

**BEFORE THE
PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Energy Efficiency and)	
Peak Demand Reduction Program Portfolio)	
Status Report of Ohio Edison Company,)	
The Cleveland Electric Illuminating)	Case No. 13-1185-EL-EEC
Company and The Toledo Edison)	13-1186-EL-EEC
Company)	13-1187-EL-EEC
)	

**REPLY COMMENTS OF OHIO EDISON COMPANY, THE CLEVELAND ELECTRIC
ILLUMINATING COMPANY AND THE TOLEDO EDISON COMPANY**

I. INTRODUCTION

On May 15, 2013, pursuant to Rule 4901:1-39-05, Ohio Administrative Code (“OAC”) and the Commission’s January 30, 2013 Entry in Case No. 12-2266-EL-WVR,¹ Ohio Edison Company, The Cleveland Electric Illuminating Company and The Toledo Edison Company (collectively, “Companies”) submitted their Energy Efficiency and Peak Demand Reduction Program Portfolio Status Reports for the year ending December 31, 2012 (“Status Reports”). Pursuant to Rule 4901:1-39-06(A), OAC, interested parties were permitted to file comments on the Status Reports. On June 14, 2013, the Natural Resources Defense Council, the Ohio Environmental Council and the Environmental Law and Policy Center (collectively “Environmental Advocates”) submitted joint comments on said Reports. The Companies hereby submit their reply to these comments.

¹ *In re Application of Ohio Edison Company, The Cleveland Electric Illuminating Company, The Toledo Edison Company, The Dayton Power and Light Company and Duke Energy Ohio, Inc., for Waiver with Regard to Rule 4901:1-39-05(C), Ohio Administrative Code, Case No. 12-2266-EL-WVR, Entry (Jan. 30, 2013).*

II. BACKGROUND

Section 4901:1-39-05, OAC, requires an Electric Distribution Utility (“EDU”) to file an annual status report that addresses “the performance of all approved energy efficiency [“EE”] and peak-demand reductions [“PDR”] that its programs were designed to achieve, relative to its corresponding baselines.” At a minimum, the report should include the following information:

- (a) An update to the EDU’s benchmark report;
- (b) A comparison between the benchmark and actual EE and PDR results achieved;
- (c) An affidavit as to whether the reported performance complies with the statutory benchmarks;
- (d) Program performance assessment;
- (e) An evaluation, measurement and verification (“EMV”) report; and
- (f) A recommendation as to whether each program should be continued, modified or eliminated.²

On May 15, 2013, the Companies filed their Status Reports. An update to the Companies’ benchmark report was included in Exhibits 1 and 2 to the Status Reports. A comparison between actual results and benchmark requirements on a pro rata basis were included in the Status Reports in Tables 2-1, 2-2 and 2-3; annualized results were included as Appendix A. An affidavit of compliance was attached to the Status Reports as Exhibit 3. The cost effectiveness of each program was set forth in Table 3-1. The Total Resource Cost test results included in the Status Reports were calculated and provided by the Companies’ independent EMV contractor, ADM Associates, Inc. (“ADM”). In accordance with Rule 4901:1-39(C)(2)(a) and (b), OAC, a description of each approved energy efficiency or peak demand reduction program was included in

² See generally Rule 4901:1-39-05(C)(1) – (2), OAC.

Section 4 of the Status Report.³ EMV reports prepared by ADM were included for each program as Appendices B-K to the Status Report. These reports were prepared consistent with the EMV report template provided by the State's Independent Program Evaluator ("Statewide Evaluator" or "SWE"). Finally, a recommendation of whether to continue, modify or terminate any of the programs was addressed in footnote 12 of the Status Reports and, as noted in that footnote and as more fully discussed below, such a recommendation was not necessary for the 2012 reports. In sum, the Status Reports include everything as required by the Commission's rules and as suggested by the SWE, and include similar information in generally the same format as that included in the 2011, 2010 and 2009 status reports filed by the Companies in Case Nos. 12-1533-EL-EEC et al, 11-2956-EL-EEC et al and 10-227-EL-EEC et al, respectively.

Quoting Section 4901:1-39-05(C)(2)(c), OAC, the Environmental Advocates claim that the Companies have allegedly "omitted an administrative code requirement", because they have failed to include "a recommendation for whether each program should be continued, modified, or eliminated."⁴ Accordingly, the Environmental Advocates urge the Commission to "require the Companies to supplement their report with a document detailing the Companies' response to each recommendation [from ADM]."⁵ They also urge the Commission to adjust savings calculations made for the Companies' Compact Fluorescent Lamp Distribution Program ("CFL Program")⁶ and the Companies' Home Energy Analyzer Program⁷ and to reject the Companies' ex ante savings estimates for the

³ Other information as required by Section 4901:1-39-05(C)(2)(a) can be found in tables included in the Status Report.

⁴ Environmental Advocates Comments, p. 3.

⁵ *Id.*

⁶ *Id.* at 3-7.

⁷ *Id.* at 7-10.

Commercial and Industrial Motors and Drives Program and, instead, use the ex post calculations for 2012.⁸ As more fully discussed below, except for the last recommendation, which the Companies believe should be modified rather than adopted as proposed,⁹ the Environmental Advocates' recommendations are without merit and, accordingly, should be rejected.

III. COMMENTS OF THE COMPANIES

A. The Companies' Status Reports Comply With all Commission Requirements.

The Environmental Advocates claim that the Companies failed to include "a recommendation for whether each program should be continued, modified, or eliminated" as allegedly required by Section 4901:1-39-05(C)(2)(c). The Environmental Advocates are wrong. Footnote 12 in the Status Reports addresses this issue, which is more than sufficient to meet the intent of the regulations, given that all of the programs within the scope of the Status Reports expired prior to the filing of these reports.¹⁰ And, although most of the programs addressed in the Status Reports were also included in the Companies' next three year plans (2013-2015 Energy Efficiency and Peak Demand Reduction Portfolio Plans)¹¹, these programs for the 2013-15 period were presented to the Commission for consideration prior to the release of the recommendations on the expired

⁸ *Id.* at 10-11.

⁹ As more fully discussed *infra*, the Companies discovered an error in the baseline calculations for 2 motor and drives projects, the correction of which is also discussed *infra* in Section III D.

¹⁰ While scheduled to expire on December 31, 2012, the programs were temporarily extended while the Companies next three year plans were being considered for approval by the Commission. *In re Application of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company For Approval of Their Energy Efficiency and Peak Demand Reduction Program Portfolio Plans for 2013 through 2015*, Case Nos. 12-2190-EL-POR, et. al., Finding and Order (Dec. 12, 2012). This extension, however, is irrelevant for purposes of this discussion.

¹¹ See, generally, *In re Application of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company For Approval of Their Energy Efficiency and Peak Demand Reduction Program Portfolio Plans for 2013 through 2015*, Case Nos. 12-2190-EL-POR, et. al., Application (July 31, 2012).

programs made by ADM.¹² Moreover, the continuation or modification of these programs for the 2013-15 period was the subject of a separate proceeding, in which the programs were fully vetted during a six day evidentiary hearing, in which 16 parties participated, and were separately reviewed and approved by the Commission in its March 20, 2013 Opinion and Order.¹³ Further, the Companies review all of their programs on a periodic basis, and will review ADM's recommendations on the 2013-15 programs as conditions warrant. As a result, there is no need to further address ADM's recommendations pertaining to expired programs and, accordingly, there is no need for the supplemental report requested by the Environmental Advocates.

B. The Methodology Used to Determine Energy Savings From the Companies' CFL Program is Appropriate and No Adjustment to Either the Savings Results or Lost Distribution Revenues is Necessary

The Environmental Advocates claim that the savings from the Companies' CFL Program were calculated incorrectly because ADM allegedly (i) "did not consistently use ex-post results from 2011;" and (ii) "used a delta-Watts multiplier that conflicts with Ohio Rule."¹⁴ As explained below, neither claim is valid.

In support of their position, the Environmental Advocates note that the "[n]ew Federal energy efficiency standards made the manufacture or importation of 100-Watt incandescent light bulbs illegal beginning January 1, 2012;" and that "the TRM delta-Watts multiplier assumes that an efficient light bulb replaces a less-efficient light bulb of

¹² The Companies' 2013-2015 portfolio plans were filed on July 31, 2012, were the subject of an evidentiary hearing at the end of October, 2012 and were approved by the Commission on March 20, 2013. ADM's recommendations were part of its program evaluations reports that were completed in May, 2013.

¹³ See, generally, *In re Application of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company For Approval of Their Energy Efficiency and Peak Demand Reduction Program Portfolio Plans for 2013 through 2015*, Case Nos. 12-2190-EL-POR, et. al., Opinion and Order (Mar. 20, 2013).

¹⁴ Environmental Advocates' Comments, p. 3.

roughly the same lumen output....”¹⁵ They further rely on Section 4901:1-39-5(H), OAC, which does not allow an EDU to include in its savings calculations “measures that are required to comply with energy performance standards set by law or regulation....”¹⁶

As a preliminary matter, the reference to Federal energy standards (and, thus Ohio regulations) is irrelevant for purposes of this discussion. The Federal standard addresses the *manufacture* and *importation* of 100-Watt incandescent light bulbs, and not the *distribution, use* or *sale* of the same. Therefore, when establishing the baseline to determine savings for installing the Companies’ 23-Watt CFL in lieu of an incandescent bulb, the focus should be on the options available to customers during 2012. And, indeed, based on ADM’s evaluation of the marketplace, the 100-Watt incandescent bulbs continued to be available in abundant supplies to customers throughout 2012.

The Environmental Advocates criticize ADM for not including the details of its market availability studies in its program evaluations.¹⁷ While no such information is required to be included with the Status Reports or the program evaluations included therein, ADM conducted both in-person and telephone surveys to determine such availability of the 100-Watt incandescent bulbs. One hundred in-person store visits were done and an additional 104 telephone interviews with retail staff were conducted between August and December 2012 to confirm stock levels. From this survey of 204 stores, 77% of them indicated that they had *extensive* stock of 100-Watt incandescent bulbs and confirmed that, while they were unable to order more of this type of bulb from a manufacturer or distributor, they were allowed to sell their existing inventory.

¹⁵ *Id.* at 4 (citations omitted).

¹⁶ *Id.*

¹⁷ *Id.*

The draft Ohio TRM established a delta-Watt multiplier of 3.25 for determining savings from the installation of various wattage CFL bulbs in 2011. The Companies acknowledge that the draft TRM reduced this multiplier in 2012 based on the aforementioned Federal standard. However, because surveys found that customers could easily purchase a 100-Watt incandescent light bulb during 2012, as they could in 2011, and because the draft TRM has never been approved by the Commission, ADM determined that the use of a 3.25 delta-Watts multiplier was still appropriate for determining savings from the installation of 23-Watt CFL bulbs during the 2012 reporting period.

Notwithstanding the Environmental Advocates' claims to the contrary, the use of this multiplier does not violate Ohio regulations. As previously mentioned, the Federal standards apply to the manufacture and importation of 100-Watt bulbs. The law does not preclude customers from purchasing or installing these bulbs. Because 100-Watt incandescent bulbs were available in the marketplace as a viable option to the CFL bulbs being offered by the Companies during 2012, ADM's continued use of the same delta-Watt multiplier in 2012 as set forth in the draft TRM for 2011 is appropriate based on actual market conditions during 2012. The Companies' CFL Program provided a legitimate option to the purchase and installation of 100 Watt incandescent bulbs during the reporting period which resulted in real energy savings as reported by ADM.

The Environmental Advocates also argue that ADM ignored the results of its work done in 2011 wherein it noted that approximately 63% of the new CFLs replaced incandescent light bulbs of 75 Watts or less, while 37% of the new CFLs replaced

incandescent light bulbs of 100 Watts or more.¹⁸ Again, the Environmental Advocates are wrong. ADM did not overlook these findings. Rather, it utilized the methodology for determining savings included in the draft Ohio TRM, which provides a delta-Watt multiplier for bulbs of both higher and lower luminosity than that of the newly installed CFL. In other words, the delta-Watt multiplier included in the draft TRM and used by ADM already factored this information into the calculation.

Finally, the Environmental Advocates claim that ADM's evaluation overstates lifetime savings arising from the CFL Program because ADM multiplied "ex post annual kWh savings by 8 years," using "the same delta watts multiplier in years 2013-2019 as used in 2012."¹⁹ The Companies acknowledge that the draft TRM incorporates a degradation principal in subsequent year calculations.²⁰ However, the draft TRM is exactly that – a draft.²¹ The Commission has yet to rule on the proposed TRM and the valuations and calculations included therein. Indeed, the Industrial Energy Users – Ohio ("IEU"), jointly with all of the Ohio EDUs, submitted comments to the draft TRM in which they challenged the degradation principal.²² For the reasons stated in the IEU/EDUs comments, which are incorporated herein by reference, the Companies submit that the methodology utilized by ADM to estimate lifetime savings reflects industry practices and is appropriate.

¹⁸ Id. at 5.

¹⁹ Id. at 6-7.

²⁰ See generally, *In re Protocols for the Measurement and Verification of Energy Efficiency and Peak Demand Reduction*, Case No. 09-512-GE-UNC, Draft TRM, p. 17 (Aug. 6, 2010).

²¹ Although a draft, the Companies adopted the contents of the draft TRM for purposes of making their energy savings calculations, unless they challenged a methodology or valuation included in the TRM in their comments submitted in Case No. 09-512-GE-UNC.

²² *Joint Objections and Comments to the August 6, 2010 Draft Technical Reference Manual from Ohio Edison Company, The Cleveland Electric Illuminating Company, The Toledo Edison Company, Columbus Southern Power Company, Ohio Power Company, Duke Energy Ohio, Inc., The Dayton Power and Light Company and Industrial Energy Users-Ohio*, Case No. 09-512-GE-UNC, Comments at pp. 10-12 (Nov. 3, 2010).

As already demonstrated, when the 2012 evaluation was performed, 100-Watt incandescent bulbs remained available in abundant supplies to customers and the measure life is 8 years. If the Environmental Advocates' approach is adopted, it reduces the lifetime savings calculation for the CFL Program to nothing more than a guess. ADM's lifetime savings calculation, on the other hand, reflects a supported estimate based on current reality and industry practice. It is the latter that is required by Ohio law.

In light of the foregoing, the methodology used by ADM to determine annual and lifetime energy savings resulting from the Companies' CFL Program is appropriate and, accordingly, no adjustment to such savings (or lost revenues) is necessary. This is especially true when considering that this approach is consistent with the methodology utilized by Dayton Power & Light and is more conservative than the approach taken by AEP-Ohio²³ – neither of which were challenged by the Environmental Advocates.

C. The Methodology Used to Determine Energy Savings From the Companies' Home Energy Analyzer Program is Appropriate

The Environmental Advocates also criticize ADM's methodology for determining energy savings resulting from the Companies' Home Energy Analyzer Program, because ADM did not utilize the methodology desired by the Environmental Advocates.²⁴ This, however, does not make ADM's approach wrong, especially when considering the fact that its EMV methodology for this program was approved by the Statewide Evaluator prior to ADM making such calculations.

²³ See, e.g., *In re Dayton Power and Light Company's Portfolio Status Report*, Case No. 13-1140-EL-POR, Report, p. 151 (May 15, 2013) (utilizes identical calculation as that of the Companies); *In re Annual Portfolio Status Report of Ohio Power Company*, Case No. 13-1182-EL-POR, Report, p. 35, Apdx A, p. 1 (May 15, 2013) (utilizes calculations resulting in higher savings than that determined by the Companies).

²⁴ Id. at 7-10.

In support of their position, the Environmental Advocates quote a passage from a recent report prepared by the Lawrence Berkeley National Laboratory in which it recommends the use of a randomized controlled trial (“RCT”) when determining the impact of behavior-based energy efficiency programs.²⁵ In making this observation, the Environmental Advocates ignore the fact that the 2012 Home Energy Audit Program was evaluated on a *retrospective* basis. Evaluations using a RCT, as suggested by the Lawrence Berkeley National Laboratory, are only possible for a *prospective* evaluation where the evaluation design can be incorporated into the program design. Indeed, in this same report quoted by the Environmental Advocates, the authors acknowledge this fact, indicating that it is within best practices to use a quasi-experimental approach, the approach utilized by ADM, when it is not feasible to use a RCT.²⁶ Moreover, the approach utilized by ADM is not unique to it or this evaluation. For example, Opinion Dynamics adopted this same approach when evaluating this same program being offered by PPL, Inc.²⁷

In sum, the fact that ADM did not adopt the approach desired by the Environmental Advocates when evaluating the Home Energy Analyzer Program does not make ADM’s approach wrong or invalid, especially when (i) the Statewide Evaluator approved such an approach; (ii) other evaluators utilize this same approach for identical programs; (iii) the approach desired by the Environmental Advocates cannot be adopted for the program at issue; and (iv) the authority relied upon by the Environmental Advocates recognizes that alternative methodologies may be appropriate in certain

²⁵ Id. at 7.

²⁶ Id. at 7-8.

²⁷ See *In re Southern Indiana Gas and Electric Company, d/b/a Vecren Energy Delivery of Indiana*, Indiana Utility Regulatory Commission, Cause No. 43839, Exhibit LDP-R-4, *Opinion Dynamics Corp. Memorandum on Draft Results of Aclara Billing Analysis for PPL, Inc.* (July 30, 2010).

circumstances. In light of this, the methodology utilized by ADM to determine energy savings resulting from the Companies' Home Energy Analyzer is appropriate and no adjustment to the determined savings or resultant lost revenues is necessary.

D. The Companies Discovered an Error in the Savings Calculations for the Commercial and Industrial Motors and Drives Program and are in the Process of Submitting Modified Status Reports.

The Companies discovered an anomaly in the realization rates while compiling the Status Report. Because of the filing deadline and the time needed to investigate the anomaly to determine its cause, the Status Report was not changed at the time of the filing. Upon further investigation of this anomaly post filing, the Companies discovered an error in the determination of the ex ante savings calculation for the State's casino project in Toledo under Toledo Edison's motors and drives program. The Environmental Advocates noted the same anomaly in their comments, suggesting that the Commission deviate from its current policy of using ex ante savings, instead substituting ex post savings for purposes of determining 2012 energy savings derived from the Companies' Motors and Drives Program.²⁸ This recommendation, however, is unnecessary because, as more fully discussed below, the error is an isolated incident that was identified through the Companies' existing internal controls and is being corrected.

Included in Appendix A to these comments are modified tables that have been affected by this error and red line changes to the text of the status report. Contemporaneous with the filing of these Comments, the Companies are also filing these same pages as a separate filing in this proceeding. This approach is much more practical than modifying a policy that has been in effect for several years now for all EDUs within

²⁸ Environmental Advocates Comments, pp. 10-11.

the State. Moreover, such a modification for a single program would make both past and future comparisons of the Companies' programs much more difficult, not only between years, but also among the other Ohio EDUs. Finally, as more fully discussed below, the Environmental Advocates' claims are exaggerated and misleading.

The Environmental Advocates claim that the reported realization rate from "these projects" was 47%, while the largest sampled project had a realization rate of 1%.²⁹ As a preliminary matter, the realization rate "from these projects" is not 47%. The error is limited to three Toledo Edison applications involving the installation of air handling motors at the Toledo casino.³⁰ According to ADM's review, Ohio Edison had a 98% realization rate for the Motors and Drives program, while CEI's was 72%. And, as can be seen in Appendix A, the overall realization rate for Toledo Edison for the program, after correcting this error, is 82%, and the aggregate realization rate for all of the Companies is 93%, rather than 47% as claimed by the Environmental Advocates.

Further, the error does not affect all aspects of the program, but rather involves only three applications for air handling equipment for the Toledo casino. This project is considered to be "new construction" for purposes of the draft TRM. When processing the applications, the Companies' program administrator inadvertently failed to acknowledge this fact and, instead of utilizing the baseline for *new construction* included in the draft TRM, the program administrator estimated savings based on a *retrofitted* project, which resulted in an ex ante savings estimate of 6,995 MWh being reported when

²⁹ Id.

³⁰ Based upon ADM's savings verification process, of the 16 motors and drives applications implemented in 2012, five involved new construction at the Toledo casino, with two of those applications -- comprising of 35 motors and 3 chilled water pumps -- being ruled by ADM to be ineligible due to building code standards.

the correct savings should have been 267 MWh.³¹ In essence, the Companies' existing internal controls were successful in highlighting this low realization rate for further investigation by the Companies. When ADM performed its EMV process, the anomaly was properly noted in the report (Table 5-8), which triggered the Companies' follow up. The Companies also investigated the other projects in the Motor and Drives Program to confirm that this error was isolated to the Toledo casino project.³²

In light of the foregoing, there is no need for the Commission to deviate from its current policy and to adopt ex post calculations for a single program. As demonstrated in Appendix A (and the filing being made contemporaneous herewith), the error has been corrected.

IV. CONCLUSION

In sum, the Companies' Status Reports include all information as required by Commission rules, and is presented in a manner that is consistent with SWE recommendations. Moreover, the methodologies utilized by ADM to determine 2012 energy savings for the Companies' CFL Program and Home Energy Analyzer Program and lifetime savings for the CFL Program are appropriate and, accordingly no adjustments to the reported savings or lost distribution revenues for either of these programs is necessary. However, as discussed in Section III (D), *supra*, an adjustment for the Companies' Motors and Drives Program is necessary as set forth in Appendix A.

³¹ As a result of this error, Toledo Edison made excess rebate payments of \$59,625 for these three projects. None of this amount will be recovered from customers. Because lost distribution revenues are already determined based on ex post results, pursuant to the Commission's Oct. 15, 2009 Order in 09-512-GE-UNC, this error has no impact on this calculation.

³² No other errors were detected.

The Companies thank the Commission for the opportunity to respond to the various criticisms surrounding their Status Reports and stand ready to provide any additional information Staff may need in order to complete its recommendations to the Commission.

Respectfully submitted,


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CERTIFICATE OF SERVICE

I hereby certify that the Reply Comments submitted by Ohio Edison Company, The Cleveland Electric Illuminating Company and The Toledo Edison Company, was filed electronically through the Docketing Information System of the Public Utilities Commission of Ohio on this 18th day of July, 2013.


Kathy J. Kolich

Attorneys for Applicants, Ohio Edison Company,
The Cleveland Electric Illuminating Company and
The Toledo Edison Company

APPENDIX A

2012 Evaluation of EnergySaveOhio Commercial and Industrial Energy Efficiency Incentive Programs

Evaluation Report

Prepared for the FirstEnergy Ohio Companies:

*Ohio Edison Company
The Cleveland Electric Illuminating Company
The Toledo Edison Company*

Prepared by:



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1. Executive Summary

During 2012, the Ohio Operating companies The Cleveland Electric Illuminating Company (CEI), Ohio Edison (OE), and The Toledo Edison (TE) (collectively "Companies"), implemented commercial and industrial programs. These programs (collectively "C/I Equipment Programs") include the following:

- Large Enterprise Equipment Program
- Small Enterprise Equipment Program
- Motors and Drives Program
- Government Lighting Program

The main features of the approach used for the evaluation are as follows:

- Data for the study were collected through review of program materials, on-site inspections, end-use metering, and interviews with the Companies' staff members, program implementation contractor staff members, and participating customers and contractors. Based on data provided by the Companies' and their program implementation contractor, a sample design was developed for on-site data collection. Samples were drawn that provide savings estimates for each program providing energy savings estimation with $\pm 10\%$ statistical precision at the 90% confidence level. Table 1-1 shows the total sample sizes for different types of data collection employed for this study for the C/I Equipment Programs.
- On-site visits were used to collect data for savings impact calculations, to verify measure installation, and to determine measure operating parameters. Facility staff were interviewed to determine the operating hours of installed systems and to locate any additional benefits or shortcomings with the installed systems. For many of the sites, energy efficient equipment was monitored in order to obtain accurate information on equipment operating characteristics. The 127 projects, for which on-site measurements and verification data were collected, account for approximately 56% of the Large Enterprise Equipment Program's ex ante kWh savings, 21% of the Small Enterprise Equipment Program's ex ante kWh savings, 9591% of the Motors and Drives Program's ex ante kWh savings, and 33% of the Government Lighting Program's ex ante kWh savings.
- Customer surveys provided the information for process evaluation. A total of 321 customer decision makers who completed 327 surveys for Small and Large Enterprise Equipment were interviewed, and 71 trade allies were interviewed. Additionally, relevant Company and implementation contractor staff members were interviewed to provide information for the process evaluation.

Table 1-1 Sample Sizes for Data Collection Efforts

<i>Type of Data Collected</i>	<i>Large Enterprise</i>	<i>Small Enterprise</i>	<i>Motors and Drives</i>	<i>Government Lighting</i>	<i>Total</i>
Project On-Site Measurement and Verification	51	60	9	7	127
Customer Decision Maker Survey	67	260	0	0	327
Trade Ally Survey	71				71

Gross savings were estimated using proven techniques, including industry standard engineering calculations and verification of computer simulations developed by program contractors to determine energy savings. The realized energy savings for each program are summarized in Table 1-2.

Table 1-2 Gross Savings by Program

<i>Program</i>	<i>Ex Ante kWh Savings</i>	<i>Ex Post kWh Savings</i>	<i>Realization Rate</i>	<i>Ex Ante Peak kW Savings</i>	<i>Ex Post Peak kW Savings</i>	<i>Realization Rate</i>
Large Enterprise	93,218,469	96,593,825	104%	11,460	13,497	118%
Small Enterprise	115,436,084	105,367,329	91%	21,464	22,877	107%
Motors & Drives	13,845,460 <u>7,117,483</u>	6,544,372 <u>6,634,855</u>	47%- <u>93%</u>	1,529 <u>1,418</u>	403- <u>404</u>	26%- <u>29%</u>
Government Lighting	1,092,169	1,069,080	98%	125	122	98%
Total	223,592,184 <u>216,864,204</u>	209,574,607 <u>209,665,090</u>	94%- <u>97%</u>	34,577 <u>34,466</u>	36,899 <u>36,900</u>	107%

The realized energy savings of the 2012 Large Enterprise Equipment Program from the three service territories are summarized in Table 1-3. For the entire program, the realized gross energy savings totaled 96,593,825 kWh. The gross realization rate for the program is 104%.

Table 1-3 Summary of Annualized kWh Savings for Large Enterprise Equipment Program

<i>Operating Company</i>	<i>Ex Ante kWh Savings</i>	<i>Ex Post kWh Savings</i>	<i>Realization Rate</i>
CEI	22,866,952	25,141,027	110%
OE	53,497,996	54,764,404	102%
TE	16,853,521	16,688,394	99%
Total Companies	93,218,469	96,593,825	104%

The realized gross peak kW reductions of the 2012 Large Enterprise Equipment Program from the three service territories are summarized in Table 1-4. The achieved gross peak demand savings for the program are 13,497.40 kW. The gross realization rate for the program is 118%

Table 1-7 Summary of Annualized Peak kW Savings for Small Enterprise Equipment Program

<i>Operating Company</i>	<i>Ex Ante Peak kW Savings</i>	<i>Ex Post Peak kW Savings</i>	<i>Realization Rate</i>
CEI	10,603.14	11,040.50	104%
OE	8,505.52	9,323.51	110%
TE	2,355.57	2,512.80	107%
Total Companies	21,464.23	22,876.81	107%

The accrued savings during the remaining months in 2012, after the date of implementation for a measure under the Small Enterprise Equipment Program, is referred to as first year pro rata savings. The first year pro rata ex post kWh savings for the Small Enterprise Equipment Program is summarized in Table 1-8. For the first year pro rata, the realized gross energy savings totaled 65,996,641 kWh.

Table 1-8 Summary of First Year kWh Pro Rata Savings for Small Enterprise Equipment Program

<i>Operating Company</i>	<i>First Year Ex Post Pro Rata kWh Savings</i>
CEI	29,099,387
OE	29,767,137
TE	7,130,118
Total Companies	65,996,641

The realized energy savings of the 2012 Motors and Drives Program from the three service territories are summarized in Table 1-1. For the entire program, the realized gross energy savings totaled ~~6,544,372~~ 6,634,855 kWh. The gross realization rate for the program is ~~47~~ 93%.

Table 1-9 Summary of Annualized kWh Savings for Motors and Drives Program

<i>Operating Company</i>	<i>Ex Ante kWh Savings</i>	<i>Ex Post kWh Savings</i>	<i>Realization Rate</i>
CEI	735,251	526,177	72%
OE	5,454,324	5,345,533	98%
TE	7,655,885 927,908	672,662 <u>763,145</u>	9% <u>82%</u>
Total Companies	13,845,460 <u>7,117,483</u>	6,544,372 <u>6,634,855</u>	47% <u>93%</u>

The realized gross peak kW reductions of the 2012 Motors and Drives Program from the three service territories are summarized in Table 1-10. The achieved gross peak demand savings for the program are ~~402.88~~ 403.76 kW. The gross realization rate for the program is ~~26~~ 28%.

Table 1-10 Summary of Annualized Peak kW Savings for Motors and Drives Program

Operating Company	Ex Ante Peak kW Savings	Ex Post Peak kW Savings	Realization Rate
CEI	179.12	82.97	46%
OE	1,093.00	241.18	22%
TE	256.40 145.82	78.73 79.61	31% 55%
Total Companies	1,528.62 1,417.94	402.88 403.76	26% 28%

After the date of implementation for a measure under the Motors and Drives Program, the number of months remaining in 2012 for which annual savings could be attributed is referred to as first year pro rata savings. The first year pro rata ex post kWh savings for the Motors and Drives Program is summarized in Table 1-11. For the first year pro rata, the realized gross energy savings totaled 3,286,513, 365,441 kWh.

Table 1-11 Summary of First Year Pro Rata kWh Savings for Motors and Drives Program

Operating Company	First Year Ex Post Pro Rata kWh Savings
CEI	517,606
OE	2,145,902
TE	623,005 701,933
Total Companies	<u>3,286,513</u> , <u>365,441</u>

The realized energy savings of the 2012 Government Lighting Program from the three service territories are summarized in Table 1-12. For the entire program, the realized gross energy savings totaled 1,069,080 kWh. The gross realization rate for the program is 98%.

Table 1-12 Summary of Annualized kWh Savings for Government Lighting Program

Operating Company	Ex Ante kWh Savings	Ex Post kWh Savings	Realization Rate
CEI	134,960	134,887	100%
OE	957,208	934,193	98%
TE	-	-	-
Total Companies	1,092,169	1,069,080	98%

The realized gross peak kW reductions of the 2012 Government Lighting Program from the three service territories are summarized in Table 1-13. The achieved gross peak demand savings for the program are 122.05 kW. The gross realization rate for the program is 98%

Table 1-13 Summary of Annualized Peak kW Savings for Government Lighting Program

Operating Company	Ex Ante Peak kW Savings	Ex Post Peak kW Savings	Realization Rate
CEI	15.41	15.40	100%
OE	109.27	106.66	98%

However, there were some aspects of the program that trade allies felt could be improved. They were displeased with the length of time required to receive the incentive payments, a lack of communication about the program, and the effort required for the application process.

Survey findings indicate that the program has improved its operations during the 2012 program year. However, some issues remain and the following recommendations may provide strategic advantage during future program operations:

- **Streamline Participation Process:** Although improvements have been made, trade allies and customers continued to express dissatisfaction with the application process and with the length of time for payment of the incentives in particular. Additional steps taken to decrease the time required to process incentives would likely lead to increased customer satisfaction.
- **Continue to Foster Greater Trust among Trade Allies and Customers:** Trade ally satisfaction with the program increased during the 2012 program year. Continued consistency in program offerings and steady improvements in operations will continue to improve both trade ally and customers satisfaction.
- **Savings Calculations for Motor and Drives Projects:** The overall realization rate for Motors and Drives Program projects was ~~47~~93%. ADM staff noted that the project documentation did not include the calculations used to estimate ex ante savings for many of the completed projects. Without calculations it was difficult to determine specifically why the realization rate was low for the projects completed. It is recommended that calculations used to estimate savings from motor and drive projects are included in the project documentation. Providing calculations for savings estimates will allow engineering staff to identify why realization rates are low to improve the estimation of ex ante savings.

Incentives were available to customers through motor distributors as a rebate per unit replaced on a first come first serve basis and were limited to the Company's motor upgrade budget.

To have been eligible to participate in the Motors and Drives Program, a customer must have met the following criteria:

- Motor(s) must operate a minimum of 2,000 hours annually.
- Projects must be a "one-for-one" replacement of a motor with a new, NEMA Premium® motor. The sizes (hp) of the existing and new motors may vary, but the project must involve replacing a quantity of motors for the same quantity of new motors. For new construction, the baseline motor should be a code-compliant option that is less efficient than the NEMA Premium® motor that is being installed.
- Project does not involve a change in annual run hours.
- Project includes the installation of a new NEMA Premium® motor of up to 200hp.
- The motor upgrade program's individual incentives per motor start at \$25 for a 1HP.
- The variable-speed drive incentive is \$35 per horsepower (up to 500hp) of the motor being used.
- Variable Frequency Drives (VFDs) incentives were available only for the installation of a new VFD on applications where no existing speed control existed on applications controlling a maximum of 500 hp.

Standard motor and drive measures include equipment for which the program uses "deemed" or "partially deemed" protocols with stipulated algorithms and assumptions to estimate measure gross energy savings and peak load reductions. The measures were evaluated on an implementation-by-implementation basis, using site-specific data and algorithms tailored to the nature of the EEM and its implementation.

Measures were targeted at customers that have purchased motor or drive equipment which will result in energy efficiency and/or peak demand reductions. Incentives for custom measures require a payback between one and seven years.

Any projects with incentive amounts totaling \$3,000 or more required pre-approval before equipment was purchased and installed. Projects with total incentives which were less than \$3,000 only needed to submit an application and implement the project. Once applications were approved, they were sent to the Companies for approval as the last step in the implementation process.

For the Motors and Drives Program, there is only one category of equipment; there were 16 projects in the program which were expected to provide savings of 43,845,460 7,117,483 kWh.

Figure 3-3 shows the Motors and Drives Program's ex post kWh savings by the date of application submission.

4. Methodology

ADM's evaluation of the 2012 C/I Equipment Programs consisted of both an impact evaluation and a process evaluation. The impact evaluation methodology is described in section 4.1 and the process evaluation methodology is described in section 4.2 of this chapter.

4.1 Impact Methodology

The methodology used for estimating gross savings is described in this section.

4.1.1 Sampling Plans - C/I Equipment Programs

Data used to estimate the gross savings achieved through the Large Enterprise Equipment Program were collected for samples of projects completed during the 2012 program year. Data provided by the implementation contractor showed that during 2012, there were 225 projects for the program, which were expected to provide savings of 93,218,469 kWh annually.

Data used to estimate the gross savings achieved through the Small Enterprise Equipment Program were collected for samples of projects completed during the 2012 program year. Data provided by the implementation contractor showed that during 2012, there were 1,471 projects for the program, which were expected to provide savings of 115,436,084 kWh annually.

Data used to estimate the gross savings achieved through the Motors and Drives Program were collected for samples of projects completed during the 2012 program year. Data provided by the implementation contractor showed that during 2012, there were 16 projects for the program, which were expected to provide savings of 43,845,460,717,483 kWh annually.

Data used to estimate the gross savings achieved through the Government Lighting Program were collected for samples of projects completed during the 2012 program year. Data provided by the implementation contractor showed that during 2012, there were 63 projects for the program, which were expected to provide savings of 1,092,169 kWh annually.

For both all programs, inspection of data on kWh savings for individual projects provided by implementation contractor indicated that the distribution of savings was generally positively skewed, with a relatively small number of projects accounting for a high percentage of the estimated savings. Estimation of savings for each program is based on a ratio estimation procedure, which allows precision/confidence requirements to be met with a smaller sample size. ADM selected a sample with a sufficient number of projects to estimate the total achieved savings with 10% precision at 90% confidence. For the Large Enterprise Equipment Program sample, the actual precision is $\pm 7\%$. For the Small Enterprise Equipment Program sample, the actual precision is $\pm 8\%$. For the

Motors and Drives Program sample, the actual precision is $\pm 38\%$. For the Government Lighting Program sample, the actual precision is $\pm 5\%$.

Sampling for the collection of program M&V data accounted for the M&V effort occurring in real time during program implementation. Completed projects accumulate over time as the program is implemented, and sample selection was thus spread over the entire program year. ADM used a near real-time process whereby a portion of the sample was selected periodically as projects in the program were completed. The timing of sample selection was contingent upon the timing of the completion of projects during the program year.

Table 4-1 shows the number of projects and expected energy savings of the sampled projects by stratum for the Large Enterprise Equipment Program. Table 4-2 shows the number of projects and expected energy savings of the sampled projects by stratum for the Small Enterprise Equipment Program. Table 4-3 shows the number of projects and expected energy savings of the sampled projects by stratum for the Motors and Drives Program. Table 4-4 shows the number of projects and expected energy savings of the sampled projects by stratum for the Government Lighting Program

Table 4-1 Population Statistics Used for Sample Design for Large Enterprise Equipment Program

	Stratum 1	Stratum 2	Stratum 3	Stratum 4	Stratum 5	Totals
Strata boundaries (kWh)	< 52310	52310 - 131599	131600 - 261669	261670 - 709649	> 709650	
Number of projects	51	44	32	57	41	225
Total kWh savings	1,101,004	3,962,587	5,663,995	24,430,291	58,060,592	93,218,469
Average kWh Savings	21,588	90,059	177,000	428,602	1,416,112	414,304
Standard deviation of kWh savings	14,872	25,670	33,347	127,861	732,353	589,705
Coefficient of variation	0.69	0.29	0.19	0.30	0.52	1.42
Final design sample	4	4	5	4	34	51

Table 4-2 Population Statistics Used for Sample Design for Small Enterprise Equipment Program

	Stratum 1	Stratum 2	Stratum 3	Stratum 4	Stratum 5	Totals
Strata boundaries (kWh) Savings	< 21020	21020 - 80419	80420 - 231049	231050 - 501419	> 501420	
Number of projects	558	521	272	95	25	1471
Total kWh savings	5,421,044	23,143,851	36,928,881	29,499,958	20,442,349	115,436,084
Average kWh Savings	9,715	44,422	135,768	310,526	817,694	78,475
Standard deviation of kWh savings	6,184	16,868	41,939	67,290	325,694	134,339
Coefficient of variation	0.64	0.38	0.31	0.22	0.40	1.71
Final design sample	9	13	8	6	24	60

Table 4-3 Population Statistics Used for Sample Design for Motors and Drives Program

	Stratum 1	Stratum 2	Stratum 3	Totals
Strata boundaries (kWh) Savings	< 22710 < 440390	22710 - 96829410390 - 66969	> 96830 > 66970	
Number of projects	6	6	4	16
Total kWh savings	325,348	1,093,5791,346, 087	5,698,55642, 204,025	7,117,483 43,846,460
Average kWh Savings	54,225	182,263219,348	1,424,6393,0 54,006	444,84386 5,341
Standard deviation of kWh savings	36,250	125,32998,784	1,535,3244,3 52,493	906,4934, 439,975
Coefficient of variation	0.67	0.690.45	1.080.44	2.044.66
Final design sample	2	3	4	9

Table 4-4 Population Statistics Used for Sample Design for Government Lighting Program

	Stratum 1	Stratum 2	Stratum 3	Stratum 4	Totals
Strata boundaries (kWh) Savings	< 13100	13100 - 17469	17470 - 265279	> 265280	
Number of projects	24	25	13	1	63
Total kWh savings	218,373	375,084	233,435	265,277	1,092,169
Average kWh Savings	9,099	15,003	17,957	265,277	17,336
Standard deviation of kWh savings	1,441	696	1,426	N/A	31,960
Coefficient of variation	0.16	0.05	0.08	N/A	1.84
Final design sample	2	1	3	1	7

As shown in Table 4-5, the Large Enterprise Equipment Program sample projects account for approximately 56% of the expected kWh savings. As shown in Table 4-6, the Small Enterprise Equipment Program sample projects account for approximately 21% of the expected kWh savings. As shown in Table 4-7, the Motors and Drives Program sample projects account for approximately 9591% of the expected kWh savings. As shown in Table 4-8, the Government Lighting Program sample projects account for approximately 33% of the expected kWh savings.

Table 4-5 Expected kWh Savings for Sampled Projects by Stratum for Large Enterprise Equipment Program

Stratum	Ex Ante kWh Savings (Population)	Ex Ante kWh Savings (Sample)	Percent of Ex Ante Peak kWh Savings in Sample
5	58,060,592	48,518,216	84%
4	24,430,291	2,196,783	9%
3	5,663,995	837,923	15%
2	3,962,587	491,876	12%
1	1,101,004	105,817	10%
Total	93,218,469	52,150,615	56%

Table 4-6 Expected kWh Savings for Sampled Projects by Stratum for Small Enterprise Equipment Program

<i>Stratum</i>	<i>Ex Ante kWh Savings (Population)</i>	<i>Ex Ante kWh Savings (Sample)</i>	<i>Percent of Ex Ante Peak-kWh Savings in Sample</i>
5	20,442,349	19,782,781	97%
4	29,499,958	2,204,268	7%
3	36,928,881	1,433,085	4%
2	23,143,851	952,630	4%
1	5,421,044	97,689	2%
Total	115,436,084	24,470,453	21%

Table 4-7 Expected kWh Savings for Sampled Projects by Stratum for Motors and Drives Program

<i>Stratum</i>	<i>Ex Ante kWh Savings (Population)</i>	<i>Ex Ante kWh Savings (Sample)</i>	<i>Percent of Ex Ante Peak-kWh Savings in Sample</i>
3	5,698,556 42,204,026	5,698,556 42,204,026	100%
2	1,093,579 4,346,087	642,975 866,483	66-59%
1	325,348	114,985	35%
Total	7,117,483 43,845,460	43,181,494 6,456,516	95-91%

Table 4-8 Expected kWh Savings for Sampled Projects by Stratum for Government Lighting Equipment Program

<i>Stratum</i>	<i>Ex Ante kWh Savings (Population)</i>	<i>Ex Ante kWh Savings (Sample)</i>	<i>Percent of Ex Ante Peak-kWh Savings in Sample</i>
4	265,277	265,277	100%
3	233,435	58,740	25%
2	375,084	16,232	4%
1	218,373	20,528	9%
Total	1,092,169	360,776	33%

As shown in Table 4-9, the Large Enterprise Equipment Program sample projects account for approximately 52% of the expected peak kW savings. As shown in Table 4-10, the Small Enterprise Equipment Program sample projects account for approximately 17% of the expected peak kW savings. As shown in Table 4-11, the Motors and Drives Program sample projects account for approximately 95-94% of the expected peak kW savings. As shown in Table 4-12, the Motors and Drives Program sample projects account for approximately 33% of the expected peak kW savings.

Table 4-9 Expected Peak Demand kW Savings for Sampled Projects by Stratum for Large Enterprise Equipment Program

<i>Stratum</i>	<i>Ex Ante Peak kW Savings (Population)</i>	<i>Ex Ante Peak kW Savings (Sample)</i>	<i>Percent of Ex Ante Peak kW Savings in Sample</i>
5	6,632	5,603	84%
4	3,342	179	5%
3	723	154	21%
2	532	39	7%
1	231	25	11%
Total	11,460	6,000	52%

Table 4-10 Expected Peak Demand kW Savings for Sampled Projects by Stratum for Small Enterprise Equipment Program

<i>Stratum</i>	<i>Ex Ante Peak kW Savings (Population)</i>	<i>Ex Ante Peak kW Savings (Sample)</i>	<i>Percent of Ex Ante Peak kW Savings in Sample</i>
5	2,881.91	2,791.83	97%
4	5,098.78	362.35	7%
3	6,899.99	231.18	3%
2	5,140.63	201.48	4%
1	1,442.92	23.76	2%
Total	21,464.23	3,610.60	17%

Table 4-11 Expected Peak Demand kW Savings for Sampled Projects by Stratum for Motors and Drives Program

<i>Stratum</i>	<i>Ex Ante Peak kW Savings (Population)</i>	<i>Ex Ante Peak kW Savings (Sample)</i>	<i>Percent of Ex Ante Peak kW Savings in Sample</i>
3	<u>1,158.63</u> 4,262.50	<u>1,158.63</u> 4,262.50	100%
2	<u>197.34</u> <u>190.53</u>	<u>159.95</u> <u>153.15</u>	81.80%
1	68.78	27.30	40%
Total	<u>1,528.62</u> <u>1,417.94</u>	<u>1,449.75</u> <u>1,339.08</u>	<u>95.94%</u>

Table 4-12 Expected Peak Demand kW Savings for Sampled Projects by Stratum for Government Lighting Program

<i>Stratum</i>	<i>Ex Ante Peak kW Savings (Population)</i>	<i>Ex Ante Peak kW Savings (Sample)</i>	<i>Percent of Ex Ante Peak kW Savings in Sample</i>
4	30.28	30.28	100%

5. Detailed Evaluation Findings

This chapter reports ADM's impact evaluation findings and process evaluation findings for the Large Enterprise Equipment Program, the Small Enterprise Equipment Program, the Motors and Drives Program, and the Government Lighting Program during the 2012 program year.

5.1 Impact Evaluation Findings

This section provides the results of gross savings for the Large Enterprise Equipment Program, the Small Enterprise Equipment Program, the Motors and Drives Equipment Program, and the Government Lighting Program during the 2012 program year. Table 5-1 summarizes the gross savings for each program.

Table 5-1 Gross Savings by Program

	Ex Ante kWh Savings	Ex Post kWh Savings	Realization Rate	Ex Ante Peak kW Savings	Ex Post Peak kW Savings	Realization Rate
Large Enterprise	93,218,469	96,593,825	104%	11,460	13,497	118%
Small Enterprise	115,436,084	105,367,329	91%	21,464	22,877	107%
Motors & Drives	<u>7,117,483</u> 43,845,660	<u>6,634,855</u> 6,544,372	<u>4793%</u>	<u>1,418</u> 4,529	<u>403404</u>	<u>2628%</u>
Government Lighting	1,092,169	1,069,080	98%	125	122	98%
Total	<u>216,864,204</u> 223,592,184	<u>209,665,090</u> 209,574,607	<u>9497%</u>	<u>34,466</u> 34,577	<u>36,899</u> 900	107%

5.1.1 Gross Savings

To estimate gross kWh savings and peak kW reductions for the Large Enterprise Equipment Program, data were collected and analyzed for samples of 512 incentive projects. To estimate gross kWh savings and peak kW reductions for the Small Enterprise Equipment Program, data were collected and analyzed for samples of 60 incentive projects. To estimate gross kWh savings and peak kW reductions for the Motors and Drives Program, data were collected and analyzed for samples of 9 incentive projects. To estimate gross kWh savings and peak kW reductions for the Government Lighting Program, data were collected and analyzed for samples of 7 incentive projects.

The data were analyzed using the methods described in section 4.1 to estimate project energy savings and peak kW reductions and to determine realization rates for both programs. The results of that analysis are reported in this section.

5.1.2 Realized Gross kWh Savings

The gross kWh savings of the 2012 Large Enterprise Equipment Program are summarized by sampling stratum in Table 5-2. Overall, the achieved gross savings of 96,593,825 kWh were equal to 104% of the expected savings.

The gross kWh savings of the 2012 Small Enterprise Equipment Program are summarized by sampling stratum in Table 5-3. Overall, the achieved gross savings of 105,367,329 kWh were equal to 91% of the expected savings.

The gross kWh savings of the 2012 Motors and Drives Program are summarized by sampling stratum in Table 5-4. Overall, the achieved gross savings of 6,544,372,634,855 kWh were equal to 4793% of the expected savings.

The gross kWh savings of the 2012 Government Lighting Program are summarized by sampling stratum in Table 5-5. Overall, the achieved gross savings of 1,069,080 kWh were equal to 98% of the expected savings.

Table 5-2 Expected and Gross Realized kWh Savings for Large Enterprise Equipment Program by Sample Stratum

Stratum	Ex Ante kWh Savings	Ex Post kWh Savings	Realization Rate
5	58,060,592	55,911,504	96%
4	24,430,291	31,184,594	128%
3	5,663,995	5,385,846	95%
2	3,962,587	3,039,523	77%
1	1,101,004	1,072,359	97%
Total	93,218,469	96,593,825	104%

Table 5-3 Expected and Gross Realized kWh Savings for Small Enterprise Equipment Program by Sample Stratum

Stratum	Ex Ante kWh Savings	Ex Post kWh Savings	Realization Rate
5	20,442,349	17,654,438	86%
4	29,499,958	28,092,136	95%
3	36,928,881	35,245,946	95%
2	23,143,851	20,071,302	87%
1	5,421,044	4,303,508	79%
Total	115,436,084	105,367,329	91%

Table 5-4 Expected and Gross Realized kWh Savings for Motors and Drives Program by Sample Stratum

Stratum	Ex Ante kWh Savings	Ex Post kWh Savings	Realization Rate
3	5,698,556 42,204,025	5,577,309	4698%
2	1,316,087 1,093,579	763,666	5878%
1	325,348	203,397	63%
Total	7,117,483	6,634,855	4793%

<i>Stratum</i>	<i>Ex Ante kWh Savings</i>	<i>Ex Post kWh Savings</i>	<i>Realization Rate</i>
	13,845,460	6,544,372	

Table 5-5 Expected and Gross Realized kWh Savings for Government Lighting Program by Sample Stratum

<i>Stratum</i>	<i>Ex Ante kWh Savings</i>	<i>Ex Post kWh Savings</i>	<i>Realization Rate</i>
4	265,277	242,922	92%
3	233,435	234,804	101%
2	375,084	370,001	99%
1	218,373	221,353	101%
Total	1,092,169	1,069,080	98%

Table 5-6 shows the expected and realized energy savings by project for the Large Enterprise Equipment Program. Table 5-7 shows the expected and realized energy savings by project for the Small Enterprise Equipment Program. Table 5-8 shows the expected and realized energy savings by project for the Motors and Drives Program. Table 5-9 shows the expected and realized energy savings by project for the Government Lighting Program.

Table 5-6 Expected and Gross Realized kWh Savings for Large Enterprise Equipment Program by Project

<i>Project ID</i>	<i>Expected kWh Savings</i>	<i>Realized Gross kWh Savings</i>	<i>Project Gross Realization Rate</i>
OH-CI8519	1,478,199	1,086,187	73%
OH-CI29442	2,116,156	2,774,909	131%
OH-NSLB5727	750,560	1,075,533	143%
OH-NSLB7368	894,781	917,249	103%
OH-NSLB8512	1,440,726	945,993	66%
OH-NSLB14276	733,773	674,141	92%
OH-NSLB18198	1,046,145	823,397	79%
OH-NSLB29411	1,311,942	1,163,558	89%
OH-CI17329	813,868	746,062	92%
OH-CI19169	1,495,317	1,349,390	90%
OH-CI31153	929,682	795,999	86%
OH-CI31154	929,682	795,999	86%
OH-NSLB4527	2,003,135	1,581,607	79%
OH-NSLB12164	3,726,271	2,687,890	72%
OH-NSLB8574	901,692	905,962	100%
OH-NSLB12114	709,653	654,760	92%
OH-NSLB13933	1,233,304	607,301	49%
OH-NSLB13900	1,304,106	738,604	57%
OH-NSLB13603	1,661,492	1,425,305	86%
OH-NSLB13012	1,549,726	1,248,426	81%
OH-NSLB13723	1,087,170	949,019	87%
OH-NSLB13938	779,014	738,191	95%

<i>Project ID</i>	<i>Ex Ante kWh Savings</i>	<i>Ex Post kWh Savings</i>	<i>Realization Rate</i>
OH-NSLB15920	76,391	29,466	39%
OH-NSLB25063	78,306	58,515	75%
OH-NSLB28819	21,936	26,265	120%
OH-NSLB13833	18,506	16,137	87%
OH-NSLB33886	15,494	14,312	92%
OH-SLB31539	3,309	5,525	167%
OH-SLB16607	2,647	3,170	120%
OH-NSLB14510	5,310	3,106	58%
OH-NSLB16925	20,861	10,839	52%
OH-NSLB28476	9,353	10,502	112%
OH-NSLB16545	19,798	11,260	57%
OH-NSLB31433	2,412	2,700	112%
Non-Sample Projects	90,965,630	83,911,947	92%
Total	115,436,084	105,367,329	91%

Table 5-8 Expected and Gross Realized kWh Savings for Motors and Drives Program by Project

<i>Project ID</i>	<i>Expected kWh Savings</i>	<i>Realized Gross kWh Savings</i>	<i>Project Gross Realization Rate</i>
OH-MD8166	3,104,065	3,369,597	109%
OH-MD16417	2,350,259	1,975,936	84%
	<u>96,825</u>	66,966	<u>469%</u>
OH-MD16367	4,921,476		
	<u>147,407</u>	164,810	<u>9112%</u>
OH-MD16369	4,828,226		
OH-MD12235	390,095	312,841	80%
OH-MD18968	230,171	141,451	61%
OH-MD16378	245,247	22,709	20211%
OH-MD4826	19,119	32,735	171%
OH-MD4827	95,867	39,150	41%
Non-Sample Projects	660,967	392,977	483,460
			<u>5973%</u>
Total	<u>7,117,483</u>	<u>6,634,855</u>	<u>4793%</u>
	<u>43,845,460</u>	<u>6,544,372</u>	

Table 5-9 Expected and Gross Realized kWh Savings for Government Lighting Program by Project

<i>Project ID</i>	<i>Expected kWh Savings</i>	<i>Realized Gross kWh Savings</i>	<i>Project Gross Realization Rate</i>
OH-TS20095	265,277	242,922	92%
OH-TS19096	18,707	18,680	100%
OH-TS19100	17,470	17,657	101%
OH-TS19126	22,563	22,747	101%

Facility Type	Ex Ante kWh Savings				Ex Post kWh Savings				Percent of Total Ex Post kWh Savings	Realization Rate
	CEI	OE	TE	Total Companies	CEI	OE	TE	Total Companies		
Warehouse	2,938,916	8,094,367	1,805,998	12,839,281	2,729,494	7,381,139	1,589,566	11,700,199	11%	91%
Retail	4,871,983	5,559,781	1,365,942	11,797,706	4,421,368	5,004,511	1,205,365	10,631,242	10%	90%
Office	5,540,004	4,936,633	898,285	11,374,922	4,760,981	4,800,749	816,154	10,377,884	10%	91%
K-12 Education	4,280,503	1,723,335	665,714	6,669,553	3,800,647	1,557,671	590,909	5,949,227	6%	89%
Hospital	2,064,570	3,759,645	469,666	6,293,881	1,461,339	3,088,892	448,262	4,998,493	5%	79%
Grocery	3,543,739	1,507,466	266,357	5,317,562	3,310,634	1,392,145	226,423	4,929,202	5%	93%
Food Service	271,974	1,410,330	412,584	2,094,888	233,823	1,301,734	362,252	1,897,808	2%	91%
University	377,724	19,183	-	396,907	354,509	15,228	-	369,738	0%	93%
Multi-Family Common Areas	291,250	-	56,013	347,263	254,140	-	44,466	298,607	0%	86%
Community College	-	75,742	176,175	251,917	-	57,474	168,146	225,620	0%	90%
Medical Clinic	33,593	129,610	4,255	167,458	28,286	111,125	3,378	142,789	0%	85%
Lodging	30,303	76,844	-	107,147	26,280	66,642	-	92,922	0%	87%
Total	55,644,456	47,123,119	12,559,206	115,326,780	50,208,339	43,773,299	11,385,692	105,367,329	100%	91%

Table 5-12 Realized Gross kWh Savings by Facility Type for Motors and Drives Program

Facility Type	Ex Ante kWh Savings				Ex Post kWh Savings				Percent of Total Ex Post kWh Savings	Realization Rate
	CEI	OE	TE	Total Companies	CEI	OE	TE	Total Companies		
Manufacturing	620,266	3,104,065	-	3,724,331	454,292	3,369,597	-	3,823,889	58%	103%
Hospital	-	2,350,259	-	2,350,259	-	1,975,936	-	1,975,936	30%	84%
Other	19,119	-	<u>431,538</u> 7,159,516	<u>450,657</u> 7,178,634	32,735	-	382,586	415,321	6%	<u>692%</u>
Retail	-	-	340,212	340,212	-	-	<u>197,409</u> 265,725	<u>197,409</u> 265,725	34%	<u>6878%</u>
University	95,887	-	156,158	252,025	39,150	-	<u>92,667</u> 114,834	<u>131,817</u> 153,984	2%	<u>6261%</u>
Total	735,251	5,454,324	<u>927,908</u> 7,655,885	<u>7,117,483</u> 13,846,460	526,177	5,345,533	<u>672,662</u> 763,145	<u>6,034,855</u> 6,544,372	100%	<u>4793%</u>

5.1.3 Realized Gross Peak kW Savings

The realized gross peak kW reductions of the 2012 Large Enterprise Equipment Program are shown in Table 5-13. The achieved gross peak demand savings for the program are 13,497.40 kW.

The realized gross peak kW reductions of the 2012 Small Enterprise Equipment Program are shown in Table 5-14. The achieved gross peak demand savings for the program are 22,876.81 kW.

The realized gross peak kW reductions of the 2012 Motors and Drives Program are shown in Table 5-15. The achieved gross peak demand savings for the program are 402,883.76 kW.

The realized gross peak kW reductions of the 2012 Government Lighting Program are shown in Table 5-16. The achieved gross peak demand savings for the program are 122.05 kW.

Table 5-13 Expected and Gross Realized Peak kW Savings for Large Enterprise Equipment Program

<i>Stratum</i>	<i>Ex Ante Peak kW Savings</i>	<i>Ex Post Peak kW Savings</i>	<i>Realization Rate</i>
5	6,631.93	7,214.87	109%
4	3,342.17	4,892.00	146%
3	722.74	888.17	123%
2	531.89	213.06	40%
1	230.84	289.30	125%
Total	11,459.57	13,497.40	118%

Table 5-14 Expected and Gross Realized Peak kW Savings for Small Enterprise Equipment Program

<i>Stratum</i>	<i>Ex Ante Peak kW Savings</i>	<i>Ex Post Peak kW Savings</i>	<i>Realization Rate</i>
5	2,881.91	3,245.01	113%
4	5,098.78	4,900.38	96%
3	6,899.99	7,891.20	114%
2	5,140.63	5,397.56	105%
1	1,442.92	1,442.66	100%
Total	21,464.23	22,876.81	107%

Table 5-15 Expected and Gross Realized Peak kW Savings for Motors and Drives Program

<i>Stratum</i>	<i>Ex Ante Peak kW Savings</i>	<i>Ex Post Peak kW Savings</i>	<i>Realization Rate</i>
3	1,158.63 4,262.50	269.18	2423%
2	197.34 190.53	104.32 105.20	5355%
1	68.78	29.38	43%
Total	1,417.94 4,528.62	402.88 403.76	2628%

Table 5-16 Expected and Gross Realized Peak kW Savings for Government Lighting Program

<i>Stratum</i>	<i>Ex Ante Peak kW Savings</i>	<i>Ex Post Peak kW Savings</i>	<i>Realization Rate</i>
4	30.28	27.73	92%
3	26.65	26.82	101%
2	42.82	42.29	99%
1	24.93	25.21	101%
Total	124.68	122.05	98%

5.1.4 Discussion of Gross Savings Analysis

The project realization rates were reviewed to assess whether there were factors that were causing systematic differences in the realization rates. An analysis was conducted to determine whether realization rates for projects differed systematically by

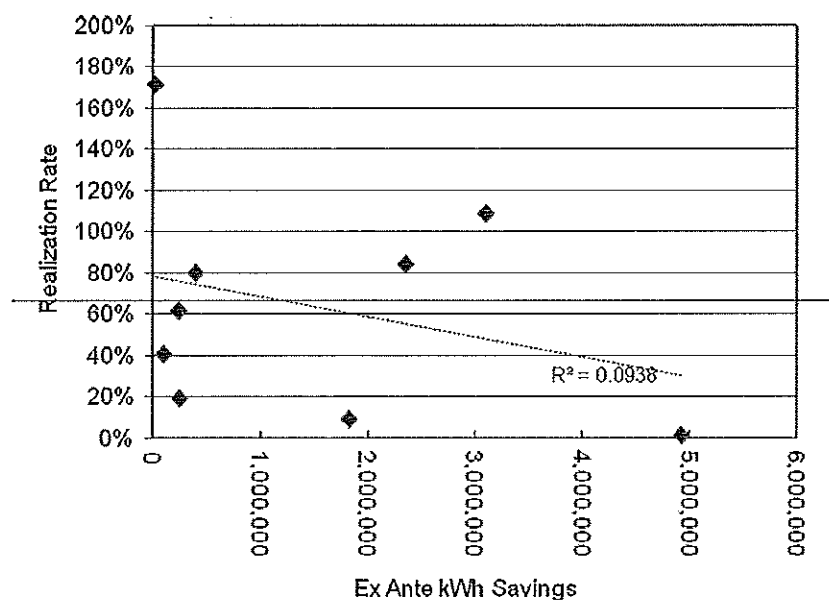
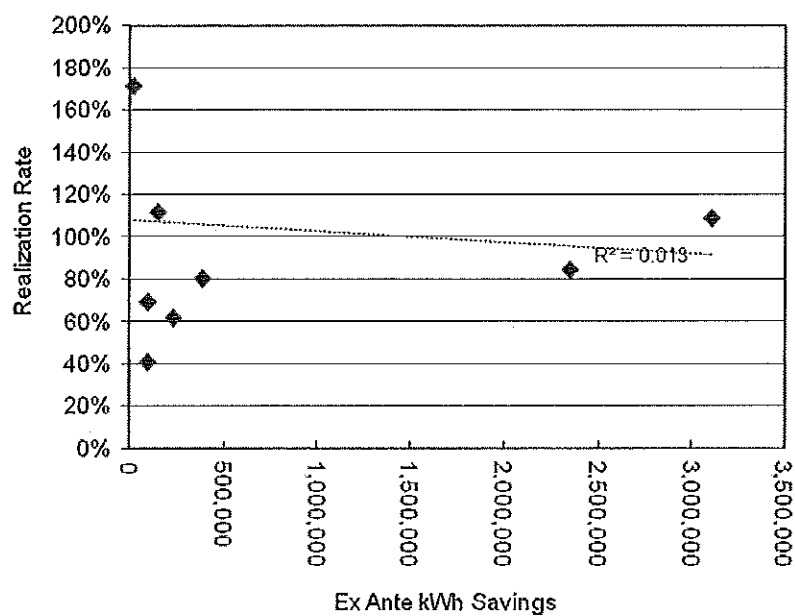


Figure 5-5 Sample Project Realization Rate versus Expected kWh Savings for Motors and Drives Program

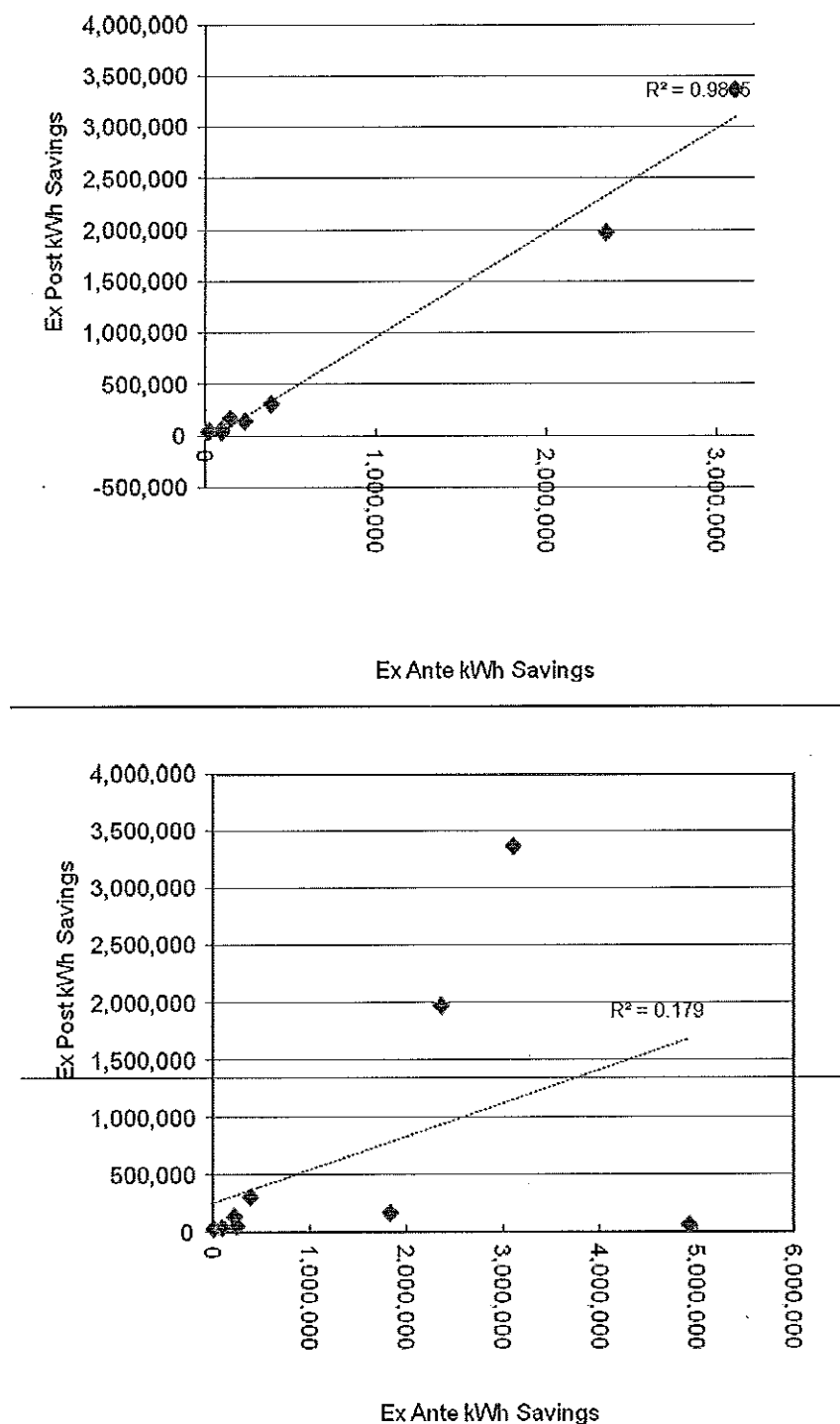


Figure 5-6 Sample Project Realized kWh Savings versus Expected kWh Savings for Motors and Drives Program

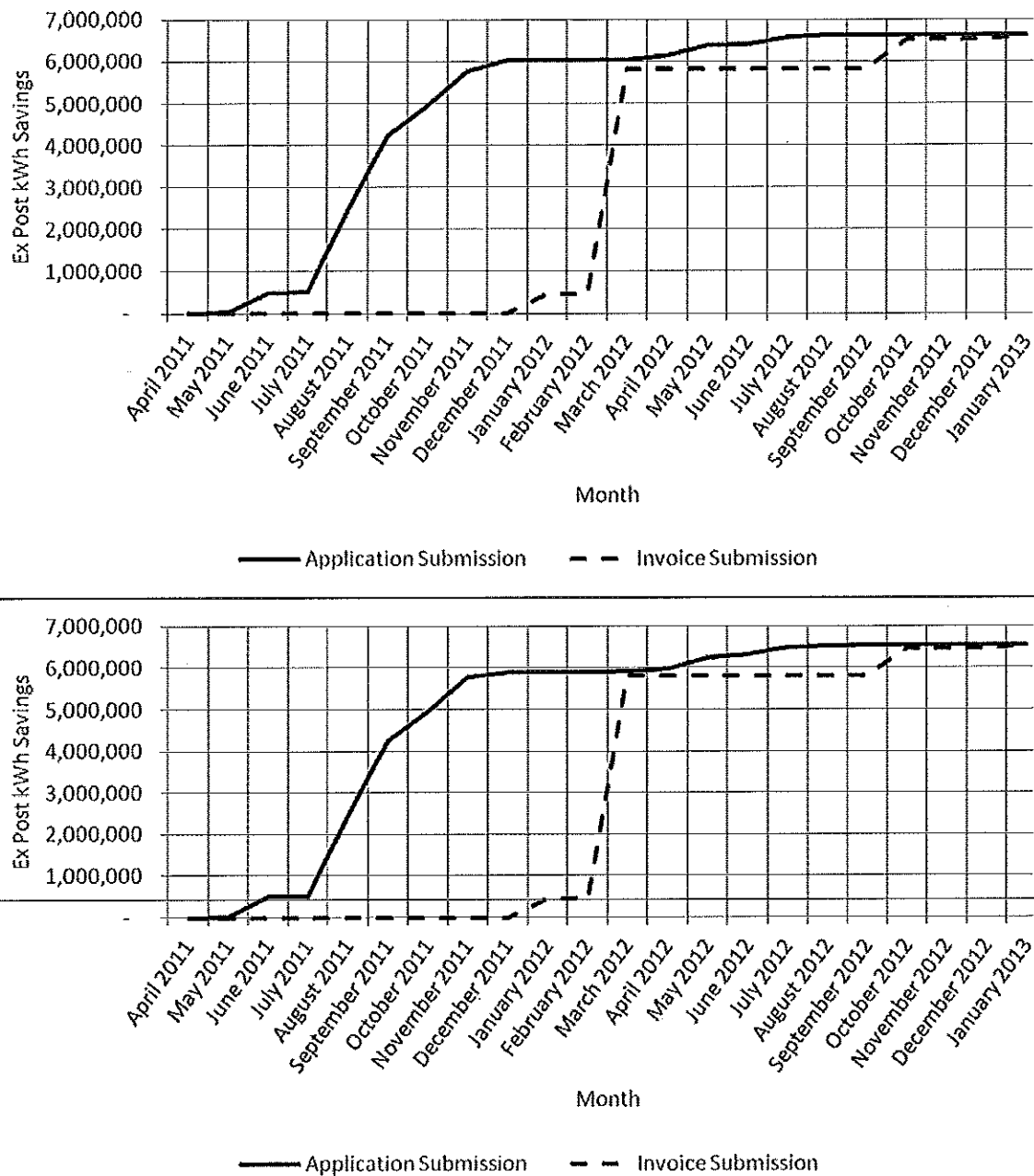


Figure 5-11 Cumulative Savings Associated with Application and Invoice Submissions by Month during 2012 for Motors and Drives Program

Equipment Type	Number of Applications	Average	Median	Range
Standard Lighting	184	\$867	\$535	\$10 - \$3,000
HVAC	12	\$588	\$400	\$250 - \$1,500
Refrigeration and Food Service	1	\$250	\$250	\$250 - \$250
Specialty Equipment	1	\$250	\$250	\$250 - \$250
Custom	48	\$11,505	\$5,655	\$441 - \$98,025
Motors and Drives	13	\$1,736	\$1,395	\$70 - \$5,075
All Equipment Types	1471	\$4,830	\$2,135	\$10 - \$208,896

Table 5-21 Motors and Drives Program Incentive Characteristics by Equipment Type

Equipment Type	Number of Applications	Average	Median	Range
Motors and Drives	16	\$10,044.317	\$2,349.105	\$1,050 - \$41,796.950 - \$37,500

Table 5-22 Government Lighting Program Incentive Characteristics by Equipment Type

Equipment Type	Number of Applications	Average	Median	Range
Traffic Signal	63	\$647	\$470	\$200 - \$13,565

Customer survey responses also support the importance of high payback measures among participants. As shown in Table 5-23 and Table 5-24, the majority of customers reported using simple payback to evaluate the implementation of efficiency measures and as displayed in Figure 5-13, participants required relatively short periods with less than one-third of respondents indicating that their required payback period exceeded three years.

Table 5-23 Financial Methods to Evaluate Energy Efficiency Improvements, Large Enterprise Equipment Programs

Which financial methods does your organization typically use to evaluate energy efficiency improvements for this facility?	Response	(n=67)	Percent of Respondents	Percent of Ex Post kWh Savings
	Initial Cost	30	45%	28%
	Simple payback	49	73%	82%
	Internal rate of return	24	36%	31%
	Life cycle cost	24	36%	18%
	None of these	0	0%	0%
	Don't know	1	1%	4%

Table 5-24 Financial Methods to Evaluate Energy Efficiency Improvements, Small Enterprise Equipment Programs

of the program activity. These findings suggest that the program activity is being generated by a different mix of facility types.

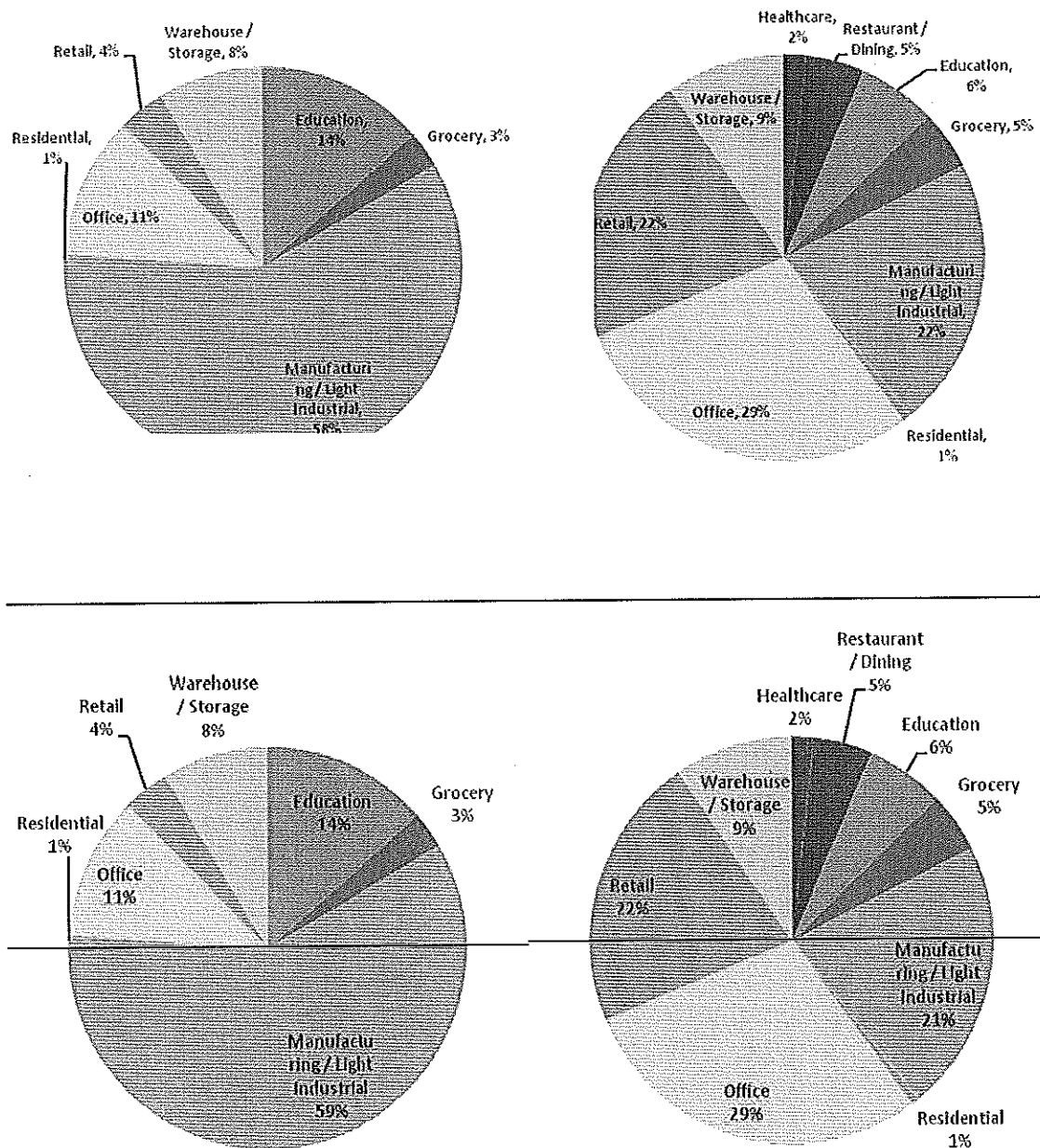


Figure 5-14 Projects by Facility Type, Large (Left Side) and Small (Right Side)
Enterprise Equipment Program

- **Savings Calculations for Motor and Drives Projects:** The overall realization rate for Motors and Drives Program projects was 4793%. ADM staff noted that the project documentation did not include the calculations used to estimate ex ante savings for many of the completed projects. Without calculations it was difficult to determine specifically why the realization rate was low for the projects completed. It is recommended that calculations used to estimate savings from motor and drive projects are included in the project documentation. Providing calculations for savings estimates will allow engineering staff to identify why realization rates are low to improve the estimation of ex ante savings.

Appendix A: Required Savings Tables

This appendix contains annualized gross kWh savings, first year gross kWh savings, and peak demand savings for the Large Enterprise Equipment Program, the Small Enterprise Equipment Program, the Motors and Drives Program, and the Government Lighting Program.

Table A-1 Gross Savings by Program

<i>Program</i>	<i>Ex Ante kWh Savings</i>	<i>Ex Post kWh Savings</i>	<i>Realization Rate</i>	<i>Ex Ante Peak kW Savings</i>	<i>Ex Post Peak kW Savings</i>	<i>Realization Rate</i>
Large Enterprise	93,218,469	96,593,825	104%	11,460	13,497	118%
Small Enterprise	115,436,084	105,367,329	91%	21,464	22,877	107%
Motors & Drives	<u>7,117,483</u> 43,845,460	<u>6,634,855</u> 6,544,372	47 <u>93</u> %	<u>1,418</u> 4,529	403,404	26 <u>28</u> %
Government	1,092,169	1,069,080	98%	125	122	98%
Total	<u>216,864,204</u> 223,592,184	<u>209,665,090</u> 209,574,607	94 <u>97</u> %	<u>34,577,466</u>	<u>36,899,900</u>	107%

Table A-2 Summary of Annualized kWh Savings for Large Enterprise Equipment Program

<i>Operating Company</i>	<i>Ex Ante kWh Savings</i>	<i>Ex Post kWh Savings</i>	<i>Realization Rate</i>
CEI	22,866,952	25,141,027	110%
OE	53,497,996	54,764,404	102%
TE	16,853,521	16,688,394	99%
Total Companies	93,218,469	96,593,825	104%

Table A-3 Summary of Annualized Peak kW Savings for Large Enterprise Equipment Program

<i>Operating Company</i>	<i>Ex Ante Peak kW Savings</i>	<i>Ex Post Peak kW Savings</i>	<i>Realization Rate</i>
CEI	2,715.30	3,526.04	130%
OE	6,698.34	7,758.56	116%
TE	2,045.92	2,212.80	108%
Total Companies	11,459.57	13,497.40	118%

Table A-4 Summary of First Year Pro Rata kWh Savings for Large Enterprise Equipment Program

<i>Operating Company</i>	<i>First Year Ex Post Pro Rata kWh Savings</i>
CEI	15,344,743
OE	29,348,992
TE	12,151,016

Table A-9 Summary of Lifetime kWh Savings for Small Enterprise Equipment Program

<i>Operating Company</i>	<i>Lifetime Ex Post kWh Savings</i>
CEI	753,125,085
OE	656,599,485
TE	170,785,380
Total Companies	1,580,509,950

Table A-10 Summary of Annualized kWh Savings for Motors and Drives Program

<i>Operating Company</i>	<i>Ex Ante kWh Savings</i>	<i>Ex Post kWh Savings</i>	<i>Realization Rate</i>
CEI	735,251	526,177	72%
OE	5,454,324	5,345,533	98%
TE	<u>927,908</u> 7,655,885	<u>763,145</u> 672,662	<u>982%</u>
Total Companies	<u>7,117,483</u> 13,845,460	<u>6,634,855</u> 6,544,372	<u>4793%</u>

Table A-11 Summary of Annualized Peak kW Savings for Motors and Drives Program

<i>Operating Company</i>	<i>Ex Ante Peak kW Savings</i>	<i>Ex Post Peak kW Savings</i>	<i>Realization Rate</i>
CEI	179.12	82.97	46%
OE	1,093.00	241.18	22%
TE	<u>145.82</u> 266.49	<u>79.61</u> 78.73	<u>3155%</u>
Total Companies	<u>1,417.94</u> 1,528.62	<u>403.76</u> 402.88	<u>2628%</u>

Table A-12 Summary of First Year Pro Rata kWh Savings for Motors and Drives Program

<i>Operating Company</i>	<i>First Year Ex Post Pro Rata kWh Savings</i>
CEI	517,606
OE	2,145,902
TE	<u>623,005</u> 701,933
Total Companies	<u>3,286,513</u> 3,365,441

Table A-13 Summary of Lifetime kWh Savings for Motors and Drives Program

<i>Operating Company</i>	<i>Lifetime Ex Post kWh Savings</i>
CEI	4,830,305
OE	49,071,993
TE	<u>7,005,671</u>

<i>Operating Company</i>	<i>Lifetime Ex Post kWh Savings</i>
	6,175,037
Total Companies	<u>60,907,969</u> 60,077,335

Table A-14 Summary of Annualized kWh Savings for Government Lighting Program

<i>Operating Company</i>	<i>Ex Ante kWh Savings</i>	<i>Ex Post kWh Savings</i>	<i>Realization Rate</i>
CEI	134,960	134,887	100%
OE	957,208	934,193	98%
TE	-	-	-
Total Companies	1,092,169	1,069,080	98%

Table A-15 Summary of Annualized Peak kW Savings for Government Lighting Program

<i>Operating Company</i>	<i>Ex Ante Peak kW Savings</i>	<i>Ex Post Peak kW Savings</i>	<i>Realization Rate</i>
CEI	15.41	15.40	100%
OE	109.27	106.66	98%
TE	-	-	-
Total Companies	124.68	122.05	98%

Table A-16 Summary of First Year Pro Rata kWh Savings for Government Lighting Program

<i>Operating Company</i>	<i>First Year Ex Post Pro Rata kWh Savings</i>
CEI	53,585
OE	708,000
TE	-
Total Companies	761,585

Table A-17 Summary of Lifetime kWh Savings for Government Lighting Program

<i>Operating Company</i>	<i>Lifetime Ex Post kWh Savings</i>
CEI	2,023,305
OE	14,012,895
TE	-
Total Companies	16,036,200

**Energy Efficiency and Peak Demand Reduction Program
Portfolio Status Report
to the
Public Utilities Commission of Ohio**

**For the period
January 1, 2012 to December 31, 2012**

Ohio Edison Company
The Cleveland Electric Illuminating Company
The Toledo Edison Company

Docket No. 13-1185-EL-EEC
Docket No. 13-1186-EL-EEC
Docket No. 13-1187-EL-EEC

May 15, 2013, Revised July 18, 2013

Table 2-1: The Companies' pro rata energy and demand Portfolio Impacts through the end of the Reporting Period¹⁶

Energy Efficiency Benchmarks and Results (MWh)					Peak Demand Benchmarks and Results (MW)			
Utility	Updated 2012 Compliance Benchmark	Savings from Approved Programs	Savings from Projects Pending PUCO Approval	Savings from Approved Programs and Pending Projects	Updated 2012 Compliance Benchmark	Savings from Approved Programs	Savings from Projects Pending PUCO Approval	Savings from Approved Programs and Pending Projects
OE	541,291	626,759	20,992	647,752	169.90	225.85	226.34	7.07
CEI	426,817	729,279	26,988	756,267	135.00	185.61	4.42	190.03
TE	231,655	243,607	206,769	91,287	67.30	167.36	167.25	19.27
TOTAL	1,199,764	1,569,645	1,562,807	139,267	372.20	578.82	579.20	30.76

2.3 Summary of Energy Impacts by Program¹⁷

A summary of pro rata energy impacts by program through the end of the reporting period is presented in the following table:

Table 2-2: The Companies' pro rata energy impacts and participation by program through the end of the reporting period

Approved Programs	Ohio Edison		Cleveland Electric		Toledo Edison		Program Totals	
	Participants / Units	MWh	Participants / Units	MWh	Participants / Units	MWh	Participants / Units	MWh
Residential								
Direct Load Control	9,995	68	5,630	38	1,319	9	16,944	115
Home Energy Analyzer	12,093	10,607	5,182	6,615	2,790	2,893	20,065	20,114
Appliance Turn-In	13,261	16,485	8,270	10,651	2,105	2,876	23,636	30,012
Energy Efficient Products	14,734	1,821	10,153	1,121	4,182	482	29,069	3,424
Residential Energy Audit	1,244	351	823	210	265	58	2,332	619
CFL	1,571,113	117,462	1,588,699	118,683	552,482	40,720	3,712,294	276,865
New Homes	13	1,037	12	383	5	385	30	1,804
Residential Low-Income								
Community Connections	4,093	5,433	5,739	7,220	1,510	1,591	11,342	14,244
Small Enterprise								
Equipment (Lighting)	1,558	104,574	1,461	118,207	334	18,290	3,353	241,070
New Construction	0	0	0	0	0	0	0	0
Government								
Government Lighting	42	766	1	57	0	0	43	822
Mercantile Utility (Large Enterprise)								
Equipment (Lighting)	207	83,705	102	43,150	60	35,978	369	162,832
Motors	3	4,624	5	758	4	7,246	12	42,098
Interruptible Demand Reduction	26	0	2	0	5	0	33	0
Other								
Consumer Behavior Study	0	0	10	0	0	0	10	0
Mercantile Customer	253	269,956	188	419,304	87	99,102	528	788,362
Transmission and Distribution	n/a	9,871	n/a	2,882	n/a	3,509	n/a	16,262
Subtotal Actual Results	1,628,635	626,759	1,626,277	729,279	565,148	243,607	3,820,060	4,569,645
Projects Pending PUCO Approval								
Mercantile Customer	21	6,374	30	20,746	20	85,433	71	112,553
Transmission and Distribution	n/a	14,518	n/a	6,242	n/a	5,854	n/a	26,714
Subtotal Potential Results	21	20,992	30	26,988	20	91,287	71	139,267
Total Portfolio	1,628,656	647,752	1,626,307	756,267	565,168	304,894	3,820,131	4,708,943

¹⁶ Ex ante pro-rata results from approved programs from 2009 through 2012 including mercantile applications pending before the Commission as of March 31, 2013, and transmission and distribution applications filed with the Commission as of May 15, 2013. Values include adjustments by appropriate loss factors with the exception of Interruptible Demand Reduction and Transmission and Distribution values.

¹⁷ The Companies also track their results on an annualized basis. These results are presented in Appendix A.

2.4 Summary of Demand Impacts by Program¹⁸

A summary of pro rata demand impacts by program through the end of the reporting period is presented in the following table:

Table 2-3: The Companies' pro rata demand impacts and participation by program through the end of the reporting period

Approved Programs	Ohio Edison		Cleveland Electric		Toledo Edison		Program Totals	
	Participants / Units	MW	Participants / Units	MW	Participants / Units	MW	Participants / Units	MW
Residential								
Direct Load Control	9,995	7.99	5,630	4.46	1,319	1.05	16,944	13.50
Home Energy Analyzer	12,093	1.62	5,182	0.95	2,790	0.42	20,065	3.00
Appliance Turn-In	13,261	3.80	8,270	2.47	2,105	0.65	23,636	6.92
Energy Efficient Products	14,734	0.34	10,153	0.26	4,182	0.13	29,069	0.73
Residential Energy Audit	1,244	0.08	823	0.07	265	0.02	2,332	0.16
CFL	1,571,113	20.49	1,588,699	20.65	552,482	7.15	3,712,294	48.30
New Homes	13	0.18	12	0.08	5	0.04	30	0.30
Residential Low-Income								
Community Connections	4,093	0.46	5,739	0.64	1,510	0.14	11,342	1.23
Small Enterprise								
Equipment (Lighting)	1,558	21.13	1,461	22.96	334	3.64	3,353	47.74
New Construction	0	0.00	0	0.00	0	0.00	0	0.00
Government								
Government Lighting	42	0.11	1	0.00	0	0.00	43	0.11
Mercantile Utility (Large Enterprise)								
Equipment (Lighting)	207	13.59	102	6.16	60	5.34	369	25.08
Motors	3	0.44 0.53	5	0.18	4	0.26 0.15	12	0.49 0.88
Interruptible Demand Reduction	26	118.46	2	75.32	5	127.76	33	321.55
Other								
Consumer Behavior Study	0	0.00	10	0.30	0	0.00	10	0.30
Mercantile Customer	253	34.68	188	50.25	87	19.66	528	104.59
Transmission and Distribution	n/a	2.88	n/a	0.85	n/a	1.09	n/a	4.82
Subtotal Actual Results	1,628,635	226.86 226.34	1,626,277	185.61	565,148	167.36 167.25	3,820,060	678.82 679.20
Projects Pending PUCO Approval								
Mercantile Customer	21	1.21	30	2.69	20	16.97	71	20.87
Transmission and Distribution	n/a	5.87	n/a	1.73	n/a	2.29	n/a	9.89
Subtotal Potential Results	21	7.07	30	4.42	20	19.27	71	30.76
Total Portfolio	1,628,656	232.92 233.41	1,626,307	190.03	565,168	186.63 186.52	3,820,131	699.59 699.96

2.5 Affidavit of Compliance

Attached hereto as Exhibit 3 is an affidavit of Compliance executed by John C. Dargie, Vice President, Energy Efficiency.

2.6 Banking of Energy Savings

The Companies intend to bank any surplus energy savings and apply such savings toward future energy efficiency benchmarks to the extent permitted by law.

¹⁸ The Companies also track their results on an annualized basis. These results are presented in Appendix A.

3 Summary of Finances

3.1 Cost Effectiveness Demonstration

A summary of portfolio finances and the Total Resource Cost Test (TRC)¹⁹ demonstrating the cost-effectiveness of a program by comparing the total economic benefits to the total costs as defined by Rule 4901:1-39-01(Y), O.A.C., is presented in the following table:

Table 3-1: Summary of Portfolio Finances: TRC Test²⁰

Program	Ohio Edison		Cleveland Electric		Toledo Edison	
	Total Cumulative Program Spend to Date Including Common Costs (b)	TRC	Total Cumulative Program Spend to Date Including Common Costs (b)	TRC	Total Cumulative Program Spend to Date Including Common Costs (b)	TRC
Residential						
Direct Load Control	\$4,489,583	0.12	\$2,072,666	0.08	\$333,139	0.22
Home Energy Analyzer	\$841,923	1.28	\$405,607	1.21	\$204,178	1.51
Appliance Turn-In	\$2,615,313	3.01	\$1,620,910	3.02	\$451,438	2.13
Energy Efficient Products	\$2,755,841	1.32	\$1,623,177	1.18	\$746,770	1.12
Residential Energy Audit	\$1,583,883	0.42	\$1,185,035	0.66	\$452,248	0.26
CFL	\$6,536,626	1.21	\$4,709,130	1.67	\$1,980,696	1.40
Efficient New Homes	\$1,173,996	1.56	\$675,210	1.24	\$264,988	4.21
Residential Low-Income						
Community Connections	\$6,518,925	0.92	\$8,121,129	0.37	\$2,501,483	0.19
Small Enterprise						
Equipment (Lighting)	\$16,570,199	1.31	\$18,104,426	1.34	\$2,998,766	1.63
Audits and Equipment	\$88,358	N/A	\$66,728	N/A	\$42,600	N/A
New Construction	\$96,478	N/A	\$70,155	N/A	\$38,815	N/A
Government Lighting	\$277,635	0.00	\$268,485	0.36	\$185,979	0.00
Mercantile Utility (Large Enterprise)						
Equipment (Lighting)	\$12,283,669	2.74	\$5,946,761	2.11	\$4,451,488	2.21
Audits and Equipment	\$150,795	N/A	\$63,779	N/A	\$71,825	N/A
Motors	\$189,882	5.11	\$94,614	4.50	\$133,562	0.91
Interruptible Demand Reduction (a)	\$10,934,450 \$21,434,092	N/A	\$10,520,314 \$22,034,509	N/A	\$12,171,174 \$24,916,745	N/A
Other						
Mercantile Customer	\$11,103,012	10.63	\$8,051,645	10.45	\$2,396,721	20.35
Transmission and Distribution	\$6,527	N/A	\$5,093	N/A	\$2,699	N/A
Total Portfolio	\$78,197,135 \$88,716,737	2.20	\$63,704,866 \$75,119,061	2.02	\$29,831,565 \$42,517,517	2.80
Notes:						
(a) Includes credits to customers in accordance with the Economic Load Response Rider (Rider ELR)						
(b) The above reported financials reflect program costs incurred since inception through March 31, 2013 as determined on May 6, 2013.						
(c) TRC results included herein have been calculated by the Companies' EM&V Contractor consistent with OAC 4901:1-39-01 (Y), reflecting measure lives consistent with the evaluation reports.						

¹⁹ TRC results were calculated by ADM Associates, Inc.

²⁰ TRC tests are performed for each program reflecting verified program costs as shown for each program excluding the Interruptible Demand Reduction program approved as a result of Commission findings in, *in re Application of [the Companies] for Authority to Establish a Standard Service Offer Pursuant to Section 4928.143, Capital Revised Code, in the Form of an Electric Security Plan*, Case No. 08-935-EL-SSO. The TRC test for the Community Connections and Mercantile Customer programs exclude customer costs and include customer rebates or incentives making the number equal to a Utility Cost Test ("UCT").

motor should be a code-compliant option that is less efficient than the NEMA Premium® motor that is being installed.

- Project does not involve a change in annual run hours.
- Project includes the installation of a new NEMA Premium® motor of up to 200hp.
- The motor upgrade program's individual incentives per motor start at \$25 for a 1HP.
- The variable-speed drive incentive is \$35 per horsepower (up to 500hp) of the motor being used.
- Variable Frequency Drives (VFDs) incentives were available only for the installation of a new VFD on applications where no existing speed control existed on applications controlling a maximum of 500 hp.

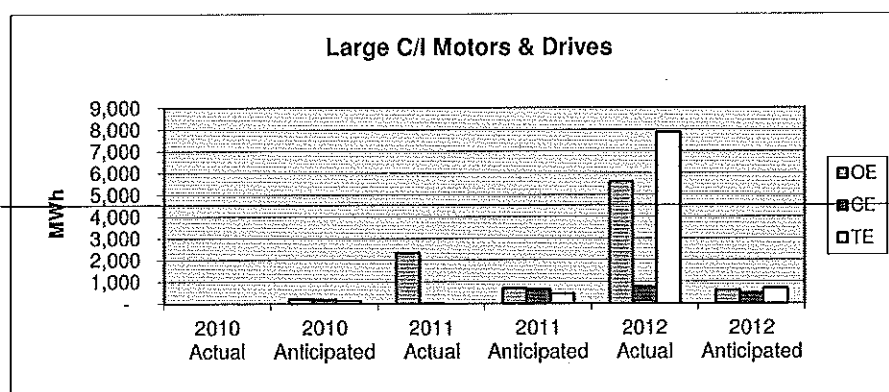
Standard motors and drives measures include equipment for which the program uses "deemed" or "partially deemed" protocols with stipulated algorithms and assumptions to estimate measure gross energy savings and peak load reductions. The measures were evaluated on an implementation-by-implementation basis, using site-specific data and algorithms tailored to the nature of the EEM and its implementation.

Measures were targeted at customers that have purchased motor or drive equipment which will result in energy efficiency and/or peak demand reductions. Incentives for custom measures require a payback between one and seven years.

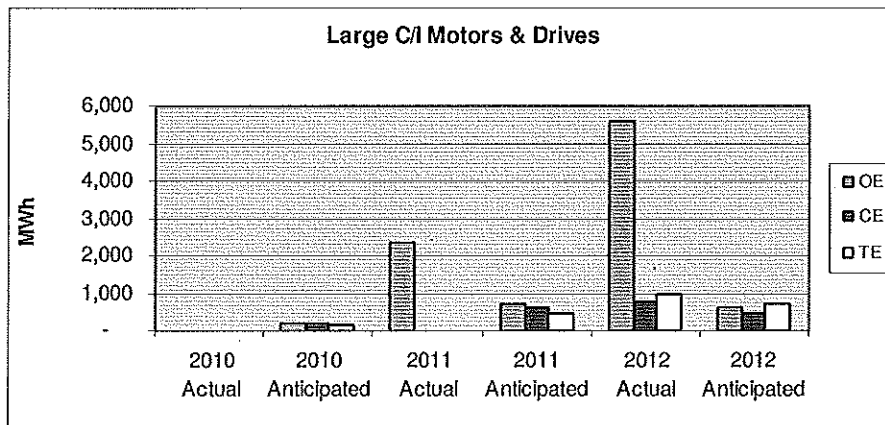
Program Partners and Trade Allies

This program was launched April 11, 2011. The Companies selected SAIC Energy Environment & Infrastructure to act as the implementation contractor. In addition to the program partner, the Companies utilized various trade allies and administrators to help facilitate the implementation of programs.

Table 4-11: Commercial / Industrial Large Equipment (Industrial Motors and Drives) Three-Year Trend Analysis³⁴



³⁴ Commercial / Industrial Large Equipment (Industrial Motors and Drives) three-year trend analysis compares cumulative gross MWh savings to anticipated MWh savings as filed in the Companies' EEPDR Plans.



4.13 Mercantile Customer

All customers that meet the definition of “mercantile customer”, as defined in R.C. § 4928.01 (A) (19) are eligible for this program. Since July 1, 2009, the Companies have been proactively working with customers across their respective service territories to jointly file applications to commit the customer’s EE&PDR programs, pursuant to division R.C. § 4928.66(A)(2)(c).

Eligible customers who have achieved EE&PDR savings independent of utility programs or incentives may file joint applications with the Companies to the Commission for commitment of these savings to the Companies in exchange for an incentive which may be either a request to exempt the customer from paying certain charges included in the Companies’ Rider DSE or a request for a cash rebate.

Customers must demonstrate verification of savings and that these savings are sustainable. The Companies review all documentation and determine that customers have met this requirement to the Companies’ satisfaction before filing an application. The Companies will assist customers with compliance with the latest Commission orders pertaining to the measurement and verification of these savings.

Program Partners and Trade Allies

The Companies use Administrators, based on the agreements approved by the Commission in Case No. 09-553-EL-EEC. Administrators are trained periodically on the latest interpretation of Commission orders and rules, process changes, and general updates.

The list of Administrators includes: Association of Independent Colleges & Universities, COSE, County Commissioners’ Association of Ohio (CCAO), E-Group, Industrial Energy Users of Ohio, Ohio Hospitals Association, Ohio Manufacturer’s Association, Ohio Schools Council, and Roth Brothers.

The role of Administrators includes the following:

- Educating customers about the program. This step includes providing customers with background on S.B. 221 EE & PDR requirements for utilities, explaining the two incentive options available

Appendix A (revised)

Summary of 2012 Annualized Actual and Potential Results by Program

Approved Programs	Ohio Edison		Cleveland Electric		Toledo Edison		Program Totals	
	Participants / Units	MWh	Participants / Units	MWh	Participants / Units	MWh	Participants / Units	MWh
Residential								
Direct Load Control	9,995	68	5,630	38	1,319	9	16,944	115
Home Energy Analyzer	12,093	11,977	5,182	7,158	2,790	3,199	20,065	22,335
Appliance Turn-In	13,261	19,968	8,270	12,582	2,105	3,255	23,636	35,805
Energy Efficient Products	14,734	3,039	10,153	1,698	4,182	671	29,069	5,408
Residential Energy Audit	1,244	843	823	631	265	161	2,332	1,634
CFL	1,571,113	124,365	1,588,699	126,422	552,482	43,370	3,712,294	294,157
New Homes	13	2,179	12	797	5	722	30	3,698
Residential Low-Income								
Community Connections	4,093	6,484	5,739	9,207	1,510	1,810	11,342	17,501
Small Enterprise								
Equipment (Lighting)	1,558	121,981	1,461	143,868	334	23,450	3,353	289,299
New Construction	0	0	0	0	0	0	0	0
Government								
Government Lighting	42	1,013	1	143	0	0	43	1,155
Mercantile Utility (Large Enterprise)								
Equipment (Lighting)	207	108,253	102	52,084	60	40,452	369	200,789
Motors	3	7,940	5	769	4	7,874,958	12	46,583,9,667
Interruptible Demand Reduction	26	0	2	0	5	0	33	0
Other								
Consumer Behavior Study	0	0	10	0	0	0	10	0
Mercantile Customer	253	272,717	188	420,944	87	99,636	528	793,297
Transmission and Distribution	n/a	9,871	n/a	2,882	n/a	3,509	n/a	16,262
Subtotal Actual Results	1,628,635	690,698	1,626,277	779,225	565,143	838,117,221,202	3,820,060	4,698,040,1,891,125
Projects Pending PUCO Approval								
Mercantile Customer	21	8,585	30	22,535	20	87,469	71	118,589
Transmission and Distribution	n/a	23,331	n/a	14,781	n/a	8,266	n/a	46,378
Subtotal Potential Results	21	31,916	30	37,316	20	95,735	71	164,967
Total Portfolio	1,628,656	722,614	1,626,307	816,542	565,168	838,862,316,937	3,820,131	4,863,008,1,856,093

Appendix A (revised)

Summary of 2012 Annualized Actual and Potential Results

Approved Programs	Ohio Edison		Cleveland Electric		Toledo Edison		Program Totals	
	Participants / Units	MW	Participants / Units	MW	Participants / Units	MW	Participants / Units	MW
Residential								
Direct Load Control	9,995	8	5,630	4	1,319	1	16,944	13.50
Home Energy Analyzer	12,093	1.84	5,182	1.05	2,790	0.48	20,065	3.37
Appliance Turn-In	13,261	4.18	8,270	2.68	2,105	0.70	23,636	7.56
Energy Efficient Products	14,734	0.66	10,153	0.44	4,182	0.19	29,069	1.29
Residential Energy Audit	1,244	0.18	823	0.33	265	0.04	2,332	0.54
CFL	1,571,113	20.73	1,588,699	21.09	552,482	7.24	3,712,294	49.06
New Homes	13	0.29	12	0.13	5	0.07	30	0.49
Residential Low-Income								
Community Connections	4,093	0.60	5,739	0.89	1,510	0.17	11,342	1.66
Small Enterprise								
Equipment (Lighting)	1,558	23.43	1,461	27.59	334	4.41	3,353	55.42
New Construction	0	0.00	0	0.00	0	0.00	0	0.00
Government								
Government Lighting	42	0.12	1	0.02	0	0.00	43	0.13
Mercantile Utility (Large Enterprise)								
Equipment (Lighting)	207	15.44	102	7.08	60	5.42	369	28.94
Motors	3	0.04	5	0.18	4	0.26	12	0.49
Interruptible Demand Reduction	26	118.46	2	75.32	5	127.76	33	321.55
Other								
Consumer Behavior Study	0	0.00	10	0	0	0.00	10	0.30
Mercantile Customer	253	34.68	188	50.25	87	19.66	528	104.59
Transmission and Distribution	n/a	2.88	n/a	0.85	n/a	1.09	n/a	4.82
Subtotal Actual Results	1,628,685	232.64	1,626,277	192.65	565,148	168.43	3,820,060	593.7
Projects Pending PUCO Approval								
Mercantile Customer	21	1.21	30	2.48	20	16.97	71	20.66
Transmission and Distribution	n/a	8.07	n/a	5.27	n/a	2.90	n/a	16.25
Subtotal Potential Results	21	9.27	30	7.75	20	19.88	71	36.91
Total Portfolio	1,628,656	244.78	1,626,307	200.40	565,168	188.31	3,820,131	630.61

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Summary: Reply Comments to the Environmental Advocates Criticisms of the Companies' 2012 Energy Efficiency and Peak Demand Reduction Portfolio Status Report electronically filed by Ms. Kathy J Kolich on behalf of Ohio Edison Company and The Cleveland Electric Illuminating Company and The Toledo Edison Company