

**Clothes Washer Rebate Program
PY5 Evaluation Report**

Final

**Energy Efficiency / Demand Response Plan:
Electric Plan Year 5
(6/1/2012-5/31/2013)**

**Presented to
Commonwealth Edison Company**

March 31, 2014

Prepared by:

Paul Higgins
Navigant Consulting, Inc.

Lorraine Renta
Navigant Consulting, Inc.



www.navigant.com

Submitted to:

ComEd
Three Lincoln Centre
Oakbrook Terrace, IL 60181

Submitted by:

Navigant Consulting, Inc.
30 S. Wacker Drive, Suite 3100
Chicago, IL 60606
Phone 312.583.5700
Fax 312.583.5701

Contact:

Randy Gunn, Managing Director
312.938.4242
Randy.Gunn@Navigant.Com

Jeff Erickson, Director
608.497.2322
Jeff.Erickson@Navigant.Com

Acknowledgements

This report has benefited strongly from the contributions of Jake Ahrens and Jack Cullen, Consultants in Navigant's Burlington and Walnut Creek offices, respectively, Argene McDowell, a Senior Consultant in Navigant's Verona office, and Rob Neumann, an Associate Director in Navigant's Chicago office.

Disclaimer: This report was prepared by Navigant Consulting, Inc. ("Navigant") for Commonwealth Edison based upon information provided by both companies and from other sources. Use of this report by any other party for whatever purpose should not, and does not, absolve such party from using due diligence in verifying the report's contents. Neither Navigant nor any of its subsidiaries or affiliates assumes any liability or duty of care to such parties, and hereby disclaims any such liability.

Table of Contents

E.	Executive Summary	1
E.1	Program Savings	1
E.2	Conclusions and Recommendations	1
1.	Introduction	3
1.1	Program Description.....	3
1.2	Evaluation Questions.....	3
2.	Evaluation Methods.....	4
2.1	Primary Data Collection.....	4
2.2	Impact Evaluation Methods.....	4
2.2.1	Verification Review	5
2.2.2	Gross Impact Analysis	5
2.2.3	Verified Net Impact Analysis.....	5
3.	Evaluation Results	6
3.1	Verification and Due Diligence Procedure Review	6
3.2	Tracking System Review	6
3.3	Gross Program Impact Parameter Estimates.....	6
3.4	Gross Program Impact Results.....	8
3.5	Net Program Impact Parameter Estimates	9
4.	Findings and Recommendations	10
5.	Appendix	11
5.1	Glossary	11
5.2	Participant Survey Instrument	15
5.3	Example of Retailer Promoting CWR Program in PY5	19

List of Figures and Tables

Tables:

Table E-1. ComEd PY5 CWR Program Savings..... 1

Table 2-1. Summary of Data Collection Activities for PY5 4

Table 3-1. Number of Clothes Washers Sold in PY5 by Tier Level 6

Table 3-2. Fuel Type Sample Counts and Proportions 7

Table 3-3. Clothes Washer Algorithm Input Values 8

Table 3-4. PY5 Research Findings Gross Impact Savings Estimates 8

Table 3-5. PY5 Research Findings Gross Demand Savings Estimate (kW) 9

Table 3-6. PY5 Evaluation Verified Savings 9

E. Executive Summary

This report presents a summary of the findings of the impact evaluation of the Clothes Washer Rebate (CWR) Program in Program Year 5 (PY5).¹ The CWR Program provided point-of-sale rebates to ComEd residential customers who purchased specific high-efficiency clothes washer models. The CWR Program was implemented and managed by Commonwealth Edison (ComEd) and APT through participating retailers. The Program was terminated at the end of PY5 and was not offered in PY6. For this reason, no process evaluation was performed.

The objectives of the CWR Program evaluation are to quantify gross and net energy and peak demand savings impacts of the Program during PY5.

E.1 Program Savings

Table E-1 summarizes the electric savings from the ComEd PY5 CWR Program. Navigant verified net energy savings of 1,203 MWh, as well as 155 kW of net coincident peak demand savings.

Table E-1. ComEd PY5 CWR Program Savings

Program Result	Energy Savings (MWh)	Coincident Peak Demand Savings (kW)
Ex-Ante Gross Savings	1,283	165
Ex-Ante NTG Ratio ²	0.60	0.60
Ex-Ante Net Savings ³	770	121
Verified Gross Savings	1,774	228.5
Verified Gross Realization Rate	1.38	1.38
NTG Ratio ⁴	0.68	0.68
Verified Net Savings	1,203	155

Source: ComEd tracking data and Navigant analysis. Note: savings values are rounded to the nearest integer, and ratios to two decimal places.

E.2 Conclusions and Recommendations

This section provides key Program findings and recommendations.

Program Savings Goal Attainment:

Finding 1. The CWR Program achieved 1,203 MWh of net energy savings, which is 156 percent of ex-ante net energy savings of 770 MWh, and 241 percent of ComEd's PY5 net electric

¹ PY5 began June 1, 2012 and ended May 31, 2013; PY6 began June 1, 2013 and ends May 31, 2014.

² ComEd used a NTG ratio of 0.60 to calculate ex-ante net savings (ComEd PY5 NTG Comparisons with SAG.xls).

³ ComEd PY5 FINAL Cost_kWh.pdf, received from ComEd October 10, 2013.

⁴ Research verified NTG ratio from PY4 CWR Program evaluation report.

energy savings goal of 500 MWh.⁵ It also attained 155 kW of net coincident peak demand savings.

Recommendation 1. If the Program is implemented again in the future, ComEd should revisit the method it uses to set its planning goal to obtain a more accurate savings estimate, for example by relying on the average per-unit verified net energy savings.

Installation Verification Rate/Tracking Data:

Finding 2. The evaluation installation verification rate for the Program was 1.00, based on 100 percent of respondents in a telephone survey of participants confirming that they purchased a new clothes washer through the program in PY5.

⁵ ComEd's PY5 planning goal for the CWR Program net energy savings is found in ComEd PY5 FINAL Cost-kWh.pdf.

1. Introduction

1.1 Program Description

This report summarizes the findings of the impact evaluation of the Clothes Washer Rebate (CWR) Program in PY5. The CWR Program provided rebates to purchasers of specific clothes washer models in an effort to promote the purchase and installation of high-efficiency clothes washers among residential customers of ComEd. Because the Program was terminated after PY5 and was not offered in PY6, Navigant performed an attenuated evaluation that focused on quantifying gross and net energy savings impacts from the Program; no process evaluation was performed.

This Program offered an incentive for the purchase of two types of ENERGY STAR® clothes washers:

- Top-loading washers with a minimum modified energy factor (“MEF”) of 2.0
- Front-loading washers with a MEF of 2.0.

Qualifying models were identified in participating retail outlets by a ComEd sticker, and retailers promoted the program through their advertising.⁶ Only ComEd residential customers could qualify for rebates at participating retail stores. Participating retailers used customers’ home ZIP Codes to verify that they qualified for rebates. Qualifying customers received a point-of-sale rebate of seventy-five dollars for any qualifying energy efficient clothes washing unit purchased and delivered during PY5.

1.2 Evaluation Questions

Navigant identified the following key researchable questions for PY5:

1. What are the verified gross annual energy (kWh) and peak demand (kW) savings induced by the Program?
2. What are the net savings impacts of the Program?
3. Did the Program meet its energy savings goal?
4. Were the assumptions and calculations used to estimate ex-ante energy savings in compliance with the TRM?

⁶ An example of a participating retailer’s web page promoting the Program in PY5 is given in the Appendix.

2. Evaluation Methods

2.1 Primary Data Collection

The CWR Program evaluation involved limited impact work for PY5. To estimate gross energy savings, Navigant relied on Program tracking data, and on parameters, assumptions and algorithms from the Illinois Technical Reference Manual (TRM)⁷. We also used telephone survey data from a random sample of PY5 Program participants to determine the distribution of hot water and dryer fuels among participants. The Program was evaluated in PY4 and a NTG ratio of 0.678 was calculated based on participant telephone survey responses. Navigant did not repeat the NTG survey in PY5, instead applying the PY4 evaluated Net-to-Gross (NTG) ratio in PY5 to calculate net savings. SAG recommended application of this PY4 NTG value in PY5.⁸

Data collection activities (Table 2-1) included:

- Verification of claimed savings through engineering review of the tracking system, and savings algorithms and assumptions
- Computer Assisted Telephone Interviews (CATI) of a randomly-selected sample of program participants.

Table 2-1. Summary of Data Collection Activities for PY5

Data Collection Task (Program Years Conducted)	Sampling Frame	Sample Size	Relative Precision at 90% CI
Engineering review of claimed savings and project documentation	Program tracking database	Program tracking database	N/A
Customer participant survey ⁹	Program tracking database	90	±10%

2.2 Impact Evaluation Methods

Navigant’s approach to measuring impacts was multi-staged, including a tracking database review, gross savings verification, and net savings verification.

⁷ Illinois Statewide Technical Reference Manual, September 14, 2012, pages 296-302 – The September 14, 2012 final version of the first State of Illinois Energy Efficiency Technical Reference Manual (TRM) (effective as of June 1, 2012) has been agreed to by Illinois Stakeholder Advisory Group (SAG) participants and is currently pending approval before the Illinois Commerce Commission in Docket No. 12-0528 as of the date of this report.

⁸ ComEd PY5-PY6 Proposal Comparisons with SAG.xls as found on <http://ilsag.info>

⁹ The telephone survey was administered by Itron, Inc. The sampling frame consisted of all valid PY5 CWR Program participants. The requested sample size was 90 completed surveys. The survey verified program participation and collected information on the fuels used for hot water and clothes drying in the residence. The survey instrument is included in the Appendix.

2.2.1 Verification Review

Navigant reviewed the program tracking database to verify that:

- The measures met all physical characteristics required to be assigned to the deemed value (e.g., make and model, minimum efficiencies, tub capacity)
- The measures met all compliance requirements for installation conditions related to the assigned deemed value (e.g., customer and retailer information, purchase date falling within PY5, ComEd customer).
- The data on measures installed and operational was clearly recorded in the tracking system

Navigant's primary research in PY5 consisted of data collected from a representative sample of participating customers via a telephone survey to verify installation and record current operating conditions (the hot water and clothes dryer fuels used in the residence). The appropriate default savings were applied to the database of participants after the verification survey addressing installation and persistence.

The evaluation team did not conduct on-site verification visits of projects. The program tracking data collected for the PY5 gross impact analysis allowed the Evaluation Team to verify rebated measure sales. Specifically, the Evaluation Team verified:

- Clothes washer capacity size, in cubic feet
- CEE Tier efficiency level
- Purchase date

2.2.2 Gross Impact Analysis

Navigant performed an engineering review of savings calculations used to calculate gross kWh and peak kW savings. Program sales data were obtained from the ComEd tracking database. As the program only paid rebates to customers living in the utility service territory, a leakage rate analysis was not conducted. The residential hours of use and energy savings estimates used in the PY5 evaluation were based on the TRM.

2.2.3 Verified Net Impact Analysis

Navigant used the NTG research result obtained in the PY4 Program evaluation (NTG ratio = 0.678) to calculate verified net savings in PY5. The SAG recommended application of this PY4 NTG value in PY5.¹⁰

¹⁰ ComEd PY5-PY6 Proposal Comparisons with SAG.xls as found on <http://ilsag.info>

3. Evaluation Results

3.1 Verification and Due Diligence Procedure Review

Navigant reviewed the quality of the tracking system data for quality and completeness. For the purpose of verification, customer surveys were administered to a randomly-selected sample of 90 Program participants. The survey results indicated that the program tracking database correctly recorded the clothes washers in all cases, with 100 percent of survey respondents confirming that they purchased a new clothes washer through the CWR Program. The number of units by efficiency level derived from ComEd’s tracking data are shown below in Table 3-1.

Table 3-1. Number of Clothes Washers Sold in PY5 by Tier Level

	CEE Tier 1	CEE Tier 2	CEE Tier 3	Total
Clothes Washers Sold in PY5	8,180	364	21,417	29,961

Source: Evaluation Team analysis of program tracking data. Note that these numbers do not include cases where customers returned clothes washers purchased through the Program, nor measures that were purchased outside of PY5.

3.2 Tracking System Review

Navigant performed independent verification checks on the program tracking database, examining it for signs of systematic input error, outliers, missing values, and potentially missing variables. This review revealed no significant issues. We recommend that if ComEd resumes the Program in a future program year, ComEd continue tracking the CWR program as it did in PY5 with the addition of documentation on per-unit ex-ante estimates as discussed below.

3.3 Gross Program Impact Parameter Estimates

The evaluation used data from the ComEd tracking database, which included the efficiency tier level and wash tub capacity for each clothes washer purchased through the program. These were used as inputs to the per-unit savings estimates as defined in the Illinois TRM. In the participant phone survey, 100 percent of the respondents answered “yes” to purchasing a new clothes washer through the program so the verified installation rate was 1.00. The tracking data indicated that some of the clothes washers were returned to the retailer; the savings for those washers were subtracted from the total savings estimate.

The Illinois TRM provides prescriptive energy savings values that use CEE/ENERGY STAR efficiency tier, washer tub capacity, hot water and clothes dryer fuel types as inputs when these are known. To obtain estimates of the proportions of Program participants having electric vs. non-electric hot water and clothes dryers, Navigant used data on fuel types from the telephone survey. The sample proportions from the survey are given in Table 3-2 below.

Table 3-2. Fuel Type Sample Counts and Proportions

		Clothes Dryer Fuel		Row Sums
		Electric	Gas/Other	
Hot Water Fuel	Electric	6 (7.50%)	0 (0.00%)	6 (7.50%)
	Gas/Other	23 (28.75%)	51 (63.75%)	74 (92.50%)
Column Sums		29 (36.25%)	51 (63.75%)	80 (100.00%)

Source: Navigant telephone survey.

Gross kWh, kW and peak kW savings are calculated using the following equations using the following equations:

- $EC = (1/MEF) * C * S$
- $Savings_{kWh} = EC_{BASE} - EC_{EFFICIENT}^{11}$
- $Savings_{kW} = Savings_{kWh}/T$
- $Savings_{kW}^{PEAK} = Savings_{kW} * CoincidenceFactor$

where:

- EC = Energy consumed annually by clothes-washing in kWh
- MEF = Modified Energy Factor, clothes-washer efficiency in ft³/kWh/cycle
- C = Number of clothes-washer cycles per year
- S = Size (tub capacity) of the clothes washer in ft³
- T = Hours of use per year = C
- $CoincidenceFactor$ = Factor to adjust $Savings_{kW}$ to account for the non-coincidence of peak loads in individual usage

The input values for the above equations are defined in Table 3-3.

¹¹ Note that the ex-ante gross savings estimate (1,283 MWh) uses only the information available in the tracking database, namely the number of rebated units by CEE efficiency level. The verified gross savings value (1,774 MWh) uses additional information on tub capacity, hot water fuel and clothes dryer fuel.

Table 3-3. Clothes Washer Algorithm Input Values

Parameter	Value	Source
<i>MEF</i> : Modified Energy Factor, or efficiency rating, in ft ³ of wash capacity per kWh used per cycle	Deemed by TRM based on CEE efficiency tier	TRM
<i>C</i> : Number of clothes washer cycles per year	Deemed (295)	TRM ¹²
<i>S</i> : Size of the equipment in ft ³	Variable, specific to each unit	Tracking database
<i>CoincidenceFactor</i>	0.038	TRM ¹³
Fuel type for hot water, clothes drying	Electric or other	Participant survey

Source: Illinois TRM.

3.4 Gross Program Impact Results

Applying the recommended factors and data from the tracking system produces the PY5 research findings gross savings estimates for clothes washers shown in Table 3-4. The resulting total program verified gross savings is 1,774 MWh which produces a gross realization rate of 138 percent.

Table 3-4. PY5 Research Findings Gross Impact Savings Estimates

Research Finding	Number of Units Sold in PY5	Gross Savings Estimates (MWh)	Average Unit Energy Savings (kWh)
Ex-Ante	29,961	1,283	43
Evaluation Verified	29,961	1,774	59
Realization Rate	1.00	1.38	N/A

Source: ComEd Program tracking data and Navigant analysis.

Table 3-5 below provides the PY5 research findings gross peak savings estimates for the CWR Program. The verified gross peak demand savings is 229 kW.

¹² Illinois TRM 2012 - based on 2009 Residential Energy Consumption Survey (RECS) national sample survey of housing appliances section, state of IL: <http://www.eia.gov/consumption/residential/data/2009/>

¹³ Illinois TRM 2012 - Calculated from Itron eShapes, 8760 hourly data by end use for Missouri

Table 3-5. PY5 Research Findings Gross Demand Savings Estimate (kW)

Research Finding	Number of Units Sold in PY5	Gross Peak Demand Savings (kW)	Average Unit Peak Demand Savings (kW)
Ex-Ante	29,961	165	0.0055
Evaluation Verified	29,961	229	0.0076
Realization Rate	1.00	1.38	N/A

Source: ComEd Program tracking data and Navigant analysis.

3.5 Net Program Impact Parameter Estimates

Having calculated the verified gross Program impacts, Navigant derived the net Program impacts by multiplying the gross impact estimates by the NTG ratio (Table 3-6). The resulting total program verified net energy savings is 1,203 MWh; the verified net peak demand savings is 155 kW.

Table 3-6. PY5 Evaluation Verified Savings

Research Finding	Energy (MWh)	Peak Demand (kW)
Evaluation Verified Gross	1774	229
NTG Ratio	0.678	0.678
Evaluation Verified Net	1,203	155

Source: Navigant analysis.

4. Findings and Recommendations

This section summarizes the key impact findings.

Program Savings Goal Attainment:

Finding 1a. The CWR Program achieved 1,203 MWh of net energy savings, which is 156 percent of ex-ante net energy savings of 770 MWh, and 241 percent of ComEd’s stated PY5 net electric energy savings goal of 500 MWh. The Program also achieved 155 kW of net coincident peak demand savings.

Recommendation 1a. If the Program is implemented again in the future, ComEd should revisit the method it uses to set its planning goal to obtain a more accurate savings estimate, for example by relying on the net per-unit verified energy savings.

Finding 1b. ComEd’s ex-ante net energy savings of 770 MWh for the CWR Program is an overall program figure that does not appear to be linked directly to the per-unit data contained in the tracking file.

Recommendation 1b. If the Program is implemented again in the future, ComEd should base its ex-ante savings values on measure counts in the tracking file and parameter values and algorithms found in the TRM.

Installation Verification Rate/Tracking Data:

Finding 2. The evaluation installation verification rate for the Program was 1.00, based on 100 percent of respondents in a telephone survey of participants confirming that they purchased a new clothes washer through the program in PY5.

5. Appendix

5.1 Glossary

High Level Concepts

Program Year

- EPY1, EPY2, etc. Electric Program Year where EPY1 is June 1, 2008 through May 31, 2009, EPY2 is June 1, 2009 through May 31, 2010, etc.
- GPY1, GPY2, etc. Gas Program Year where GPY1 is June 1, 2011 through May 31, 2012, GPY2 is June 1, 2012 through May 31, 2013.

There are two main tracks for reporting impact evaluation results, called Verified Savings and Impact Evaluation Research Findings.

Verified Savings composed of

- Verified Gross Energy Savings
- Verified Gross Demand Savings
- Verified Net Energy Savings
- Verified Net Demand Savings

These are savings using deemed savings parameters when available and after evaluation adjustments to those parameters that are subject to retrospective adjustment for the purposes of measuring savings that will be compared to the utility's goals. Parameters that are subject to retrospective adjustment will vary by program but typically will include the quantity of measures installed. In EPY5/GPY2 the Illinois TRM was in effect and was the source of most deemed parameters. Some of ComEd's deemed parameters were defined in its filing with the ICC but the TRM takes precedence when parameters were in both documents.

Application: When a program has deemed parameters then the Verified Savings are to be placed in the body of the report. When it does not (e.g., Business Custom, Retrocommissioning), the evaluated impact results will be the Impact Evaluation Research Findings.

Impact Evaluation Research Findings composed of

- Research Findings Gross Energy Savings
- Research Findings Gross Demand Savings
- Research Findings Net Energy Savings
- Research Findings Net Demand Savings

These are savings reflecting evaluation adjustments to any of the savings parameters (when supported by research) regardless of whether the parameter is deemed for the verified savings analysis. Parameters that are adjusted will vary by program and depend on the specifics of the research that was performed during the evaluation effort.

Application: When a program has deemed parameters then the Impact Evaluation Research Findings are to be placed in an appendix. That Appendix (or group of appendices) should be labeled Impact Evaluation Research Findings and designated as "ER" for short. When a program does not have deemed parameters (e.g., Business Custom, Retrocommissioning), the Research Findings are to be in the body of the report as the only impact findings. (However, impact findings may be summarized in the body of the report and more detailed findings put in an appendix to make the body of the report more concise.)

Program-Level Savings Estimates Terms

N	Term Category	Term to Be Used in Reports‡	Application†	Definition	Otherwise Known As (terms formerly used for this concept)§
1	Gross Savings	Ex-ante gross savings	Verification and Research	Savings as recorded by the program tracking system, unadjusted by realization rates, free ridership, or spillover.	Tracking system gross
2	Gross Savings	Verified gross savings	Verification	Gross program savings after applying adjustments based on evaluation findings for only those items subject to verification review for the Verification Savings analysis	Ex post gross, Evaluation adjusted gross
3	Gross Savings	Verified gross realization rate	Verification	Verified gross / tracking system gross	Realization rate
4	Gross Savings	Research Findings gross savings	Research	Gross program savings after applying adjustments based on all evaluation findings	Evaluation-adjusted ex post gross savings
5	Gross Savings	Research Findings gross realization rate	Research	Research findings gross / ex-ante gross	Realization rate
6	Gross Savings	Evaluation-Adjusted gross savings	Non-Deemed	Gross program savings after applying adjustments based on all evaluation findings	Evaluation-adjusted ex post gross savings
7	Gross Savings	Gross realization rate	Non-Deemed	Evaluation-Adjusted gross / ex-ante gross	Realization rate
1	Net Savings	Net-to-Gross Ratio (NTGR)	Verification and Research	1 – Free Ridership + Spillover	NTG, Attribution
2	Net Savings	Verified net savings	Verification	Verified gross savings times NTGR	Ex post net
3	Net Savings	Research Findings net savings	Research	Research findings gross savings times research NTGR	Ex post net
4	Net Savings	Evaluation Net Savings	Non-Deemed	Evaluation-Adjusted gross savings times NTGR	Ex post net
5	Net Savings	Ex-ante net savings	Verification and Research	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.	Program-reported net savings

‡ “Energy” and “Demand” may be inserted in the phrase to differentiate between energy (kWh, Therms) and demand (kW) savings.

† **Verification** = Verified Savings; **Research** = Impact Evaluation Research Findings; **Non-Deemed** = impact findings for programs without deemed parameters. We anticipate that any one report will either have the first two terms or the third term, but never all three.

§ Terms in this column are not mutually exclusive and thus can cause confusion. As a result, they should not be used in the reports (unless they appear in the “Terms to be Used in Reports” column).

Individual Values and Subscript Nomenclature

The calculations that compose the larger categories defined above are typically composed of individual parameter values and savings calculation results. Definitions for use in those components, particularly within tables, are as follows:

Deemed Value – a value that has been assumed to be representative of the average condition of an input parameter and documented in the Illinois TRM or ComEd’s approved deemed values. Values that are based upon a deemed measure shall use the superscript “D” (e.g., delta watts^D, HOU-Residential^D).

Non-Deemed Value – a value that has not been assumed to be representative of the average condition of an input parameter and has not been documented in the Illinois TRM or ComEd’s approved deemed values. Values that are based upon a non-deemed, researched measure or value shall use the superscript “E” for “evaluated” (e.g., delta watts^E, HOU-Residential^E).

Default Value – when an input to a prescriptive saving algorithm may take on a range of values, an average value may be provided as well. This value is considered the default input to the algorithm, and should be used when the other alternatives listed for the measure are not applicable. This is designated with the superscript “DV” as in X^{DV} (meaning “Default Value”).

Adjusted Value – when a deemed value is available and the utility uses some other value and the evaluation subsequently adjusts this value. This is designated with the superscript “AV” as in X^{AV}

Glossary Incorporated From the TRM

Below is the full Glossary section from the TRM Policy Document as of October 31, 2012¹⁴.

Evaluation: Evaluation is an applied inquiry process for collecting and synthesizing evidence that culminates in conclusions about the state of affairs, accomplishments, value, merit, worth, significance, or quality of a program, product, person, policy, proposal, or plan. Impact evaluation in the energy efficiency arena is an investigation process to determine energy or demand impacts achieved through the program activities, encompassing, but not limited to: *savings verification, measure level research, and program level research*. Additionally, evaluation may occur outside of the bounds of this TRM structure to assess the design and implementation of the program.

Synonym: **Evaluation, Measurement and Verification (EM&V)**

Measure Level Research: An evaluation process that takes a deeper look into measure level savings achieved through program activities driven by the goal of providing Illinois-specific research to facilitate updating measure specific TRM input values or algorithms. The focus of this process will primarily be driven by measures with high savings within Program Administrator portfolios, measures with high uncertainty in TRM input values or algorithms (typically informed by previous savings verification activities or program level research), or measures where the TRM is lacking Illinois-specific, current or relevant data.

¹⁴ IL-TRM_Policy_Document_10-31-12_Final.docx

Program Level Research: An evaluation process that takes an alternate look into achieved program level savings across multiple measures. This type of research may or may not be specific enough to inform future TRM updates because it is done at the program level rather than measure level. An example of such research would be a program billing analysis.

Savings Verification: An evaluation process that independently verifies program savings achieved through prescriptive measures. This process verifies that the TRM was applied correctly and consistently by the program being investigated, that the measure level inputs to the algorithm were correct, and that the quantity of measures claimed through the program are correct and in place and operating. The results of savings verification may be expressed as a program savings realization rate (verified ex post savings / ex ante savings). Savings verification may also result in recommendations for further evaluation research and/or field (metering) studies to increase the accuracy of the TRM savings estimate going forward.

Measure Type: Measures are categorized into two subcategories: custom and prescriptive.

Custom: Custom measures are not covered by the TRM and a Program Administrator’s savings estimates are subject to retrospective evaluation risk (retroactive adjustments to savings based on evaluation findings). Custom measures refer to undefined measures that are site specific and not offered through energy efficiency programs in a prescriptive way with standardized rebates. Custom measures are often processed through a Program Administrator’s business custom energy efficiency program. Because any efficiency technology can apply, savings calculations are generally dependent on site-specific conditions.

Prescriptive: The TRM is intended to define all prescriptive measures. Prescriptive measures refer to measures offered through a standard offering within programs. The TRM establishes energy savings algorithm and inputs that are defined within the TRM and may not be changed by the Program Administrator, except as indicated within the TRM. Two main subcategories of prescriptive measures included in the TRM:

Fully Deemed: Measures whose savings are expressed on a per unit basis in the TRM and are not subject to change or choice by the Program Administrator.

Partially Deemed: Measures whose energy savings algorithms are deemed in the TRM, with input values that may be selected to some degree by the Program Administrator, typically based on a customer-specific input.

In addition, a third category is allowed as a deviation from the prescriptive TRM in certain circumstances, as indicated in Section 3.2:

Customized basis: Measures where a prescriptive algorithm exists in the TRM but a Program Administrator chooses to use a customized basis in lieu of the partially or fully deemed inputs. These measures reflect more customized, site-specific calculations (e.g., through a simulation model) to estimate savings, consistent with Section 3.2.

5.2 Participant Survey Instrument

Participant Survey Questionnaire for ComEd Clothes Washer Program

PY5 – June 1, 2012 – May 31, 2013

Impact Evaluation
 Residential Participant Survey
Telephone Survey Instrument
 Draft Questionnaire 09.09.2013

Interviewer Instructions

- Call is to be placed asking to speak to the person named in the customer contact information obtained from program records.
- If that person is no longer at the phone number of record, ask the respondent if they live at [customer address of record].
- If the individual of record no longer lives at address of record, take any info offered, thank them and end the call.
- Make at least 5 attempts to each customer at different times of the day/week.
- The purpose of the introductory script is to ensure the survey is answered by the primary decision maker involved in enrolling in ComEd Clothes Washer Rebate Program.
- Initial questions are to qualify the respondent.
- Acceptable respondents include: persons who signed up on behalf of a dependent person (e.g., older relative), but may not live at the target service address.

SAMPLE_NO
 CUST_NAME (Name)
 SERVICE_ADDRESS
 HOME_PHONE
 PROGRAM IN WHICH PARTICIPATED
 PARTIC_DATE
 ComEd

QUOTAS

[Strata]	Program Totals by Measure	Samples

INTRODUCTION

INTRO1 [Preferred Intro] Hello, my name is _____, I'm calling on behalf of ComEd. Our records indicate that you received a rebate from ComEd toward the purchase of a new clothes washer and I want to ask you a few questions about your purchase decision and the rebate you received from ComEd. This is not a sales call. May I speak with <CUST NAME>?

1. CONTINUE WITH CUSTOMER ONCE THEY ARE ON THE PHONE
2. CUSTOMER NOT AVAILABLE [SCHEDULE CALLBACK]
3. NOT A GOOD TIME TO CONDUCT SURVEY [SCHEDULE CALLBACK]

INTRO2 ComEd has asked us to contact you because we are evaluating ComEd's energy efficiency programs, and we'd like to talk briefly with you because our records show that you received a rebate from ComEd through their Clothes Washer Program this past year.

SCREENING QUESTIONS AND MEASURE IDENTIFICATION

SCR1. Do you live at <SERVICE_ADDRESS>?

1. YES
 2. NO
 3. NOT NOW, BUT I DID LIVE THERE
888. Don't Know [SKIP TO THANK8]
999. Refused [SKIP TO THANK8]

SCR2. The Residential Clothes Washer Program gives an instant rebate for ComEd customers buying select ENERGY STAR-labeled clothes washers. The rebate was provided to you at the time of sale so that the final sale price was reduced, and you should have been informed that there was a rebate reducing the cost of the clothes washer you purchased. Do you remember the program?

1. YES [SKIP TO EQT1]
 2. NO, I don't recall purchasing any clothes washer in the past year (since May 2012) [SKIP TO SCR2A]
 3. YES I did purchase a clothes washer but I don't recall hearing about a ComEd rebate. [SKIP TO EQT1]
888. Don't Know [SKIP TO SCR2A]
999. Refused [SKIP TO THANK8]

SCR2A. Is there someone in the household at <SERVICE_ADDRESS> who might recall the program and could talk about your household's experience with the ComEd Clothes Washer Program?

1. YES [ASK TO SPEAK WITH PERSON WHO RECALLS PROGRAM & CONTINUE WITH THAT PERSON; take call-back info] [SKIP TO INTRO2]
 2. NO, I'm sure your records are in error. [SKIP TO THANK2]
888. Don't Know [SKIP TO THANK8]
999. Refused [SKIP TO THANK8]

[QUALIFIED RESPONDENT – QAL STATEMENT]

EQT1. Was the clothes washer you purchased a top-loading machine or a front-loading machine?

1. Top Loader
2. Front Loader
000. NONE OF THE ABOVE [\[SKIP TO THANK2\]](#)
888. Don't Know
999. Refused

EQT2. Is the washer you purchased currently installed in your home?

1. Yes
2. No
888. Don't Know
999. Refused

[\[IF EQT2=2, ASK EQT2A\]](#)

EQT2A. What is the reason the washer is not currently installed? Did you ... [\[READ LIST\]](#)

1. Return it to the store after it was delivered
2. Refuse delivery
3. Other, specify
888. Don't Know
999. Refused

EQT3. What type of hot water heater do you have? Is it ... [\[READ LIST\]](#)

1. Gas
2. Electric
000. Other, specify
888. Don't know
999. Refused

EQT4. What type of clothes dryer do you have? Is it ... [\[READ LIST\]](#)

1. Gas
2. Electric
3. Don't own a dryer
000. Other, specify
888. Don't know
999. Refused

DEMOGRAPHICS

Q1. I have just a couple of questions left to ask for classification purposes. First, do you own or rent the home at <SERVICE_ADDRESS>?

1. Own
2. Rent
000. Other, specify
888. Don't know

999. Refused

Q2. What type of home do you live in? Is it a... [\[READ LIST\]](#)

1. Single Family detached,
 2. Single Family attached (duplex, town home, etc.)
 3. Multifamily Apartment or Condominium
000. Other, specify
888. Don't know
999. Refused

CLOSE

THANK. Thank you for taking time to help with our survey and the helpful information you provided. Have a great day/evening!

[DISPOS = 40]

THANK2. Thank you for taking time to help with our survey. However, for this survey we are only interviewing those who have participated in ComEd's Clothes Washer Program. Have a great day/evening!

[DISPOS = 25]

THANK8. Thank you very much for your time. Have a great day/evening!

[DISPOS = 24]

5.3 Example of Retailer Promoting CWR Program in PY5

The following web page was found at <http://www.abt.com/rebates/ComEd-75Instant-Washers> (downloaded on December 19, 2013):

The screenshot shows the Abt website's promotional page for a \$75 instant rebate. The page features the Abt logo, navigation menus, and a search bar. The main content area highlights the rebate offer, including the ComEd logo and a photo of a clothes washer. A sidebar on the left lists site promotions and shopping options, while a sidebar on the right offers help and learning resources.

Abt Pleasing People...Since 1936

Shop By Brand | Shop By Category | Registries + Lists | Gift Cards | Gift Ideas | **shoppingcart**

Customer Support - 7 Days a Week
Live Chat or call us at 888.228.5800
(Chicagoland 847.967.8830)

Log In | Track Your Order | Customer Service

Appliances | Audio | TV & Video | Cameras & Camcorders | Portable Electronics | Communications | Computers | Mobile Electronics | Furniture | Gourmet Shop | Other | Specials

Free Shipping on thousands of items. [Learn more](#) | **A Better Experience** [Learn More](#)

YEAR END SAVINGS Save Throughout The Site [LEARN MORE](#)

Site promotions

- Free Shipping
- Buy Now. Pay Later
- Sign Up For Our E-Letter
- No Sales Tax

More ways to shop

- Weekly Specials
- Not Yet Released
- Outlet
- Rebates

smartideas

ComEd powering lives
An Exelon Company

\$75 Instant Rebate
on select ENERGY STAR® qualified clothes washers for qualifying Chicagoland ComEd residential customers.

Need Help?
Call us 888.228.5800 live chat
[Chat Now](#)

Learn Before You Buy

- Buying Guides
- Customer Reviews

Why Abt?

- Award Winning Service
- Authorized Retailer
- Price Match Policy
- Quick Shipping
- Free Tech Support
- Testimonials

Abtblog
[\(click here\)](#)

Clothes Washer Rebate Saves Money and Energy

This offer available starting June 1, 2012
ComEd residential customers can qualify for a \$75 rebate on select ENERGY STAR® qualified clothes washers.

Visit **Abt** to take advantage of the rebate starting in July. Look for the ComEd Smart Ideas® sticker on qualifying units or ask an Abt sales person for more information.

You can also call 888.228.5800 between 7am-10pm Monday through Friday, 9am-7pm Saturday, and 10:30am - 6:15pm Sunday.

Qualifying Washer Models:

Fisher and Paykel

- WA42T26GW1

Frigidaire

- FAFS4073R
- FAFS4073SS
- FAFS4073WH
- FAFW3801WH
- FAFW3921WH
- FAHE1011WH
- FAHE4044WH

GE

- GFWH1200WH
- GTWN4250DWH
- GTWN4950DWH
- GTWN5250DWH
- GTWN5450DWH
- GTWN5550DWH

LG

- WM2250WH
- WT1101WH
- WT4801WH
- WT4870WH

Maytag

- MHWC7500YWH
- MHWE201WH
- MVWC360WH
- MVWC400XWH
- MVWC450WH
- MVWX600WH
- MVWX700WH

Samsung

- WA400PJWH
- WA422PRWH
- WF361WH

Whirlpool

- WFC7500VWH
- WFW9151WH
- WFW9351WH
- WTW4880AWH
- WTW4950XWH
- WTW5550WH
- WTW5600WH
- WTW5700WH
- WTW8200YWH

Advantages of Energy Star clothes washers

The average household washes 400 loads of laundry a year, which uses precious resources like water, electricity and gas. A high efficiency ENERGY STAR® qualified clothes washer can help conserve these resources. Families can cut their related energy costs by about a third - and the water costs by more than half - just by purchasing a select clothes washer with the ENERGY STAR label.

- ENERGY STAR qualified clothes washers use about 37 percent less energy and require less than half of the amount of water that regular washers use. Many qualified clothes washers also have a greater capacity than conventional models, meaning fewer loads of laundry.
- Over the life of your new ENERGY STAR qualified washer, you'll save enough money in operating costs to pay for the matching dryer. With your water savings, you could fill three backyard swimming pools.
- Is your washer over 10 years old? Replace it with a new ENERGY STAR qualified washer and you could save \$135 each year on your utility bills. That's like getting your High Efficiency (HE) detergent free year round.