# Evaluation Plan – Residential Multi-family "All Electric" Efficiency Upgrade

## Introduction

The objectives of the Residential Multi-family All Electric Efficiency Upgrade evaluation are to: (1) quantify gross and net savings impacts from the program for each of the following years: PY 2009 and 2010; and (2) to determine key process-related program strengths and weaknesses and identify ways in which the program can be improved.

This program has three major elements: provide direct installation of low-cost measures such as CFLs, pipe insulation, faucet aerators and low-flow showerheads; an energy audit of common areas; and rebates for HVAC and lighting measure recommendations through the Business Custom or Prescriptive programs. The target market is the property owners and managers of all-electric multifamily residential facilities, and tenants.

This ComEd program launched in June 2008, and half way through the program year was on track to meet first year goals. As a part of the overall ComEd portfolio, the risk of non-performance by this program is low as the expected ex ante impacts are small (less than 2% of the three-year planned residential MWh target). For this reason, evaluation activities in PY1 will focus on process evaluation and review of the program tracking data and deemed savings assumptions. The evaluation activities for PY2 and PY3 will address gross and net impacts.

The evaluation will seek to answer the following key researchable questions:

Impact Questions:

1. What are the gross impacts from this program?
2. What are the net impacts from this program?
3. Did the program meet its energy and demand goals? If not, why not?

Process Questions:

1. Has the program design changed from the plan filed on November 15, 2007? If so, how, why, and was this an advantageous change?
2. Is implementation on track and meeting goals? Has the program been implemented a manner consistent with program design?
3. Effectiveness of program implementation, design and processes, and marketing efforts,
4. Customer (tenant and owner/manager) experience and satisfaction with the program, and
5. Market effects associated with program activities.

## Gross Savings Impact and M&V

### Data Collection Methods

1. Engineering review of project level tracking data and the algorithms used by the program to calculate energy savings for all measures and the assumptions that feed those algorithms (PY 2008).
2. Phone surveys with participating tenants (PY 2009 and PY 2010).
3. Phone surveys with participating building owners/managers (PY 2009 and PY 2010).

### Content

Savings assumptions will be verified through follow-up phone interviews with program participants in the second and third program years. The survey will cover the following:

* Pre-installation baseline conditions
* As-installed operating conditions (e.g., Operating hours for CFLs, water use habits for the low flow showerheads)
* Persistence (e.g., are the lighting and water measures still installed?)
* Installation of audit-recommended measures that do not receive a rebate
* HVAC and lighting rebated measures installed

If the participant survey indicates participants installed audit-recommended measures, the savings estimates for those non-tracked measures will be analyzed for addition to the total program savings.

### Sample

The phone survey samples will be designed to achieve a 90/10 confidence/precision level (or better). The target sample size for the participating tenant phone survey is 68 customers per year for PY 2009 and PY 2010. The target sample for the participant owner/manager phone survey is 40 customers per year for the second and third years.

We plan to conduct phone surveys for PY2009 participants and then repeat the phone surveys for PY2010. Each survey will include gross impact, net impact, and process related questions.

### Analysis

The survey data will be applied to the engineering savings algorithms and models to estimate gross energy savings and provide recommended adjustments to the algorithms and assumptions. The primary focus will be on verifying the direct installation component, based on baseline and as-installed operating conditions. Audit recommended measures that do not have program-established engineering algorithms and assumptions will be evaluated using engineering analysis.

More precise estimates could be obtained by going on-site and identifying the actual characteristics of the direct installed and common area measures. Given the small program savings relative to the overall portfolio savings goals, we have not budgeted for such on-sites. The evaluation team will work with ComEd staff to monitor the results of the participant surveys and discuss changes in the M&V scope if warranted.

## Process Evaluation and Net-to-Gross Ratio Assessment

### Data Collection Methods

1. Phone surveys with participants (tenants and owners) – process, self-report free-ridership and participant spillover.
2. Program staff and contractor in depth interviews.

### Content

Process (participants) – Sources of program awareness, program satisfaction, installed measure satisfaction, audit report satisfaction, barriers to measure installation and participation, awareness of program features (e.g., direct install, rebates, educational materials), quality of service, and marketing outreach effectiveness.

Process (program staff and contractor) – Review of program databases, documentation (including contractor Operations Manual, marketing plans, etc.) and promotional materials, program design and delivery, quality assurance and control.

Net-to-gross Customer Self-reports – Influence of the program on direct installed measures and common area measures.

### Sample

The phone survey samples will be designed to achieve a 90/10 confidence/precision level (or better). The target sample size for the participating tenant phone survey is 68 customers per year for PY 2009 and PY 2010. The target sample for the participant owner/manager phone survey is 40 customers per year for the second and third years.

We plan to conduct phone surveys for PY2009 participants and then repeat the phone surveys for PY2010. Each survey will include gross impact, net impact, and process related questions.

Program Staff Interviews – Interview key program staff at ComEd and Honeywell.

The complete sample for this evaluation is as follows:

Table 1. Sample

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| N | What | Who | How Many | When | Comments |
| *Impact Assessment* | | | | | |
| 1 | Telephone Survey | Building owner/representative | 40 | PY 2009 and PY 2010 | Will include data collection for gross, net, and process in same instrument |
| 2 | Telephone Survey | Tenant Participants | 68 | PY 2009 and PY 2010 | Will include data collection for gross, net, and process in same instrument |
| *Process Assessment* | | | | | |
| 4 | Depth Interview | Program Staff and Contractors | 3 | PY 2008 |  |
| 5 | Telephone Survey | Building owner/representative | 40 | PY 2009 and PY 2010 | Will include data collection for gross, net, and process in same instrument |
| 6 | Telephone Survey | Tenant Participants | 68 | PY 2009 and PY 2010 | Will include data collection for gross, net, and process in same instrument |

### Analysis

Data analysis will be conducted following completion of each year’s primary data collection.

Free ridership will be calculated using an algorithm approach based on survey self report data. The analysis will triangulate between participant surveys, program staff, and program contractor interviews.

The existence of participant spillover will be examined using survey self-report data in PY2009. If preliminary evidence of significant spillover is found in PY2009, a more extensive effort will be undertaken to quantify it in PY2010.

Process data will be analyzed to triangulate between implementation contractor interviews, participant surveys, and program manager interviews to identify the most defensible conclusions and recommendations.

## Activity and Reporting Schedule Summary

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | Action | | Deliverables | |
| Task | Deliverable Description | Start Date | End Date | Draft | Final |
| 2 | Draft and Final Evaluation Plans |  |  | 03/3/2009 | 03/25/2009 |
| 3 | Review and comment on program verification and due diligence procedures |  |  | 05/15/2009 | 05/31/2009 |
| 4 | Review and comment on program tracking system structure, data and content |  |  | 05/15/2009 | 05/31/2009 |
| 4 | Review program theory and logic model (if available) | 04/01/2009 | 04/30/2009 |  |  |
| 5A & 5B | Impact and Process Evaluation activities |  |  |  |  |
| Conduct program manager interviews | 04/01/2009 | 04/30/2009 |  |  |
|  | Develop impact and NTG/process samples | 03/01/2010  annually thereafter | 03/31/2010 |  |  |
|  | Design NTG/process surveys | 02/01/2010 | 03/31/2010 |  |  |
|  | Conduct NTG/process phone surveys | 04/1/2010  04/01/2011 | 06/30/2010  06/30/2011 |  |  |
|  | Engineering review of tracking data and savings algorithms | 04/01/2009 | 05/31/2010 |  |  |
|  | Analyze data | 07/01/2010 annually thereafter | 07/31/2010 annually thereafter |  |  |
|  | Develop estimates of gross savings |  |  | 08/01/2010, annually thereafter | 09/15/2010, annually thereafter |
|  | Develop net realization rates |  |  | 08/01/2010 annually thereafter | 09/15/2010 annually thereafter |
|  | Summarize process findings |  |  | 08/01/2009 annually thereafter | 09/15/2009 annually thereafter |
| 6 | Develop draft and final annual report findings and recommendations |  |  | 09/15/2009, annually thereafter | 10/15/2009, annually thereafter |

## Budget

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Task** | **PY2008** | **PY2009** | **PY2010** | **Total** |
| Task 2 Develop Evaluation Plan | $4,628 | $651 | $684 |  |
| Task 3 Verification and Due Diligence | 7,108 | 1,695 | 1,780 |  |
| Task 4 Tracking Systems, Program Theories, Communications | 5,828 | 5,267 | 5,529 |  |
| Task 5A Impact Evaluation | 3,280 | 33,106 | 22,529 |  |
| Task 5B Process Evaluation | 9,066 | 12,946 | 9,283 |  |
| Task 6 Reporting | 3,768 | 7,221 | 7,524 |  |
| Total |  |  |  |  |