

**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 Edison Company) Case No. 16-0743-EL-POR
For Approval of Their Energy Efficiency and)
Peak Demand Reduction Program Portfolio)
Plans for 2017 through 2019)

AMENDED DIRECT TESTIMONY OF

GEORGE L. FITZPATRICK

ON BEHALF OF

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

INTRODUCTION AND BACKGROUND

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is George L. Fitzpatrick, and my business address is 551 North Country Road, Suite 201, St. James, New York 11780.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am President and Chief Executive Officer of Harbourfront Group, Inc. ("Harbourfront"), a management and economic consulting firm that serves electric and gas utilities in the areas of planning, forecasting, load research, energy efficiency, demand response, smart meter/smart grid business case analyses, nuclear cost and performance analyses and a wide variety of engineering economic, econometric and statistical studies.

Q: DID YOU PREVIOUSLY SUBMIT DIRECT TESTIMONY IN THIS CASE?

A: Yes, I submitted Direct Testimony that was filed in this case on April 15, 2016. This Amended Direct Testimony is intended to incorporate (to the extent set forth below) and replace my original Direct Testimony.

Q: ARE YOU INCORPORATING BY REFERENCE ANY OF YOUR ORIGINAL DIRECT TESTIMONY DATED APRIL 15, 2016? IF SO, WHICH PORTIONS?

A: Yes, I am incorporating by reference the following portions of my original Direct Testimony: Page 2, Line 12 through Page 12, Line 18, as well as Exhibit GLF-1 referenced therein and attached thereto. For ease of reference, my original Direct Testimony is attached hereto as Exhibit GLF-A1.

1 **Q. WOULD YOU LIKE TO MAKE ANY CHANGES TO THE PORTIONS OF**
2 **YOUR ORIGINAL DIRECT TESTIMONY THAT YOU INCORPORATE**
3 **BY REFERENCE HEREIN?**

4 A. The only change to my original Direct Testimony that I am making is on page 4,
5 line 10, where I indicate that the Market Potential Study (“MPS”) supports the
6 Proposed Plans. The MPS also supports the Revised Energy Efficiency and Peak
7 Demand Reduction Plans filed by the Ohio Edison Company, The Cleveland
8 Electric Illuminating Company, and The Toledo Edison Company with the
9 Commission on December 8, 2016.

10 **Q. DOES THIS CONCLUDE YOUR AMENDED DIRECT TESTIMONY?**

11 A. Yes, it does. However, I reserve the right to supplement my testimony.

EXHIBIT GLF-A1

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

A. My professional experience includes over 40 years within utility management and the electric/gas technical and management consulting fields. My areas of expertise include: econometric and statistical analysis for energy and peak forecasting, load research; integrated resource planning; smart meter/smart grid business case analytics; Demand Side Management ("DSM")/Energy Efficiency ("EE") market potential; program assessment and design; and implementation and evaluation. I also have significant experience in electric generating plant life cycle economics, operating costs and performance modeling and overall utility investment prudence analyses.

1 **Q. HAVE YOU EVER TESTIFIED BEFORE THE PUBLIC UTILITIES**
2 **COMMISSION OF OHIO OR ANY OTHER REGULATORY BODIES?**

3 **A.** I have testified extensively before state regulatory commissions throughout the
4 United States, in both direct and rebuttal roles. In fact, I oversaw the development
5 of the last market potential study of Ohio Edison Company (“Ohio Edison”), The
6 Cleveland Electric Illuminating Company (“CEI”) and The Toledo Edison
7 Company (“Toledo Edison”) (collectively, “Companies”) while employed with
8 Black & Veatch, Inc. and provided expert testimony in support of that study in the
9 Companies’ 2012 Energy Efficiency and Peak Demand Reduction (“EE/PDR”)
10 portfolio cases (Case Nos. 12-2190-EL-POR *et seq.*). Other areas in which I have
11 previously provided testimony include:

- 12 • Integrated Resource Planning;
- 13 • Electric and Gas DSM/EE Program Assessment, Implementation and
14 Evaluation;
- 15 • Smart Meter Business Case Development;
- 16 • Comparative Lifecycle Economics of Competing Utility Investments;
- 17 • Econometric/Statistical-Based Load and Energy Forecasting;
- 18 • Other Econometric and Statistical Studies on Utility-Related Issues;
- 19 • Weather Normalization Studies;
- 20 • Strategic Planning;
- 21 • Load Research Program Sample Design, Implementation and Analysis;
- 22 • Rate Design;
- 23 • Cost of Service Studies;

- Renewable Program Evaluation; and
- Nuclear and Fossil Generation Performance Standard Design and Statistical Construction

A more complete description of my qualifications and a list of regulatory proceedings in which I have testified are set forth in my professional resume, which is attached to my testimony as Exhibit GLF-1.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to sponsor the Market Potential Study (“MPS”) that Harbourfront performed on behalf of the Companies and that supports the proposed EE/PDR portfolio plans that are the subject of this proceeding (“Proposed Plans”). I also provide a brief description of the avoided Transmission and Distribution (“T&D”) Cost Study used in the MPS.

Q. DOES YOUR TESTIMONY APPLY TO ALL OF THE COMPANIES?

A. Unless otherwise stated, my testimony equally applies to all three Companies. It should also be noted that throughout my testimony I refer to sections included in the MPS, which is part of the Proposed Plans as Appendix D. Rather than reiterate in my testimony the details of the sections to which I refer, I am incorporating those sections into my testimony by reference.

Q. WAS THE MPS PREPARED BY YOU OR UNDER YOUR DIRECT SUPERVISION?

A. Yes, it was.

SUMMARY OF THE MPS

Q. PLEASE EXPLAIN GENERALLY WHAT THE MPS IS.

A. The MPS is generally an assessment of three categories of EE and PDR potential within each of the Companies' respective service territories: (i) Technical Potential; (ii) Economic Potential; and (iii) Achievable Potential, which when analyzed together provide an estimate of market potential for energy efficiency program and measure participation during a set period of time. This study was utilized by the Companies' when designing the programs that are included in the Proposed Plans. Company Witness Miller discusses this process in more detail in his testimony.

Q. WHAT IS TECHNICAL POTENTIAL?

A. Generally, Technical Potential is the savings associated with replacing or installing all standard efficiency technologies across all end uses regardless of cost effectiveness. Technical potential represents the maximum savings level possible. The official definition of this potential is set forth in Section 4901:1-39-01(X), Ohio Administrative Code. Section 2.1 of the MPS describes the analysis of technical potential required by the Ohio Administrative Code and followed by Harbourfront.

Q. WHAT IS ECONOMIC POTENTIAL?

A. Generally, Economic Potential reviews the Technical Potential and screens it to identify and select only those measures that pass the cost-effectiveness test. For Ohio, the Total Resource Cost ("TRC") test is used as the basis for determining cost effectiveness. As a result, economic potential is a sub-set of technical potential. The official definition of this potential is set forth in Section 4901:1-39-

1 01(H), Ohio Administrative Code. Section 2.1 of the MPS describes the analysis
2 of economic potential required by the Ohio Administrative Code and followed by
3 Harbourfront.

4 **Q. WHAT IS ACHIEVABLE POTENTIAL?**

5 **A.** Achievable Potential reviews the measures contained in the Economic Potential
6 savings estimates and further screens them to capture that portion of savings that
7 can realistically be implemented by customers. In other words, even if a measure
8 is cost effective for the customer, they may be unwilling to install the measure for
9 various reasons such as personal preferences, reluctance to incur a higher upfront
10 costs, or overall budgetary constraints. The official definition of achievable
11 potential is set forth in Section 4901:1-39-01(A), Ohio Administrative Code.
12 Section 2.1 of the MPS describes the analysis of this potential as required by the
13 Ohio Administrative Code and followed by Harbourfront.

14 **Q. WHAT IS THE SCOPE OF THE MPS?**

15 **A.** The scope of the MPS is discussed in the Executive Summary (Section 1.0) of that
16 document. Generally, Harbourfront assessed the EE and PDR market potential
17 within the Companies' service territories for the period January 1, 2017 through
18 December 31, 2031, although for purposes of developing the Proposed Plans, the
19 focus was on the period January 1, 2017 through December 31, 2019 ("Plan
20 Period").

1 **Q. WHAT WAS THE METHODOLOGY FOLLOWED WHEN DEVELOPING**
2 **THE MPS?**

3 **A.**The methodology followed when developing the MPS is described in Section 3.0
4 of the MPS.

5 **Q. WHAT MEASURES WERE CONSIDERED FOR PURPOSES OF THE**
6 **MPS?**

7 **A.**The measures and how they were selected are discussed in Section 7.0 of the MPS.

8 **Q. WHAT BASIC ASSUMPTIONS WERE MADE WHEN DEVELOPING THE**
9 **MPS?**

10 **A.**When developing the MPS, Harbourfront made the global assumptions set forth in
11 Section 8.6 of the MPS, as well as some other minor assumptions as described
12 throughout the document.

13 **Q. WHAT INFORMATION WAS FACTORED INTO THE DEVELOPMENT**
14 **OF THE MPS?**

15 **A.**A description of data sources used by Harbourfront when developing the MPS is
16 included in Section 3.2 of the MPS. Generally, when developing the MPS,
17 Harbourfront performed extensive EE and PDR program and measure research,
18 reviewing cost and savings information from a variety of sources including utility
19 “best practice” programs in a number of states, and the authoritative reports that are
20 listed in Section 3.2 of the MPS. Harbourfront also collected primary participation
21 and appliance end use ownership data from statistically valid Residential and
22 Commercial customer surveys that were conducted either through the internet or
23 by telephone and also conducted interviews with the Companies’ large account

1 representatives, large customers and local appliance retail store personnel. Store
2 visits to major box store chains throughout the Companies' service territories also
3 provided information regarding the availability of Energy Star appliances and LED
4 and CFL lighting within the Companies' service territories.

5 **Q. WHAT WAS THE PURPOSE OF THE SURVEYS?**

6 **A.** The overall objective of the survey process was to collect primary market and
7 customer research information, on a statistically valid basis, that would allow the
8 Harbourfront team to develop robust Base Case and High Case estimates of
9 potential customer participation in the various measures and programs that were
10 relevant to the Companies' service territories. The survey process and related
11 results are described in detail in Sections 4.0, 5.0 and 6.0 of the MPS.

12 **Q. HOW WAS THE MARKET POTENTIAL DETERMINED?**

13 **A.** The steps performed to determine Achievable, Technical and Economic Potential
14 are described in Section 8.0 of the MPS.

15 **Q. BASED ON THE WORK THAT YOU HAVE DESCRIBED, WHAT WERE**
16 **THE RESULTS OF THE MPS FOR THE PLAN PERIOD?**

17 **A.** The MPS provides both a "Base Case" and "High Case" savings potential for each
18 of the years 2017 through 2031. The results through 2031 are summarized in Tables
19 1-1 through 1-9 in Section 1.0 of the MPS.

1 The EE savings potential for each of the Companies during the Plan Period is as
2 follows:

3	<u>CO</u>	<u>YEAR</u>	<u>BASE</u>	<u>HIGH</u>
4	OE	2017	7.9%	8.3%
5	OE	2018	9.9%	10.9%
6	OE	2019	12.0%	13.6%
7				
8	CEI	2017	8.0%	8.4%
9	CEI	2018	9.9%	10.7%
10	CEI	2019	11.9%	13.2%
11				
12	TE	2017	7.2%	7.5%
13	TE	2018	8.8%	9.5%
14	TE	2019	10.5%	11.6%

The PDR potential for each of the Companies during the Plan Period is as follows:

<u>CO</u>	<u>YEAR</u>	<u>BASE</u>	<u>HIGH</u>
OE	2017	5.6%	5.9%
OE	2018	6.7%	7.4%
OE	2019	7.8%	8.9%
CEI	2017	5.7%	6.1%
CEI	2018	6.9%	7.5%
CEI	2019	8.0%	9.0%
TE	2017	5.5%	5.7%
TE	2018	6.5%	7.0%
TE	2019	7.5%	8.2%

Q. WHAT IS THE DIFFERENCE BETWEEN THE BASE AND HIGH CASES?

A. The Base Case represents a normal program plan with incentives and marketing expenses generally seen in the market today. It reflects what can reasonably be expected using reasonable incentives and marketing techniques. The High Case, on the other hand, includes more aggressive marketing and higher customer incentives, which, in turn, results in higher costs to achieve the results.

1 **Q. IN YOUR OPINION, WHICH CASE SHOULD BE USED FOR PURPOSES**
2 **OF DEVELOPING THE PROPOSED PLANS?**

3 **A.** In my opinion, the Base Case savings potential should (and was) used for planning
4 purposes because the Base Case costs and participation levels are more reflective
5 of a level of savings that are more likely to be achieved. When modeling, the goal
6 is to reflect what is expected under normal circumstances, and not under overly
7 aggressive targets. Conversely, the High Case, would be more reflective of stretch
8 goals. Further, under the Base Case, absent unforeseen events not anticipated in
9 the MPS, the results demonstrate that the Companies should be able to achieve their
10 statutory EE and PDR targets during the Plan Period since the market potential for
11 both targets during the Plan Period exceeds the statutory requirements. Finally,
12 Base Case savings levels should be sufficient to foster free market transformation
13 of the Companies' service territories' appliance/end use stocks to the next level of
14 energy efficiency. Use of the High Case increases the risk that more resources will
15 be spent to achieve the same levels of ultimate energy efficiency and peak demand
16 reduction as would result under the Base Case.

17 **Q. DID HARBOURFONT PERFORM ANY OTHER STUDIES FOR THE**
18 **COMPANIES?**

19 **A.** Yes. Harbourfront performed an avoided T&D cost study that provides certain
20 data inputs for calculating cost-effectiveness for purposes of market potential.

1 **Q. PLEASE DESCRIBE THE PROJECTS USED TO EVALUATE THE**
2 **AVOIDED T&D COSTS.**

3 **A.** The Avoided T&D Cost Study relied on three years of planned investment data for
4 demand growth-related T&D projects, since those projects, according to Company
5 personnel, were relatively certain to be implemented. And, while the Companies
6 evaluate future projects beyond this time-frame, the certainty of the project
7 implementation is less. Harbourfront also reviewed more than ten years of
8 historical T&D project costs as reported in each of the Companies' FERC Forms
9 No. 1.

10 **Q. WERE ANY T&D PROJECTS WITHIN THE TIME PERIOD OF YOUR**
11 **REVIEW NOT EVALUATED?**

12 **A.** Yes. Harbourfront did not include in its analysis any projects that were related to
13 (i) remote siting of generation units; (ii) system interconnections and pool
14 requirements; (iii) large loads of individual customers, the costs of which are
15 charged to the customer; and (iv) replacement of existing facilities without adding
16 capacity to serve additional load.

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

18 **A.** Yes, it does. However, I reserve the right to supplement my testimony.

Resume of George Fitzpatrick-President-Harbourfront Group

Mr. Fitzpatrick's professional experience includes over 40 years within the utility management and electric/gas management consulting fields. Mr. Fitzpatrick's areas of expertise include: economic and econometric analysis for energy and peak forecasting, load research, integrated resource planning, demand side management and related areas, as well as nuclear and fossil generating plant life cycle economics, operating costs and performance modeling and overall utility investment prudence analyses. He has testified extensively throughout the U.S. before the FERC and state regulatory commissions, in both direct and rebuttal roles. Areas in which he has provided testimony include:

- Lifecycle economic analysis of nuclear generation investments
- Nuclear generation operating costs and performance modeling
- Nuclear and total utility operating performance standards
- Integrated Resource Planning
- Distribution Reliability, Smart Meters and Smart Grid
- Forecasts supporting Distribution Investments
- Electric and Gas Demand Side Management / Energy Efficiency (DSM/EE) Program Assessment, Implementation and Evaluation
- Comparative lifecycle economics of competing utility investments
- Smart Meter Business Case Analyses and Benefit Realization Studies
- Econometric/statistical-based Peak Load and Energy / Sales Forecasting
- Other Econometric and Statistical Studies on Utility- related Issues
- Weather Normalization Studies
- Strategic Planning
- Load Research Program Sample Design, Implementation and Analysis
- Rate Design
- Cost of Service Studies
- Renewable Program Evaluation
- Performance Standard design and statistical construction
- SAIDI / SAIFI-related statistical investigations

During Mr. Fitzpatrick's consulting career he has provided services to over 50 electric and gas utility clients both in the U.S. and abroad. However, there are a number of clients that have utilized his services on an ongoing basis over the years as a senior management consultant and/or expert witness. These clients include:

- American Electric Power Corp.
- Arizona Public Service Company (Pinnacle West)
- Bermuda Electric Light Company Limited
- Centerpoint Energy
- Consolidated Edison Company of New York
- El Paso Electric Company

Specialization:

DSM Planning, Implementation and Evaluation; Smart Meter Business Case Analyses Nuclear Lifecycle Economic Analyses; Load & Energy Forecasting; Econometric & Statistical Analysis; 40 Years of Expert Testimony Experience

Education

- St. John's University, M.B.A., Economic Theory, 1972
- St. John's University, B.A., Economics, 1969
- C.W. Post College, course work toward an MS, Management Engineering

Mr. Fitzpatrick has also completed course work in Engineering Economics, Load Research, Demand Forecasting, Box-Jenkins Forecasting Techniques, logistic curve analyses; two and three stage multiple regression techniques; advanced econometric modeling and the utilization and interpretation of multiple regression models and associated analytical techniques

Total Years Experience-40+ Professional Associations

- Association of Energy Engineers
- American Statistical Association
- American Economic Association
- Mathematical Association of America
- Omicron Delta Epsilon
- Advisor to American Management Association

- Entergy
- FirstEnergy
- Freeport Electric
- Georgia Power Company (Southern Company)
- Guam Power Authority
- KeySpan Energy
- National Grid
- New England Electric System
- Niagara Mohawk Power Corp. (National Grid)
- New York Power Authority
- Ontario Power Generation
- Public Service Company of Oklahoma
- San Diego Gas & Electric
- Southern Maryland Electric Cooperative
- TXU Electric (TXU)
- Union Gas Co. Ltd.
- United Illuminating Co.
- Westar Energy (and its three predecessor companies)

He has also served his client base as a negotiator, often playing a key role in the negotiation of multi-million dollar, short and long term utility power supply and franchise contracts (e.g., Ft Bliss, White Sands Missile Range, University of Texas, and El Paso Water Utilities and El Paso Electric Vs. the City of Las Cruces).

REPRESENTATIVE PROJECT EXPERIENCE

Expert Testimony & Regulatory Support (Selected Assignments)

United Illuminating Company | Development and Expert Witness Support of the 2007-2014 Ten Year Plan Long Term Peak Load and Energy Forecasts for Distribution Planning

Since 2007, Mr. Fitzpatrick has been the author of the methodology for and the developer of the econometric-driven peak load and energy sales by class forecasts for the Company. Additionally, he has developed a custom methodology for weather normalization analysis of UI's summer peaks and energy sales. UI has recently contracted with Mr. Fitzpatrick's firm for such services through 2018. These forecasts are used to determine the need for distribution investments and provide forecasts of peak down to the substation level.

FirstEnergy Pennsylvania Operating Companies 2014 Rate Cases | Metropolitan Edison Company / Docket No. M-2014-2428745; Pennsylvania Electric Company / Docket No. M-2014-2428743; Pennsylvania Power Company / Docket No. M-2014-2428744; West Penn Power Company / Docket No. M-2014-2428742 (2014-2015)

Provided Rebuttal testimony on Smart Meter Data Access issues and the reporting of Smart Meter/ Smart Grid distribution operational metrics related to

the Companies' Smart Meter Implementation Plan that was developed pursuant to PA Act 129.

FirstEnergy Pennsylvania Operating Companies | Metropolitan Edison Company / Docket No. M-2013-2341990; Pennsylvania Electric Company / Docket No. M-2013-2341991; Pennsylvania Power Company / Docket No. M-2013-2341993; West Penn Power Company / Docket No. M-2013-2341994 (2012-2014)

Provided Direct, Rebuttal and Rejoinder testimony on the nominal and lifecycle estimated costs, utility cost savings and utility/customer benefits of the Companies' Smart Meter Implementation Plan that was developed pursuant to PA Act 129. This case was decided in an Order dated March 6, 2014. The Commission approved the Companies' filed deployment plan and agreed with all of George Fitzpatrick's testimony positions.

American Electric Power and Public Service Company of Oklahoma | Docket Nos. 200500516, 200600030, and 200700012 (2005-2007)

Provided direct and rebuttal expert testimony on the overall prudence of AEP's Integrated Resource Planning processes and results with specific focus on AEP's load forecasting processes and comparative lifecycle economic analyses of supply and demand side alternatives.. Also provided an analysis of the short and longer term potential for cost effective Demand Side Management in the PSO service territory based upon my earlier work on this subject for the entire AEP system and its 11 operating companies.

Arizona Nuclear Power Project - Palo Verde (1987-Present)

Developed computer software to facilitate budget tracking and comparison. Developed econometric-based target estimation models of Operation and Maintenance Costs. Developed target estimation of Capital Additions Costs based upon econometric modeling. Developed forced and planned outage statistical models to be used in regulatory proceedings for all participants as well as for internal outage planning. Acted as Advisor to Palo Verde Participant's Engineering and Operating Committee on Palo Verde Cost and Performance budget targeting.

Arizona Public Service Company | Docket Nos. E-01345A-05-0816, E-01345A-05-0826, E-01345A-05-0827 (2005)

Provided rebuttal testimony on the practical and statistical considerations to address when designing a nuclear plant operating performance standard. This testimony presented the results of his non-linear multiple regression models as they apply to this subject. Further, it referenced his prior work on behalf of

Georgia Power Company developing an operating performance standard for Plants Vogtle and Hatch.

Arizona Public Service Company | Palo Verde 1, 2, & 3 / Docket Nos. U-1345-85-156 and U-1345-85-367 (1987-1990)

Provided direct testimony presenting comparative economic analysis of Palo Verde vs. hypothetical coal unit alternative. Provided econometrically developed estimates of Operation and Maintenance Costs, as well as Capital Additions Costs. Provided independent statistically derived estimates of lifecycle Capacity Factors for the Palo Verde units. Participated in the training of APS witnesses.

Atlanta Gas Light - Georgia (1997)

Worked with senior management to develop testimony for a performance based rate plan in support of the unbundling of gas service.

Centerpoint Energy-Minnesota | MPUC Docket No. G008/GR-15-424 (2015-16)

Provided Direct and Rebuttal testimony related to my development of a test year econometric-based gas use per customer/sales by class forecast for Centerpoint's 2014-2015 Test Year. This econometric forecast was accepted by all parties to this case except for a mutually agreed upon weather normal change.

Centerpoint Energy-Minnesota | MPUC Docket No. G008/GR-13-316 (2013-14)

Provided Direct and Rebuttal testimony related to my development of a test year econometric-based gas use per customer/sales by class forecast for Centerpoint's 2013-2014 Test Year. This forecast was accepted by all parties to this case without modification.

El Paso Electric Company | Palo Verde 1 & 2 / Texas - Docket No. 7460 (1986)

Provided direct testimony on lifecycle economics of nuclear vs. coal alternative. Provided direct testimony on decisional prudence of company to enter into nuclear investment. Provided load forecast of company's future energy and peak demand needs. Participated in the training of Company witnesses.

El Paso Electric Company | Palo Verde 1, 2, & 3 / Docket Nos. 8892, 9069 and 9165 (1987-88)

Provided Direct Testimony presenting comprehensive industry analysis and statistical analysis of Nuclear Performance Standards. Presented statistically derived optimal Performance Standard for Palo Verde Units 1, 2, and 3. Provided Rebuttal Testimony discussing theoretical and statistical flaws in intervenor's Performance Standard proposal.

El Paso Electric Company - Texas (1997-1998)

Developed unbundling strategy and performance based rate plan in support of ongoing Texas PUC workshops on the unbundling of electric service.

Empire District - Missouri (1992)

Provided econometric rebuttal testimony critiquing MPSC Staff's direct testimony on Empire District's forecast. Staff accepted rebuttal testimony and the Company's forecast was accepted for use in the rate case.

FirstEnergy Pennsylvania Operating Companies 2014 Rate Cases | Metropolitan Edison Company / Docket No. M-2014-2428745; Pennsylvania Electric Company / Docket No. M-2014-2428743; Pennsylvania Power Company / Docket No. M-2014-2428744; West Penn Power Company / Docket No. M-2014-2428742 (2014-2015)

Provided Rebuttal testimony on Smart Meter Data Access issues and the reporting of Smart Meter/ Smart Grid distribution operational metrics related to the Companies' Smart Meter Implementation Plan that was developed pursuant to PA Act 129.

FirstEnergy Pennsylvania Operating Companies | Metropolitan Edison Company / Docket No. M-2013-2341990; Pennsylvania Electric Company / Docket No. M-2013-2341991; Pennsylvania Power Company / Docket No. M-2013-2341993; West Penn Power Company / Docket No. M-2013-2341994 (2012-2014)

Provided Direct, Rebuttal and Rejoinder testimony on the nominal and lifecycle estimated costs, utility cost savings and utility/customer benefits of the Companies' Smart Meter Implementation Plan that was developed pursuant to PA Act 129. This case was decided in an Order dated March 6, 2014. The Commission approved the Companies' filed deployment plan and agreed with all of George Fitzpatrick's testimony positions.

FirstEnergy Pennsylvania Operating Companies | Metropolitan Edison Company / Docket No. M-2013-2341990; Pennsylvania Electric Company / Docket No. M-2013-2341991; Pennsylvania Power Company / Docket No. M-2013-2341993; West Penn Power Company / Docket No. M-2013-2341994 (2014) Accelerated Deployment Plan Filing

On March 19, 2014 The Companies filed an Accelerated Deployment Plan in order to accelerate the deployment of smart meters in their Pennsylvania service territories. George Fitzpatrick provided Supplemental testimony supporting the entire Revised Plan and the analysis of the Revised Accelerated Plan's nominal and NPV lifecycle economics from both the Companies' and customers' perspectives

FirstEnergy Ohio Operating Companies | Cleveland Electric Illuminating Company / Docket No. 12-2190-EL-POR; Docket No. 12-2191-EL-POR; Docket No. 12-2192-EL-POR (2012)

Presented and successfully defended the results of an Energy Efficiency Market Potential Study that served as the underpinning of FirstEnergy Companies 2013-2015 Energy Efficiency Program Portfolio.

FirstEnergy Ohio Operating Companies | Cleveland Electric Illuminating Company / Docket No. Docket No. 09-1947-EL-POR Docket No. 09-1942-EL-EEC Docket No. 09-580-EL-EEC; Ohio Edison Company / Docket No. 09-1948-EL-POR; Docket No. 09-1943-EL-EEC; Docket No. 09-581-EL-EEC; Toledo Edison Company / Docket No. 09-1949-EL-POR; Docket No. 09-1944-EL-EEC; Docket No. 09-582-EL-EEC (2009)

In 2011, Fitzpatrick provided direct testimony presenting, updating and supporting the Energy Efficiency and Peak Demand Reduction Plans of the Companies originally developed by Fitzpatrick in 2009 in response to the requirements of S.B. 221.

FirstEnergy Pennsylvania Operating Companies | Metropolitan Edison Company / Docket No. M-2009-2092222; Pennsylvania Electric Company / Docket No. M-2009-2112952; Pennsylvania Power Company / Docket No. M-2009-2112956 (2009)

Provided direct and supplemental testimony presenting, updating and supporting the Energy Efficiency and Conservation Plans of the Companies developed in response to the requirements of PA Act 129. Also provided rebuttal testimony on a variety of related issues raised by the other parties in the three dockets.

Freeport Electric | 1995 Docket No. 95-E-0676, 2001 Docket No. 01-E0965, 2003 Docket No. 03-E-0686 (1995-present)

Provided direct testimony supporting Freeport's KWH sales and peak demand forecasts in four NYPSC proceedings. Constructed econometric models based forecast methodology by calls along with weather normalization of the test year sales. Provided testimony on the selection of Freeport-specific DSM programs to meet Commission requirements.

Georgia Power Company | Plant Hatch and Plant Vogtle / Georgia - Docket Nos. 3554-U and 3673-U (1985-90)

For the Vogtle Financing Case, the Vogtle Rate Case and the Hatch Rate Case: Provided rebuttal testimony on comparative economics of Plant Vogtle, provided rebuttal testimony (with presentation to Commission) on Vogtle's economics, and statistically derived projections of Vogtle's performance and Hatch O&M Costs, participated in witness training, and developed internal statistically-based O&M and Capital Additions "Targets" for Plant Hatch and Plant Vogtle.

Georgia Power Company | Plant Hatch and Plant Vogtle / Docket No. 3840-U (1985-87)

Provided Rebuttal Testimony that pointed out methodological and statistical flaws in Staff consultant's Performance Standard proposal. Presented parameters for a statistically unbiased, optimal Performance Standard.

Kansas Gas and Electric Company | Wolf Creek / Kansas City Power and Light Company/Kansas-1984 Docket Nos. 84-KG&E-197-R-142, O98-U / Missouri Docket #ER-85-128, EO-85-185 (1983-85)

Provided rebuttal testimony on lifecycle economics of nuclear vs. coal alternative. Provided first-year and lifecycle statistically based estimates of Wolf Creek's Operation and Maintenance Costs and Capital Additions Costs. Provided first-year and lifecycle estimates of Wolf Creek's Capacity Factors. Participated in the preparation of KG&E witnesses on the subjects of statistics, econometrics, forecasting, and engineering economics.

Long Island Lighting Company | Shoreham / New York-Docket No. 28252 (1976-78)

Provided rebuttal testimony on most likely performance of Shoreham Unit. Provided testimony on most likely Operation and Maintenance Cost levels and Capital Additions Cost level for Shoreham based upon econometric analysis of nuclear industry. Provided testimony on demand-side vs. supply-side alternatives for the Long Island Lighting Company.

Long Island Lighting Company (1974-1979)

Testified as an expert witness, usually in both the direct and rebuttal phases, in the following New York State Public Service Commission proceedings: Docket Numbers: 26733, 26829, 26985, 27136, 27154, 80003, 27319, 27374, 27375, 28223, 28252, on subjects such as econometric and econometric-end use Electric and Gas Peak and Energy Forecasts, Load Research studies for cost-of-service analysis, Load Management, Cogeneration, Conservation and statistical studies for weather normalization of gas send out and electric energy requirements data.

Minnegasco | Docket No. G-008/GR-92-400 (1993 - 1994)

Developed a set of econometrically derived, short run forecasts for Minnegasco's major customer classes. Provided direct expert testimony regarding the use of these forecasts as a factor in determining the need for and magnitude of Minnegasco's requested rate increase. Assisted in preparation of cross-examination of intervening parties.

On rebuttal, supported the implementation of weather normalization adjustments and discussed the effects of an adjustment on varying classes of customer use.

All testimony was accepted by Staff.

Missouri Public Service (MOPUB) - (1992)

Provided econometric-based rebuttal testimony critiquing MPSC Staff's direct case criticizing MOPUB's forecast. Rebuttal testimony resulted in Staff stipulating to the use of the Company's forecast.

Southern Maryland Electric Cooperative | Maryland Public Service Commission / Docket No. 9294 (2012-2013)

Provided direct and reply testimony related to the development of Time of Use Rate proposals on behalf of Southern Maryland Electric Cooperative. Also, developed likely short term and long term price elasticity effects for these TOU proposals.

United Illuminating Company | Development and Expert Witness Support of the 2007-2014 Ten Year Plan Long Term Peak Load and Energy Forecasts

Since 2007, Mr. Fitzpatrick has been the author of the methodology for and the developer of the econometric-driven peak load and energy sales by class forecasts for the Company. Additionally, he has developed a custom methodology for weather normalization analysis of UI's summer peaks and energy sales. UI has recently contracted with Mr. Fitzpatrick's firm for such services through 2018. These forecasts are used to determine the need for distribution investments and provide forecasts of peak down to the substation level.

United Illuminating Company | October 2008 Connecticut DPUC Docket 08-07-04 and 2012 Connecticut DPUC Rate Case Docket_____

"Application of the United Illuminating Company to Increase its Rates and Charges"—provided direct testimony concerning UI's long term econometric-based kWh sales and system peak forecasts and UI's 2000-2008 normalized system peak analyses. Offered perspectives on the structural differences between, and objectives of, long term planning forecasts vs. short term financial forecasts.

United Illuminating Company | July 2007 Connecticut Siting Council Filing

Developed econometric-driven peak load and energy sales by class forecasts for the company. Performed a multi-year weather normalization analysis of UI's summer peaks and energy sales. Provided support for UI witnesses in the 2007 Siting Council hearings held in June 2007.

Westar Energy | 2014 Load Research Sample Redesign and Refreshment

Westar Eneergy has again retained Mr. Fitzpatrick to update its load research sample for all of its classes and geographic areas. This project is facilitated by Harbourfront's proprietary sample design and selection software and processes.

Westar Energy | 2005-2007 KCC Docket Nos. 05-WSEE-981-RTS and 07-WSEE-616-PRE

In the 2005 docket, provided direct and rebuttal testimony on the subjects of distribution reliability and reliability-based performance standards. Developed a series of statistical analyses that set performance standards for five utility performance metrics: SAIDI, SAIFI, EFOR, Answered Calls and Meters Read. Developed daily 1998-2004 SAIDI and SAIFI non-linear multiple regression-based weather normalization models for use by the Company.

In the 2007 docket provided both direct and rebuttal testimony on the subjects of peak and energy forecasting, DSM program potential and budgeting, and peak and energy weather normalization analyses.

Western Resources Inc. and Kansas Gas and Electric Company | 2000 KCC Docket No. 01-WSRE-436

Sponsored two adjustments necessary to normalize operating revenues and expenses for the test year. Performed a review of KPL's and KGE's sales and peak demand forecasting methodology. This review was performed to evaluate its accuracy and unbiasedness since this forecast, in part, supports the Company's decisions to install new capacity. Also performed a statistical review of KPL's and KGE's peak demand normalization methodology, which is necessary to analyze the accuracy of the KPL's and KGE's peak demand forecasts.

Western Resources | 1996 KCC Docket No. 193,307-U96-WSRE-101-DRS

Provided expert testimony and supporting statistical analysis for test year, class weather normalization, as well as, primary and secondary economic benefits of key customer discounted contracts.

Demand-Side Management Program Design, Implementation, & Evaluation

Overview

George Fitzpatrick has over 35 years experience in performing DSM/EE technical and economic potential assessments, program implementation and program evaluations for his electric and gas utility clients. His strong economic, statistical and ESCO business background has enabled him to advise clients on effective DSM/EE initiatives, provide unbiased evaluations of both electric and gas supply and demand side resources, operate successful ESCO's on behalf of his utility clients and finally manage the evaluation of over 300 DSM/EE programs.

Over this same 35 year span he has served as an expert witness on a number of subjects related to the DSM/EE practice area. It should be noted that his long professional career as an expert witness attests to the fact that he is a knowledgeable professional who has and continues to offer reasonable perspectives on the subjects to which he provides expert testimony. This same ethic carries over to his conduct of consulting assignment for clients.

The following paragraphs provide a representative sample of the DSM/EE work that he has performed over his professional career:

American Electric Power

In 2004-5 he directed an eleven operating company DSM/EE measure assessment that included the estimation of the economic and load/energy impacts of over 80 measures, customized where appropriate to each of AEP's operating companies. As part of this assignment, he directed the development of conditional demand analyses for the purpose of developing individual service territory-specific impacts for certain weather sensitive measures. This work served as a basis for AEP's decision to more fully engage in DSM/EE activities. Mr. Fitzpatrick also served as AEP's overall IRP prudency and DSM/EE witness in PSO's 2007 Oklahoma IRP-related docket.

Bermuda Electric Light Company, Ltd.

Directed a 1990-1991 multi-faceted evaluation of the potential for DSM on Bermuda. Conducted in-depth research of various customer classes to determine likelihood of adoption of available DSM technologies. Building on this research, developed a series of pilot programs that were implemented in 1993, as well as evaluation strategies to be employed at the programs' conclusion. Designed and served as the responsible officer for the creation and staffing of a full service energy services company, BESCO, that commenced operation in 1995 and provides, to this day, a full range of energy efficiency, energy security and power protection products and services to residential, commercial and industrial customers in Bermuda.

Consolidated Edison Company of New York, Inc.

Project Manager for a 1981 Conservation Assessment Study which included designing a methodology and performing analysis to impact Conservation measures in the residential and commercial sectors to meet requirements imposed by New York PSC in Case No. 28223.

El Paso Electric Company's Energy Service Business Unit (ESBU)

From 1996-2001, Mr. Fitzpatrick served as the General Manager of El Paso Electric's ESBU, a full service ESCO that he conceived, staffed and managed until this unit was spun off as a wholly-owned subsidiary of EPE. Although a consultant to EPE, Mr. Fitzpatrick had full operating authority and served as authorized agent of the company for contracting and procurement matters. This profitable business unit designed and negotiated long term power supply contracts that had value adding components such as large chilled water storage plants (University Of Texas-El Paso), emergency backup generation for water and wastewater facilities (El Paso Water Utilities), innovative time of use rates that provided for increased security for military installations and pipeline operations (e.g., Ft Bliss, Holloman Air Force Base, White Sands Missile Range, NASA, Diamond Shamrock, shopping centers, office parks and the like.

Jersey Central Power & Light (JCP&L)

Performed a 2006-7 assessment and recommended a portfolio of targeted peak load management initiatives to achieve significant reductions of electric loads on both a substation and system wide basis. These programs served as a significant component of JCP&L's submission to the New Jersey Energy Master Plan (2007).

Long Island Lighting Company (LILCO)

Directed a 1993 research project focusing on the right-sizing of LILCO's DSM program in the face of maturing market conditions, as well as on the measurement of the extent to which LILCO's programs had successfully moved the market to energy efficient technologies. Research includes an assessment of the impacts of pure market forces on DSM and the role of rebates and information in overall market capture for DSM technologies.

Project Manager for LILCO's 1992 Research and Development Initiative entitled, "Institutional Barriers to Conservation in Master-Metered, Tenant-Occupied Commercial Office Space." The project involved estimating the market conservation potential, identifying institutional barriers through focus groups and interviews with landlords and tenants, and establishing a pilot program and blueprint lease to implement in order to enhance DSM measures in the relevant market.

Directed the comprehensive evaluation of LILCO's 1987 Conservation and Load Management Programs. This evaluation is contained in a three-volume report, which has been called the "most comprehensive" effort to date in this area.

Directed the evaluation of LILCO's 1988 and 1989 Conservation and Load Management Programs. Directed the preparation of a June 1988 Load Management Study. Specific responsibilities included estimating Load Management reductions included in LILCO's Load Forecasts by major components.

Minnegasco

Served as the Senior Management Advisor to Minnegasco's DSM/Load Research Program from 1993 through mid-1995. Responsibilities included contract negotiations with consultants, supervision of consultant's activities, and resolution of technical issues, and on-site presence as required to effectively oversee all Load Research-related activities.

New York Power Authority (NYPA)

Served as the Senior Management Advisor (1992-present) for NYPA's \$1 Billion High Efficiency Lighting Program (HELP) and its successor programs having primary responsibility for drafting and negotiating DSM cost sharing umbrella contracts with New York State and New York City, serving as project executive during the program's 18 month startup and directing multiple implementation contractor management and quality assurance efforts.

Analysis on behalf of NYPA of Energy Systems Research Group's (ESRG) Conservation Assessment Report submitted in FERC Case No. 2729: Prattsville Pumped Storage Facility.

Supervised the development of an evaluation of potential Load Management strategies for the NYPA's municipal customers, including a cost/benefit analysis and specific Load Management test programs.

New York Power Pool

Analyzed the conservation forecasts contained within the Member Systems' individual long-range forecasts and evaluated all parties' conservation forecasts and analyses.

New York State Electric & Gas Corporation (NYSEG)

Served as Responsible Officer for NYSEG's 1991 & 1992 Commercial / Industrial Process and Impact Evaluations. Served as Responsible Officer in the development of NYSEG's June 1994 DSM Market Transformation Study.

Orlando Utilities Board

Directed a 2007 comprehensive assessment of the maximum and technically feasible potential for DSM/EE measures in the OUB service territory. Measures were evaluated based upon lifecycle economics from varying stakeholder perspectives. Developed a short list of most applicable measures for the OUB service territory and directed the development of 8,760 hour load shapes for each short-listed measure. This work was utilized in OUB's 2007-2008 IRP filing.

Orange and Rockland Utilities (O&R)

Assessed the potential for and designed an Energy Cooperative Program for O&R's commercial customers. Directed project to assess new regulated and unregulated business opportunities to diversify O&R from its core business.

Rochester Gas & Electric Corporation

Served as Responsible Officer for RG&E's 1990-94 DSM Evaluations. Represented RG&E in all DSM-related interactions with PSC Staff.

Westar Energy

Developed the initial 2006-2007 DSM/EE program menu that included program by program projected impacts and lifecycle economics for consideration by Company senior management. Further developed Westar's peak load and energy forecasts that included both programmatic and free market substitution DSM/EE effects. Worked with the Company and Commission to explore appropriate mechanisms for DSM/EE program implementation and predetermined cost recovery

SELECTED CONSULTING ASSIGNMENTS

Westar Energy

Mr. Fitzpatrick served as the Principal statistical consultant on a joint Distribution Reliability project with Davies Consulting. This project had as its objective the evaluation of Westar's distribution integrity and repair metrics (i.e., SAIFI and SAIDI) and the development of non-linear multiple regression models to normalize these metrics over time for those major weather elements affecting SAIFI and SAIDI performance. The results of this analysis were presented to both Westar Senior Management and the Kansas Corporation Commission.

Generation Investment Analysis (Westar La Cygne 2 and SDGE SONGS related analysis.)

Westar La Cygne 2 Sale Leaseback Analysis

Provided an industry based statistical study of lifecycle availability and O&M cost Expectation in connection with Westar Sale/Leaseback of the La Cygne 2 Unit.

San Diego Gas & Electric | SONGS O&M and Capital Additions

Served as the technical project manager for the development of several non-linear multiple regression analysis developed to evaluate SONGS mayor cost components as compared to a focused sample of like plants.

Freeport Electric

Served as the principal-in-charge of the statistical analysis to develop the Freeport Electric 2005 Normalized System Peak and the estimation of Freeport's 2006 ICAP peak responsibility for the New York ISO. Also served as the project manager for the development of Freeport Electric's 2005 Load & Energy Forecasts.

Duquesne Light Company

Served as the Principal-in-charge of the statistical analysis to develop Duquesne Light's 2005 Normalized Summer Peak as well as the development of the major rate class contribution to that peak.

El Paso Electric Company

Developed a business plan for and then implemented an Energy Services Business Unit (ESBU) that had as its mission key customer retention contracting and the provision of value added products and services in the areas of energy efficiency, power quality, standby generation, and "behind the fence" maintenance and support services.

Planning & Forecasting (Selected Projects)

New York State Electric & Gas Corporation (NYSEG) - (1994 -1997)

Served as Responsible Officer for AEG's development of a Multi-Equational Small Area Forecast Modeling System. This system is used to track monthly sales geographically in the NYSEG system, identifying significant weather normalized monthly variances almost in "real time" so that NYSEG can recognize and react to significant changes in a shorter elapsed time.

Western Resources/Westar (1984 - 2004)

Provide continuing advisory services to Western Resources (now Westar) on potential methodological upgrades to their forecast and weather normalization methodologies.

Long Island Lighting Company (LILCO)

Directed the preparation of LILCO's Annual Long Range Peak and Energy Forecasts during the years 1974 - 1979. Constructed the first Engineering End Use and Econometric End Use models for electric forecasting in New York State; utilized Box-Jenkins stochastic and multiple transfer functions for short run electric forecasts; employed two and three stage regression techniques in SIC-based commercial-industrial forecasting.

In 1994, provided advisory services to review adequacy of the econometric methodologies for the capture of "market transformation" DSM and efficiency effects.

Saudi Arabia SCECO East (1995)

Selected from an international list of experts to perform a comprehensive review of Saudi Arabia's largest utility's overall planning and forecasting procedures, methodologies, and results. This two-phase project also called for the reengineering of these processes once the analytical and fact-finding phase was complete.

Bermuda Electric Light Company, Ltd. (BELCO) - (1994)

Reviewed BELCO's existing forecasting process and provided a "phase in" solution for enhancing their forecasting systems.

Freeport Electric (1995-2004)

Have and continue to prepare Freeport's short and long-term electric peak and energy forecasts. Have presented and defended Freeport's forecasts and weather normalization studies in its last three rate cases.

Innovative Market Segmentation & Profitability Studies

Western Resources

Served as Responsible Officer for a Competitive Assessment of Western Resources key customer's responses to cost competition.

Union Gas Limited 2004

Performed a detailed evaluation of the Union Gas forecasting methodology and results. Developed a written report containing an evaluation opinion and forecast improvement suggestions. This report was filed with and accepted by the Ontario Energy Board.

CINergy

In 1995, advisor to senior staff in a multi-phase project that had as its objective the meaningful (from a risk-profit perspective) segmentation of CINergy key customer markets and the analysis of profitability of the segments. This was followed by the development of strategies to optimize the use of CINergy's marketing resources to maximize shareholder returns while ensuring the long-term viability of the company.

Load Research

Westar Energy 2006-2007

Redesigned Westar's load research program to account for new rate classes and the emerging need to perform conditional demand analyses to support DSM assessment in the future. Redesigned and administered a residential and commercial appliance/ed uses study that linked to the new load research sample designs.

Electric Power Research Institute

Advisor to EPRI's Demand Program. Author of RP 1588-3 "Load Data Management and Analysis"; co-author of EPRI Rate Design Study Topic Paper 3: "Issues in Load Research."

Elizabethtown Gas Company

Asked by Senior Management to assess Elizabethtown's Load Research Program and develop a set of recommendations that would result in full cost-effective utilization of the Load Research resource, developed study plan, conducted in-depth technical interviews of potential load research clients, and presented findings and recommendations to all levels of Management.

Iowa Power Company

Directed weather normalization analysis on historical system peak demands. Results from analysis will be utilized in future system peak demand forecasts.

Long Island Lighting Company

Designed and implemented stratified sampling software that employed Dalenius-Hodges and Neyman Allocation techniques with stratum optimization and validation. Also directed LILCO's Load Research Program.

New England Power Service Company

Reviewed NEPSco's Load Research Data Management and Analysis System from analytical and data perspectives and developed a NEPSco-specific computer hardware and software plan for implementation.

New York Power Authority

Directed the review of the existing Load Research Program and formulated a Management Plan to specify future needs in the areas of sample design, hardware, software, and staffing.

Assisted in the development of specifications for a microcomputer-based Load Research Data Collection, Editing and Analysis System.

New York State Electric & Gas Corporation

Served as Technical Advisor to the Manager of NYSEG's Load Research Department.

Northeast Utilities Service Company

Performed a comprehensive audit of the technical, software, and organizational aspects of the Northeast Utilities Load Research Program, including the identification of current uses and recommended future cost-effective uses within the company.

Supervised development of a study to analyze load research, weather, and attribute data for the small Commercial and Industrial customer group.

Northern States Power Company

Directed the review of all aspects of NSP's load research process and presented findings in a comprehensive presentation to senior management.

Pacific Gas & Electric Company

Performed a comprehensive audit of the PG&E Load Research Data Management and Analysis System. Also, assessed the value of Load Research to all relevant departments in the company including recommendations for more cost-effective uses of Load Research data for both current and future applications.

Smart Meter Implementation Planning

Served as the Lead of the regulatory and communications workstream for the FirstEnergy Smart Meter Implementation Plan project. As lead of this workstream, Mr. Fitzpatrick was responsible for planning and implementation regulatory and collaborative communication initiatives, designing and conducting appropriate customer and market research that would serve to aid the construction of the Companies' business case, and interacting with FirstEnergy executives and internal project sponsors and managers on project activities.

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Summary: Testimony - Amended Direct Testimony of George L. Fitzpatrick electronically filed by Ms. Erika Ostrowski on behalf of The Cleveland Electric Illuminating Company and Ohio Edison Company and The Toledo Edison Company