

**BEFORE THE
PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Application of Ohio)	
Edison Company, The Cleveland Electric)	
Illuminating Company, and The Toledo)	Case Nos. 12-2190-EL-POR
Edison Company For Approval of Their)	12-2191-EL-POR
Energy Efficiency and Peak Demand)	12-2192-EL-POR
Reduction Program Portfolio Plans for 2013)	
through 2015)	
)	

DIRECT TESTIMONY OF

EDWARD C. MILLER

ON BEHALF OF

OHIO EDISON COMPANY
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
THE TOLEDO EDISON COMPANY

1 **UUNINTRODUCTION AND BACKGROUND**

2 **Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION.**

3 **A.** My name is Edward C Miller, and my business address is 631 Excel Drive, Suite
4 200, Mount Pleasant, Pennsylvania 15666. I am the Manager of Compliance &
5 Development for the Energy Efficiency Department of FirstEnergy Service
6 Company.

7 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING TODAY?**

8 **A.** I am testifying on behalf of Ohio Edison Company (“Ohio Edison”), The
9 Cleveland Electric Illuminating Company (“CEI”), and The Toledo Edison
10 Company (“Toledo Edison”) (the “Companies”). Unless otherwise stated, my
11 testimony applies equally to all three Companies. Throughout my testimony I
12 refer to sections included in each of the Companies’ updated Energy Efficiency
13 (“EE”) and Peak Demand Reduction (“PDR”) Portfolio Plans (“Proposed Plans”)
14 that are attached to the Application being filed in this matter as Exhibits A (Ohio
15 Edison), B (CEI) and C (Toledo Edison). Rather than reiterate in my testimony
16 the details of the sections to which I refer, I am incorporating these sections by
17 reference as part of my direct testimony.

18 **Q: WHAT IS YOUR PROFESSIONAL AND EDUCATIONAL**
19 **BACKGROUND?**

20 **A.** For over seventeen years, I was employed by Allegheny Energy Service
21 Corporation, the service company for Allegheny Energy Inc. (“Allegheny”),
22 which merged in 2011 with FirstEnergy Corp. (“FirstEnergy”). I have held
23 various engineering, customer service and management positions in Customer

1 Services, Sales & Marketing, Customer Management and Energy Efficiency.
2 After FirstEnergy and Allegheny merged in 2011, I became employed by
3 FirstEnergy Service Company as the Manager of Development & Compliance for
4 FirstEnergy's Energy Efficiency Department, my current position. I hold a
5 Bachelor of Science degree in Electrical Engineering from the University of
6 Pittsburgh.

7 **Q. PLEASE DESCRIBE YOUR CURRENT RESPONSIBILITIES WITHIN**
8 **FIRSTENERGY.**

9 **A.** I am responsible for development and compliance activities related to energy
10 efficiency and conservation ("EE&C") for the FirstEnergy utilities in Ohio,
11 Maryland, New Jersey, Pennsylvania and West Virginia. This primarily involves
12 the development of programs and filings to meet the FirstEnergy utilities' EE&C
13 requirements and obligations. I report to the Director, Compliance and Reporting
14 in FirstEnergy's Energy Efficiency Department.

15 **Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE**
16 **RELEVANT TO THE TESTIMONY YOU ARE NOW GIVING.**

17 **A.** I have been involved in the development of EE&C programs and filings for the
18 utilities formerly owned by Allegheny since EE&C requirements or obligations
19 were established in Pennsylvania, Maryland and West Virginia. I was
20 significantly involved in the development of the Companies' Proposed Plans and
21 was responsible for the modeling and design of the programs included in those
22 Proposed Plans.

23

1 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

2 **A.** The purpose of my testimony is to: (i) summarize and sponsor the Companies’
3 Proposed Plans; (ii) describe the development of the Companies’ Proposed Plans;
4 and (iii) analyze whether the Proposed Plans comply with the Commission’s rules
5 regarding the Total Resource Cost (“TRC”) test threshold.

6 **SUMMARY OF THE COMPANIES’ PROPOSED PLANS**

7 **Q. PLEASE SUMMARIZE THE KEY FEATURES AND IMPLICATIONS OF**
8 **THE COMPANIES’ PROPOSED PLANS.**

9 **A.** Each of the Companies has developed plans that include a portfolio of energy
10 efficiency and peak demand reduction programs that are designed to achieve
11 results that will either meet or exceed the statutory EE&PDR targets established
12 in Section 4928.66, Revised Code for the period starting January 1, 2013 through
13 December 31, 2015 (“Plan Period”). Collectively, the proposed programs provide
14 significant opportunities for energy and cost savings for practically all of the
15 Companies’ customers and provide the Companies with the best opportunity to
16 meet or exceed their statutory energy efficiency and peak demand reduction
17 requirements in a cost conscious and effective manner. Like the EE&PDR Plans
18 currently in effect (“Existing Plans”), which were approved in Case No. 09-1947-
19 EL-POR *et al.* the Proposed Plans include a portfolio of energy efficiency projects
20 targeted to a variety of customer segments, including: (i) Residential-Low
21 Income; (ii) Residential-Other; (iii) Small Enterprise; (iv) Mercantile-Utility; and
22 (v) Governmental. Each of the Proposed Plans passes the Total Resource Cost
23 test on a portfolio basis. Each of the Proposed Plans includes virtually all of the

1 components reflected in the Existing Plans. However, the Companies have
2 modified many of these components in an effort to provide customers with more
3 opportunities for energy and related cost savings and the Companies with more
4 implementation flexibility to improve their ability to meet the EE&PDR targets.
5 For example, many of the programs include new measures and expanded end-
6 uses, which enhanced the program offerings to the Companies' customers and
7 reflect advancements in technology. Many of the programs included in the
8 Existing Plans have also been reorganized in the Proposed Plans so as to make the
9 Proposed Plans similar in design and format to FirstEnergy's other utilities
10 outside of Ohio. These changes allow the Companies to: (i) capitalize on the
11 economies of scale and synergies created through common plan administration
12 and program implementation activities; (ii) simplify EM&V and program
13 performance evaluations; and (iii) streamline program tracking and reporting,
14 which collectively contributes to keeping overall administrative costs low.

15 **DEVELOPMENT OF THE PROPOSED PLANS**

16 **Q. PLEASE DESCRIBE GENERALLY HOW FIRSTENERGY SELECTED**
17 **THE PROGRAMS, SUB-PROGRAMS AND MEASURES FOR**
18 **INCLUSION IN THE PROPOSED PLANS.**

19 **A.** Sections 1 and 3 of the Proposed Plans describe how the FirstEnergy energy
20 efficiency plan development team ("FirstEnergy Team" or "Team") developed the
21 Companies' Proposed Plans. Generally, the Team and its consultants reviewed
22 the existing programs, sub-programs and measures in the Companies' Existing
23 Plans to assess implementation status and performance to date. The FirstEnergy

1 Team and its consultants also reviewed the programs and measures offered by
2 other FirstEnergy utilities and other Ohio utilities to establish a universe of
3 programs and measures for consideration, including measures identified by a
4 group of interested parties representing various stakeholders, who have formed
5 the FirstEnergy Collaborative (“Collaborative Group”). The Team also
6 completed initial modeling taking into account: (i) implementation experience
7 through existing programs; (ii) program costs; (iii) the current draft technical
8 reference manual (“TRM”) being considered by the Commission in Case No. 09-
9 0512-GE-UNC, as well as technical reference manuals or databases established to
10 support energy efficiency programs in other jurisdictions; (iv) the 2009 Market
11 Potential Study conducted by Black & Veatch Corporation (“Black & Veatch”),
12 which it updated in 2012 (“2012 Market Potential Study”); and (v) other sources
13 identified in Appendix C-1 of the Proposed Plans. The 2012 Market Potential
14 Study is attached to the Proposed Plans as Appendix D. Based on the results of
15 the initial modeling, input from the Companies’ consultants and the Collaborative
16 Group and the 2012 Market Potential Study, the Team finalized program design
17 and modeling assumptions for the Proposed Plans.

18 **Q. HOW MANY MEASURES DID FIRSTENERGY EVALUATE WHEN**
19 **DEVELOPING THE PROPOSED PLANS?**

20 **A.** The Companies used a wide reaching process to identify and consider over 100
21 EE&PDR measures for inclusion in the Proposed Plans, including measures
22 suggested by the Collaborative Group.

1 **Q. HOW MANY MEASURES DID FIRSTENERGY ULTIMATELY**
2 **INCLUDE IN EACH OF THE COMPANIES' PROPOSED PLANS?**

3 **A.**90 distinct measures were ultimately included in the Companies' Proposed Plans,
4 many of which are included in multiple programs targeting different customer
5 sectors. Each Company's Proposed Plan provides details of each of the included
6 measures.

7 **Q. WHAT PROGRAMS, SUB-PROGRAMS AND MEASURES DID**
8 **FIRSTENERGY CONSIDER, BUT NOT INCLUDE IN THE PROPOSED**
9 **PLANS?**

10 **A.**The FirstEnergy Team considered the following measures but did not include
11 them in the Proposed Plans due primarily to implementation barriers, questionable
12 or limited savings estimates and costs:

- 13 • Dishwashers;
- 14 • Set Top Boxes;
- 15 • Check-up Audits;
- 16 • Door Closer-Reach In Refrigerator/Freezer;
- 17 • ECM Evaporative Fan Motor: Walk in Refrigerator/Freezer;
- 18 • ECM Evaporative Fan Motor: Reach In Refrigerator/Freezer;
- 19 • Evaporator Fan Controller; and
- 20 • High Efficiency Transformers.

21 The FirstEnergy Team also considered certain specific application or end-
22 use programs, such as Data Center programs, but did not include a dedicated
23 program in the Companies' Proposed Plans. Rather, the Team designed programs

1 with the flexibility to incorporate various types of custom projects and measures
2 so as to provide implementation flexibility and accommodate multiple programs
3 or measures that may have limited application or variable energy efficiency
4 impacts based on application specifics. Accordingly, Data Center programs, as
5 well as other types of specific application or end-use programs and measures, are
6 eligible as a custom measure under the Companies' Commercial/Industrial
7 Energy Efficient Equipment Programs, subject to program eligibility guidelines.
8 These types of projects and measures may also be eligible for the Mercantile
9 Customer Program.

10 During the Plan Period, the Companies will regularly evaluate the
11 programs and program participation to evaluate whether changes can be made to
12 existing programs or whether certain programs and measures can be modified to
13 include measures originally considered but not included. The Companies will
14 discuss these opportunities periodically with the Collaborative Group as they are
15 identified.

16 **THE PROPOSED PLANS**

17 **Q. WHAT PROGRAMS ARE THE COMPANIES PROPOSING?**

18 **A.** Each of the programs included in the Proposed Plans are described in detail in
19 Section 3 of each plan. The Proposed Plans also detail the scope and benefits of
20 the various energy efficiency and peak demand reduction programs for which the
21 Companies seek Commission approval. As I previously mentioned, the
22 Companies' Proposed Plans leverage the programs in the Existing Plans, as well
23 as offer numerous new measures targeting expanded end-uses, thus providing

1 customers more opportunities to participate in the program offerings and
2 providing the Companies with more opportunities to meet their EE&PDR targets.
3 Exhibit ECM-4 shows how the programs included in the Existing Plans have been
4 consolidated into the new programs included in the Proposed Plans.

5 **Q. WHAT RESIDENTIAL PROGRAMS ARE THE COMPANIES**
6 **PROPOSING?**

7 **A.** The Companies' residential programs are described in Exhibit ECM-5. First, the
8 Companies request that the Commission approve the following residential
9 programs that the Companies have implemented and have not changed from the
10 Existing Plans:

- 11 • **Appliance Turn-In Program** – removes inefficient operating appliances
12 from the system by offering customers an incentive and pick-up and
13 disposal service for refrigerators, freezers and room air conditioners.
- 14 • **Direct Load Control Program** – offers residential customers a
15 programmable thermostat with two-way communications that allows
16 customers to achieve energy savings and also allows the Companies to
17 curtail summer air conditioning load during peak periods.
- 18 • **Low Income Program (formerly called “Community Connections**
19 **Program”)** – provides weatherization measures, energy efficiency
20 solutions and client education to the Companies' low-income customers at
21 no additional cost to them. The Commission approved the proposed
22 extension of the Community Connections program in its July 18, 2012
23 Order in the Companies Electric Security Plan Case, Case No. 12-1230-

1 “Efficient New Homes Program.” Like its predecessor programs, this new
2 program offers: (i) residential customer online audits and discounted
3 comprehensive home energy audits; and (ii) rebates to local builders for achieving
4 energy efficiency targets. The following changes have been made to the current
5 programs as reflected in the new Home Performance Program:

- 6 • Added all-electric home audits;
- 7 • Added energy efficiency kits including customized contents for standard
8 and all-electric customers and an educational program at schools where
9 participants receive energy efficiency kits;
- 10 • Added a behavioral component that provides customers with energy usage
11 reports.

12 **Q. WHAT SMALL ENTERPRISE PROGRAMS ARE THE COMPANIES**
13 **PROPOSING?**

14 **A.** The Companies’ small enterprise programs are described in Exhibit ECM-6.
15 First, the Companies request approval of the C&I Energy Efficient Equipment
16 Program – Small, which is a continuation and consolidation of the existing C&I
17 Equipment Program-Small, C&I Equipment Program (Industrial Motors) – Small,
18 and C&I Equipment Program (Commercial Lighting) – Small. The new program
19 provides financial incentives (prescriptive & performance) and support to
20 customers directly or through manufacturers, distributors, and retailers for
21 purchasing and installing energy efficient equipment and products. The following

13 (July 18, 2012).

1 changes have been made to the current programs as reflected in the new C&I
2 Energy Efficient Equipment Program - Small:

- 3 • Expanded measures in the HVAC and water heating sub-program;
- 4 • Expanded measures including recycling in the appliances sub-program;
- 5 • Expanded measures in the food service sub-program;
- 6 • Expanded measures to include LED, Halogen and other EE Lighting
7 technologies in the lighting sub-program; and
- 8 • Removed prescriptive rebates for motors up to and over 200HP from the
9 customer equipment sub-program; but the Companies will consider
10 rebates for motors in their custom equipment sub-program. The reason for
11 this change is that standards for energy efficient motors are evolving and,
12 rather than simply rebate all purchases the Companies will consider
13 requests for rebates of motors on a case-by-case basis.²

14 Second, the Companies request approval of the Energy Efficient Buildings
15 Program-Small, which is a continuation and consolidation of the C&I New
16 Construction Program and C&I Audit Program. Like its predecessor programs,
17 this new program provides financial incentives and support to customers for
18 implementing energy efficient custom building shell or building system
19 improvements. The Companies made the following changes to the current
20 programs as reflected in the new Energy Efficient Buildings Program – Small:

- 21 • Added a targeted custom building offering for shell improvements; and
- 22 • Added energy efficiency kits.

Q. WHAT MERCANTILE-UTILITY (LARGE ENTERPRISE) PROGRAMS ARE THE COMPANIES PROPOSING?

A. The Companies' mercantile-utility (large enterprise) programs are outlined in Exhibit ECM-7. First, the Companies request approval of the C&I Energy Efficient Equipment Program – Large, which is a continuation and consolidation of the C&I Equipment Program-Large, C&I Equipment Program (Industrial Motors) – Large, Technical Assessment Umbrella Program and C&I Equipment Program (Commercial Lighting) – Large. Like its predecessor programs, this new program provides financial incentives (prescriptive & performance) and support to customers directly or through manufacturers, distributors and retailers for installing energy efficient equipment and products. The following changes have been made to the current programs as reflected in the new C&I Energy Efficient Equipment Program - Large:

- Expanded measures in the HVAC sub-program;
- Expanded measures to include LED, Halogen and other EE Lighting technologies in the lighting sub-program; and
- Removed prescriptive rebates for motors up to and over 200HP from the customer equipment sub-program; but the Companies will consider rebates for motors in their custom equipment sub-program. The reason for this change is that standards for energy efficient motors are evolving and, rather than simply rebate all purchases the Companies will consider requests for rebates of motors on a case-by-case basis.

² These types of requests for rebates are evaluated based on criteria such as: the types of equipment installed, whether the customer is upgrading less efficient equipment to more efficient equipment, and

1 Second, the Companies request approval of the Energy Efficient Buildings
2 Program-Large, which is a continuation and consolidation of the C&I Equipment
3 Program-Large and Technical Assessment Umbrella Program. Like its
4 predecessor programs, this new program provides financial incentives and support
5 to customers for making energy efficient custom building shell or building system
6 improvements. The measures included in this program are unchanged from those
7 included in the predecessor programs already included in the Existing Plans.

8 **Q. WHAT GOVERNMENT PROGRAMS ARE THE COMPANIES**
9 **PROPOSING?**

10 The Companies' government programs are outlined in Exhibit ECM-7. The
11 Companies request approval of the Government Tariff Lighting Program, which
12 is a continuation of the LED Traffic Signals measure offered under the existing
13 Government Lighting Program with the addition of an Energy Efficiency Street
14 Lighting measure. The following changes were made to the current programs as
15 reflected in the new Government Tariff Lighting Program:

- 16 • Added rebates for Government customers who replace customer owned
17 and maintained street lighting equipment served under the Companies'
18 Street Lighting rate schedules with higher efficiency equipment.

19 **Q. WHAT DEMAND REDUCTION PROGRAMS ARE THE COMPANIES**
20 **PROPOSING?**

21 **A.** The Companies request approval of their Demand Reduction Program, which is a
22 continuation of the existing C&I Interruptible Load Program approved in the
23 Companies' ESP-2 and continued in the Companies' ESP-3 which includes the

whether the energy efficiency savings can be measured and validated.

1 Companies' interruptible load tariffs and the Demand Response Program, which
2 allow the Companies to contract for demand attributes with customers or with
3 Curtailment Service Providers ("CSPs") doing business in the territory of PJM
4 Interconnection LLC ("PJM"). The following changes were made to the Demand
5 Reduction Program:

- 6 • Revised the program to permit the Companies to count for purposes of
7 PDR compliance, demand response resources participating in the PJM
8 market for the applicable delivery year, without the need to contract for
9 these resources separately. This change avoids the Companies having to
10 provide compensation that may otherwise not be required for these
11 resources.

12 **Q. WHY DID THE COMPANIES OPT TO REMOVE CERTAIN MEASURES**
13 **FROM THE EXISTING PLAN?**

14 **A.** The Companies considered their implementation experience, anticipated energy
15 savings results and input from its consultants and stakeholders in deciding to
16 include or remove measures from the Proposed Plans. The Companies removed
17 incentives for traditional Programmable Thermostats as a prescriptive measure
18 based on implementation experience and evaluation results in other jurisdictions.
19 However, programmable thermostats will be eligible through the Home
20 Performance Program as the result of a comprehensive audit. The Companies
21 also removed providing incentives for motors as a prescriptive measure based on
22 changing efficiency standards and instead proposes to make motors eligible for
23 incentive as a custom measure where the Companies will review specific

1 applications to determine the energy savings and incentive for approved
2 installations.

3 **Q. ARE THE COMPANIES SEEKING APPROVAL FOR ANY OTHER**
4 **PROGRAMS?**

5 **A.** Yes, the Companies are also seeking approval of a new program that studies
6 conservation voltage reduction (“CVR”) in order to determine if opportunities for
7 voltage reduction and resulting energy savings on the Companies’ systems exist.
8 The CVR study will determine the potential on the Companies’ system to
9 strategically select distribution circuits that have sufficient voltage levels to
10 accommodate a one-time fixed voltage reduction while still remaining within the
11 voltage parameters required under Rule 4901:1-10-04 Ohio Administrative Code
12 (equipment for voltage measurements and system voltage and frequency
13 requirements).

14 **Q. ARE THERE OTHER PROGRAMS INCLUDED IN THE PROPOSED**
15 **PLANS THAT ARE ADDRESSED IN OTHER DOCKETS?**

16 **A.** Yes, in addition to the Low Income Program (f.k.a. Community Connections
17 Program) already discussed, the Proposed Plans also include the Mercantile
18 Customer Program, the Transmission and Distribution (“T&D”) Improvement
19 Program and the Smart Grid Modernization Initiative Program. These programs
20 are included in the Proposed Plans as part of the Companies’ strategy for
21 compliance with statutory EE&PDR mandates, but because these programs are
22 either permitted by statute, or have already been approved by the Commission, no
23 further approval is necessary in this docket.

1 **Q. PLEASE DESCRIBE THESE PROGRAMS.**

2 A. The Mercantile Customer Program is a continuation of the existing Mercantile
3 Self-Direct program, only with a different name. This program targets mercantile
4 customer energy efficiency projects implemented from January 1, 2010 through
5 the end of the Plan Period, incenting customers to commit their projects
6 implemented prior to the Plan Period, or otherwise incenting them to invest in
7 energy efficient projects during the Plan Period. Applications for approval of
8 mercantile customer sited programs are separately filed with the Commission in
9 individual dockets with incentives paid to customers (and recovered by the
10 Companies through the Companies' Riders DSE) or exemptions, both of which
11 are approved in those individual dockets. Accordingly, the budgets set forth in
12 the Proposed Plans do not include any costs for these incentives, but do include
13 costs associated with the administration of this program.

14 Second, the T&D Improvements Program, is a continuation of the existing
15 Transmission & Distribution Programs only with a different name. The approval
16 of the projects and resulting energy savings are addressed in a separate docket.
17 No costs associated with this program are included in the budgets set forth in the
18 Proposed Plans.

19 Third, the Smart Grid Modernization Initiative Program was approved in
20 Case No. 09-1820-EL-ATA et al. This program studies the impact of producing
21 an integrated system of protection, performance, efficiency and economy on the
22 energy delivery system for multiple stakeholder benefits. Except for nominal
23 costs related to peak demand credits and costs associated with reporting and filing

1 for compliance with SB 221 (which are recovered through Rider DSE), no costs
2 associated with this program are included in the budget set forth in the Proposed
3 Plans and costs are recovered through Rider AMI as approved in the
4 Commission's June 30, 2010 Order in Case No. 09-1820-EL-ATA.

5 **PROGRAM RESULTS, COSTS AND THE TRC TEST**

6 **Q: WHAT ARE THE TARGETS FOR EACH OF THE COMPANIES?**

7 **A:** According to the benchmarks set forth in R.C. 4928.66(A)(1)(a) and (b), the
8 cumulative kWh and KW reduction requirements for the Companies' are as
9 follows:

10 **Ohio Edison S.B. 221 Benchmarks for the Period 2013 - 2015**

Year	Energy Efficiency Benchmarks Percentage	Required Energy Efficiency Savings MWh	Peak Demand Reduction Benchmarks Percentage	Required Peak Demand Reductions MW
2013	3.20%	775,177	4.00%	214
2014	4.20%	1,028,575	4.75%	256
2015	5.20%	1,282,722	5.50%	288

13 **CEI S.B. 221 Benchmarks for the Period 2013 - 2015**

Year	Energy Efficiency Benchmarks Percentage	Required Energy Efficiency Savings MWh	Peak Demand Reduction Benchmarks Percentage	Required Peak Demand Reductions MW
2013	3.20%	605,132	4.00%	166
2014	4.20%	805,047	4.75%	194
2015	5.20%	1,006,406	5.50%	218

Toledo Edison S.B. 221 Benchmarks for the Period 2013 - 2015

Year	Energy Efficiency Benchmarks Percentage	Required Energy Efficiency Savings MWh	Peak Demand Reduction Benchmarks Percentage	Required Peak Demand Reductions MW
2013	3.20%	338,918	4.00%	82
2014	4.20%	460,161	4.75%	98
2015	5.20%	590,112	5.50%	111

Q. PLEASE SUMMARIZE THE LIFETIME COSTS AND BENEFITS RESULTING FROM EACH COMPANY'S PROPOSED PLAN.

A. Exhibit ECM-1³, consisting of three pages, summarizes each Company's projected lifetime costs and benefits related to the Proposed Plans developed in response to S.B. 221.

Q. WHAT ARE THE PROJECTED EE&PDR RESULTS EXPECTED FROM THE PROPOSED PLANS?

A. Exhibit ECM-2, consisting of three pages, provides the projected MW and MWh savings, on a cumulative and pro rata basis, by customer sector that each Company's Proposed Plan is expected to produce during the Plan Period. Absent unforeseen events, or events beyond the Companies' control, each of the Proposed Plans is designed to comply with statutory targets as set forth in Section 4928.66, Revised Code.

1 **Q. PLEASE SUMMARIZE THE ANNUAL COSTS OF EACH COMPANY’S**
2 **PROPOSED PLAN DURING THE PLAN PERIOD.**

3 **A.** Exhibit ECM-3, consisting of three pages, provides the estimated costs of the
4 Proposed Plans by sector by year for each Company. For the proposed programs
5 and measures, the Companies projected costs by relying on current contract
6 pricing under the Existing Plans, as well as pricing for common program offerings
7 from other jurisdictions in which FirstEnergy has EE&C programs in place.
8 Company administrative and other program costs are based on internal
9 estimations. The Companies will recover their costs through their respective
10 Riders DSE, which were approved in Case No. 08-0935-EL-SSO, and amended in
11 the 2009 Case in which the Existing Plans were approved (09-1947-EL-POR, *et*
12 *al.*)

13 **Q. WHAT IS THE TRC TEST?**

14 **A:** As provided by O.A.C. 4901:1-39-01(Y):

15 “Total resource cost test” is an analysis to determine if, for an
16 investment in energy efficiency or peak-demand reduction measure
17 or program, on a life-cycle basis, the present value of the avoided
18 supply costs for the periods of load reduction, valued at marginal
19 cost, are greater than the present value of the monetary costs of the
20 demand-side measure or program borne by both the electric utility
21 and the participants, plus the increase in supply costs for any

³ The sources for Exhibits ECM 1-3 were the results of modeling output. FirstEnergy uses industry standard software in conducting its modeling, DSM Portfolio Pro, developed and supplied by Cadmus. Appendix C-1 of the Proposed Plans provides the program measure assumptions utilized for the modeling.

1 periods of increased load resulting directly from the measure or
2 program adoption. Supply costs are those costs of supplying
3 energy and/or capacity that are avoided by the investment,
4 including generation, transmission, and distribution to customers.
5 Demand-side measure or program costs include, but are not limited
6 to, the costs for equipment, installation, operation and
7 maintenance, removal of replaced equipment, and program
8 administration, net of any residual benefits and avoided expenses
9 such as the comparable costs for devices that would otherwise have
10 been installed, the salvage value of removed equipment, and any
11 tax credits.

12 O.A.C. 4901:1-39-04(B) requires each electric utility to demonstrate that
13 its program portfolio plan is cost effective on a portfolio basis.

14 **Q. DO THE PROPOSED PLANS EACH PASS THE TRC TEST?**

15 Yes. As demonstrated in Exhibit ECM-1 and Tables 7(A)-(G) included in each of
16 the Proposed Plans, each plan passes the TRC test on a portfolio basis. While the
17 TRC test results vary by sector and program, the overall Proposed Plan for each
18 Company achieves a TRC greater than 1.0.

19 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

20 **A.** Yes, it does.

Ohio Edison Portfolio Summary of Lifetime Costs and Benefits Net Lifetime Benefits, and TRC per the California Standard Practice Manual					
Portfolio	Discount Rate	Total Discounted Lifetime Costs (\$000)	Total Discounted Lifetime Benefits (\$000)	Total Discounted Net Lifetime Benefits (\$000)	Cost- Benefit Ratio (TRC)
Residential (inclusive of Low-Income)	8.48%	57,363,076	80,850,982	23,487,906	1.4
Small Enterprise	8.48%	40,005,566	70,269,736	30,264,170	1.8
Mercantile	8.48%	1,409,608	41,318,449	39,908,841	29.3
Mercantile-Utility (Large Enterprise)	8.48%	18,088,613	41,397,959	23,309,347	2.3
Government	8.48%	215,799	922,097	706,299	4.3
Transmission & Distribution *	8.48%	250,000	-	(250,000)	0.0
Total	8.48%	117,332,662	234,759,224	117,426,562	2.0
<i>* No costs from the T&D Improvements and Smart Grid Modernization Initiative programs are included in the budgets for this Plan. Except for costs associated with reporting and filing for compliance with SB 221, costs will be addressed in other proceedings. T&D Improvements and Smart Grid Modernization Initiative are further described in Section 2.7 and 3.6 of the Proposed Plans.</i>					

CEI Portfolio Summary of Lifetime Costs and Benefits Net Lifetime Benefits, and TRC per the California Standard Practice Manual					
Portfolio	Discount Rate	Total Discounted Lifetime Costs (\$000)	Total Discounted Lifetime Benefits (\$000)	Total Discounted Net Lifetime Benefits (\$000)	Cost- Benefit Ratio (TRC)
Residential (inclusive of Low-Income)	8.48%	35,816,668	39,410,671	3,594,003	1.1
Small Enterprise	8.48%	29,841,846	50,348,776	20,506,930	1.7
Mercantile	8.48%	1,232,605	19,969,774	18,737,168	16.2
Mercantile-Utility (Large Enterprise)	8.48%	10,815,352	26,275,392	15,460,040	2.4
Governmental	8.48%	179,075	632,138	453,063	3.5
Transmission & Distribution *	8.48%	250,000	-	(250,000)	0.0
Total	8.48%	78,135,546	136,636,750	58,501,204	1.7
* No costs from the T&D Improvements and Smart Grid Modernization Initiative programs are included in the budgets for this Plan. Except for costs associated with reporting and filing for compliance with SB 221, costs will be addressed in other proceedings. T&D Improvements and Smart Grid Modernization Initiative are further described in Section 2.7 and 3.6 of the Proposed Plans.					

Toledo Edison Portfolio Summary of Lifetime Costs and Benefits Net Lifetime Benefits, and TRC per the California Standard Practice Manual					
Portfolio	Discount Rate	Total Discounted Lifetime Costs (\$000)	Total Discounted Lifetime Benefits (\$000)	Total Discounted Net Lifetime Benefits (\$000)	Cost- Benefit Ratio (TRC)
Residential (inclusive of Low-Income)	8.48%	21,576,520	25,203,394	3,626,874	1.2
Small Enterprise	8.48%	18,510,030	33,316,222	14,806,193	1.8
Mercantile	8.48%	600,778	20,223,178	19,622,400	33.7
Mercantile-Utility (Large Enterprise)	8.48%	23,432,233	44,655,205	21,222,972	1.9
Government	8.48%	50,158	175,119	124,961	3.5
Transmission & Distribution *	8.48%	250,000	-	(250,000)	0.0
Total	8.48%	64,419,719	123,573,119	59,153,400	1.9
<i>* No costs from the T&D Improvements and Smart Grid Modernization Initiative programs are included in the budgets for this Plan. Except for costs associated with reporting and filing for compliance with SB 221, costs will be addressed in other proceedings. T&D Improvements and Smart Grid Modernization Initiative are further described in Section 2.7 and 3.6 of the Proposed Plans.</i>					

Ohio Edison Summary of Portfolio Energy and Demand Savings - Pro rata						
MWh Saved for Consumption Reductions kW Saved for Peak Load Reductions	Program Year 2013		Program Year 2014		Program Year 2015	
	MWh Saved	kW Saved	MWh Saved	kW Saved	MWh Saved	kW Saved
Residential Sector (inclusive of Low- Income) - Cumulative Projected Portfolio Savings	40,613	48,708	124,062	61,536	206,795	73,986
Small Enterprise - Cumulative Projected Portfolio Savings	29,994	44,442	105,656	63,859	184,642	81,934
Mercantile - Cumulative Projected Portfolio Savings	40,166	39,450	68,705	44,017	88,789	47,230
Mercantile-Utility (Large Enterprise)- Cumulative Projected Portfolio Savings	10,050	93,165	29,631	99,140	49,610	99,259
Government Sector - Cumulative Projected Portfolio Savings	75	18	251	36	438	54
Transmission & Distribution	0	0	0	0	0	0
Portfolio Plan Total - Cumulative Projected Savings	120,898	225,783	328,307	268,587	530,273	302,463

CEI Summary of Portfolio Energy and Demand Savings - Pro rata						
MWh Saved for Consumption Reductions kW Saved for Peak Load Reductions	Program Year 2013		Program Year 2014		Program Year 2015	
	MWh Saved	kW Saved	MWh Saved	kW Saved	MWh Saved	kW Saved
Residential Sector (inclusive of Low- Income) - Cumulative Projected Portfolio Savings	18,751	33,341	53,819	39,608	92,127	46,363
Small Enterprise - Cumulative Projected Portfolio Savings	20,125	37,463	68,367	49,776	121,185	62,100
Mercantile - Cumulative Projected Portfolio Savings	18,999	49,317	32,297	51,684	41,797	53,374
Mercantile-Utility (Large Enterprise)- Cumulative Projected Portfolio Savings	5,881	53,972	17,667	62,864	29,999	66,395
Government Sector - Cumulative Projected Portfolio Savings	93	9	351	18	659	27
Transmission & Distribution	0	0	0	0	0	0
Portfolio Plan Total - Cumulative Projected Savings	63,849	174,101	172,501	203,949	285,767	228,259

Toledo Edison						
Summary of Portfolio Energy and Demand Savings - Pro rata						
MWh Saved for Consumption Reductions kW Saved for Peak Load Reductions	Program Year 2013		Program Year 2014		Program Year 2015	
	MWh Saved	kW Saved	MWh Saved	kW Saved	MWh Saved	kW Saved
Residential Sector (inclusive of Low- Income) - Cumulative Projected Portfolio Savings	12,791	11,847	42,538	16,403	68,222	19,704
Small Enterprise - Cumulative Projected Portfolio Savings	16,140	14,899	53,753	24,408	88,578	31,815
Mercantile - Cumulative Projected Portfolio Savings	20,115	40,006	33,877	42,208	43,405	43,732
Mercantile-Utility (Large Enterprise)- Cumulative Projected Portfolio Savings	13,335	145,147	39,410	26,522	66,091	32,276
Government Sector - Cumulative Projected Portfolio Savings	13	4	39	7	64	11
Transmission & Distribution	0	0	0	0	0	0
Portfolio Plan Total - Cumulative Projected Savings	62,393	211,903	169,617	109,548	266,360	127,538

Ohio Edison Summary of Portfolio Costs			
	Program Year 2013	Program Year 2014	Program Year 2015
	Portfolio Budget (\$)	Portfolio Budget (\$)	Portfolio Budget (\$)
Residential Portfolio (inclusive of Low-Income) Annual Budget	20,392,318	22,208,453	21,507,001
Small Enterprise Portfolio Annual Budget	7,924,784	10,046,943	8,873,635
Mercantile Portfolio Annual Budget	595,152	500,998	414,962
Mercantile-Utility (Large Enterprise) Portfolio Annual Budget	5,864,043	11,296,460	10,814,232
Government Portfolio Annual Budget	80,668	91,852	91,378
Transmission & Distribution Portfolio Annual Budget *	250,000	0	0
Total Portfolio Annual Budget	35,106,964	44,144,706	41,701,207
<i>* No costs from the T&D Improvements and Smart Grid Modernization Initiative programs are included in the budgets for this Plan. Except for costs associated with reporting and filing for compliance with SB 221, costs will be addressed in other proceedings. T&D Improvements and Smart Grid Modernization Initiative are further described in Section 2.7 and 3.6 of the Proposed Plans.</i>			

CEI Summary of Portfolio Costs			
	Program Year 2013	Program Year 2014	Program Year 2015
	Portfolio Budget (\$)	Portfolio Budget (\$)	Portfolio Budget (\$)
Residential Portfolio (inclusive of Low-Income) Annual Budget	12,244,991	13,041,096	14,230,869
Small Enterprise Portfolio Annual Budget	5,310,444	6,476,520	6,524,148
Mercantile Portfolio Annual Budget	530,991	435,318	353,421
Mercantile-Utility (Large Enterprise) Portfolio Annual Budget	2,871,300	7,596,316	7,754,488
Government Portfolio Annual Budget	81,182	114,404	115,365
Transmission & Distribution Portfolio Annual Budget *	250,000	0	0
Total Portfolio Annual Budget	21,288,907	27,663,654	28,978,292
<i>* No costs from the T&D Improvements and Smart Grid Modernization Initiative programs are included in the budgets for this Plan. Except for costs associated with reporting and filing for compliance with SB 221, costs will be addressed in other proceedings. T&D Improvements and Smart Grid Modernization Initiative are further described in Section 2.7 and 3.6 of the Proposed Plans.</i>			

Toledo Edison Summary of Portfolio Costs			
	Program Year 2013	Program Year 2014	Program Year 2015
	Portfolio Budget (\$)	Portfolio Budget (\$)	Portfolio Budget (\$)
Residential Portfolio (inclusive of Low-Income) Annual Budget	7,772,729	9,453,687	6,881,565
Small Enterprise Portfolio Annual Budget	3,871,964	4,442,645	3,433,963
Mercantile Portfolio Annual Budget	253,554	213,222	177,307
Mercantile-Utility (Large Enterprise) Portfolio Annual Budget	3,863,980	4,691,220	4,685,502
Government Portfolio Annual Budget	18,482	18,375	17,864
Transmission & Distribution Portfolio Annual Budget *	250,000	0	0
Total Portfolio Annual Budget	16,030,710	18,819,149	15,196,202
<p><i>* No costs from the T&D Improvements and Smart Grid Modernization Initiative programs are included in the budgets for this Plan. Except for costs associated with reporting and filing for compliance with SB 221, costs will be addressed in other proceedings. T&D Improvements and Smart Grid Modernization Initiative are further described in Section 2.7 and 3.6 of the Proposed Plans.</i></p>			

Existing & New Programs	
Ohio Edison Company, The Cleveland Electric Illuminating Company, & The Toledo Edison Company	
Existing Program Name	New Program Name
Residential Programs (inclusive of Low-Income)	
Appliance Turn-In Program	Appliance Turn-In Program
Comprehensive Residential Retrofit Program	Home Performance Program
Online Audit Program	
Efficient New Homes Program	
Energy Efficient Products Program	Energy Efficient Products Program
CFL Program	
Direct Load Control Program	Direct Load Control Program
Community Connections Program	Low Income Program
Small Enterprise Programs	
C&I Equipment Program - Small	C&I Energy Efficient Equipment Program - Small
C&I Equipment Program (Industrial Motors) - Small	
C&I Equipment Program (Commercial Lighting) - Small	
C&I New Construction Program	Energy Efficient Buildings Program - Small
C&I Audits	
Mercantile-Utility (Large Enterprise) Programs	
C&I Equipment Program - Large	C&I Energy Efficient Equipment Program - Large
C&I Equipment Program (Commercial Lighting) - Large	
C&I Equipment Program (Industrial Motors) - Large	
Technical Assessment Umbrella Program	Energy Efficient Buildings Program - Large
C&I Equipment Program - Large	
C&I Interruptible Load Program	Demand Reduction Program
Demand Response	
Government Programs	
Government Lighting Program	Government Tariff Lighting Program
Other Programs	
Mercantile Self-Direct	Mercantile Customer Program
Transmission & Distribution Programs	T&D Improvements
N/A	Conservation Voltage Reduction Study
Smart Grid Modernization Initiative	Smart Grid Modernization Initiative

Proposed Residential Portfolio			
Ohio Edison Company, The Cleveland Electric Illuminating Company, & The Toledo Edison Company			
Program Name	Sub Program	Measure Name	Measure Status
Appliance Turn-In Program	Appliance Turn-In	Refrigerator Recycling	Existing
		Freezer Recycling	Existing
		Room Air Conditioner Recycling	Existing
Home Performance Program	Audits	Comprehensive Audit	Existing
		On-Line Audit	Existing
		All Electric Home Audit	New
	Kits	Efficiency Kit - Standard	New
		Efficiency Kit - All-Electric	New
		Efficiency Kit - School	New
	New Homes	New Construction	Existing
Energy Efficient Products Program	Behavioral	Energy Usage Reports	New
	HVAC & Water Heating	Air Source Heat Pump	Existing
		HVAC Maintenance	Existing
		Central Air Conditioner	Existing
		Ground Source Heat Pump	Existing
		Whole House Fan	New
		Room Air Conditioner	Existing
		Ductless Mini-Split AC & HP	New
		Solar Water Heating	Existing
		HP Water Heater	Existing
		EE Water Heater	Existing
	Appliances	Clothes Washers	Existing
		Dehumidifiers	Existing
		Refrigerators	Existing
		Freezers	New
		Pool Pump Motors	Existing
	Consumer Electronics	Smart Strips	Existing
		Televisions	New
		Computers	New
		Computer Monitors	New
	Lighting	Torchiere Floor Lamps	Existing
		Ceiling Fan with Integral CFLs	New
		Energy Efficient Lighting Products	New
		Emerging Technology	New
Direct Load Control Program	Direct Load Control	DLC - CAC	Existing
		DLC - Pool Pump	Existing
		DLC - Water Heater	Existing
Low Income Program	Low Income	Community Connections	Existing

Proposed Small Enterprise Portfolio Ohio Edison Company, The Cleveland Electric Illuminating Company, & The Toledo Edison Company			
Program Name	Sub Program	Measure Name	Measure Status
C&I Energy Efficient Equipment Program - Small	HVAC & Water Heating	Air Conditioning 65,000-760,000 BTU/Hr (5-65TN)	Existing
		HVAC Maintenance - Small C&I	New
		Hotel Room HVAC/Receptacle Controls	New
		Dual Enthalpy Economizer	New
		Electric Chillers	New
		Room Air Conditioners - Small C&I	New
		Electric Water Heaters	Existing
		Water-Cooled cent Chiller Up to 300 ton	Existing
	Appliances - Small	Clothes Washer - Small C&I	Existing
		Refrigerator Recycling - Small C&I	New
		Freezer Recycling - Small C&I	New
		Room Air Conditioner Recycling - Small C&I	New
		Refrigerators - Small C&I	New
		Freezers - Small C&I	New
		Vending Equipment Controller (Remote Mount, Lighting)	Existing
		Window Film	Existing
	Food Service	Smart Strip (Load Sensing & Occupancy) - Small C&I	Existing
		Efficient Refrigeration Condenser	Existing
		Commercial Solid Door Freezers	Existing
		Commercial Solid Door Refrigerators	Existing
		Commercial Glass Door Refrigerators	New
		Efficient Refrigeration Condenser	Existing
		Ice Machines	Existing
		Steam Cookers	Existing
		Hot Food Holding Cabinet	New
		Fryers & Griddles	New
		Combination & Convection Ovens	New
		Refrigerated Case Covers	New
		Anti Sweat Heater Controls	New
		LED Reach in Refrig / Freezer Lights	New
	Lighting	Pre Rinse Sprayers	Existing
		Strip curtains for walk-in Refrig/Freezer	Existing
		Energy Efficient Exterior Lighting (Area & Prk Gar)	Existing
		Linear Fluorescent Retrofits (Stdnd & Non Stdnd)	Existing
		LED Exit Signs (Retrofit Only)	Existing
	Custom Equipment	Energy Efficient Lighting Products - Small C&I	New
		Lighting Controls (Occupancy & Daylight) - Small C&I	Existing
		VFDs up to 200 HP	Existing
Energy Efficient Buildings Program - Small	New Buildings	VFDs greater than 200 HP	Existing
		Custom	Existing
	C&I Audits	New Construction - Small C&I	Existing
	Custom Buildings	Audit - Small C&I	Existing
		On-Line Audit - Small C&I	Existing
	Kits	Custom Buildings	New
		Efficiency Kits - Small C&I	New

Proposed Mercantile-Utility (Large Enterprise), Government, & Other Portfolio Ohio Edison Company, The Cleveland Electric Illuminating Company, & The Toledo Edison Company			
Program Name	Sub Program	Measure Name	Measure Status
C&I Energy Efficient Equipment Program - Large	HVAC - Large	Air Conditioning 65,000-760,000 BTU/Hr (5-65TN) - Large C&I	Existing
		HVAC Maintenance - Large C&I	New
		Dual Enthalpy Economizer - Large C&I	New
		Electric Chillers - Large C&I	New
		Water-Cooled cent Chiller Up to 300 ton - Large C&I	Existing
	Lighting - Large	Energy Efficient Exterior Lighting (Area & Prk Gar) - Large C&I	Existing
		Linear Fluorescent Retrofits (Stdnd & Non Stdnd) - Large C&I	Existing
		LED Exit Signs (Retrofit Only) - Large C&I	Existing
		Energy Efficient Lighting Products - Large C&I	New
		Lighting Controls (Occupancy & Daylight) - Large C&I	Existing
	Custom Equipment - Large	VFDs up to 200 HP - Large C&I	Existing
		VFDs greater than 200 HP - Large C&I	Existing
		Custom - Large C&I	Existing
Energy Efficient Buildings Program - Large	C&I Audits - Large	Audit - Large C&I	Existing
	Custom Buildings - Large	Custom Buildings - Large C&I	Existing
		Retrocommissioning - Large C&I	Existing
Demand Reduction Program	Demand Response - Large	Interruptible Tariff	Existing
		Contracted Demand Resources	Existing
Government Tariff Lighting Program	Government	LED Traffic Signals	Existing
		Energy Efficient Street Lighting	New
Mercantile Customer Program	Mercantile	Mercantile Customer Projects	Existing
T&D Improvements	Distribution Upgrades	Distribution Upgrades	Existing
Conservation Voltage Reduction Study	Conservation Voltage Reduction	Conservation Voltage Reduction Study	New
Smart Grid Modernization Initiative	Smart Grid Modernization Initiative	Smart Grid Modernization Initiative	Existing

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

7/31/2012 4:32:09 PM

in

Case No(s). 12-2190-EL-POR, 12-2191-EL-POR, 12-2192-EL-POR

Summary: Testimony (Direct) of Edward C. Miller - Company Exhibit 4 electronically filed by Ms. Carrie M Dunn on behalf of The Cleveland Electric Illuminating Company and Ohio Edison Company and The Toledo Edison Company