program to include interviews with the program manager and implementation contractor and an assessment of program outreach efforts. If participation warrants, we will include a participant survey effort to gather process evaluation and site specific information necessary to support the impact evaluation.

Sampling: No sampling will be needed for the impact evaluation which will focus on the calculations, not the characteristics of individual participants. A statistically valid sample will be developed for any quantitative survey efforts deemed appropriate.

Data Sources: The evaluation will use data from the program tracking database and from project files that document the savings algorithms and sources for the key assumptions.

Data Analysis: Engineers from the evaluation team will review the algorithms used by the program to calculate savings and recommend appropriate changes, if any. They will re-calculate program impacts based on the recommended changes and calculate a realization rate on the program-estimated savings.

Commercial Demand Credit

Evaluation Overview: The goal of the impact evaluation is to develop estimates of the peak load reductions associated with the programs for control events occurring during the summer of 2009. The central element of the process evaluation will be an evaluation of the customer outreach and recruitment effort. We will also conduct a participant and non-participant survey effort. The participant survey will gather information regarding the effectiveness of program outreach, feedback on program procedures and operations and satisfaction with program participation. The non-participant survey will explore barriers to participation.

Sampling: The sample will consist of all participants with interval meters installed. A

statistically valid sample will be developed for the quantitative survey efforts.

Data Sources: Our primary data sources will be interval meter billing data, program specific event data, weather data, and participation data.

Data Analysis: Savings will be evaluated using the Representative Day Approach. The Representative Day Approach constructs a "typical day" or baseline using load and/or weather data from the work days preceding the event day and then calculates the savings on the control day. If participation warrants it, and the budget is increased to allow it, a second analysis could be performed using a multivariate statistical model to determine individual customers' event responses. Using a statistical model allows us to develop information on how customers respond to program events across event days that may have different weather, as well as to understand the determinants of different responses across customers.