

**BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO**

**In the Matter of the Determination of the
Existence of Significantly Excessive
Earnings for 2012 Under the Electric
Security Plans of Ohio Edison Company,
The Cleveland Electric Illuminating
Company, and The Toledo Edison Company**

Case No. 13-1147-EL-UNC

APPLICATION

By its Opinion and Order dated, August 25, 2010, in Case No. 10-388-EL-SSO, the Commission approved a Combined Stipulation regarding the second Electric Security Plan (“ESP 2”) under Ohio Revised Code 4928.143 for Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company (collectively, "Companies"). ESP 2 became effective on June 1, 2011 and continues through May 31, 2014.

Each of the Companies is an electric distribution utility within the meaning of Ohio Revised Code 4928.01(A)(6). Under Ohio Revised Code 4928.143(F), the Commission is to consider, following the end of each annual period of an ESP, whether significantly excessive earnings have resulted for an electric distribution utility under its ESP “as measured by whether the earned return on common equity of the electric distribution utility is significantly in excess of the return on common equity that was earned during the same period by publicly traded companies, including utilities, that face comparable business and financial risk, with such adjustments for capital structure as may be appropriate.” Pursuant to the provisions of Ohio Revised Code 4928.143(F) and Ohio Administrative Code 4901:1-35-3(C)(10), the Companies by this Application request the Commission’s determination that significantly excessive earnings

did not result for the Companies under their ESP with respect to the annual period ending December 31, 2012.

In support of the requested determination, the Application is accompanied by the testimony and analysis of K. Jon Taylor and Dr. Michael J. Vilbert. (Attachments 1 and 2). In addition, and as contemplated under the cited Ohio Administrative Code section, provided for each of the Companies as part of the Application are the FERC Form 1 for 2012 and the Securities and Exchange Commission Form 10-K filing for 2012.¹

Also as contemplated under the cited Ohio Administrative Code section is a presentation of the Companies' capital budget requirements for future committed investments in Ohio for each annual period remaining in the ESP.² The statute provides that in connection with the determination of whether significantly excessive earnings exist "[c]onsideration also shall be given to the capital requirements of future committed investments in this state." Additionally, the accompanying testimony also addresses the group of various factors (expressly set out in the Opinion and Order of June 30, 2010, Case No. 09-786-EL-UNC, p. 29) which the Commission views as reflecting "significant variations" among Ohio's electric utilities. In the context of the review applicable to 2012, however, the Companies submit that analysis of financial performance metrics provided for the Companies and the comparable publicly traded companies provide a substantial and adequate basis to support the conclusion that significantly excessive earnings did not result. Accordingly, the Commission need not engage in any detailed analysis

¹ As these documents are readily and publicly available online at the websites of the agencies of the federal government with which they have been filed, hard copies of these voluminous documents have not been physically submitted to the Docketing Division. The Companies' FERC Form 1 for 2012 can be located in the FERC Online eLibrary. See <http://elibrary.ferc.gov/idmws/search/fercadvsearch.asp>. The Companies' Securities and Exchange Commission Form 10-K filing for 2012 can be located on the SEC website. See <http://www.sec.gov/edgar/searchedgar/companysearch.html>.

² The Companies capital requirements can be found on pages 13-15 of the Securities and Exchange Commission Form 10-K filing for 2012. The website where the Securities and Exchange Commission Form 10-K filing for 2012 can be located is listed in the footnote above.

of future capital requirements nor the other factors in order to reach the determination requested herein.

WHEREFORE, based upon the foregoing, the Companies request that the Commission determine and set out as its findings and order in this case that for the annual period ending December 31, 2012, the earnings of the Companies under ESP 2 were not significantly excessive.

Respectfully submitted,

/s/ Arthur E. Korkosz

Arthur E. Korkosz (Attorney No. 0010587)
Counsel of Record
FIRSTENERGY SERVICE COMPANY
76 South Main Street
Akron, OH 44308
Telephone: (330) 384-5849
Facsimile: (330) 384-3875
korkosza@firstenergycorp.com

ATTORNEY FOR APPLICANTS, OHIO
EDISON COMPANY, THE CLEVELAND
ELECTRIC ILLUMINATING COMPANY,
AND THE TOLEDO EDISON COMPANY

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DIRECT TESTIMONY OF

K. JON TAYLOR

ON BEHALF OF

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

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

2 A. My name is K. Jon Taylor. My business address is FirstEnergy Corp.
3 ("FirstEnergy"), 76 South Main Street, Akron, Ohio 44308. I am Vice President,
4 Controller and Chief Accounting Officer of FirstEnergy and a number of its
5 subsidiary companies, including Ohio Edison Company ("OE"), The Cleveland
6 Electric Illuminating Company ("CEI"), and The Toledo Edison Company ("TE")
7 (collectively, "Companies").

8

9 **Q. WHAT ARE YOUR EDUCATIONAL AND PROFESSIONAL**
10 **QUALIFICATIONS?**

11 A. I earned a Bachelor of Science degree in accounting from the University of Alabama
12 at Birmingham in 1996. I also earned a Master of Accounting from the University of
13 Alabama at Birmingham in 1997. I joined Coopers & Lybrand LLP, currently
14 PricewaterhouseCoopers LLP, in 1997 serving in various client service positions until
15 I joined FirstEnergy, as Manager Financial Reporting and Technical Accounting, in
16 2009. I was elected Assistant Controller, FirstEnergy Utilities in 2010 and Assistant
17 Controller, FirstEnergy Generation in March of 2012. In October 2012, I was elected
18 Vice President and Assistant Controller and in May 2013, I was elected Vice
19 President, Controller and Chief Accounting Officer for FirstEnergy. I am a licensed
20 Certified Public Accountant in Ohio and Alabama.

21

1 **Q. PLEASE DESCRIBE YOUR DUTIES AS VICE PRESIDENT, CONTROLLER**
2 **AND CHIEF ACCOUNTING OFFICER.**

3 A. I am responsible for: ensuring that the financial, accounting, and tax records of
4 FirstEnergy and its subsidiaries are maintained in conformity with generally accepted
5 accounting principles (“GAAP”) and regulatory requirements; disbursements to
6 employees, tax authorities and vendors; external financial reporting; accounting
7 research in connection with proposed accounting standards and proposed business
8 transactions; and cost analysis and account classification of construction projects.

9
10 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

11 A. The purpose of my testimony is to present information for purposes of the
12 Commission’s annual test with respect to whether the Companies’ ESP has resulted in
13 significantly excessive earnings per Ohio Revised Code 4928.143(F) (“Significantly
14 Excessive Earnings Test” or “SEET”). I am responsible for identifying and
15 quantifying transactions that are included in the accounts for each of the Companies
16 under GAAP but are excluded from their Ohio regulatory books of account for
17 purposes of the significantly excessive earnings evaluation. In particular, I provide
18 information regarding the Companies’ earnings and equity which supports the
19 conclusion that the return on equity that was earned in 2012 by each of the
20 Companies was not significantly in excess of the return that was earned by publicly
21 traded companies as described in the statute. I also sponsor materials that are
22 required to accompany the Companies’ filing under Ohio Administrative Code
23 4901:1-35-03(C)(10)(a).

1

2 **Q. IS YOUR TESTIMONY IN THIS PROCEEDING CONSISTENT WITH THE**
3 **COMMISSION’S JUNE 30, 2010 FINDING AND ORDER AND AUGUST 25,**
4 **2010 ENTRY ON REHEARING IN CASE NO. 09-786-EL-UNC (“09-786**
5 **CASE”)?**

6 A. Yes, my analyses were prepared in a manner that reflects the decisions made by the
7 Commission in the Finding and Order and Entry on Rehearing where applicable to
8 the Companies. My conclusions are based on the results of these analyses and the
9 analysis sponsored by Companies’ Witness Dr. Michael J. Vilbert.

10

11 **Q. WHAT MATERIALS HAVE YOU INCLUDED WITH YOUR TESTIMONY?**

12 A. I have included the following four attachments to my testimony:

13

14	Schedule KJT-1	Return on Equity Calculation
15	Schedule KJT-2	Net Income Calculation
16	Schedule KJT-3	Common Equity Calculation
17	Schedule KJT-4	Capital Structure, Debt Cost, Effective Income Tax Rates

18

19 **Q. HAVE YOU INCLUDED THE COMPANIES’ FERC FORM 1 AND SEC**
20 **FORM 10-K IN YOUR FILING PURSUANT TO OHIO ADMINISTRATIVE**
21 **CODE 4901:1-35-03(C)(10)(a)?**

22 A. No. As discussed in the Application, the Companies’ FERC Form 1 and SEC Form
23 10-K are publicly available documents that can be located on the Internet. Due to the

1 voluminous nature and public availability of these documents, the Commission Staff
2 has advised the Companies that it is acceptable to fulfill this requirement by citing
3 where parties may locate these documents on the Internet. The URLs where these
4 documents can be found on the Internet are provided in the Application.

5
6 **Q. DO YOU SPONSOR THE COMPANIES' ANALYSIS OF THE RETURN ON**
7 **EQUITY EARNED BY THE COMPARABLE GROUP OF PUBLICLY**
8 **TRADED COMPANIES DURING 2012 OR THE THRESHOLD ABOVE**
9 **SUCH RETURN AT WHICH THE COMPANIES' EARNINGS WOULD BE**
10 **CONSIDERED SIGNIFICANTLY EXCESSIVE?**

11 A. No. That analysis is sponsored by Companies' Witness Dr. Michael J. Vilbert.

12
13 **Q. DID YOU PROVIDE THE COMPANIES' 2012 CAPITAL STRUCTURE,**
14 **EFFECTIVE INCOME TAX RATES, AND DEBT COST INFORMATION**
15 **UPON WHICH DR. VILBERT RELIES FOR HIS ANALYSIS?**

16 A. Yes, I provided the Companies' 2012 capital structure, effective income tax rates, and
17 debt cost information to Dr. Vilbert for use in his analysis. This information can be
18 found on Schedule KJT-4.

19
20 **Q. PLEASE EXPLAIN THE PROCESS FOR DETERMINING THE EARNED**
21 **RETURN ON COMMON EQUITY FOR THE COMPANIES IN 2012.**

22 A. The earned return on common equity was calculated by dividing 2012 adjusted net
23 income by the adjusted average common equity during 2012. For purposes of the

1 determination of significantly excessive earnings, net income and common equity
2 were adjusted to eliminate the revenue, expenses, or earnings of any affiliate
3 company as required in Ohio Revised Code 4928.143, to reflect items contemplated
4 by the Stipulations in the Companies' second Electric Security Plan ("ESP 2")
5 approved in Case No. 10-388-EL-SSO, and for other non-recurring, special or
6 extraordinary items as contemplated in Case No. 09-786-EL-UNC. These
7 adjustments are described below. Average common equity was calculated by
8 summing the adjusted common equity balances at the end of each of the thirteen
9 months from December 31, 2011 through December 31, 2012 and dividing the result
10 by thirteen.

11
12 **Q. HAVE YOU ELIMINATED THE IMPACT OF REVENUE, EXPENSES, OR**
13 **EARNINGS OF AFFILIATES FROM THE SEET CALCULATION?**

14 A. Yes. As required by Ohio Revised Code 4928.143(F), the Companies have
15 eliminated revenues, expenses and earnings from affiliates. These adjustments
16 include the removal of subsidiary earnings, associated companies revenues and
17 expenses, and interest and dividend income from associated companies. For example,
18 Pennsylvania Power Company is a distribution subsidiary of Ohio Edison providing
19 service in the Commonwealth of Pennsylvania -- its earnings, which are non-Ohio
20 jurisdictional and unrelated to the provisions of ESP 2, should not be included for
21 SEET purposes.

1 **Q. WHAT ARE THE SPECIFIC ADJUSTMENTS CONTEMPLATED BY THE**
2 **STIPULATION IN THE COMPANIES' ESP 2?**

3 A. The specific adjustments contemplated by the Stipulation were to exclude the impact
4 (i) of a reduction in equity resulting from any write-off of goodwill, (ii) of deferred
5 carrying charges and (iii) associated with any liability or write-off of regulatory assets
6 due to implementing ESP 2.

7

8 **Q. DID YOU MAKE AN ADJUSTMENT FOR THE WRITE-OFF OF**
9 **GOODWILL AS ALLOWED FOR BY ESP 2?**

10 A. No. There were no impairments of goodwill recognized by the Companies since the
11 start of ESP 2 in June 2011, so no adjustment was needed.

12

13 **Q. DID YOU MAKE AN ADJUSTMENT FOR DEFERRED CARRYING**
14 **CHARGES ALLOWED FOR BY ESP 2?**

15 A. Yes, an adjustment has been made to exclude the impact of deferred carrying charges
16 from the SEET calculations as shown in Schedules KJT-2 and KJT-3.

17

18 **Q. DID YOU MAKE AN ADJUSTMENT TO EXCLUDE THE IMPACT OF THE**
19 **WRITE-OFF OF REGULATORY ASSETS DUE TO THE**
20 **IMPLEMENTATION OF THE ESPs?**

21 A. No. There were no write-offs of regulatory assets by the Companies since the start of
22 ESP 2 in June 2011, so no adjustments were necessary.

23

1 **Q. WHAT OTHER ADJUSTMENTS HAVE YOU MADE TO THE EARNINGS**
2 **AND COMMON EQUITY BALANCES OF THE COMPANIES?**

3 A. Similar to the Companies' 2009 – 2011 SEET filings, I have made adjustments for
4 other special, extraordinary or nonrecurring items. These adjustments include
5 removing the impact of organizational restructuring charges, deferred income tax rate
6 changes, and gains and impairments in the value of investments in securities held in
7 nuclear decommissioning trusts, as well as normalizing expenses associated with the
8 Companies' pension and post-retirement benefits plan (e.g. mark to market).

9
10 **Q. WHY SHOULD THESE VARIOUS ITEMS BE EXCLUDED FROM THE**
11 **MEASURE OF RETURN ON EQUITY COMPUTED FOR THE UTILITY**
12 **UNDER ANALYSIS?**

13 A. If a portion of the utility's earnings are related to subsidiary or affiliate companies not
14 providing distribution services in Ohio, those earnings should be excluded for the
15 SEET analysis. This is clearly stated in Ohio Revised Code 4928.143(F). In
16 addition, specific adjustments were agreed upon per the Companies' ESP 2
17 Stipulation. Also, if portions of a company's net income are special, extraordinary or
18 nonrecurring, or are otherwise non-representative of the utility's operations, they
19 should be excluded from the utility's return on equity calculation in order to maintain
20 comparability with the basis upon which the earnings of a comparable group of
21 companies are reported. These types of adjustments are consistent with the Order in
22 Case No. 09-786-EL-UNC.

1 **Q. DID YOU ADJUST BOTH THE NET INCOME AMOUNTS AND COMMON**
2 **EQUITY BALANCES IN YOUR ANALYSIS?**

3 A. Yes, the monthly adjustments for 2012 were applied to net income and were also
4 applied to the determination of the average common equity balance.

5
6 **Q. WHAT ARE THE EARNINGS, AVERAGE COMMON EQUITY, AND**
7 **RETURN ON EQUITY FOR THE COMPANIES FOR 2012 SEET**
8 **PURPOSES?**

9 A. The earnings in 2012, adjusted for the items described above, were \$96,829,997 for
10 OE, \$35,976,099 for CEI, and \$15,613,610 for TE. The average common equity with
11 adjustments for 2012 was \$792,320,805 for OE, \$1,147,380,661 for CEI, and
12 \$368,791,410 for TE. The resulting return on equity for 2012 was 12.2% for OE,
13 3.1% for CEI, and 4.2% for TE. The underlying calculations supporting these
14 amounts are shown in Schedules KJT-1, KJT-2, and KJT-3.

15
16 **Q. DO YOU BELIEVE THAT ANY OF THE COMPANIES HAD**
17 **SIGNIFICANTLY EXCESSIVE EARNINGS FOR 2012 WITHIN THE**
18 **MEANING OF OHIO REVISED CODE 4928.143(F)?**

19 A. No. Based upon my calculation of the Companies' returns on equity and Dr.
20 Vilbert's calculation of the mean return on equity for the comparable group of
21 publicly traded companies and the analysis of SEET thresholds, I conclude that none
22 of the Companies had significantly excessive earnings in 2012. The results of Dr.
23 Vilbert's statistical analysis of what would comprise the threshold for determining

1 significantly excessive earnings are that each of the Companies' return on equity for
2 2012 (OE – 12.2%, CEI – 3.1%, and TE – 4.2%) is well below its respective
3 significantly excessive earnings threshold (OE – 17.7%, CEI – 19.3%, and TE –
4 19.7%). Further, my conclusion is supported by the fact that each of the Companies'
5 return on equity earned in 2012, as stated previously, is less than its respective safe
6 harbor value calculated by Dr. Vilbert. The safe harbor returns were calculated at 200
7 basis points above the mean of the comparable companies in his analysis. The 2012
8 safe harbor returns were OE – 12.5%, CEI – 13.5%, and TE – 13.6%.

9
10 **Q. IN REACHING YOUR CONCLUSION, DID YOU TAKE INTO**
11 **CONSIDERATION THE CAPITAL REQUIREMENTS OF THE**
12 **COMPANIES' FUTURE COMMITTED INVESTMENTS IN OHIO?**

13 A. No. As was the case with the Companies' prior SEET filings, since the equity return
14 results of the Companies were below the thresholds of what would comprise
15 significantly excessive earnings as compared with the comparable group of publicly
16 traded companies, I did not consider such an analysis necessary.

17
18 **Q. PURSUANT TO OHIO ADMINISTRATIVE CODE 4901:1-35-03(C)(10)(a),**
19 **WHAT ARE THE COMPANIES' CAPITAL BUDGET REQUIREMENTS**
20 **FOR FUTURE COMMITTED INVESTMENTS IN OHIO FOR EACH**
21 **ANNUAL PERIOD FOR THE REMAINING ESP PERIOD?**

1 A. As discussed in the Application, the Companies' capital requirements can be found
2 on pages 13-15 of the 2012 SEC Form 10-K. The URL where the SEC Form 10-K
3 can be found on the Internet is provided in the Application.

4
5 **Q. PLEASE DISCUSS THE FINDING AND ORDER AND ENTRY ON**
6 **REHEARING IN CASE NO. 09-786-EL-UNC AS THEY RELATE TO THE**
7 **COMPANIES.**

8 A. The Finding and Order and the Entry on Rehearing provide direction on a number of
9 issues that had been the topic of much discussion in the Companies' and other electric
10 utilities' ESP cases and Case No. 09-786-EL-UNC. The Finding and Order took the
11 form of responding to eleven questions that had been previously posted to the
12 Commission's website and available to the Companies and other electric utilities for
13 comment and that were addressed in the question and answer session held before the
14 Commission on April 1, 2010. In several of the Commission's responses to the
15 eleven questions, electric utilities are directed to file additional information and
16 hypothetical scenarios (e.g., impacts to the SEET from earnings differences with and
17 without implementation of an ESP and impacts from including and excluding
18 deferrals) to facilitate the Commission's consideration of whether an electric utility
19 had significantly excessive earnings in the prior year. For example, electric utilities
20 are directed to address in their SEET filings the effect of including and excluding off-
21 system sales, deferrals, and the differences between an electric utility's ESP and its
22 prior rate plan. In addition, the Commission discusses giving consideration to other

1 broad factors in its review, including factors related to an electric utility's risk profile.

2 The Entry on Rehearing further addressed these issues.

3
4 **Q. DO THE FINDING AND ORDER AND THE ENTRY ON REHEARING IN**
5 **THE CASE NO. 09-786-EL-UNC PROVIDE GUIDANCE AS TO WHEN AN**
6 **ELECTRIC UTILITY MUST INCLUDE IMPACTS TO THE SEET FROM**
7 **EARNINGS DIFFERENCES UNDER A UTILITY'S CURRENT RATE PLAN**
8 **AND PRIOR RATE PLAN?**

9 A. Yes. On page 29 of the Order the Commission establishes a "safe harbor" of 200
10 basis points above the mean ROE of the comparable group. Page 29 of the Finding
11 and Order states, in part, "...any electric utility earning less than 200 basis points
12 above the mean of the comparable group will be found not to have significantly
13 excessive earnings." On page 5 of the Entry on Rehearing the Commission clarifies
14 that information comparing a utility's earnings under the current rate plan and prior
15 rate plan is not required to be filed in years where an electric utility can demonstrate
16 that it does not exceed the "safe harbor", and this appears to have been reaffirmed in
17 the Commission's Opinion and Order in AEP's SEET proceeding, Case No. 10-1261-
18 EL-UNC.

19 This directive is applicable here since Dr. Vilbert's calculations show the "safe
20 harbor" for OE, CEI, and TE is, respectively, 12.5%, 13.5% and 13.6%. As noted
21 above, each of the Companies' returns on equity for 2012 (OE – 12.2%, CEI – 3.1%,
22 and TE – 4.2%) are within (i.e. less than) the "safe harbor".

1 **Q. DID THE COMPANIES PROVIDE A COMPARISON OF EARNINGS**
2 **UNDER THE ESP 2 TO WHAT MAY HAVE OCCURRED HAD THE PRIOR**
3 **RATE PLAN BEEN IN EFFECT IN THIS FILING?**

4 A. No, for the reasons described in my answer to the preceding question.
5

6 **Q. DID THE COMPANIES PROVIDE SEET CALCULATIONS WITH AND**
7 **WITHOUT THE IMPACT OF DEFERRALS IN THIS FILING?**

8 A. No. The Companies' ESP 2 Stipulations provided that the calculation of return on
9 equity for SEET purposes shall specifically exclude the impact of deferred carrying
10 charges. As shown on the attachments to my testimony, the Companies' SEET return
11 on equity calculations do exclude the impact of deferred carrying charges. On page
12 16 of the Finding and Order in Case No. 09-786-EL-UNC the Commission concludes
13 that since the Companies' ESP Stipulations addressed the treatment of deferrals when
14 calculating the SEET, this obviated the need for the Companies to supplement their
15 SEET filing with calculations including and excluding all deferrals.
16

17 **Q. PLEASE DISCUSS THE SECOND PARAGRAPH OF PAGE 29 OF THE**
18 **FINDING AND ORDER IN CASE NO. 09-786-EL-UNC.**

19 A. In the second paragraph of page 29 of the Finding and Order the Commission
20 discusses giving consideration to a broad range of factors in its determination of
21 whether an electric utility had significantly excessive earnings in the prior year.
22 These factors include an electric utility's most recently authorized return on equity
23 and an electric utility's risk profile, itself comprised of several components. Many of

1 these factors have been extensively addressed and litigated before the Commission in
2 other proceedings, such as the Companies' most recent distribution rate case (Case
3 No. 07-551-EL-AIR), the Companies' first ESP case (Case No. 08-935-EL-SSO), the
4 Companies' second ESP case (Case No. 10-0388-EL-SSO), the Companies' third
5 ESP case (Case No. 12-1230-EL-SSO) and other cases. The records in these cases,
6 including the Companies' testimony, are publicly available on the Commission's
7 website. Below I will briefly address these additional factors in the second paragraph
8 of page 29 of the Finding and Order in Case No. 09-786-EL-UNC, to the extent not
9 already discussed elsewhere in my testimony.

10
11 **Q. DO THE COMPANIES OWN GENERATION?**

12 A. No, the Companies do not own any generation. The Companies acquire all power
13 necessary to serve their standard service offer customers through a descending clock
14 format competitive bid process. The bidding process is conducted by an independent
15 bid manager who selects the winning bidder(s) subject to Commission oversight.

16
17 **Q. DID THE ESP 2 IN EFFECT IN 2012 FOR THE COMPANIES INCLUDE A**
18 **FUEL AND PURCHASED POWER ADJUSTMENT OR OTHER SIMILAR**
19 **ADJUSTMENTS?**

20 A. As discussed in the Companies' ESP cases, the Companies have rider mechanisms
21 that recover generation-related expenses for customers who take standard service
22 offer ("SSO") generation service from the Companies. For example, the Generation
23 Service Rider ("Rider GEN") recovers the cost of providing SSO generation service

1 including energy and capacity, resource adequacy requirements, transmission service
2 and transmission ancillaries. The Generation Cost Reconciliation Rider (“Rider
3 GCR”) reconciles any under or over recovery of the Companies’ cost of providing
4 SSO generation service.

5
6 **Q. DO THE COMPANIES MAKE OFF-SYSTEM SALES?**

7 A. No. The Companies do not make off-system sales since they do not own generation
8 assets. Therefore, there is no impact from off-system sales on the Companies’ SEET
9 analysis.

10
11 **Q. PLEASE DISCUSS THE COMPANIES’ RATE DESIGN AND THE EXTENT**
12 **TO WHICH THE COMPANIES REMAIN SUBJECT TO WEATHER AND**
13 **ECONOMIC RISK.**

14 A. The Companies’ rate design has been the subject of significant discussion,
15 negotiation, and litigation before the Commission over the past several years in the
16 most recent distribution rate case, the ESP cases, and other cases. The Companies’
17 distribution rate design was established in the most recent distribution rate case and
18 generation and transmission rate design was established in the ESP cases. Further
19 detail about the Companies’ rate design can be found in the records in these cases.
20 Kilowatt-hour sales and kilowatt demands are impacted by weather and the economy.
21 To the extent that kilowatt-hour sales and kilowatt demands deviate from the levels
22 used to establish the Companies’ rates, differences will exist in the revenues collected

1 by the Companies as compared to the revenue requirement used in setting the current
2 rates.

3
4 **Q. PLEASE DESCRIBE THE COMPANIES' ACTIONS WITH RESPECT TO**
5 **MEETING INDUSTRY CHALLENGES TO MAINTAIN AND IMPROVE**
6 **THE COMPETITIVENESS OF OHIO'S ECONOMY**

7 A. As discussed in the stipulations and supporting testimony in the Companies' ESP
8 cases (Case No. 08-935-EL-SSO, Case No. 10-0388-EL-SSO and Case No. 12-1230-
9 EL-SSO), the Companies' ESPs provide more certain and stable rate levels than
10 otherwise would have been in place and advance renewable energy and energy
11 efficiency in Ohio. The Companies' ESPs have resulted in a competitive market for
12 generation service through the competitive bidding process for SSO customers, retail
13 shopping, and governmental aggregation. Further, the Companies' ESPs provide
14 funding for lower income customers and for economic development purposes and
15 include an Economic Development Rider ("Rider EDR") that provides credits to
16 certain customer groups to help transition those customers to market based pricing.
17 The Companies' ESPs were supported by signatory parties representing varied and
18 diverse interests, such as large industrial customers, small- and medium-sized
19 manufacturers, small businesses, hospitals, schools, environmental interests,
20 residential customers including lower income residential customers, and
21 governmental entities. The Companies' ESPs provide a number of mechanisms that
22 support state policy and improves the competitiveness of Ohio's economy.

Q. PLEASE DESCRIBE THE COMPANIES' ACTIONS WITH RESPECT TO INNOVATION AND INDUSTRY LEADERSHIP INVOLVING INVESTMENT, RESEARCH AND DEVELOPMENT OF ADVANCED TECHNOLOGIES AND INNOVATIVE PRACTICES.

A. The Companies are implementing a Smart Grid Modernization Initiative in Ohio to test and validate the integration of crosscutting smart grid technologies with existing distribution system infrastructure, analyze full-system life-cycle costs and benefits, examine how existing infrastructure will function when combined with smart grid technologies, and evaluate the benefits to customers and the environment. As part of this initiative, the Companies have deployed advanced meter technologies to a pilot group of customers. These customers participated last summer in a Customer Behavior Study designed to analyze customers' willingness to reduce their contribution to peak demand when provided various in-home technologies, education and peak time rebates. The study will continue this summer. The initiative also includes evaluation of volt/var control systems and distribution automation for grid efficiency and reliability enhancements. The U.S. Department of Energy selected the Companies as an award recipient for smart grid stimulus funds. The introduction of these advanced technologies is expected to improve the reliability and interactivity of the electric distribution infrastructure in targeted areas selected for the pilot.

The Companies are also actively implementing the portfolio of energy efficiency and peak demand reduction programs approved by the Commission in Case No. 09-1947-EL-EEC on March 23, 2011 and the programs for the period 2013-2015 approved by

1 the Commission in Case Nos. 12-2190-EL-EEC, 12-2191-EL-EEC and 12-2192-EL-
2 EEC on March 20, 2013. The energy efficiency and peak demand reduction
3 programs offer customers programs designed to reduce their energy use and
4 contributions to peak demand.

5
6 Another example of the Companies' commitment to advanced and innovative
7 technologies is their participation in the Electric Power Research Institute (EPRI)
8 national energy efficiency demonstration project to evaluate highly efficient
9 technologies with the potential to reduce energy usage. As part of this multi-year
10 project that was completed in 2012, FE was a host site for advanced technologies,
11 including the Ductless Heat Pump Technology Pilot being conducted across its
12 service territories, and partnering with Habitat for Humanity, Ohio, and Whirlpool to
13 evaluate the efficiency of the next-generation of refrigerators, washers and dryers.
14 The Companies are also active in the Ohio Department of Transportation's task force
15 on Plug-in Electric Vehicle Infrastructure Readiness and installing charging stations
16 locally. In addition, the Companies are collaborating in a grant with Clean Fuels
17 Ohio and University of Akron, and a member of the SMART@CAR research
18 consortium at The Ohio State University with other Ohio utilities, automakers, and
19 other stakeholders. As part of an EPRI led industry DOE award, the Companies will
20 be testing Plug-in Hybrid Electric Vehicle (PHEV) vans to evaluate their performance
21 and charging capabilities. The Companies are also participating in industry research
22 through EPRI and demonstrating plug-in electric vehicles to evaluate smart charging

1 technologies and impacts related to grid infrastructure, economic development and
2 the environmental aspects of Plug-in Electric Vehicle technology.

3

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

5 A. Yes

**2012 Significantly Excessive Earnings Test (SEET)
Return on Equity Calculation**

Line	Description	OE	CEI	TE	Source
1	SEET Net Income	96,829,997	35,976,099	15,613,610	Schedule KJT-2, Page 1, Line 5
2	SEET Common Equity	792,320,805	1,147,380,661	368,791,410	Schedule KJT-3, Page 2, Line 67
3	SEET Return on Equity	12.2%	3.1%	4.2%	Calculation: Line 1 / Line 2

Note: See Schedules KJT-2 and KJT-3 for the calculation of Net Income and Common Equity.

2012 Significantly Excessive Earnings Test (SEET)
Net Income Calculation

Line	Description	OE	CEI	TE	Source
1	Net Income	101,292,298	41,998,518	15,684,665	2012 Q4 FERC Form 1, Page 117, Line 78
2	Affiliate Company Earnings	(29,518,105)	(12,968,556)	(6,654,213)	Supporting Workpapers
3	Deferred Interest Income	(8,372,721)	(12,176,163)	(2,215,893)	Supporting Workpapers
4	Special / Extraordinary Items After-Tax	33,428,525	19,122,300	8,799,051	Supporting Workpapers
5	SEET Net Income	96,829,997	35,976,099	15,613,610	Calculation: Sum Lines 1 through 4

**2012 Significantly Excessive Earnings Test (SEET)
Common Equity Calculation**

Line	Month	Description	OE	CEI	TE	Source
1	December	12/31/11 Common Equity	716,047,086	1,281,080,949	368,322,244	2011 Q4 FERC Form 1, Page 112, Line 16
2		Affiliate Company Earnings	49,616,359	(7,103)	(63,925)	2011 SEET Filing
3		Rider DSI Income	(18,144,235)	(15,376,721)	(5,939,146)	2011 SEET Filing
4		Deferred Interest Income	(3,069,870)	(6,306,675)	(1,153,006)	2011 SEET Filing
5		Special / Extraordinary Items After-Tax	31,259,799	14,928,328	7,307,732	2011 SEET Filing
6		12/31/11 SEET Common Equity	775,709,140	1,274,318,778	368,473,900	Calculation: Sum Lines 1 through 5
7	January	1/31/12 Common Equity	729,101,967	1,182,077,768	360,987,579	Financial Reporting Dept.
8		Affiliate Company Earnings	46,097,193	(1,351,279)	(714,698)	Supporting Workpapers
9		Deferred Interest Income	(3,840,756)	(7,362,922)	(1,322,704)	Supporting Workpapers
10		Special / Extraordinary Items After-Tax	29,960,330	14,329,201	6,725,780	Supporting Workpapers
11		1/31/12 SEET Common Equity	801,318,734	1,187,692,767	365,675,957	Calculation: Sum Lines 7 through 10
12	February	2/29/12 Common Equity	735,784,430	1,184,390,451	362,604,554	Financial Reporting Dept.
13		Affiliate Company Earnings	43,015,580	(2,592,560)	(1,403,419)	Supporting Workpapers
14		Deferred Interest Income	(4,622,081)	(8,432,900)	(1,501,176)	Supporting Workpapers
15		Special / Extraordinary Items After-Tax	29,069,770	13,979,321	6,273,251	Supporting Workpapers
16		2/29/12 SEET Common Equity	803,247,700	1,187,344,311	365,973,210	Calculation: Sum Lines 12 through 15
17	March	3/31/12 Common Equity	742,329,238	1,187,753,094	362,900,686	2012 Q1 FERC Form 3Q, Page 112, Line 16
18		Affiliate Company Earnings	39,503,280	(3,839,971)	(2,075,181)	Supporting Workpapers
19		Deferred Interest Income	(5,392,569)	(9,504,583)	(1,683,030)	Supporting Workpapers
20		Special / Extraordinary Items After-Tax	28,650,799	13,907,188	6,263,762	Supporting Workpapers
21		3/31/12 SEET Common Equity	805,090,748	1,188,315,729	365,406,237	Calculation: Sum Lines 17 through 20
22	April	4/30/12 Common Equity	728,671,245	1,125,638,162	364,287,007	Financial Reporting Dept.
23		Affiliate Company Earnings	36,686,409	(4,864,772)	(2,581,683)	Supporting Workpapers
24		Deferred Interest Income	(6,179,118)	(10,586,236)	(1,879,261)	Supporting Workpapers
25		Special / Extraordinary Items After-Tax	27,479,480	13,429,320	5,906,573	Supporting Workpapers
26		4/30/12 SEET Common Equity	786,658,017	1,123,616,474	365,732,636	Calculation: Sum Lines 22 through 25
27	May	5/31/12 Common Equity	739,771,448	1,130,313,953	364,756,192	Financial Reporting Dept.
28		Affiliate Company Earnings	33,782,420	(5,897,379)	(3,109,939)	Supporting Workpapers
29		Deferred Interest Income	(6,961,045)	(11,656,834)	(2,079,983)	Supporting Workpapers
30		Special / Extraordinary Items After-Tax	26,339,281	12,923,351	5,536,044	Supporting Workpapers
31		5/31/12 SEET Common Equity	792,932,104	1,125,683,092	365,102,314	Calculation: Sum Lines 27 through 30
32	June	6/30/12 Common Equity	755,255,161	1,137,732,624	369,515,132	2012 Q2 FERC Form 3Q, Page 112, Line 16
33		Affiliate Company Earnings	30,846,019	(6,916,080)	(3,644,914)	Supporting Workpapers
34		Deferred Interest Income	(7,722,498)	(12,708,126)	(2,282,106)	Supporting Workpapers
35		Special / Extraordinary Items After-Tax	25,278,607	12,387,976	5,574,962	Supporting Workpapers
36		6/30/12 SEET Common Equity	803,657,289	1,130,496,394	369,163,074	Calculation: Sum Lines 32 through 35

**2012 Significantly Excessive Earnings Test (SEET)
Common Equity Calculation**

Line	Month	Description	OE	CEI	TE	Source
37	July	7/31/12 Common Equity	745,408,593	1,144,024,640	375,018,113	Financial Reporting Dept.
38		Affiliate Company Earnings	27,632,854	(7,930,433)	(4,169,991)	Supporting Workpapers
39		Deferred Interest Income	(8,447,442)	(13,732,556)	(2,480,971)	Supporting Workpapers
40		Special / Extraordinary Items After-Tax	24,141,533	11,806,507	5,151,684	Supporting Workpapers
41		7/31/12 SEET Common Equity	788,735,538	1,134,168,158	373,518,835	Calculation: Sum Lines 37 through 40
42	August	8/31/12 Common Equity	761,415,937	1,154,347,475	378,524,102	Financial Reporting Dept.
43		Affiliate Company Earnings	24,716,843	(8,946,240)	(4,689,656)	Supporting Workpapers
44		Deferred Interest Income	(9,110,935)	(14,718,947)	(2,668,907)	Supporting Workpapers
45		Special / Extraordinary Items After-Tax	22,783,877	11,635,632	4,518,874	Supporting Workpapers
46		8/31/12 SEET Common Equity	799,805,722	1,142,317,920	375,684,413	Calculation: Sum Lines 42 through 45
47	September	9/30/12 Common Equity	772,789,151	1,158,778,891	381,064,213	2012 Q3 FERC Form 3Q, Page 112, Line 16
48		Affiliate Company Earnings	22,344,083	(9,974,710)	(5,184,234)	Supporting Workpapers
49		Deferred Interest Income	(9,721,384)	(15,664,035)	(2,842,215)	Supporting Workpapers
50		Special / Extraordinary Items After-Tax	21,678,699	11,111,213	4,283,156	Supporting Workpapers
51		9/30/12 SEET Common Equity	807,090,549	1,144,251,360	377,320,920	Calculation: Sum Lines 47 through 50
52	October	10/31/12 Common Equity	739,088,832	1,112,737,121	371,955,004	Financial Reporting Dept.
53		Affiliate Company Earnings	19,638,140	(10,962,509)	(5,674,951)	Supporting Workpapers
54		Deferred Interest Income	(10,314,486)	(16,602,163)	(3,014,784)	Supporting Workpapers
55		Special / Extraordinary Items After-Tax	20,619,421	10,696,818	3,665,335	Supporting Workpapers
56		10/31/12 SEET Common Equity	769,031,906	1,095,869,266	366,930,603	Calculation: Sum Lines 52 through 55
57	November	11/30/12 Common Equity	748,413,746	1,117,361,289	373,245,899	Financial Reporting Dept.
58		Affiliate Company Earnings	16,509,197	(11,961,555)	(6,194,374)	Supporting Workpapers
59		Deferred Interest Income	(10,888,330)	(17,539,738)	(3,190,338)	Supporting Workpapers
60		Special / Extraordinary Items After-Tax	19,906,201	10,775,481	3,534,618	Supporting Workpapers
61		11/30/12 SEET Common Equity	773,940,814	1,098,635,477	367,395,805	Calculation: Sum Lines 57 through 60
62	December	12/31/12 Common Equity	719,608,220	1,080,646,739	361,890,675	2012 Q4 FERC Form 1, Page 112, Line 16
63		Affiliate Company Earnings	20,098,254	(12,975,659)	(6,718,138)	Supporting Workpapers
64		Deferred Interest Income	(11,442,591)	(18,482,838)	(3,368,899)	Supporting Workpapers
65		Special / Extraordinary Items After-Tax	64,688,324	34,050,628	16,106,783	Supporting Workpapers
66		12/31/12 SEET Common Equity	792,952,207	1,083,238,870	367,910,421	Calculation: Sum Lines 62 through 65
67		SEET Average Common Equity	792,320,805	1,147,380,661	368,791,410	Calculation: 13-Month Average

**2012 Significantly Excessive Earnings Test (SEET)
Capital Structure, Debt Cost, Effective Income Tax Rates**

Line	Description	OE	CEI	TE	Source
1	Average Monthly Long-Term Debt	1,039,057,331	1,747,375,235	597,796,186	Financial Reporting Dept.
2	Average Monthly SEET Common Equity	792,320,805	1,147,380,661	368,791,410	Schedule KJT-3, Page 2, Line 67
3	Average Monthly Total Capital	1,831,378,136	2,894,755,897	966,587,595	Calculation: Line 1 + Line 2
4	Average Monthly Long-Term Debt %	56.7%	60.4%	61.8%	Calculation: Line 1 / Line 3
5	Average Monthly SEET Common Equity %	43.3%	39.6%	38.2%	Calculation: Line 2 / Line 3
6	Average Monthly Total Capital %	100.0%	100.0%	100.0%	Calculation: Line 4 + Line 5
7	Average Monthly Cost of Long-Term Debt	7.12%	6.70%	6.80%	Treasury Dept.
8	Effective Income Tax Rates	35.876294%	36.142493%	35.740630%	Tax Dept.

**BEFORE THE
PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Determination of the
Existence of Significantly Excessive Earnings
for 2012 Under the Electric Security Plan of
Ohio Edison Company, The Cleveland Electric
Illuminating Company, and The Toledo Edison
Company

Case No. 13-1147-EL-UNC

DIRECT TESTIMONY OF

MICHAEL J. VILBERT

ON BEHALF OF

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

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Appendix A: Resume

Appendix B: Empirical Implementation and Technical Details

I. INTRODUCTION AND SUMMARY

Q1. Please state your name and address for the record.

A1. My name is Michael J. Vilbert. My business address is The Brattle Group, 201 Mission Street, Suite 2800, San Francisco, CA 94105, USA.

Q2. Please describe your job and educational experience.

A2. I am a Principal of The Brattle Group, ("*Brattle*"), an economic, environmental and management consulting firm with offices in Cambridge, Washington, London, San Francisco, Madrid and Rome. My work concentrates on financial and regulatory economics. I hold a B.S. from the U.S. Air Force Academy and a Ph.D. in finance from the Wharton School of Business at the University of Pennsylvania.

Q3. What is the purpose of your testimony in this proceeding?

A3. I have been asked by Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company (collectively, the "Companies") to address provisions of the Am. Substitute Senate Bill No. 221 ("S.B. 221") with regard to the significantly excessive earnings test ("SEET") within the meaning of Section 4928.143(F) of the Revised Code ("R.C.") for a utility's Electric Security Plan ("ESP"). Specifically, I propose a method of implementing the SEET that provides a statistical test consistent with the language of the statute. I then implement the proposed method and derive the applicable significantly excessive earnings threshold for the 2012 fiscal year.

Q4. Are you intending to provide legal interpretation of the statutory requirements?

A4. No. Nothing in my testimony is intended to imply a legal opinion. The statute mandates an evaluation of an Ohio electric utility's earnings which involves consideration of economic and financial principles. As an expert in financial and regulatory economics, I am offering guidance as to how such an evaluation should be undertaken with proper application of these principles.

1 **Q5. Have you previously testified before the Public Utilities Commission of Ohio on**
2 **the issue of the appropriate method to implement a SEET?**

3 A5. Yes, I submitted Initial Testimony on July 31, 2008 and Rebuttal Testimony on
4 October 28, 2008 in Case No. 08-935-EL-SSO, and subsequently testified before the
5 Commission in October 2008. I also submitted Initial Testimony in September 2010
6 in Case No. 10-1265-EL-UNC, July 2011 in Case No. 11-4553-EL-UNC, and May
7 2012 in Case No. 12-1544-EL-UNC. In addition, I have read the PUCO Staff's
8 SEET Recommendations filed in Case No. 09-786-EL-UNC, the transcript from the
9 SEET meeting held at the PUCO on April 1, 2010, the Commission's June 30, 2010
10 Finding and Order and its August 25, 2010 Entry on Rehearing in Case No. 09-786-
11 EL-UNC.

12 **Q6. Are you familiar with the Commission's decisions in its application of the SEET**
13 **for 2009, 2010 and 2011?**

14 A6. Yes. I know that the Companies' 2009, 2010 and 2011 earnings were not deemed
15 significantly excessive. The Companies, the Commission Staff and, in some
16 instances, other parties stipulated to those outcomes, and the Commission agreed. I
17 have also read the Commission's decision in Case No. 10-1261-EL-UNC involving
18 American Electric Power's Ohio subsidiaries, as well as the prefiled testimony and
19 oral hearing testimony of Commission Staff's witness, Richard Cahaan, in that case.

20 **Q7. Is the methodology you propose in this testimony the same as the one you**
21 **proposed in your previous testimony in Cases No. 10-1265-EL-UNC, 11-4553-**
22 **EL-UNC and 12-1544-EL-UNC?**

23 A7. Yes, the methodology I propose for the SEET is the same.

24 **Q8. Please summarize your testimony.**

25 A8. S.B. 221 mandates an annual test to determine whether the electric utilities in Ohio
26 subject to an Electric Security Plan have earned significantly excessive earnings
27 compared to other publicly traded companies of comparable business and financial
28 risk, but the legislation does not specify how this test is to be performed.

1 It is important that the test be well designed. A poorly designed test for significantly
2 excessive earnings could impose asymmetric risk on the electric utilities and could
3 discourage the utilities from pursuing measures that would increase the efficiency of
4 their service because any increase in profits from such efficiency measures may
5 inappropriately result in a determination of significantly excessive earnings.

6 My testimony proposes and implements a test that provides an economic
7 interpretation of the language of statute. The test is relatively easy to apply and uses
8 readily available information. The test also mitigates the potential to impose
9 asymmetric risk on the utilities by guarding against incorrectly determining that
10 significantly excessive earnings have occurred. If asymmetric risk were imposed
11 upon the utilities, it would require an increase in the utilities' allowed rates so that
12 they could again expect to earn their cost of capital on average.

13 **II. PROPOSED TEST OF SIGNIFICANTLY EXCESSIVE EARNINGS**

14 **A. TEST OUTLINE**

15 **Q9. Please outline the method you propose.**

16 A9. The proposed annual test of significantly excessive earnings compares the utility's
17 earnings to the average (mean) earned return of companies that have comparable
18 business risk to the utility, making appropriate adjustments for differences in capital
19 structure. The utility's earnings may be deemed significantly excessive if they are
20 greater than a threshold that is significantly higher than the average return earned by
21 comparable companies.

22 **Q10. Is the earned return on equity ("ROE") an accounting measure of return on** 23 **book equity or a return on the market value of equity?**

24 A10. The statute uses the term "earnings," which indicates that it envisions an accounting
25 measure of the return on the utility's book value of equity: "... the commission shall
26 consider, following the end of each annual period of the plan, if any such adjustments
27 resulted in excessive earnings" In addition, the statute specifically requires that
28 the "revenues, expenses, or earnings of any affiliate or parent company" not be

1 considered in implementing the test of significantly excessive earnings. As a result, if
2 the utility is not itself publicly traded, its ROE measure can only be based on
3 accounting data. This is discussed in more detail below in the discussion of the
4 proposed earnings metric.

5 **Q11. What is the implication of the measure of return for the utility being an**
6 **accounting-based return on book equity?**

7 A11. The implication is that the test of significantly excessive earnings for the sample of
8 companies of comparable business and financial risk should also be based upon a
9 measure of the accounting-determined return on equity. Otherwise the test would not
10 be evaluating comparable measures of earnings. This point is discussed in more
11 detail below.

12 **Q12. What metric do you have in mind when testing for “significantly excessive**
13 **earnings”?**

14 A12. The statute is not explicit in defining the term, but I interpret the language as
15 suggesting two characteristics that should be incorporated into the test. First,
16 economists frequently refer to a test result that is “statistically significant” at some
17 confidence level. “Significantly” excessive therefore suggests a statistical test is
18 appropriate. Second, significantly “excessive” implies earnings well beyond what is
19 normal, proper and reasonable. The language seems to recognize that there will be
20 fluctuations in earned returns due to normal variations in economic conditions so that
21 simply earning more than authorized or more than earned by comparable firms would
22 not reach the level of being significantly excessive. As discussed below, it is
23 important to avoid erroneously concluding that significantly excessive earnings have
24 occurred because of the negative incentive signal it would send to the utility, as well
25 as because it would impose asymmetric risk on the utility. In addition, I propose a
26 method that is predictable and attempts to avoid hard-to-anticipate arbitrary
27 considerations that would unnecessarily create uncertainty among investors regarding
28 the outcome of the test, and thus possibly raise the utility’s cost of capital.

B. EARNINGS METRIC

Q13. What measure of return on equity do you use for the sample companies?

A13. I use an accounting measure of return on equity, which I then adjust for differences in capital structure between sample companies, as required by the statute. As a measure of the earnings that accrue to shareholders, I rely on net income before non-recurring gains or losses. As a measure of shareholders' equity, I use the average of the beginning-of-year and end-of-year book value of equity from each company's balance sheet, as reported by *Value Line*.

Q14. Why do you rely on accounting values rather than market values?

A14. I use accounting book values because it is the only possibility consistent with the language of the law. Specifically, the statute reads: "In making its determination of significantly excessive earnings under this division, the commission shall not consider, directly or indirectly, the revenue, expenses, or earnings of any affiliate or parent company." All of the PUCO regulated electric utilities operating in Ohio are subsidiaries of larger companies so they are not themselves publicly traded. This is true for FirstEnergy's subsidiaries that operate in Ohio. It is therefore not possible to construct a market-based measure of earnings for the utility, without relying on information of its parent company. As noted above, the law uses the term "earnings," which indicates that it envisions an accounting measure of the return on the utility's book value of equity.

Q15. But could you use market values for the set of comparable companies?

A15. Yes, but in that case a comparison would have to be made between an accounting measure of returns for the utility, and a market-based measure of returns for the sample companies. Such a comparison cannot be properly made in the case of earned returns. A company's stock return, the market-based measure of return, is driven not only by realized earnings, but also, or even mostly, by expectations about future earnings. To the contrary, an accounting measure of return, such as net income divided by common equity, does not capture expectations about future earnings. It is therefore inappropriate to base the test of significantly excessive earnings comparing

1 book-based with market-based measures of earned returns. Indeed, the statute itself
2 makes reference to historical rather than forward-looking measures of return.

3 **Q16. How is this different from setting the allowed ROE based on market measures of**
4 **returns?**

5 A16. The key difference is that the allowed ROE in the context of a traditional rate case is
6 set equal to the *expected* rate of return on equity, whereas in the current matter, the
7 test of significantly excessive earnings must be based on *earned*, or realized, returns.
8 The expected rate of return is the rate that investors can expect to obtain by financing
9 investments of comparable risk, and it is determined in the market. The allowed ROE
10 is therefore set equal to this expectation, in order to allow the utility to attract
11 investors, who would otherwise invest in these alternative investments. It has become
12 routine in U.S. rate regulation to accept the “cost of capital” as the right expected rate
13 of return on utility investment. That practice is normally viewed as consistent with
14 the U.S. Supreme Court's opinions in *Bluefield Waterworks & Improvement Co. v.*
15 *Public Service Commission*, 262 U.S. 678 (1923), and *Federal Power Commission v.*
16 *Hope Natural Gas*, 320 U.S. 591 (1944). The only way to estimate expectations
17 about the future is to use information embedded in stock prices, which by their very
18 nature reflect the information and beliefs investors currently hold about future cash
19 flows. In contrast, in the case of a test of significantly excessive earnings, which
20 specifically considers what the utility and comparable firms have already earned in
21 the past year, there is no need to measure expectations, and therefore no need to rely
22 on stock prices, i.e., market measures. It would be particularly inappropriate to
23 compare an accounting measure of returns for the utility, which does not incorporate
24 expectations about future performance, with a measure based on stock prices for the
25 sample companies, which does incorporate such expectations.

26 **Q17. More specifically, what metric are you proposing?**

27 A17. I propose (and have implemented) a measure of return on total capital equal to the
28 ratio of total ordinary return to long-term capital (including debt and preferred
29 equity), less tax shields generated by the use of debt, divided by total long-term
30 capital. The numerator of this fraction is therefore the sum of two items: earnings on

equity before non-recurring items and pre-tax interest expense on long-term debt multiplied by one minus the effective tax rate for each individual company. The denominator is the sum of average shareholders' equity (including preferred equity) and average long-term debt for the year under analysis:

$$R = \frac{(NI - Nonrec) + (1 - t)LT Int}{Average Total Capital}$$

where:

- *NI* = Net Income (including dividends paid to preferred stock, if any)
- *Nonrec* = Nonrecurring gains/losses,
- *t* = Effective marginal tax rate,
- *LT Int* = Interest expense on long-term debt, and
- *Average Total Capital* = the sum of common equity, preferred equity and long-term debt, computed as an average of the beginning-of-year and end-of-year values.

Q18. Why do you add the interest expense multiplied by (1-t)?

A18. I add the interest expense because it is the return obtained by debt holders. I multiply by (1-t) in order to eliminate the effect of tax shields created by the use of debt in the capital structure. The effect of adding this term is to account for differences in capital structure between companies, as indicated by the statutory language requiring "adjustments for capital structure as may be appropriate." Simply comparing the return on equity between companies with very different equity ratios is not meaningful. Companies with very little equity should earn a higher return on equity reflecting higher financial risk, while companies with comparable business risk, but much higher equity ratios should earn a lower return on equity. In order to arrive at a figure that can be meaningfully compared, I compute the surplus that would accrue to shareholders if each company were financed entirely by equity. This entails adding the interest expense, but subtracting the income tax that would be payable in that case, since interest expense is tax deductible, but earnings are not.

Q19. Can you provide an example of why it is necessary to consider differences in capital structure to ensure consistency between sample companies of comparable business risk?

A19. Yes. Consider two companies that are identical in every way except for their capital structures, such as the two hypothetical companies shown in Table 1 below.

Table 1. Effect of the Capital Structure Adjustment.

	Company 1 100% Equity Ratio	Company 2 50% Equity Ratio	Formulas
[1] Total Capital	10,000	10,000	
[2] Debt	0	5,000	
[3] Equity	10,000	5,000	[1] - [2]
[4] Cost of Debt	6%	6%	
[5] EBIT	1,500	1,500	
[6] Interest Expense	0	300	[2] x [4]
[7] Pretax income	1,500	1,200	[5] - [6]
[8] Tax Rate	40%	40%	
[9] Total Tax	600	480	[7] x [8]
[10] Net Income	900	720	[7] - [9]
[11] Return on Equity (without capital structure adjustment)	9.00%	14.40%	[10] / [3]
[12] Return on Total Capital (without tax shield adjustment)	9.00%	10.20%	([10] + [6]) / [1]
[13] Return on Total Capital (with tax shield adjustment)	9.00%	9.00%	([10] + (1 - [8]) x [6]) / [1]

Assume that both have Earnings before Interest and Taxes (“EBIT”) of \$1500, but that one is financed entirely with equity while the other has interest expense of \$300. After-tax net income for the all equity financed company is \$900 assuming a 40 percent income tax rate, but after-tax net income for the debt financed company is \$720 ((\$1500 EBIT - \$300 interest) x (1 – 40% tax rate)). As shown in row [11] of Table 1, simply computing the return on equity would suggest that Company 2 is more profitable, since its ROE is 14.4 percent compared to the 9 percent of Company 1. However, the difference in ROEs is simply a reflection of the different capital structures, not of the underlying profitability of the company. Adjusting for these differences is the reason why I rely on a measure of return on total capital instead of

1 simply realized return on equity, following the requirement of the statute that such an
2 adjustment is necessary.

3 **Q20. Why is it also necessary to recognize the tax shield of the interest payments?**

4 A20. As shown in row [12] of Table 1 if the full amount of interest were used in computing
5 the return on total capital, the result would be \$1020 (\$720 net income + \$300 interest
6 expense) compared to the \$900 for the all-equity financed firm. Therefore, the
7 measure of return on total capital would suggest that the debt-financed firm also had a
8 greater rate of return on total capital but that also would be incorrect. The after-tax
9 interest expense would be \$180 ($\$300 \times (1 - \text{tax rate of } 40\%)$) for a total of \$900 (\$720
10 net income + \$180 after-tax interest expense). As shown in row [13] of Table 1, the
11 use of the after-tax interest expense instead of the full interest expense results in a
12 return on total capital for both companies identical in all ways except capital
13 structure.

14 **Q21. Why do you use the average total capital for the year, instead of the end-of-year**
15 **balances?**

16 A21. The average of the beginning-of-year and end-of-year balances for capital items gives
17 a better measure of the company's capital during the entire year over which earnings
18 have been earned. Using the average reduces the impact of issuing or retiring debt or
19 equity during the year, which could bias the rate of return calculation.

20 **Q22. Why do you eliminate non-recurring gains and losses from net income?**

21 A22. I eliminate these items because the purpose of using a sample of comparable
22 companies is to obtain a measure of normal, or usual, earned returns – in other words,
23 a measure of ordinary, recurring, returns that have been earned by companies similar
24 to the utility under analysis. Simply put, eliminating non-recurring items from the
25 comparable companies' earnings measure ensures a higher degree of comparability.

C. COMPARABLE COMPANIES

Q23. What is the purpose of the sample selection procedure?

A23. The purpose of the sample selection procedure I propose is to select a sample of companies “including utilities” that matches as closely as possible the business risk of the Companies. It is important that the sample selection process result in a consistent set of comparable companies, year-to-year, because the factors that make a set of companies comparable do not change rapidly. Failing to select a consistent set of companies year-to-year could unnecessarily increase the uncertainty associated with the SEET and could result in two otherwise similar companies having different SEET outcomes simply because the samples differ. The sample selection method I propose focuses on characteristics of the electric distribution industry which do not change rapidly so the universe of companies eligible for inclusion in the sample do not change much year-to-year.

Q24. How did you select the sample of companies of comparable business and financial risk?

A24. I select the sample based only on business risk similarities, and then take capital structure differences into account by adjusting the measure of return on capital, as discussed above. Differences in financial risk result from differences in capital structure. By using a measure of returns that attempts to control for such differences, there is less need to restrict the sample based on capital structure. This is an enormous advantage, because imposing a restriction that all companies in the sample have approximately the same capital structure as the target utility would reduce the number of sample companies substantially, making the resulting estimate much less precise.

Q25. How did you select companies of comparable business risk?

A25. The law does not restrict the universe of comparable companies to regulated utilities. Indeed, the statute appears to suggest that a larger universe should be considered, by its use of the phrase “including utilities.” Therefore I considered the following important characteristics of the electric distribution industry: sample companies

1 should operate in industries that (1) rely on a network of assets to provide services to
2 a customer mix that includes residential, commercial and industrial customers, and
3 (2) that exhibit high capital intensity. Capital intensity means that the capital
4 investment required for each dollar of revenue is high. Based on the first of these two
5 characteristics, I started with a universe of twelve industries as classified by *Value*
6 *Line*: Electric Utilities, Natural Gas Utilities, Oil and Gas Distribution, Pipeline
7 MLPs, Water Utilities, Environmental Services, Railroads, Air Transportation,
8 Trucking, Cable TV, Telecommunications Services, and Telecommunications
9 Utilities.

10 **Q26. Is this the same set of industries you considered in your report filed in previous**
11 **SEET cases?**

12 A26. Yes.

13 **Q27. How did you narrow the number of industries in your final sample?**

14 A27. I computed an average measure of capital intensity for each industry, based on five
15 years of data (fiscal years 2008-2012). I then eliminated industries that had low
16 capital intensity as determined by this metric. The remaining group of industries
17 includes Electric Utilities, Natural Gas Utilities, Oil and Gas Distribution, Pipeline
18 MLPs, Water Utilities, Environmental Services, Railroads, Telecommunications
19 Services, and Cable TV. Appendix B contains additional details about the sample
20 selection procedure, as well as industry statistics for the industries included in the
21 final sample.

22 **Q28. Did you apply additional criteria to eliminate some companies from the**
23 **industries remaining in the sample?**

24 A28. Yes. Before calculating the capital intensity measure, I eliminated companies with a
25 credit rating below investment grade, foreign companies, as well as companies for
26 which the information necessary to compute the asset turnover measure was not
27 available. The data were extracted from the *Value Line Investment Analyzer* and
28 Bloomberg. The sample used to calculate the 2008-2012 industry average capital
29 intensity contains 90 companies.

1 **Q29. Is this the same sample you use to compute the threshold for significantly**
2 **excessive earnings?**

3 A29. Not exactly. In order to calculate the return on total capital, I had to use additional
4 data fields not required to arrive at the measure of asset turnover, but I use five years
5 of asset turnover data to measure capital intensity. Some companies may have
6 sufficient current data to calculate the return on total capital but may not have five
7 years of asset turnover data. Alternatively some companies may have data for the
8 asset turnover calculation but may have some missing data necessary to calculate the
9 return on total capital. As a result, there are some differences between the sample
10 used to select the capital intensive industries and the sample used to compute the
11 earnings metric. Table 2 below lists all the industries considered, as well as the
12 number of companies in each industry that was included in either calculation. Table
13 B 5 in Appendix B lists the individual companies that were included in each
14 calculation.

15 **Q30. Are the companies in your sample used to compute the threshold for**
16 **significantly excessive earnings for 2012 the same as those in your 2011 test**
17 **sample?**

18 A30. The 2012 sample is substantially similar to the 2011 sample, although not identical.
19 Of the 81 companies in the 2011 sample and the 77 in the 2012 sample, 74 are
20 included in both samples. In percentage terms, 96 percent of the 2012 sample
21 companies were included in the 2011 sample, and 91 percent of the 2011 sample
22 companies are included in the 2012 sample.

Table 2. Sample Industries

Industry	Number of Companies in Earnings Threshold Calculation	Number of Companies in Capital Intensity Calculation
Electric Utilities		
Electric Utility (Central)	19	19
Electric Utility (East)	14	14
Electric Utility (West)	11	13
<i>Electric Utilities</i>	<i>44</i>	<i>46</i>
Other Regulated Utilities		
Natural Gas Utility	10	10
Water Utility	6	6
Oil and Gas Distribution	2	2
Pipeline MLP	5	7
<i>All Regulated Utilities</i>	<i>67</i>	<i>71</i>
Other Capital Intensive Industries		
Railroad	2	3
Telecommunications Services	3	4
Environmental	3	3
Cable TV	2	3
<i>All Capital Intensive Industries</i>	<i>77</i>	<i>84</i>
Other Industries		
Air Transport	3	3
Telecommunications Utility	0	0
Trucking	3	3
<i>All Industries</i>	<i>83</i>	<i>90</i>

1 **Q31. Do you have any additional comments about the sample?**

2 A31. Yes. Focusing on the companies in the earnings threshold calculation, both the
3 sample containing the initial range of all industries and the subset of all capital
4 intensive industries are dominated by electric utilities (44 companies out of 83 and 77
5 companies respectively). Moreover, 67 companies operate in regulated industries.
6 The large fraction of regulated companies and electric utilities in particular gives a
7 high degree of confidence in the sample being of comparable business risk with an
8 electric utility. At the same time, including some unregulated companies in
9 comparable industries is not only consistent with the language used in the statute but
10 also results in the consideration of a larger number of estimates. A larger sample is,

1 in general, preferable as it will smooth out fluctuations from an industry group or
2 subset of companies with unusual returns in a particular year.

3 **Q32. Have you considered the effect of including electric utilities in your sample that**
4 **derive a large part of their earnings from unregulated generation?**

5 A32. Yes. Including companies with unregulated segments is not in itself a reason for
6 concern, since the statute itself envisions looking beyond regulated utilities for a
7 comprehensive sample of comparable companies. However, there could be a
8 legitimate concern that the volatility of generation revenues is higher than volatility of
9 revenues of regulated electric distribution companies, and therefore that the returns of
10 companies that invest heavily in electric generation may not be comparable. In order
11 to gauge whether this is in fact the case, I also computed rate of return thresholds for
12 a subsample of companies that excludes those electric utilities classified by the
13 *Edison Electric Institute* as “Diversified” or “Mostly Regulated.” Companies in these
14 two categories have more unregulated assets than companies classified as
15 “Regulated.” As a result, eliminating these two categories will eliminate the electric
16 companies with a substantial investment in unregulated generation.

17 **Q33. Are the results obtained by excluding electric utilities with unregulated**
18 **operations as described in the previous question materially different?**

19 A33. No. The thresholds I obtained by excluding the Diversified and Mostly Regulated
20 electric utilities are very close to those obtained for the full sample. The numerical
21 results are discussed in the next subsection. It should also be pointed out that
22 focusing on a particular group of companies that have a high rate of return in a given
23 year is not an appropriate basis for excluding them from the sample as being
24 insufficiently comparable to the utility under analysis. Earned returns vary from year
25 to year. Companies or industries that may have had a particularly good year recently
26 may have done worse in the past or may under-perform in the future. It is much more
27 advisable to select sample companies based on characteristics of an operational and
28 business risk nature, which remain unchanged over time as long as the company does
29 not change its primary business.

Q34. Do you test for “outliers” in your sample companies?

A34. Yes. I recommend that any company more than three standard deviations above or below the mean return on total assets be eliminated from the sample. The mean and standard deviation should then be recalculated and the test for any companies greater than three standard deviations above or below the mean should be repeated. This process should continue until no sample companies have realized returns more than three standard deviations away from the mean. In general, I expect that in practice it is unlikely to need more than 1 or 2 iterations to arrive at the final sample.

Q35. Why do you recommend eliminating outliers?

A35. Observations three standard deviations above or below the mean are extraordinarily rare in a normal distribution, less than 1 in 350. Such observations could be the result of an error in the data. Eliminating such observations has two beneficial effects on the SEET. The first benefit is that it provides further screening for companies that might otherwise appear to be comparable. The second benefit is that companies that may themselves have significantly unusual earnings in a particular year do not affect the SEET for the regulated companies in Ohio. However, eliminating observations from the sample must be done with caution because the observations may be providing important information about the sample. Simply because an observation is unusual does not necessarily mean that there is an error in the data or that it is not a legitimate member of the target population. For example, the discovery that one man in a sample of 100 is more than 7 feet tall does not suggest that the measurement is in error even though the mean height for a man in the U.S. is about 5 feet 9 inches.

Q36. Did application of the outlier test result in eliminating any companies from the sample?

A36. Yes, I eliminated one company based on the outlier test, as presented in more detail in Section E when I discuss the 2012 results. The decision to exclude outliers is an effort to deal with the larger problem of balancing the tradeoff between false positives and not detecting significantly excessive earnings. Making the distribution more homogenous will hopefully reduce both types of error because it will make it easier to detect significantly excessive earnings while simultaneously allowing for an increase

1 in the confidence level to avoid false positives. Increasing the size of the sample has
2 a similar effect if the companies are comparable to the regulated company.

3 **Q37. Would it be appropriate to implement a test for outliers and maintain your**
4 **original recommendation of a 90 percent confidence level for the statistical test?**

5 A37. No. Eliminating outliers reduces the standard deviation of the distribution and likely
6 will reduce the mean as well if the outliers are highs rather than lows. (This scenario
7 is more probable given the positive skew of the return on capital distribution across
8 the comparable companies). As a result, the danger of determining a false positive is
9 increased. In fact, with a 90 percent confidence level, we would expect to have false
10 positives 10 percent of the time. This is particularly true in the case where the outlier
11 test results in elimination of an observation for which there is no obvious reason for
12 the company to be excluded.

13 **Q38. What data sources are you using?**

14 A38. Most of the data are taken from *Value Line* except for the information on the
15 corporate credit ratings, which can be extracted from Compustat, Standard & Poor's,
16 Bloomberg or other sources, and the Edison Electric Institute's (EEI) classification of
17 electric utilities based on percentage of regulated assets, which is obtained from EEI.
18 I used the *Value Line Investment Analyzer*, which provides electronic access to the
19 historical data reported in the *Value Line* sheets. In addition, because *Value Line* has
20 not yet published the end-of-year data for all the companies in the sample, I used
21 Bloomberg to supplement the dataset when possible.

22 **Q39. Are there any issues related to data availability that are important to discuss?**

23 A39. Yes, there are two important issues regarding data availability. *Value Line*, as do
24 other reliable data providers, reports data based on the fiscal year according to which
25 each company operates. An important reason for this is that for most companies only
26 annual (fiscal year) financial statements are audited. In addition, there is a lag of up
27 to three months between the end of the fiscal year and the time audited results
28 become available. As a result, the test cannot be performed immediately after the end
29 of each calendar year.

1 The second issue stems from *Value Line*'s data updating process, which does not
2 reflect all the fiscal year end data as soon as it becomes available. Because of this
3 delay in publishing the data, I had to rely on Bloomberg data to ensure that the
4 sample size was not reduced artificially. I discuss both issues in greater detail in
5 Appendix B.

6 **D. SIGNIFICANTLY EXCESSIVE EARNINGS**

7 **Q40. How can the sample of comparable risk companies be used to determine whether**
8 **the utility has earned significantly excessive earnings?**

9 A40. A properly selected sample provides a collection of returns that exhibit the kind of
10 variation one would expect to see from companies that experience no unusual events
11 that would cause excessively high or low returns. Based on the sample, it is possible
12 to draw inferences about the unknown characteristics of the underlying process that
13 determines, in practice, a utility's actual return on total capital. Conceptually, the set
14 of possible returns that the utility can experience in the absence of significantly
15 excessive earnings, and the associated probabilities that each of these returns occur,
16 can be thought of as a statistical distribution whose parameters (i.e., the mean and
17 standard deviation) are unknown.

18 The mean of this distribution represents what the utility is expected to earn on
19 average in a normal year. The standard deviation indicates how much variation one is
20 likely to observe around this mean. A utility's earnings are affected by many factors,
21 many of which cannot be measured or predicted with certainty. Therefore, it is to be
22 expected that in the course of a normal year, in which no significantly excessive
23 earnings have occurred, a utility might earn more or less than the average amount.
24 The magnitude of this variation is measured by the standard deviation.

25 **Q41. Can the mean and standard deviation of this distribution of returns be measured**
26 **accurately?**

27 A41. The true parameters of this distribution are not known, but we can estimate them
28 using the sample of comparable companies. The sample average and standard
29 deviation provide the best estimates of the mean and standard deviation of the

1 unknown distribution of returns. The better and more comprehensive the sample is,
2 the better the estimated parameters will be. This is the reason why a larger sample is
3 preferable to a smaller sample: it provides more precise estimates, reducing the
4 likelihood that these estimates differ from the true, but unknown, parameters by
5 material amounts. In this regard, adjusting the results for capital structure differences
6 rather than restricting the sample to only those companies that are similar to the
7 Companies' capital structure is critical in maximizing the test's reliability.

8 **Q42. Does it mean that if the utility earns more than the allowed, or expected,**
9 **amount, any excess should be deemed significantly excessive?**

10 A42. No. Because so many factors determine the actual earnings, a utility's realized return
11 on capital is guaranteed to fluctuate around its expected value. Sometimes returns are
12 higher than the expected value, and sometimes lower, and these differences tend to
13 offset each other over time. Simply earning something higher than the mean of the
14 distribution is not evidence of significantly excessive earnings.

15 **Q43. How then should it be determined that significantly excessive earnings have**
16 **occurred?**

17 A43. While some variation around the mean is to be expected, we may sometimes observe
18 a return sufficiently high (or low) that it is unlikely to have been generated by the
19 same underlying process that generates usual, ordinary earnings. When such an
20 unlikely return is observed, we may conclude that something happened to the utility
21 in that year that altered its earnings process, making it possibly significantly
22 excessive. Mathematically, we can determine what it means that an observation is
23 sufficiently unlikely by using the standard deviation, as described more fully below.

24 **Q44. After you have calculated the return on total capital for the sample companies,**
25 **how do you propose to test for significantly excessive earnings?**

26 A44. After calculating the return on total capital for the sample companies for the year, I
27 calculate the sample mean and standard deviation of the data. I then implement a
28 *one-sided* statistical test of significantly excessive earnings. If the earned rate of
29 return on total capital of the utility exceeds the sample mean earned return on total

capital by more than 1.645 standard deviations, then significantly excessive earnings may be indicated by the test.

Q45. Can the return threshold be expressed in terms of ROE, rather than return on total capital?

A45. Yes. Using the threshold return on total capital derived from the sample, a threshold ROE level can be determined using information about the utility's capital structure and its tax rate, interest expense, and preferred dividends. An example of how this transformation can be performed is provided in Appendix B.

Q46. Does the fact that the Companies' capital structures are influenced by decisions of their sole shareholder, FirstEnergy, present a concern regarding using your methodology?

A46. No, it does not. As the example in Table 1 illustrates, the capital structure adjustment essentially eliminates the effect of capital structure on the test results. While the ROE threshold certainly is affected by the Companies' equity ratio, the fundamental measure that drives the comparison between the sample results and the Companies' results is the return on total capital. In other words, whether a Company's earnings may be deemed significantly excessive or not depends on how much money the Company earns for all its investors in that year, regardless of how that money is divided between debt investors and equity investors. That comparison does not depend on the Company's mix of debt and equity – changing the ratio of debt to equity without changing the total earnings will not change the return on total capital threshold. Therefore, such a change in capital structure will not affect the test results. This is an important reason why the capital structure adjustment is critical to a correct comparison between the company under analysis and the sample. Performing this adjustment ensures that the test makes “such adjustments for capital structure as may be appropriate,” and that a meaningful comparison is being made between the Companies' ROE and the sample companies' ROE, as the statute requires.

1 **Q47. Why did you select 1.645 standard deviations above the mean as the cutoff for**
2 **determining significantly excessive earnings?**

3 A47. For a normal distribution, 95 percent of the observations lie below 1.645 standard
4 deviations above the mean. In other words, if a number were drawn at random from a
5 normal distribution, only 5 percent of the time would the number be expected to be
6 higher than 1.645 standard deviations above the sample mean. The 95 percent figure
7 is typically referred to in the statistics literature as the confidence level used in
8 hypothesis testing. Other commonly used confidence levels are 90 percent and 99
9 percent, but in most cases levels below 90 percent are not considered sufficiently
10 reliable. The chosen confidence level determines how conservative the test is: a
11 higher level ensures that fewer false positives are generated but also makes it more
12 likely that the test does not identify significantly excessive earnings.

13 **Q48. In your initial testimony before the Commission in Case No. 08-935-EL-SSO,**
14 **you recommended a threshold of 1.28 standard deviations. Have you changed**
15 **your recommendation?**

16 A48. Yes. In subsequent testimony filed in Case No. 10-1265-EL-UNC, Case No. 11-
17 4553-EL-UNC and Case No. 12-1544-EL-UNC, I revised my recommended
18 threshold because I also recommended a test for outliers. I continue that revised
19 recommendation here. A sample without outliers means that the distribution of
20 returns is more homogeneous, which increases the possibility of a false positive for
21 significantly excessive earnings at the same significance level relative to a less
22 homogeneous sample. As I discussed in my initial testimony in Case No. 08-935-EL-
23 SSO, if the distribution is more homogeneous, it would be appropriate to increase the
24 confidence level.

25 **Q49. What standard deviation cutoffs do these alternative confidence levels yield?**

26 A49. Using a higher confidence level means that the return threshold is set farther above
27 the sample average return. For example, using a 97.5 percent confidence level
28 implies setting the threshold at 1.96 standard deviations above the average. Other
29 common cutoffs are shown in Table 3 below.

Table 3. Standard Deviation Cutoffs at Different Confidence Levels

Confidence Level	90%	95%	97.5%	99%
Number of Standard Deviations for Threshold	1.282	1.645	1.960	2.326

Q50. What factors should be considered in setting the confidence level of the SEET?

A50. Selection of the confidence level involves a trade-off between falsely determining that significantly excessive earnings occurred by setting the confidence level too low versus not detecting significantly excessive earnings when they occurred by setting the confidence level too high. The fact that the proposed sample contains companies from industries other than the electric utility industry suggests that the confidence level be lower, but the elimination of outliers argues for a higher confidence level. A 90 percent confidence level is the most conservative statistical test that could be applied and has the effect of allowing more false positives than a higher confidence level. A higher confidence level is appropriate if the sample is restricted to only regulated utilities, or if it has no outliers, because the distribution of returns for the sample would likely be less variable. In other words, if the sample companies were more comparable to an electric utility, it is likely that variations in earnings caused by factors not related specifically to the electric utility industry would be reduced. As a result, it is necessary to use a higher confidence level in order to determine that earnings in excess of that threshold could be significantly excessive. If the sample were restricted to only electric utilities, the possibility of a false positive would be higher when using a lower confidence level. The variance of the sample returns would likely be smaller for a sample restricted to electric utilities which would substantially reduce the threshold for a determination of significantly excess profits. In that case, a higher confidence level such as 97.5 percent would be necessary in order to avoid deeming “significantly excessive” a return that is simply at the high end of the normal variation in returns that characterizes the operations of an electric utility. The absence of outliers has a similar effect on the distribution of the sample.

1 **Q51. But would it not then be better to use a sample that is as comparable as possible**
2 **to an electric utility?**

3 A51. Not necessarily. First, the statute refers to a sample of comparable companies
4 “including regulated utilities.” This language suggests that not only should the
5 sample include utilities other than electric utilities, but also companies with
6 unregulated operations. Second, it is impossible to select a sample of companies that
7 is perfectly comparable to the utility under analysis. Differences will always exist
8 even if attention is restricted to the same industry. As more industries are included in
9 the sample, the sample may become less comparable to the specific company, but it
10 may also be a better sample for the determination of significantly excessive earnings.
11 However, there is no clear line that mechanistically determines what an acceptable
12 range of industries to consider may be. It is important however to be aware that
13 changing the breadth of the sample needs to be taken into account when selecting an
14 appropriate statistical confidence level. It would be inappropriate to change one
15 without adjusting the other to reflect the different level of comparability between the
16 sample companies.

17 **Q52. Why is it important to guard against a false positive?**

18 A52. A false positive means that the test incorrectly identifies the utility’s earnings as
19 significantly excessive. Although it is important to protect customers from paying
20 rates that result in significantly excessive profits, it is also important to avoid a
21 determination of significantly excessive profits when none were earned. Reducing
22 the probability of false positives mitigates the problem of asymmetric risk, which is
23 an important concern that needs to be addressed when implementing a test of
24 significantly excessive earnings. In addition, incorrect determinations of significantly
25 excessive earnings negatively affect the utility’s incentives to operate efficiently.

26 **Q53. Please describe what you mean by the term “asymmetric risk”.**

27 A53. Asymmetric risk is the situation in which the possibility of a bad outcome is not
28 offset by the possibility of an equally good outcome. In general, a utility’s earned
29 ROE will deviate somewhat each year from the ROE used to set rates due to random
30 fluctuations in costs and revenues: sometimes the earned ROE will be greater than

1 expected and sometimes it will be less. For an electric utility, a key reason for under
2 or over-earning the expected ROE may be due to fluctuating power prices or to
3 differences between actual and forecast costs. If high power prices are reflected in
4 rates with a delay, the result may be that a utility's ROE is low in the current year, but
5 higher than normal next year – simply because the costs of power are recovered with
6 a delay. Under normal economic circumstances, these fluctuations offset each other
7 over time, allowing the utility to earn its cost of capital on average. However, if the
8 utility is erroneously determined to have significantly excessive earnings that must be
9 refunded, the offsetting of high and low earnings over time no longer happens, and
10 the utility will fail to earn its cost of capital on average. This situation would impose
11 asymmetric risk on the utility because the utility receives no extra income in years of
12 very low earnings, but must refund income when earnings are determined to be
13 significantly excessive.

14 **Q54. How should a regulator address the situation of a utility that faces asymmetric**
15 **risk?**

16 A54. Ideally, the source of the asymmetric risk should be eliminated or minimized if
17 possible. If elimination of the asymmetric risk is not possible, the utility's allowed
18 return in a traditional rate proceeding must be set above the estimated cost of capital
19 by an amount that offsets the asymmetric risk so that the utility will again be able to
20 expect to earn its cost of capital on average.

21 Imposing asymmetric risk on the utilities is an inappropriate regulatory outcome, and
22 therefore not likely to be what the legislators had in mind. Instead, a determination of
23 significantly excessive earnings, or windfall profits, should be reserved for the
24 situation in which earnings exceed the expected return by an amount so great as to not
25 likely be the result of random fluctuations of a magnitude to be expected under
26 normal situations. If such excessively high profits were not corrected, then the utility
27 would be likely to earn a rate of return well above its cost of capital. Such an
28 outcome could be unfair to customers, and it is this situation that the test should
29 attempt to prevent.

1 **Q55. Is a company's cost of capital affected by asymmetric risk?**

2 A55. It could be depending upon whether the probability of an asymmetric outcome is
3 related to the rest of the economy. Recall that a company's cost of capital depends
4 upon the risk that cannot be diversified away, i.e., the market risk or systematic risk
5 of a company. If the asymmetric risk is also systematic, then the company's cost of
6 capital would be increased. Even if the asymmetric risk has no systematic
7 component, the price of the company's stock is likely to decrease so that investors
8 can compensate for the possibility that their return may be adversely affected by the
9 asymmetric risk. Both shareholders and customers may be adversely affected by
10 asymmetric risk because ultimately customers pay the costs of service, including the
11 cost of equity capital which may increase as a result of asymmetric risk.

12 **Q56. Is the asymmetric risk mitigated by the fact that the regulated utility can file a**
13 **rate case whenever it believes that its costs exceed what can be recovered in its**
14 **currently allowed rates?**

15 A56. No. The SEET is backward looking in that it considers realized returns. A rate case
16 only affects prospective rates. A utility whose earnings fell short of the allowed
17 return cannot seek recovery of the past shortfall in a future rate case. Therefore, the
18 asymmetric risk remains if only earnings in excess of the threshold must be returned
19 to customers while earnings substantially below the utility's cost of capital cannot be
20 reclaimed.

21 **Q57. Are there other problems with erroneously determining that significantly**
22 **excessive earnings have occurred?**

23 A57. Yes. Too many determinations of significantly excessive earnings can result in
24 inefficient decision-making by the utility. All businesses have an incentive to reduce
25 costs and to operate efficiently through the promise of higher profits. If the
26 expectation of higher earnings disappears, so does the incentive to seek efficiencies
27 that will ultimately benefit customers. An inefficient business means that obtainable
28 gains are not realized, either by the shareholders or by the customers. This is a "lose-
29 lose" situation, which has no desirable features for any party.

1 **Q58. You have discussed the dangers of false positives, but what about false**
2 **negatives?**

3 A58. It is important to guard against both types of errors. One way to reduce the likelihood
4 of false negatives is to ensure that the companies in the sample are as comparable as
5 possible to the Companies. I do this in two ways: first, I eliminate non-recurring and
6 extraordinary earnings from the calculation, thus reducing earnings variability and the
7 sample standard deviation. Second, I ensure that the sample excludes any companies
8 whose earnings are outliers – values either too low or too high, that would otherwise
9 increase sample standard deviation and the SEET threshold.

10 It is worth keeping in mind that given any sample, a tradeoff will always exist:
11 reducing the probability of making one type of error increases the probability of
12 making the other type. I believe that in choosing a 95 percent confidence level for the
13 threshold calculation, my recommended approach applies a sound analytical
14 methodology that achieves a balance between the two types of error.

15 **Q59. You have assumed that the distribution of earned returns for the sample**
16 **companies can be approximated by a normal distribution. What is the effect on**
17 **the test if the earned returns were not normally distributed?**

18 A59. If the returns were not normally distributed, the test would not have precisely a 95
19 percent confidence level. The area in the tails of the distribution could be somewhat
20 more or less than expected for a normal distribution. In fact, a plot of the sample
21 returns shows that the distribution is skewed to the right (toward higher returns),
22 implying that most likely the confidence level is somewhat lower than the 95 percent
23 I recommend. In other words, if the sample is not exactly normally distributed, then
24 imposing the normal distribution is a conservative assumption in the sense that
25 earnings are found to be excessive more often with a corresponding increase in the
26 potential for a false positive.

1 **Q60. Assuming that the utility's earnings fall above the threshold, are there any**
2 **additional factors that need to be considered?**

3 A60. If application of the formula outlined above suggests the utility's earnings may be
4 significantly excessive, the Commission should scrutinize the utility's earnings for
5 any unusual items. If the utility's earnings rise above the threshold, then the cause of
6 the excessive earnings should be visible – i.e., the extra earnings should be
7 attributable to a particular event experienced by the company during the year being
8 tested, or to a particular earnings source. If no such item can be identified, the
9 possibility that the determination of significantly excessive earnings is incorrect
10 should be seriously contemplated. I note also that the language of the statute states
11 that "Consideration also shall be given to the capital requirements of future
12 committed investments in this state." From the perspective of an expert in financial
13 and regulatory economics, I believe these may be appropriate factors to include in the
14 consideration of whether significantly excessive earnings have been realized. The
15 Commission has also recommended that factors other than a statistical test result be
16 considered in making a determination as to whether the utility has significantly
17 excessive earnings.

18 **Q61. Do you have any concerns regarding reliance on factors other than the statistical**
19 **test?**

20 A61. Yes, I do. The SEET can have an important effect on the utility's financial
21 performance. Investors are likely to evaluate carefully the likelihood that the SEET
22 would result in a finding of significantly excessive earnings, and thus lower returns
23 on their investment after the fact. The more transparent the process by which this
24 determination is made, the less uncertainty surrounds the expected outcome of the
25 test, and thus the investors' expected return. Lower uncertainty about the utility's
26 future performance translates, in turn, into a lower cost of capital than would be the
27 case if the SEET process is viewed as having great uncertainty. A lower cost of
28 capital ultimately means lower rates for the utility's customers. If the test depends on
29 factors that may be not well defined, highly subjective or are difficult to quantify,
30 investors are faced with higher risk about the ultimate test outcome, and higher risk
31 means they will demand a higher expected return in order to be willing to provide

capital. Because of this, I believe the test should be as transparent as possible, so that it doesn't increase the utility's regulatory risk and thus its cost of capital.

Q62. In the AEP Decision, the Commission declined to rely on a “bright line SEET threshold based exclusively on a statistical analysis of comparable companies.” Isn't the method you propose based exclusively on statistical analysis?

A62. It is, to some extent, but I place great importance on ensuring that the sample selection process results in a suitable set of comparable companies. It is at that stage of the process that judgment is best used, and I rely on both quantitative and qualitative criteria to arrive at a sample of comparable companies. Having done so, I believe that this sample accurately reflects not only the average returns suitable as a benchmark for the SEET, but also the range of such returns. Whether most sample companies earned relatively similar returns, or very different returns, is not captured by considering only the average sample return, but is useful information about the economic environment in which the Companies operated. A stable economic environment will likely result in relatively small variation around the mean, and suggest using a threshold closer to the average for determining significantly excessive earnings. Conversely, an environment with a lot of uncertainty, in which many companies earned very high and very low returns, requires using a threshold farther away from the average. After all, if a lot of companies of comparable risk earned returns above those of the company, it is difficult to argue that the company has significantly excessive earnings.

Additionally, I would note that although the Commission in the AEP Decision declined to rely exclusively on the statistical analysis or “bright line” test proposed in that case, the Commission did recognize that “a statistical analysis of the variation in returns among companies facing comparable business and financial risks can provide useful information, as indicated in our decision in 09-786. . . .” The value of a statistical analysis was also recognized by the Commission's Staff in its formal Recommendation developed in Case No. 09-786-EL-UNC, and comprised at least a portion of the methodologies proposed by other witnesses testifying in the initial

1 round of Electric Security Plan cases, including the witness sponsored by the Ohio
2 Consumers' Counsel.

3 **Q63. The Commission looked favorably upon Mr. Cahaan's suggestion to set the**
4 **SEET threshold 50 percent above the sample average ROE. Would that method**
5 **accurately reflect the relevant sample characteristics?**

6 A63. No, because it ignores the variation and range of returns seen in the sample. In order
7 to take account of how variable the sample is, the 50 percent figure should change
8 with how heterogeneous the sample returns are – when the sample shows more
9 variability the threshold should be higher, perhaps 60 or 70 percent, and conversely,
10 the threshold should be lower when sample variability is low. This is the same logic
11 as that employed by Mr. Cahaan in deciding to switch from a threshold based on a
12 fixed number of basis points above the sample mean (as he did in the initial round of
13 Electric Security Plan cases), to one based on adding a percentage of the mean as he
14 did in the AEP case. In doing so, he may have intended to better reflect the idea that
15 over time the level of the sample average might change substantially in response to
16 economic factors such as inflation, making a fixed adder unfair. But I believe he fell
17 somewhat short of the mark since these factors can also influence variability of the
18 sample distribution, making a fixed percentage adder a poor measure of significantly
19 excessive earnings. That is why using information about the sample itself is more
20 reliable in determining the proper threshold.

21 Accordingly, it is difficult to see how one could reasonably reflect changes in sample
22 variability without using the most commonly used measure of sample variability,
23 namely the standard deviation. In fact, using a fixed percentage of the sample
24 average would provide just as much a “bright line” threshold as using the standard
25 deviation does. The important difference is that fixing the 50 percent is arbitrary, and
26 more importantly, could result in a threshold that is inappropriately large, or
27 inappropriately low, given the economic reality in which the company operated.

1 **Q64. How could use of a fixed percentage of the sample average, such as 50 percent,**
2 **result in too high a threshold?**

3 A64. That can happen if the sample does not exhibit much variability. For example, in a
4 sample with average returns of 10 percent and standard deviation of 2 percent, the 50
5 percent threshold (15 percent) would be 2.5 standard deviations higher than the mean.
6 In a normally distributed population, that would imply a less than 1 percent chance of
7 earnings being significantly excessive (recall the standard deviation cutoffs shown in
8 Table 3). By contrast, using a fixed number of standard deviations as a threshold
9 ensures that the result scales appropriately with the amount of sample variability. In
10 this situation, the method I propose would give a threshold of only 13.3 percent.

11 **Q65. The Commission also considered that in the AEP 2009 case subtracting that**
12 **same percentage from the sample average resulted in a number close to the**
13 **company's cost of debt, as highlighted by Mr. Cahaan. Is that comparison**
14 **relevant in determining a SEET threshold?**

15 A65. Given the retrospective nature of the test, I do not think it is particularly useful. It
16 would certainly be unusual and excessively deficient for a company's *expected* return
17 on equity to be lower than its cost of debt, but when looking at realized returns one
18 should keep in mind why equity commands higher expected returns than debt: it is
19 risky, and part of that riskiness manifests itself in sometimes very low, even negative,
20 actual or realized returns. In fact, when examining realized stock returns, which is
21 what measures shareholders' actual gains and losses, it is not at all unusual to see
22 numbers that are not only lower than the company's cost of debt, but lower than zero.

23 Another reason to be skeptical of using this comparison is that there is no economic
24 reason why subtracting 50 percent from the sample average ROE should result in a
25 number close to the cost of debt. While it can yield such a result, as it did in the AEP
26 case for that year, it does not necessarily have to do so. In fact, the Companies'
27 actual rates of return on equity were all below the cost of debt in 2009, with Toledo
28 Edison's ROE being as much as 280 basis points below its cost of debt. Similarly, in
29 2010, Cleveland Electric Illuminating Company's ROE was 530 points below its cost
30 of debt and Toledo Edison's ROE was 100 basis points below its cost of debt.

E. RESULTS OF THE SAMPLE

Q66. Have you identified any outliers while implementing the outlier test?

A66. Yes, I identified one outlier while implementing the outlier test. After calculating the mean and standard deviation for the sample, I found that Union Pacific had a return on capital that exceeded the sample mean by more than three standard deviations. I removed Union Pacific from the sample, recalculated the mean and standard deviation for the updated sample, and found no additional outliers. Excluding Union Pacific lowered the sample average return on total capital by 10 bps and the standard deviation by 20 bps.

Q67. How did you decide whether to exclude Union Pacific from the sample?

A67. As I discussed before, the very high returns by themselves should not be dispositive in determining whether to include or exclude a company from the sample. Ideally, one should be able to identify a specific reason that explains the unusual results, evaluate whether that factor makes the company not comparable, and only if that is the case exclude the outlier. In the case of Union Pacific, I could not determine with sufficient certainty whether such an event occurred. This, of course, does not mean that an explanation could not exist. Given the uncertainty about the underlying factors causing this company's earnings to appear to be an outlier, one could argue that they belong in the sample.

Nevertheless, given the impact it has on both the sample mean and standard deviation, and in order to ensure that my test results are conservative, I decided to exclude the outlier. Additionally, there are important benefits of minimizing the impact of subjective judgments on the outcome of the test. If the test methodology is transparent and doesn't rely on too many subjective judgments, it reduces the potential increase in the utility's cost of capital that can occur due to increased uncertainty about the utility's financial performance. In this case, excluding companies based only on the statistical outlier test results in a both conservative (i.e., the threshold would be higher if Union Pacific were included) and objective (i.e., the results rely solely on a statistical test) outcome.

Q68. Based on the sample of comparable companies you selected, what values for the test did you obtain?

A68. Using data for the 2012 fiscal year, I obtained an average return on total capital equal to 7.12 percent with a standard deviation of 1.89 percent. If electric utilities classified as Diversified by the EEI are excluded, then the average return remains 7.12 percent, and the standard deviation increases slightly to 1.90 percent. Further excluding Mostly Regulated electric utilities yields an average return on total capital of 7.20 percent, and a standard deviation of 2.04 percent. The results are not substantially different if companies classified as Mostly Regulated or Diversified were eliminated from the sample.

Q69. What thresholds do these numbers imply?

A69. If the determination is performed based on the full sample of capital intensive industries, then significantly excessive earnings may be found if the return on total capital were greater than or equal to 10.23 percent. Restricting the sample in the two ways described above imply thresholds of 10.25 percent and 10.55 percent respectively. The results are summarized in Table 4 below.

Table 4. Return on Total Capital Thresholds for Different Samples

Statistical Significance Threshold		95.0%		
		Capital Intensive Industries	Excluding Electric Utilities Classified "D" by EEI	Excluding Electric Utilities Classified "D" or "MR" by EEI
Sample Average Return on Total Capital	[1]	7.12%	7.12%	7.20%
Sample Standard Deviation	[2]	1.89%	1.90%	2.04%
Return on Total Capital Threshold	[3]	10.23%	10.25%	10.55%
Sources and Notes:				
[1]: Sample average of return on total capital for the corresponding sample.				
[2]: Sample standard deviation of return on total capital for the corresponding sample.				
[3] = [1] + 1.645 x [2]. See Table 3 for supporting evidence for 1.645.				

Q70. Which of these three thresholds do you find most reasonable?

A70. I believe that the results based on the full sample of capital intensive industries, which are presented in Table 5, are the most reliable. While eliminating electric utilities with more unregulated assets does not influence the results substantially, using a larger sample provides a more reliable result, and is therefore a better methodology.

1 **Q71. You mentioned earlier that applying a 50 percent adder to the sample mean can**
2 **result in a higher threshold than that based on the standard deviation. Does that**
3 **apply in this case?**

4 A71. It does, in fact. As shown in Table 4, the threshold I derive for the sample of capital
5 intensive industries is 10.23 percent. Adding 50 percent to the sample average return
6 on total capital of 7.12 percent would yield a threshold of 10.68 percent, which while
7 of comparable magnitude is slightly higher than 10.23 percent. To be clear, in his
8 AEP Testimony Mr. Cahaan suggested that the adder be calculated and applied based
9 directly on the sample average ROE, not on the return on total capital. However, that
10 approach, in addition to being just as exposed to this specific problem, has the
11 additional problem of either not adjusting for capital structure (contrary to the
12 statute), or reducing the sample size unnecessarily.

13 **Q72. What ROE thresholds do these numbers imply?**

14 A72. In order to determine a threshold in terms of ROE, one needs to use information about
15 each utility's capital structure, tax rate, cost of debt and preferred equity. Because
16 each of the three FirstEnergy utilities has different values for these quantities, I
17 calculate Company-specific thresholds in Table 5 below. Restricting the sample
18 based on the EEI classification of electric utilities does not yield substantially
19 different results so those results are not presented here. The ROE thresholds for each
20 Company and each subsample are detailed in Table B 4 of Appendix B.

Table 5. Thresholds for Significantly Excessive Earnings

		Cleveland Electric Illuminating	Ohio Edison	Toledo Edison
<u>Average Capital Structure for 2012</u>				
Equity Ratio	[1]	39.6%	43.3%	38.2%
Debt Ratio	[2]	60.4%	56.7%	61.8%
Debt-to-Equity Ratio	[3]	1.52	1.31	1.62
Embedded Cost of Debt	[4]	6.70%	7.12%	6.80%
Effective Tax Rate	[5]	36.14%	35.88%	35.74%
<u>Sample Statistics</u>				
Sample Average Return on Total Capital	[6]	7.12%	7.12%	7.12%
Sample Standard Deviation	[7]	1.89%	1.89%	1.89%
<u>ROE Thresholds using the Sample Standard Deviation</u>				
Statistical Significance Threshold	[8]	95.0%	95.0%	95.0%
Return on Total Capital Threshold	[9]	10.23%	10.23%	10.23%
ROE Threshold at Sample Average plus 1.645 standard deviations	[10]	19.30%	17.67%	19.74%
Sources and Notes:				
[1] - [2], [4] - [5]: Provided by FirstEnergy				
[3] = [2] / [1].				
[6]: Sample average of return on total capital for the sample.				
[7]: Sample standard deviation of return on total capital for the sample.				
[8]: Confidence level of statistical test.				
[9] = [6] + 1.645 x [7]. See Table 3 for supporting evidence for 1.645.				
[10] = [9] x (1 + [3]) - (1 - [5]) x [4] x [3].				

1 **Q73. Have you also determined the “safe harbor” ROE of 200 bps over the sample**
2 **mean?**

3 A73. Yes. These values are displayed in row [10] of Table 6 below, adjusted for each
4 Company’s capital structure. The values vary by company because the capital
5 structures vary by company.

Table 6. ROE Determinants Using 200 bps “Safe Harbor” Increment

		Cleveland Electric Illuminating	Ohio Edison	Toledo Edison
<u>Average Capital Structure for 2012</u>				
Equity Ratio	[1]	39.6%	43.3%	38.2%
Debt Ratio	[2]	60.4%	56.7%	61.8%
Debt-to-Equity Ratio	[3]	1.52	1.31	1.62
Embedded Cost of Debt	[4]	6.70%	7.12%	6.80%
Effective Tax Rate	[5]	36.14%	35.88%	35.74%
<u>Sample Statistics</u>				
Sample Average Return on Total Capital	[6]	7.12%	7.12%	7.12%
Sample Standard Deviation	[7]	1.89%	1.89%	1.89%
<u>ROE Determinants using "Safe Harbor" Increment</u>				
ROE Corresponding to Sample Average Return on Total Capital, Adjusted to Account for Capital Structure	[8]	11.45%	10.48%	11.59%
"Safe Harbor" Increment	[9]	2.00%	2.00%	2.00%
ROE Determinants using "Safe Harbor" Increment	[10]	13.45%	12.48%	13.59%
Sources and Notes:				
[1] - [2], [4] - [5]: Provided by FirstEnergy				
[3] = [2] / [1].				
[6]: Sample average of return on total capital for the sample.				
[7]: Sample standard deviation of return on total capital for the sample.				
[8] = [6] x (1 + [3]) - (1 - [5]) x [4] x [3].				
[9]: Commission Finding and Order in case no. 09-786-EL-UNC, at p. 29.				
[10] = [8] + [9].				

1 **Q74. Why did you not simply calculate the sample average ROE and add 200 bps to**
2 **determine the “safe harbor” ROE?**

3 A74. Simply averaging the realized ROEs for the sample companies ignores differences in
4 capital structure, but the statute specifies that differences in capital structure should
5 be considered. Adjusting for differences in capital structure is inherent in the method
6 I propose and important as demonstrated by the variation in the safe harbor
7 determinant for the Companies. These vary from 12.48 percent to 13.59 percent.
8 Ignoring capital structure differences could lead to an unfair result and weakens the
9 effectiveness of the safe harbor determination.

Q75. How does the resulting ROE threshold depend on the utility's capital structure?

A75. While the return on total capital threshold is based only on the sample of comparable companies, and therefore not affected by the utility's capital structure, the ROE threshold depends on it. In general, a higher equity thickness lowers the ROE threshold, while a lower equity thickness tends to raise it. As an example, if Ohio Edison's capital structure had an equity thickness of 50 percent instead of 43.3 percent, the implied ROE threshold based on the capital intensive sample would be 15.90 percent or approximately 180 basis points lower than the implied threshold at 43.3 percent equity. The thresholds that result at several hypothetical equity ratios for Ohio Edison are presented below in Table 7:

Table 7. Implied ROE Thresholds at Different Equity Ratios for Ohio Edison

Cost of Debt	7.12%			[1]
Effective Tax Rate	35.9%			[2]
Equity	35.0%	43.3%	50.0%	[3]
Debt-to-Equity ratio	1.86	1.31	1.00	[4] = (1-[3])/[3]
Return on Total Capital Threshold	10.23%	10.23%	10.23%	[5]
Implied Return on Equity Threshold	20.76%	17.67%	15.90%	[6] = [5] x (1+[4]) - (1-[2]) x [4] x [1]
Note: The calculations use the cost of debt and tax rate information for Ohio Edison, and for illustrative purposes consider two hypothetical capital structures around the Company's actual values.				

Q76. Does this conclude your testimony?

A76. Yes.

APPENDIX A:

QUALIFICATIONS OF MICHAEL J. VILBERT

Dr. Michael J. Vilbert is Office Director of The Brattle Group's San Francisco office and has 20 years of experience as an economic consultant. He is an expert in cost of capital, financial planning and valuation who has advised clients on these matters in the context of a wide variety of investment and regulatory decisions. In the area of regulatory economics, he has testified or submitted testimony on the cost of capital for regulated companies in the water, electric, natural gas and petroleum industries in the U.S. and Canada. His testimony has addressed the effect of regulatory policies such as decoupling or must-run generation on a regulated company's cost of capital and the appropriate way to estimate the cost of capital for companies organized as Master Limited Partnerships. He analyzed issues associated with situations imposing asymmetric risk on utilities, the prudence of purchased power contracts, the economics of energy conservation programs, the appropriate incentives for investment in electric transmission assets and the effect of long-term purchased power agreements on the financial risk of a company. He has served as a neutral arbitrator in a contract dispute and analyzed the effectiveness of a company's electric power supply auction. He has also estimated economic damages and analyzed the business purpose and economic substance of tax related transactions, valued assets in arbitration for purchase at the end of the contract, estimated the stranded costs of resulting from the deregulation of electric generation and from the municipalization of an electric utility's distribution assets and addressed the appropriate regulatory accounting for depreciation and goodwill.

He received his Ph.D. in Financial Economics from the Wharton School of the University of Pennsylvania, an MBA from the University of Utah, an M.S. from the Fletcher School of Law and Diplomacy, Tufts University, and a B.S. degree from the United States Air Force Academy. He joined The Brattle Group in 1994 after a career as an Air Force officer, where he served as a fighter pilot, intelligence officer, and professor of finance at the Air Force Academy. .

REPRESENTATIVE CONSULTING EXPERIENCE

- ◆ Dr. Vilbert served as the consulting expert in several cases for the U.S. Department of Justice and the Internal Revenue Service regarding the business purpose and economic substance of a series of tax related transactions. These projects required the analysis of a complex series of financial transactions including the review of voluminous documentary evidence and required expertise in financial theory, financial market as well as accounting and financial statement analysis.
- ◆ In a securities fraud case, Dr. Vilbert designed and created a model to value the private placement stock of a drug store chain as if there had been full disclosure of the actual financial condition of the firm. He analyzed key financial data and security analysts'

reports regarding the future of the industry in order to recreate pro forma balance sheet and income statements under a variety of scenarios designed to establish the value of the firm.

- ◆ For pharmaceutical companies rebutting price-fixing claims in antitrust litigation, Dr. Vilbert was a member of a team that prepared a comprehensive analysis of industry profitability. The analysis replicated, tested and critiqued the major recent analyses of drug costs, risks and returns. The analyses helped develop expert witness testimony to rebut allegations of excess profits.
- ◆ For an independent electric power producer, Dr. Vilbert created a model that analyzed the reasonableness of rates and costs filed by a natural gas pipeline. The model not only duplicated the pipeline's rates, but it also allowed simulation of a variety of "what if" scenarios associated with cost recovery under alternative time patterns and joint cost allocations. Results of the analysis were adopted by the intervenor group for negotiation with the pipeline.
- ◆ For the CFO of an electric utility, Dr. Vilbert developed the valuation model used to support a stranded cost estimation filing. The case involved a conflict between two utilities over the responsibility for out-of-market costs associated with a power purchase contract between them. In addition, he advised and analyzed cost recovery mechanisms that would allow full recovery of the stranded costs while providing a rate reduction for the company's rate payers.
- ◆ Dr. Vilbert has testified as well as assisted in the preparation of testimony and the development of estimation models in numerous cost of capital cases for natural gas pipeline, water utility and electric utility clients before the Federal Energy Regulatory Commission ("FERC") and state regulatory commissions. These have spanned standard estimation techniques (e.g., Discounted Cash Flow and Risk Positioning models). He has also developed and applied more advanced models specific to the industries or lines of business in question, e.g., based on the structure and risk characteristics of cash flows, or based on multi-factor models that better characterize regulated industries.
- ◆ Dr. Vilbert has valued several large, residual oil-fired generating stations to evaluate the possible conversion to natural gas or other fuels. In these analyses, the expected pre- and post-conversion station values were computed using a range of market electricity and fuel cost conditions.
- ◆ For a major western electric utility, Dr. Vilbert helped prepare testimony that analyzed the prudence of QF contract enforcement. The testimony demonstrated that the utility had not been compensated in its allowed cost of capital for major disallowances stemming from QF contract management.
- ◆ Dr. Vilbert analyzed the economic need for a major natural gas pipeline expansion to the Midwest. This involved evaluating forecasts of natural gas use in various regions of the United States and the effect of additional supplies on the pattern of natural gas pipeline

use. The analysis was used to justify the expansion before the FERC and the National Energy Board of Canada.

- ◆ For a Public Utility Commission in the Northeast, Dr. Vilbert analyzed the auction of an electric utility's purchase power agreements to determine whether the outcome of the auction was in the ratepayers' interest. The work involved the analysis of the auction procedures as well as the benefits to ratepayers of transferring risk of the PPA payments to the buyer.
- ◆ Dr. Vilbert led a team tasked to determine whether bridge tolls were "just and reasonable" for a non-profit port authority. Determination of the cost of service for the authority required estimation of the value of the authority's assets using the trended original cost methodology as well as evaluation of the operations and maintenance budgets. Investment costs, bridge traffic information and inflation indices covering a 75 year period were utilized to estimate the value of four bridges and a passenger transit line valued in excess of \$1 billion.
- ◆ Dr. Vilbert helped a recently privatized railroad in Brazil develop an estimate of its revenue requirements, including a determination of the railroad's cost of capital. He also helped evaluate alternative rate structures designed to provide economic incentives to shippers as well as to the railroad for improved service. This involved the explanation and analysis of the contribution margin of numerous shipper products, improved cost analysis and evaluation of bottlenecks in the system.
- ◆ For a utility in the Southeast, Dr. Vilbert quantified the company's stranded costs under several legislative electric restructuring scenarios. This involved the evaluation of all of the company's fossil and nuclear generating units, its contracts with Qualifying Facilities and the prudence of those QF contracts. He provided analysis concerning the impact of securitizing the company's stranded costs as a means of reducing the cost to the ratepayers and several alternative designs for recovering stranded costs.
- ◆ For a recently privatized electric utility in Australia, Dr. Vilbert evaluated the proposed regulatory scheme of the Australian Competition and Consumer Commission for the company's electric transmission system. The evaluation highlighted the elements of the proposed regulation which would impose uncompensated asymmetric risks on the company and the need to either eliminate the asymmetry in risk or provide additional compensation so that the company could expect to earn its cost of capital.
- ◆ For an electric utility in the Southwest, Dr. Vilbert helped design and create a model to estimate the stranded costs of the company's portfolio of Qualifying Facilities and Power Purchase contracts. This exercise was complicated by the many variations in the provisions of the contracts that required modeling in order to capture the effect of changes in either the performance of the plants or in the estimated market price of electricity.
- ◆ Dr. Vilbert helped prepare the testimony responding to a FERC request for further

comments on the appropriate return on equity for electric transmission facilities. In addition, Dr. Vilbert was a member of the team that made a presentation to the FERC staff on the expected risks of the unbundled electric transmission line of business.

- ◆ Dr. Vilbert and Mr. Frank C. Graves, also of The Brattle Group, prepared testimony evaluating an innovative Canadian stranded cost recovery procedure involving the auctioning of the output of the province's electric generation plants instead of the plants themselves. The evaluation required the analysis of the terms and conditions of the long-term contracts specifying the revenue requirements of the plants for their entire forecasted remaining economic life and required an estimate of the cost of capital for the plant owners under this new stranded cost recovery concept.
- ◆ Dr. Vilbert served as the neutral arbitrator for the valuation of a petroleum products tanker. The valuation required analysis of the Jones Act tanker market and the supply and demand balance of the available U.S. constructed tanker fleet.
- ◆ Dr. Vilbert evaluated the appropriate "bareboat" charter rate for an oil drilling platform for the renewal period following the end of a long-term lease. The evaluation required analysis of the market for oil drilling platforms around the world including trends in construction and labor costs and the demand for platforms in varying geographical environments.

PRESENTATIONS

"Utility Distribution Cost of Capital," *EEI Electric Rates Advanced Course*, Bloomington, IN, 2002, 2003.

"Issues for Cost of Capital Estimation," with Bente Villadsen, *Edison Electric Institute Cost of Capital Conference*, Chicago, IL, February 2004.

"Not Your Father's Rate of Return Methodology," *Utility Commissioners/Wall Street Dialogue*, NY, May 2004.

"Utility Distribution Cost of Capital," *EEI Electric Rates Advanced Course*, Madison, WI, July 2004.

"Cost of Capital Estimation: Issues and Answers," *MidAmerican Regulatory Finance Conference*, Des Moines, IA, April 7, 2005.

"Cost of Capital - Explaining to the Commission - Different ROEs for Different Parts of the Business," *EEI Economic Regulation & Competition Analysts Meeting*, May 2, 2005.

"Current Issues in Cost of Capital," with Bente Villadsen, *EEI Electric Rates Advanced Course*, Madison, WI, 2005.

Appendix A to the Direct Testimony of Michael J. Vilbert

“Current Issues in Estimating the Cost of Capital,” *EEI Electric Rates Advanced Course*, Madison, WI, 2006, 2007, 2008, 2009, 2010 and 2011.

“Revisiting the Development of Proxy Groups and Relative Risk Analysis,” Society of Utility and Regulatory Financial Analysts: 39th Financial Forum, April 2007.

“Current Issues in Explaining the Cost of Capital to Utility Commissions” Cost of Capital Seminar, Philadelphia, PA, 2008.

“Impact of the Ongoing Economic Crisis on the Cost of Capital of the U.S. Utility Sector”, New York Public Service Commission, Albany, NY, April 20, 2009.

“Impact of the Ongoing Economic Crisis on the Cost of Capital of the U.S. Utility Sector”, National Association of Water Companies: New York Chapter, Albany, NY, May 21, 2009.

ARTICLES

"Flaws in the Proposed IRS Rule to Reinstate Amortization of Deferred Tax Balances Associated with Generation Assets Reorganized in Industry Restructuring," by Frank C. Graves and Michael J. Vilbert, white paper for *Edison Electric Institute* (EEI) to the IRS, July 25, 2003.

"The Effect of Debt on the Cost of Equity in a Regulatory Setting," by A. Lawrence Kolbe, Michael J. Vilbert, Bente Villadsen and The Brattle Group, *Edison Electric Institute*, April 2005.

"Measuring Return on Equity Correctly: Why current estimation models set allowed ROE too low," by A. Lawrence Kolbe, Michael J. Vilbert and Bente Villadsen, *Public Utilities Fortnightly*, August 2005.

"Understanding Debt Imputation Issues," by Michael J. Vilbert, Bente Villadsen and Joseph B. Wharton, *Edison Electric Institute*, August 2008.

“Review of Regulatory Cost of Capital Methodologies,” (with Bente Villadsen and Matthew Aharonian), Canadian Transportation Agency, September 2010.

“The Impact of Decoupling on the Cost of Capital – An Empirical Study,” Joseph B. Wharton, Michael J. Vilbert, Richard E. Goldberg, and Toby Brown, Discussion Paper, *The Brattle Group*, March 2011.

TESTIMONY

Direct and rebuttal testimony before the Alberta Energy and Utilities Board on behalf of TransAlta Utilities Corporation in the matter of an application for approval of its 1999 and 2000 generation tariff, transmission tariff, and distribution revenue requirement, Docket U99099, October 1998.

Direct testimony before the Federal Energy Regulatory Commission on behalf of Central Maine Power in Docket No. ER00-982-000, December 1999.

Direct testimony before the Alberta Energy and Utilities Board on behalf of TransAlta Utilities Corporation for approval of its 2001 transmission tariff, May 2000.

Direct testimony before the Federal Energy Regulatory Commission on behalf of Mississippi River Transmission Corporation in Docket No. RP01-292-000, March 2001.

Written evidence, rebuttal, reply and further reply before the National Energy Board in the matter of an application by TransCanada PipeLines Limited for orders pursuant to Part I and Part IV of the *National Energy Board Act*, Order AO-1-RH-4-2001, May 2001, Nov. 2001, Feb. 2002.

Written evidence before the Public Utility Board on behalf of Newfoundland & Labrador Hydro - Rate Hearings, October 2001, Order No. P.U.7 (2002-2003), dated June 2002.

Direct testimony (with William Lindsay) before the Federal Energy Regulatory Commission on behalf of DTE East China, LLC in Docket No. ER02-1599-000, April 2002.

Direct and rebuttal reports before the Arbitration Panel in the arbitration of stranded costs for the City of Casselberry, FL, Case No. 00-CA-1107-16-L, July 2002.

Direct reports before the Arbitration Board for Petroleum products trade in the Arbitration of the Military Sealift Command vs. Household Commercial Financial Services, fair value of sale of the Darnell, October 2002.

Direct testimony and hearing before the Arbitration Panel in the arbitration of stranded costs for the City of Winter Park, FL, In the Circuit Court of the Ninth Judicial Circuit in and for Orange County, FL, Case No. C1-01-4558-39, December 2002.

Direct testimony before the Federal Energy Regulatory Commission on behalf of Florida Power Corporation, dba Progress Energy Florida, Inc. in Docket No. SC03-1-000, March 2003.

Direct report before the Arbitration Panel in the arbitration of stranded costs for the Town of Belleair, FL, Case No. 000-6487-C1-007, April 2003.

Direct and rebuttal reports before the Alberta Energy and Utilities Board in the matter of the Alberta Energy and Utilities Board Act, R.S.A. 2000, c. A-17, and the Regulations under it; in

the matter of the Gas Utilities Act, R.S.A. 2000, c. G-5, and the Regulations under it; in the matter of the Public Utilities Board Act, R.S.A. 2000, c. P-45, as amended, and the Regulations under it; and in the matter of Alberta Energy and Utilities Generic Cost of Capital Hearing, Application No. 1271597, July 2003, November 2003, Decision 2004-052, dated July 2004.

Written evidence before the National Energy Board in the matter of the National Energy Board Act, R.S.C. 1985, c. N-7, as amended, (Act) and the Regulations made under it; and in the matter of an application by TransCanada PipeLines Limited for orders pursuant to Part IV of the *National Energy Board Act*, for approval of Mainline Tolls for 2004, RH-2-2004, January 2004.

Direct and rebuttal testimony before the Public Service Commission of West Virginia, on Cost of Capital for West Virginia-American Water Company, Case No 04-0373-W-42T, May 2004.

Direct and rebuttal testimony before the Federal Energy Regulatory Commission on Energy Allocation of Debt Cost for Incremental Shipping Rates for Edison Mission Energy, Docket No. RP04-274-000, December 2004 and March 2005.

Direct testimony before the Arizona Corporation Commission, Cost of Capital for Paradise Valley Water Company, a subsidiary of Arizona-American Water Company, Docket No. WS-01303A-05, May 2005.

Written evidence before the Ontario Energy Board, Cost of Capital for Union Gas Limited, Inc., Docket No. EB-2005-0520, January 2006.

Direct and rebuttal testimony before the Pennsylvania Public Utility Commission, Return on Equity for Metropolitan Edison Company, Docket No. R-00061366 and Pennsylvania Electric Company, Docket No. R-00061367, April 2006 and August 2006.

Expert report in the United States Tax Court, Docket No. 21309-05, 34th Street Partners, DH Petersburg Investment, LLC and Mid-Atlantic Finance, Partners Other than the Tax Matters Partner, Petitioner, v. Commissioner of Internal Revenue, Respondent, July 28, 2006.

Direct and supplemental testimony before the Federal Energy Regulatory Commission, Docket No. ER06-427-003, on behalf of Mystic Development, LLC on the Cost of Capital for Mystic 8 and 9 Generating Plants Operating Under Reliability Must Run Contract, August 2006 and September 2006.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER07-46-000, on behalf of Northwestern Corporation on the Cost of Capital for Transmission Assets, October 2006.

Direct and rebuttal testimony before the Tennessee Regulatory Authority, Case No. 06-00290, on behalf of Tennessee American Water Company, on the Cost of Capital, November, 2006 and April 2007.

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Direct and rebuttal testimony before the Public Service Commission of Wisconsin, Docket No. 5-UR-103, on behalf of Wisconsin Energy Corporation, on the Cost of Capital for Wisconsin Electric Power Company and Wisconsin Gas LLC, May 2007 and October 2007.

Rebuttal testimony before the California Public Utilities Commission, Docket No. A. 07-01-036-39, on behalf of California-American Water Company, on the Cost of Capital, May 2007.

Direct testimony before the Public Utilities Commission of the State of South Dakota, Docket No. NG-07-013, on behalf of NorthWestern Corporation, on the Cost of Capital for NorthWestern Energy Company's natural gas operations in South Dakota, June 2007.

Direct, supplemental and rebuttal testimony before the Public Utilities Commission of Ohio, Case No. 07-551-EL-AIR, Case No. 07-552-EL-ATA, Case No. 07-553-EL-AAM, and Case No. 07-554-EL-UNC, on behalf of Ohio Edison Company, The Toledo Edison Company, and The Cleveland Electric Illuminating Company, on the cost of capital for the FirstEnergy Company's Ohio electric distribution utilities, June 2007, January 2008 and February 2008.

Direct testimony before the Public Service Commission of West Virginia, Case No. 07-0998-W-42T, on behalf of West Virginia American Water Company on cost of capital, July 2007.

Direct and rebuttal testimony before the State Corporation Commission of Virginia, Case No. PUE-2007-00066, on behalf of Virginia Electric and Power Company on the cost of capital for its southwest Virginia coal plant, July 2007 and December 2007.

Direct and Supplemental testimony before the Public Utilities Commission of Ohio, Case No. 07-829-GA-AIR, Case No. 07-830-GA-ALT, and Case No. 07-831-GA-AAM, on behalf of Dominion East Ohio Company, on the rate of return for Dominion East Ohio's natural gas distribution operations, September 2007 and June 2008.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER08-92-000 to Docket No. ER08-92-003, on behalf of Virginia Electric and Power Company, on the Cost of Capital for Transmission Assets, October 2007.

Direct and rebuttal testimony before the California Public Utilities Commission, Docket No. A. 07-01-022, on behalf of California-American Water Company, on the Effect of a Water Revenue Adjustment Mechanism on the Cost of Capital, October 2007 and November 2007.

Written direct and reply evidence before the National Energy Board in the matter of the National Energy Board Act, R.S.C. 1985, c. N-7, as amended, and the Regulations made thereunder; and in the matter of an application by Trans Québec & Maritimes PipeLines Inc. ("TQM") for orders pursuant to Part I and Part IV of the *National Energy Board Act*, for determining the overall fair return on capital for tolls charged by TQM, December 2007 and September 2008, Decision RH-1-2008, dated March 2009.

Comments in support of The Interstate Natural Gas Association of America's Additional Initial Comments on the FERC's Proposed Policy Statement with regard to the Composition of Proxy

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Companies for Determining Gas and Oil Pipeline Return on Equity, Docket No. PL07-2-000, December, 2007.

Direct and rebuttal testimony on the Cost of Capital before the Tennessee Regulatory Authority, Case No. 08-00039, on behalf of Tennessee American Water Company, March and August 2008.

Post-Technical Conference Affidavit on behalf of The Interstate Natural Gas Association of America in response to the Reply Comments of the State of Alaska with regard the FERC's Proposed Policy Statement on to the Composition of Proxy Companies for Determining Gas and Oil Pipeline Return on Equity, Docket No. PL07-2-000, March, 2008

Direct and rebuttal testimony before the California Public Utilities Commission, Docket No. A.08-05-003, on behalf of California-American Water Company, concerning Cost of Capital, May 2008 and August 2008.

Rebuttal testimony on the financial risk of Purchased Power Agreements, before the Public Utilities Commission of the State of Colorado, Docket No. 07A-447E, in the matter of the application of Public Service Company of Colorado for approval of its 2007 Colorado Resource Plan, June 2008.

Direct and rebuttal testimony before the Federal Energy Regulatory Commission, Docket No. RP08-426-000, on behalf of El Paso Natural Gas Company, on the Cost of Capital for Natural Gas Transmission Assets, June 2008 and August 2009.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER08-1207-000, on behalf of Virginia Electric and Power Company, on the incentive Cost of Capital for investment in New Electric Transmission Assets, June 2008

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER08-1233-000, on behalf of Public Service Electric and Gas Company, on the Cost of Capital for Electric Transmission Assets, July 2008.

Direct and rebuttal testimony before the Public Service Commission of West Virginia, Case No. 08-0900-W-42t, on behalf of West Virginia-American Water Company concerning the Cost of Capital for Water Utility assets, July 2008 and November 2008.

Direct and rebuttal testimony before the Public Utilities Commission of Ohio, Case No. 08-935-EL-SSO, on behalf of Ohio Edison Company, The Toledo Edison Company, and The Cleveland Electric Illuminating Company, with regard to the test to determine Significantly Excessive Earnings within the context of Senate Bill No. 221, September 2008 and October 2008.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER09-249-000, on behalf of Public Service Electric and Gas Company, on the incentive Cost of Capital for Mid-Atlantic Power Pathway Electric Transmission Assets, November 2008.

Direct and rebuttal testimony before the Public Service Commission of West Virginia, Case No.

08-1783-G-PC, on behalf of Dominion Hope Gas Company concerning the Cost of Capital for Gas Local Distribution Company assets, November 2008 and May 2009.

Written Evidence before the Alberta Utilities Commission in the matter of the Alberta Utilities Commission Act, S.A. 2007, c. A-37.2, as amended, and the regulations made thereunder; and IN THE MATTER OF the Gas Utilities Act, R.S.A. 2000, c. G-5, as amended, and the regulations made thereunder; and IN THE MATTER OF the Public Utilities Act, R.S.A. 2000, c. P-45, as amended, and the regulations made thereunder; and IN THE MATTER OF Alberta Utilities Commission 2009 Generic Cost of Capital Hearing, Application No. 1578571/Proceeding No. 85. 2009 Generic Cost of Capital Proceeding on behalf of NGTL, November 2008.

Written and Reply Evidence before the Alberta Utilities Commission in the matter of the Alberta Utilities Commission Act, S.A. 2007, c. A-37.2, as amended, and the regulations made thereunder; and IN THE MATTER OF the Gas Utilities Act, R.S.A. 2000, c. G-5, as amended, and the regulations made thereunder; and IN THE MATTER OF the Public Utilities Act, R.S.A. 2000, c. P-45, as amended, and the regulations made thereunder; and IN THE MATTER OF Alberta Utilities Commission 2009 Generic Cost of Capital Hearing, Application No. 1578571/Proceeding No. 85. 2009 Generic Cost of Capital Proceeding on behalf of AltaGas Utilities Inc., November 2008 and May 2009.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER09-548-000, on behalf of ITC Great Plains, LLC, on the Cost of Capital for Electric Transmission Assets, January 2009.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER09-681-000, on behalf of Green Power Express, LLP, on the Cost of Capital for Electric Transmission Assets, February 2009.

Written evidence before the Régie de l'Énergie on behalf of Gaz Métro Limited Partnership, Cause Tarifaire 2010, R-3690-2009, on the Cost of Capital for natural gas transmission assets, May 2009.

Direct and rebuttal testimony before the Public Service Commission of Wisconsin, Docket No. 6680-UR-117, on behalf of Wisconsin Power and Light Company, on the cost of capital for electric and natural gas distribution assets, May 2009 and September 2009.

Direct and rebuttal testimony before the State of New Jersey Board of Public Utilities in the Matter of the Petition of Public Service Electric and Gas Company for Approval of an Increase in Electric and Gas Rates and for Changes in the Tariffs for Electric and Gas Service, B.P.U.N.J. No. 14 Electric and B.P.U.N.J. No. 14 Gas Pursuant to N.J.S.A. 48:2-21 and N.J.S.A. 48:2-21.1 and for Approval of a Gas Weather Normalization Clause; a Pension Expense Tracker and for other Appropriate Relief BPU Docket No. GR09050422, June 2009 and December 2009.

Rebuttal testimony before the Florida Public Service Commission in re: Petition for Increase in Rates by Progress Energy Florida, Inc., Docket No. 090079-EI, August 2009.

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Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER10-159-000, on behalf of Public Service Electric and Gas Company, on the incentive Cost of Capital for the Branchburg-Roseland-Hudson 500 kV Line electric transmission project (“BRH Project”), October 2009.

Direct and Rebuttal Testimony before the California Public Utilities Commission regarding cost of service for San Joaquin Valley crude oil pipeline on behalf of Chevron Products Company, Docket Nos. A.08-09-024, C.08-03-021, C.09-02-007 and C.09-03-027, December 2009 and April 2010.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER10-516-000, on behalf of South Carolina Gas and Electric Company, on the Cost of Capital for Electric Transmission Assets, December 2009.

Direct testimony before the Oklahoma Corporation Commission, Cause No. PUD 201000050, on behalf of Public Service Company of Oklahoma, regarding cost of service for a regulated electric utility, June 2010.

Direct testimony before the Michigan Public Service Commission, Case No. U-16400, on behalf of Michigan Consolidated Gas Company, regarding cost of service for natural gas distribution assets, July 15, 2010

Direct testimony before the Public Utilities Commission of Ohio, Case No. 10-1265-EL-UNC, In the Matter of the Determination of the Existence of Significantly Excessive Earnings for 2009 Under the Electric Security Plan of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company, September 2010.

Direct and rebuttal testimony before the Federal Energy Regulatory Commission, Docket No. RP10-1398-000, on behalf of El Paso Natural Gas Company, on the Cost of Capital for Natural Gas Transmission Assets, September 2010 and September 2011.

Direct and rebuttal testimony before the Michigan Public Service Commission, In the matter of the application of The Detroit Edison Company, for authority to increase its rates, amend its rate schedules and rules governing the distribution and supply of electric energy, and for miscellaneous accounting authority, Case No. U-16472, October 2010 and April 2011.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. RP11-1566-000, on behalf Tennessee Gas Pipeline Company, on the Cost of Capital for Natural Gas Transmission Assets, November 2010.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER11-013-000, on behalf of the Atlantic Wind Connection Companies, on the Cost of Capital and Cost of Capital incentive adders for Electric Transmission Assets, December 2010.

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Direct and rebuttal testimony before the Public Utilities Commission of the State of California, Docket No. A.11-05-001, on behalf of California Water Service Company, on the Cost of Capital for Water Distribution Assets, April 2011 and September 2011.

Rebuttal testimony before the Public Utilities Commission of the State of California, Docket No. A.10-09-018, on behalf of California American Water Company, on Application of California American Water Company (U210W) for Authorization to Implement the Carmel River Reroute and San Clemente Dam Removal Project and to Recover the Costs Associated with the Project in Rates, June 2011.

Initial testimony before the Public Utilities Commission of Ohio, Case No. 11-4553-EL-UNC, In the Matter of the Determination of the Existence of Significantly Excessive Earnings for 2010 Under the Electric Security Plan of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company, July 2011.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. PA10-13-000, on behalf of ITC Holdings Corp. in response to FERC Staff, Office of Enforcement, Division of Audits, Draft Report on the appropriate accounting for goodwill for the acquisition of ITC Midwest assets from Interstate Power and Light Company, July 2011.

Written direct and reply evidence before the National Energy Board in the matter of the National Energy Board Act, R.S.C. 1985, c. N-7, as amended, and the Regulations made thereunder; and in the matter of an application by TransCanada PipeLines Limited for orders pursuant to Part I and Part IV of the *National Energy Board Act*, for determining the overall fair return on capital in the business and services restructuring and Mainline 2012 – 2013 toll application, RH-003-2011, September 2011 and May 2012.

Report before the Arbitrator on behalf of Canadian National Railway Company in the matter of a Submission by Tolko Marketing and Sales LTD for Final Offer Arbitration of the Freight Rates and Conditions Associated with Respect to the Movement of Lumber by Canadian National Railway Company from High Level, Alberta to Various Destinations in the Vancouver, British Columbia Area, October, 2011.

Rebuttal Evidence before the National Energy Board in the matter of AltaGas Utilities Inc., 2010-2012 GRA Phase I, Application No. 1606694; Proceeding I.D. 904, October, 2011.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. ER12-296-000, on behalf of Public Service Electric and Gas Company on the Cost of Capital and for Incentive Rate Treatment for the Northeast Grid Reliability Transmission Project, October 2011.

Rebuttal testimony before the Florida Public Service Commission, Docket No. 110138-EL, on behalf of Gulf Power, a Southern Company, on the method to adjust the return on equity for differences in financial risk, November 2011.

Direct testimony before the Federal Energy Regulatory Commission, Docket No. PA10-13-000, on behalf of ITC Holdings Corp. regarding a rehearing for FERC Staff, Office of Enforcement,

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Division of Audits, Report on the appropriate accounting for goodwill for the acquisition of ITC Midwest assets from Interstate Power and Light Company, February 2012.

Direct and rebuttal testimony before the Michigan Public Service Commission, Case No. U-16999, on behalf of Michigan Consolidated Gas Company, regarding cost of service for natural gas distribution assets, April 2012 and October 2012.

Deposition testimony in *Primex Farms, LLC, Plaintiff, v. Roll International Corporation, Westside Mutual Water Company, LLC, Paramount Farming Company, LLC, Defendants*, April 2012.

Deposition testimony in *Tahoe City Public Utility District, Plaintiff vs. Case No. SCV 27283 Tahoe Park Water Company, Lake Forest Water Company, Defendants*, May 2012.

Direct testimony before the Public Utilities Commission of Ohio, In the Matter of the Determination of the Existence of Significantly Excessive Earnings for 2011 Under the Electric Security Plan of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company, Case No. 12-1544-EL-UNC, May 2012.

Joint Rebuttal Testimony before the California Public Utility Commission on behalf of California American Water Company, regarding Application of California-American Water Company (U210W) for Authorization to increase its Revenues for Water Service, Application 10-07-007, and In the Matter of the Application of California-American Water Company (U210W) for an Order Authorizing and Imposing a Moratorium on New Water Service Connections in its Larkfield District, Application 11-09-016, August 2012.

Direct testimony and supporting exhibits on behalf of Transcontinental Gas Pipeline Company, LLC, before the Federal Energy Regulatory Commission, on the Cost of Capital for Interstate Natural Gas Pipeline assets, Docket No. RP12-993-000, August 2012.

Direct Testimony before the North Carolina Utilities Commission on behalf of Cardinal Pipeline Company LLC, regarding the cost of capital for an intrastate natural gas pipeline, Docket G-39, Sub 28, August 2012.

Rebuttal Testimony before the Public Utilities Commission of the State of California on behalf of Southern California Edison regarding Application 12-04-015 of Southern California Edison Company (U 338-E) For Authority to Establish Its Authorized Cost of Capital for Utility Operations for 2013 and to Reset the Annual Cost of Capital Adjustment Mechanism , August 2012.

Direct testimony before the Public Utilities Commission of the State of Colorado on behalf of Rocky Mountain Natural Gas LLC regarding the cost of capital for an intrastate natural gas pipeline, Docket No. 13AL-___G, with Advice Letter No. 77, January 2013.

APPENDIX B

EMPIRICAL IMPLEMENTATION AND TECHNICAL DETAILS

I. SAMPLE SELECTION.

Q1. Please describe the universe of companies that you believe have business risk comparable to the Ohio EDUs.

A1. I started by selecting industries that share several essential business characteristics with an electric distribution utility, without restricting the potential sample to regulated companies. The initial criteria I used were (1) companies that operate in industries relying on a network of assets to provide services to a customer mix that includes residential, commercial and industrial customers and (2) that exhibit high capital intensity. Capital intensity means that the capital investment required for each dollar of revenue is high. I started with the universe of 102 industries and approximately 1700 companies covered by the *Value Line Standard Edition*. The following twelve industries satisfy the first criterion outlined above: Electric Utilities,¹ Natural Gas Utilities, Oil and Gas Distribution, Pipeline MLPs, Water Utilities, Air Transportation, Cable TV, Environmental, Railroads, Telecommunications Services, Telecommunications Utilities, Trucking. The total number of companies covered by the *Value Line Standard Edition* in these twelve industries is 156.²

Q2. What additional criteria did you use?

A2. I further limited the sample to companies with an investment-grade credit rating, using Standard & Poor's credit ratings provided by Compustat.³ I also eliminated foreign companies.

¹ *Value Line* breaks the electric utilities down into three categories, based on geographical location: East, Central, and West.

² As of April 24, 2013, no companies that would have otherwise been included in our sample have been acquired since January 1, 2013.

³ The ratings are as of December 31, 2012. If ratings data for a company is unavailable in Compustat, we obtain the credit rating information from Bloomberg instead.

Q3. How did you apply the capital intensity screen?

A3. The electric utility industry is one of the most capital intensive industries, so I eliminated industries whose average capital intensity was substantially below that of an electric utility. There are several possible measures of capital intensity. I used asset turnover, which is defined as the ratio of revenues to total assets. In order to account for asset disposals or purchases during the year, I used an average of the beginning and end of year total asset figures for the denominator of the fraction. This ratio provides an indicator of the amount of capital invested to generate a dollar of revenue. Using this measure and eliminating industries with an average asset turnover in excess of 1.00 for the 2008-2012 (five-year) period results in nine industries for inclusion in the sample: Electric Utilities, Natural Gas Utilities, Water Utilities, Oil and Gas Distribution, Pipeline MLPs, Environmental, Railroads, Cable TV, and Telecommunications Services.⁴

Q4. How many companies were excluded by restricting the sample to domestic, investment grade companies?

A4. From the starting universe of 156 companies, 92 remained in the sample after applying these two filters. More specifically, I identified and excluded 14 foreign companies and 51 below-investment grade companies (one company was both foreign and below investment grade).

Q5. How many companies were included in the sample used to compute capital intensity?

A5. The sample consisted of 90 companies, because two of the 92 companies otherwise qualifying lacked the necessary data to calculate the capital intensity average. The companies in the sample, by industry classification, are presented in Table B 1 below, which shows the average asset turnover by industry, as well as the average industry

⁴ The Telecommunications Utilities industry contains no domestic companies with a credit rating above investment grade. Therefore, neither the capital intensity calculation nor the return on total capital threshold calculation can include this industry.

beta and equity thickness. The individual companies are listed in Table B 5 at the end of this Appendix.

Table B 1. Industry Statistics

Table B 1. Industry Statistics				
Industry	Number of Companies	Average Asset Turnover	Common Equity Percentage	Beta as of 2012
Electric Utilities				
Electric Utility (Central)	19	0.37	49%	0.74
Electric Utility (East)	14	0.36	48%	0.70
Electric Utility (West)	13	0.33	50%	0.73
<i>Electric Utilities</i>	<i>46</i>	<i>0.36</i>	<i>48.9%</i>	<i>0.72</i>
Other Regulated Utilities				
Natural Gas Utility	10	0.61	55%	0.68
Water Utility	6	0.23	52%	0.68
Oil/Gas Distribution	2	0.62	35%	0.98
Pipeline MLP	7	0.84	48%	0.81
<i>All Regulated Utilities</i>	<i>71</i>	<i>0.44</i>	<i>49.5%</i>	<i>0.73</i>
Other Capital Intensive Industries				
Railroad	3	0.39	58%	1.13
Telecommunications Services	4	0.58	71%	0.88
Environmental	3	0.51	46%	0.80
Cable TV	3	0.71	12%	0.95
<i>All Capital Intensive Industries</i>	<i>84</i>	<i>0.46</i>	<i>49.4%</i>	<i>0.76</i>
Other Industries				
Air Transport	3	1.26	68%	0.95
Telecommunications Utility	0	--	--	--
Trucking	3	1.50	47%	1.18
<i>All Industries</i>	<i>90</i>	<i>0.52</i>	<i>49.9%</i>	<i>0.78</i>

Q6. Is this the same sample that you used to compute the earnings metric?

A6. Approximately. Several differences arise due to data availability. In order to compute the capital intensity metric, I used all domestic investment-grade companies for which I could obtain revenue and total assets data in each of the five years included in the average. When computing the return on total capital, I restricted the sample to the companies that had the necessary data available for 2012. The data availability criterion generated some differences between the list of companies used to choose the list of industries, and the list used to compute the return metrics. However, most companies appear in both calculations. The list of all companies is provided in Table B 5, which also indicates whether a particular company was not

1 included in one of the sample calculations. The final sample used to derive the
2 earnings threshold, consisting of the more capital intensive companies, contains 77
3 companies.

4 **Q7. Are there any other data availability issues that you think are important to**
5 **raise?**

6 A7. Yes. First, because of the process used by *Value Line* to update its database, it does
7 not publish the fiscal-year end data as soon as it becomes available. As a result,
8 relying on *Value Line* alone will result in a smaller sample when the test is conducted
9 relatively early in the year. Because *Value Line* still lacks some data at this time for a
10 substantial number of companies that have published their 2012 financial statements,
11 I supplemented the *Value Line* dataset with Bloomberg figures for the following
12 variables: Total Assets, Long Term Debt, Preferred Equity, Preferred Dividends, and
13 Shareholder Equity. For the other variables used in my analysis *Value Line* provided
14 information for most sample companies.⁵

15 A second potential issue is that because not all companies' fiscal years coincide with
16 the calendar year, there are timing differences between the data reported for different
17 companies in the sample. If a company's fiscal year ends in the first four months of
18 the calendar year, then *Value Line* will assign the previous year's label to the data.
19 As a result, if the test of significantly excessive earnings is conducted comparatively
20 early in the year, the sample size may be substantially reduced. Because the filing
21 date for the SEET proceeding is early in the year, information for companies whose
22 fiscal year ends after December 31, 2012 is not available. From the initial universe of
23 156 companies, only 4 had a fiscal year that ended in the first four months of 2013.
24 Of those, none would have passed the initial screens (domestic company and credit
25 rating), so there is no impact on the test results from omitting these companies.

⁵ In order to ensure that I match correctly the Bloomberg variables with their *Value Line* counterparts, I checked that the numbers matched for 2011 and earlier years, for which both Bloomberg and *Value Line* report the data. Only variables for which the match was reliable were supplemented with Bloomberg data.

1 II. MEASURING THE RETURN ON TOTAL CAPITAL

2 **Q8. Please describe the metric that you propose to determine significantly excessive**
3 **earnings.**

4 A8. For each sample company, I compute an adjusted annual return on total capital, using
5 the following formula:

$$R = \frac{(NI - \text{Nonrec}) + (1 - t)LT \text{ Int}}{\text{Average Total Capital}}$$

7 Where:

- NI = Net Income
- $Nonrec$ = Nonrecurring gains/losses
- t = Company's effective tax rate
- $LT\ Int$ = Interest expense on long-term debt
- $Average\ Total\ Capital$ = the sum of the book values of common equity, preferred equity and long-term debt, measured as the average of beginning-of-year and end-of-year balance sheet values.

Q9. What is the source of the data necessary to perform this calculation?

A9. *Value Line Investment Analyzer* provides an electronic source for historical data collected or computed in *Value Line* reports. This data set, last updated on April 24, 2013, is used in the analysis.⁶ I obtained the S&P credit ratings for the sample companies from Compustat and Bloomberg. Finally, when restricting the sample based on percentage of regulated assets, I use *Edison Electric Institute's* classification for each electric utility.

Q10. Does *Value Line* report each of the required variables separately?

A10. No, but they can be obtained by straightforward manipulation of the electronic data provided. *Value Line* computes a measure that is very close to the adjusted return on total capital defined above, namely:

⁶ As discussed above, the data set was supplemented with Bloomberg data when certain items were unavailable.

$$R_{ValueLine} = \frac{Net\ profit + \frac{1}{2} LT\ Int}{Total\ Capital}$$

Because *Value Line* excludes non-recurring gains and losses from the computation of the Net Profit measure, the only differences from the metric I propose are that *Value Line* multiplies the long-term interest expense by 0.5 instead of the company's effective income tax rate, and that *Value Line* uses the end-of-year balance for total capital instead of the average of beginning and end-of-year values. Net Profit and the components of Total Capital are reported separately so long-term interest can be calculated, and then used to calculate the adjusted return on total capital that I propose.

Q11. Did you make any other adjustment to the return on total capital?

A11. Yes. The components of total capital are reported as of the end of the fiscal year. If the company issues or retires equity or debt during the year, the end-of-year value is different from the average value for the year. Because net profit and interest expense are based on the entire year, it is more accurate to use the average value for common equity, preferred equity, and long-term debt. Therefore, I use an average of the end-of-year total capital values for the current and previous year in the calculation.

Q12. Which data items exactly did you use for the return on total capital calculation?

A12. I used the following data items reported in the *Value Line Investment Analyzer*:

- Net Profit: this item excludes nonrecurring gains and losses, as determined by the *Value Line* analysts, and includes preferred dividends;
- Shareholders' Equity: this item includes both common and preferred equity, and excludes minority interest;
- Long-Term Debt;
- Return on Total Capital: this item is defined as the ratio of annual Net Profit plus ½ annual long-term interest to the sum of end-of-year shareholders' equity and long-term debt; and

- Income Tax Rate: this is the effective tax rate, determined as the ratio of taxes to earnings before taxes.

Q13. Apart from data availability, did you apply any additional filter to the data before calculating the return on total capital?

A13. Yes, I performed a test to identify any potential outliers in the data. The test was designed to identify any company with a return on capital that was more than three standard deviations away from the average return on capital in the sample. I found one such company, Union Pacific, which I decided to exclude from the sample mean and standard deviation. I found no additional outliers in the second round of the test.

Q14. What were the results of your analysis of sample companies' returns on total capital?

A14. Using only the capital intensive industries, I obtained an average adjusted return on total capital of 7.12 percent, with a standard deviation of 1.89 percent. For the initial universe of companies (which also includes the Air Transportation and Trucking industries), I obtained an average of 7.59 percent, with a standard deviation of 3.38 percent. The results for each sample are provided in Table B 2 below.

Table B 2. Return on Total Capital for Sample Industries

Industry	Number of Companies	Return on Total Capital (2012)
Electric Utilities		
Electric Utility (Central)	19	6.98%
Electric Utility (East)	14	6.55%
Electric Utility (West)	11	6.55%
Other Regulated Utilities		
Natural Gas Utility	10	7.81%
Water Utility	6	5.40%
Oil/Gas Distribution	2	7.04%
Pipeline MLP	5	9.69%
Other Capital Intensive Industries		
Railroad	2	12.18%
Telecommunications Services	3	5.15%
Environmental	3	7.13%
Cable TV	2	8.86%
<i>All Capital Intensive Industries</i>	<i>77</i>	
<i>Mean</i>		<i>7.12%</i>
<i>Standard deviation</i>		<i>1.89%</i>
Other Industries		
Air Transport	3	14.15%
Telecommunications Utility	0	-
Trucking	3	13.16%
<i>All Industries</i>	<i>83</i>	
<i>Mean for All Industries</i>		<i>7.59%</i>
<i>Standard Deviation for All Industries</i>		<i>3.38%</i>

Q15. Did you consider any subsamples?

A15. Yes. In order to test the sensitivity of the results to including electric utilities that own a large share of unregulated generation assets, I first excluded companies classified as Diversified by the *Edison Electric Institute* (EEI), and then those classified as either Diversified or Mostly Regulated by the EEI. The EEI classifies an electric utility as Diversified if less than 50 percent of its assets are regulated, and as Mostly Regulated if between 50 and 80 percent of its assets are regulated. The results of these two subsamples are summarized in Table B 3 below.

Table B 3. Return on Capital Thresholds for Subsamples Obtained Based on EEI Classification

Statistical Significance Threshold		95.0%		
		Capital Intensive Industries	Excluding Electric Utilities Classified "D" by EEI	Excluding Electric Utilities Classified "D" or "MR" by EEI
Sample Average Return on Total Capital	[1]	7.12%	7.12%	7.20%
Sample Standard Deviation	[2]	1.89%	1.90%	2.04%
Return on Total Capital Threshold	[3]	10.23%	10.25%	10.55%
Sources and Notes:				
[1]: Sample average of return on total capital for the corresponding sample.				
[2]: Sample standard deviation of return on total capital for the corresponding sample.				
[3] = [1] + 1.645 x [2]. See Table 3 for supporting evidence for 1.645.				

III. THE THRESHOLD FOR SIGNIFICANTLY EXCESSIVE EARNINGS

Q16. How did you use the sample information about the adjusted return on total capital to determine a threshold for significantly excessive earnings?

A16. First, I used the sample information to determine a threshold for what could be termed “significantly excessive return on total capital” – a value of the adjusted return on total capital above which only approximately 5 percent of the observations are likely to occur. According to statistical theory, if observations from a normal distribution with mean μ and standard deviation σ are drawn, then 95 percent of them would, on average, fall below a threshold of approximately $\mu + 1.645\sigma$.

Of course, it is not possible to know with certainty what statistical distribution characterizes the return on total capital. However, if the sample size is sufficiently large, then the sample average will be approximately described by a normal distribution, whose expected value is the true, unknown population mean. I derive a threshold measure of return on total assets of $R_{\max} = m + 1.645s$, where m is the sample average adjusted return on total capital, and s is the sample standard deviation of the adjusted return on total capital.

Q17. How do you propose using this threshold to determine significantly excessive earnings?

A17. First, compute the measure of adjusted return on total capital for the utility whose earnings are being examined. Then compare that value to the threshold measure of

significantly excessive earnings for the period described above. If the utility's adjusted return on total capital exceeds the threshold R_{\max} , then the test would indicate that the utility may have significantly excessive earnings.

Q18. How would the amount of earnings in excess of the threshold be determined?

A18. Because the expected payments to debt holders and preferred shareholders are known, variation in earned return on total capital would be owed to common equity investors. Therefore, it is reasonable to impute any significant excess in the return to total capital to net profit earned on common equity. This amount can be computed simply by multiplying the average total capital by the difference between the utility's return on total capital, and the threshold R_{\max} determined above:

$$\text{Excess Earnings} = (R_{\text{utility}} - R_{\max}) \times \text{Average Total Capital}$$

Q19. Can you use the return on total capital threshold to compute a corresponding threshold in terms of return on common equity?

A19. Yes. This can be done using the utility's capital structure information, as well as information about its cost of debt and cost of preferred equity for the year under analysis. Specifically, using the R_{\max} threshold, it is straightforward to compute an implied threshold for the amount of net income accruing to common equity holders, taking into account interest expense on long-term debt and preferred dividends paid:

$$\text{Net Income to } CE_{\max} = (R_{\max} \times \text{Average Total Capital}) - (1 - t)LT \text{ Int} - PDiv$$

where $PDiv$ stands for "preferred dividends" and the other notation is as defined before. The ROE threshold is then simply:

$$ROE_{\max} = \frac{\text{Net Income to } CE_{\max}}{\text{Average Common Equity}}$$

Q20. Can you provide an example of how the threshold you determined using 2012 sample information can be used to determine an ROE threshold for the Companies?

A20. Yes. FirstEnergy has provided the capital structure, embedded cost of debt, and effective tax rate for each of the Companies. Table B 4 shows how the calculated ROE thresholds for each company vary with the confidence level selected for the test, both in the baseline sample of capital intensive companies, and in the subsamples obtained by excluding some electric utilities based on the EEI classification. At a confidence level of 95 percent, and using the results based on the full sample of capital intensive industries, the implied ROE thresholds are 19.30 percent for Cleveland Electric Illuminating, 17.67 percent for Ohio Edison, and 19.74 percent for Toledo Edison. These values are in bold type in Table B 4.

Table B 4. ROE Thresholds for the Companies at Different Confidence Levels

	Baseline Analysis - Capital Intensive Industries	Excluding EEI Diversified	Further Excluding EEI Diversified and Mostly Regulated
Number of Companies	77	76	61
Return on Total Capital Thresholds			
Sample Average	7.12%	7.12%	7.20%
Sample Standard Deviation	1.89%	1.90%	2.04%
Threshold at 97.5% Confidence Level	10.83%	10.85%	11.19%
Threshold at 95.0% Confidence Level	10.23%	10.25%	10.55%
Threshold at 90.0% Confidence Level	9.55%	9.56%	9.81%
Return on Equity Thresholds			
Cleveland Electric Illuminating			
Threshold at 97.5% Confidence Level	20.80%	20.87%	21.72%
Threshold at 95.0% Confidence Level	19.30%	19.36%	20.10%
Threshold at 90.0% Confidence Level	17.57%	17.61%	18.23%
Ohio Edison			
Threshold at 97.5% Confidence Level	19.05%	19.11%	19.88%
Threshold at 95.0% Confidence Level	17.67%	17.72%	18.40%
Threshold at 90.0% Confidence Level	16.08%	16.12%	16.69%
Toledo Edison			
Threshold at 97.5% Confidence Level	21.30%	21.37%	22.25%
Threshold at 95.0% Confidence Level	19.74%	19.80%	20.57%
Threshold at 90.0% Confidence Level	17.94%	17.99%	18.63%

Table B 5. Complete List of Companies Included in Analysis

No.	Company	Ticker	Value Line Industry	EEI Classification	Included in Capital Intensity Calculation	Included in Returns Calculation	Average Asset Turnover	Return on Total Capital	Return on Equity
1.	Consol. Edison	ED	Electric Utility (East)	R	x	x	0.37	6.89%	9.79%
2.	Dominion Resources	D	Electric Utility (East)	MR	x	x	0.34	7.74%	14.72%
3.	Duke Energy	DUK	Electric Utility (East)	MR	x	x	0.24	4.93%	6.75%
4.	Exelon Corp.	EXC	Electric Utility (East)	MR	x	x	0.37	6.43%	8.81%
5.	FirstEnergy Corp.	FE	Electric Utility (East)	MR	x	x	0.38	6.13%	10.05%
6.	NextEra Energy	NEE	Electric Utility (East)	MR	x	x	0.31	6.83%	12.32%
7.	Northeast Utilities	NU	Electric Utility (East)	R	x	x	0.35	6.19%	9.24%
8.	Pepco Holdings	POM	Electric Utility (East)	MR	x	x	0.49	4.68%	6.72%
9.	PPL Corp.	PPL	Electric Utility (East)	MR	x	x	0.33	7.11%	14.41%
10.	Public Serv. Enterprise	PEG	Electric Utility (East)	MR	x	x	0.40	7.61%	11.35%
11.	SCANA Corp.	SCG	Electric Utility (East)	MR	x	x	0.37	6.72%	10.57%
12.	Southern Co.	SO	Electric Utility (East)	R	x	x	0.32	7.29%	13.24%
13.	TECO Energy	TE	Electric Utility (East)	R	x	x	0.46	7.23%	10.79%
14.	UIL Holdings	UIL	Electric Utility (East)	R	x	x	0.37	5.91%	9.50%
15.	ALLETE	ALE	Electric Utility (Central)	R	x	x	0.35	6.35%	8.52%
16.	Alliant Energy	LNT	Electric Utility (Central)	R	x	x	0.39	8.10%	10.48%
17.	Amer. Elec. Power	AEP	Electric Utility (Central)	R	x	x	0.30	6.58%	9.40%
18.	Ameren Corp.	AEE	Electric Utility (Central)	R	x	x	0.32	5.52%	8.10%
19.	CenterPoint Energy	CNP	Electric Utility (Central)	MR	x	x	0.44	6.55%	12.67%
20.	Cleco Corp.	CNL	Electric Utility (Central)	R	x	x	0.28	7.53%	10.96%
21.	CMS Energy Corp.	CMS	Electric Utility (Central)	R	x	x	0.41	6.75%	13.41%
22.	DTE Energy	DTE	Electric Utility (Central)	R	x	x	0.35	6.68%	9.26%
23.	Empire Dist. Elec.	EDE	Electric Utility (Central)	R	x	x	0.29	5.77%	7.89%
24.	Entergy Corp.	ETR	Electric Utility (Central)	R	x	x	0.30	7.28%	10.38%
25.	G't Plains Energy	GXP	Electric Utility (Central)	R	x	x	0.25	5.06%	6.18%
26.	Integrus Energy	TEG	Electric Utility (Central)	R	x	x	0.61	7.42%	9.83%
27.	ITC Holdings	ITC	Electric Utility (Central)	R	x	x	0.17	6.94%	14.59%
28.	MGE Energy	MGEE	Electric Utility (Central)	MR	x	x	0.42	8.37%	11.50%
29.	OGE Energy	OGE	Electric Utility (Central)	MR	x	x	0.49	9.29%	13.13%
30.	Otter Tail Corp.	OTTR	Electric Utility (Central)	MR	x	x	0.67	6.58%	8.21%
31.	Vectren Corp.	VVC	Electric Utility (Central)	R	x	x	0.48	6.87%	10.63%
32.	Westar Energy	WR	Electric Utility (Central)	R	x	x	0.26	6.70%	9.66%
33.	Wisconsin Energy	WEC	Electric Utility (Central)	R	x	x	0.33	8.30%	13.49%
34.	Avista Corp.	AVA	Electric Utility (West)	R	x	x	0.42	4.97%	6.90%
35.	Black Hills	BKH	Electric Utility (West)	MR	x	x	0.35	5.60%	6.96%
36.	Edison Int'l	EIX	Electric Utility (West)	R	x	x	0.29	6.20%	10.19%
37.	El Paso Electric	EE	Electric Utility (West)	R	x	x	0.40	8.26%	11.35%
38.	Hawaiian Elec.	HE	Electric Utility (West)	D	x	x	0.31	7.01%	10.55%
39.	IDACORP, Inc.	IDA	Electric Utility (West)	R	x	x	0.23	6.60%	9.76%
40.	NorthWestern Corp.	NWE	Electric Utility (West)	R	x	x	0.39	6.90%	8.92%
41.	PG&E Corp.	PCG	Electric Utility (West)	R	x	x	0.32	6.23%	8.95%
42.	Pinnacle West Capital	PNW	Electric Utility (West)	R	x	x	0.27		
43.	PNM Resources	PNM	Electric Utility (West)	R	x	x	0.30		
44.	Portland General	POR	Electric Utility (West)	R	x	x	0.34	5.96%	8.25%
45.	Sempra Energy	SRE	Electric Utility (West)	MR	x	x	0.31	7.66%	10.66%
46.	Xcel Energy Inc.	XEL	Electric Utility (West)	R	x	x	0.39	6.69%	10.37%
47.	AGL Resources	GAS	Natural Gas Utility		x	x	0.32	5.70%	8.05%
48.	Atmos Energy	ATO	Natural Gas Utility		x	x	0.75	6.51%	8.33%
49.	Laclede Group	LG	Natural Gas Utility		x	x	0.97	8.40%	10.66%
50.	New Jersey Resources	NJR	Natural Gas Utility		x	x	1.14	10.36%	14.14%
51.	NiSource Inc.	NI	Natural Gas Utility		x	x	0.33	6.46%	7.89%
52.	Northwest Nat. Gas	NWN	Natural Gas Utility		x	x	0.36	6.57%	8.29%
53.	Piedmont Natural Gas	PNY	Natural Gas Utility		x	x	0.50	8.11%	11.84%
54.	South Jersey Inds.	SJI	Natural Gas Utility		x	x	0.44	9.86%	13.72%
55.	Southwest Gas	SWX	Natural Gas Utility		x	x	0.48	7.48%	10.52%
56.	WGL Holdings Inc.	WGL	Natural Gas Utility		x	x	0.76	8.65%	11.09%
57.	ONEOK Inc.	OKE	Oil/Gas Distribution		x	x	1.04	7.24%	15.92%
58.	Spectra Energy	SE	Oil/Gas Distribution		x	x	0.20	6.83%	11.19%
59.	Boardwalk Pipeline	BWP	Pipeline MLP		x	x	0.15	4.59%	8.64%
60.	Buckeye Partners L.P.	BPL	Pipeline MLP		x		0.80		
61.	Energy Transfer	ETP	Pipeline MLP		x		0.60		
62.	Enterprise Products	EPD	Pipeline MLP		x	x	1.23	9.01%	19.05%
63.	Kinder Morgan Energy	KMP	Pipeline MLP		x	x	0.43	12.30%	23.60%
64.	Magellan Midstream	MMP	Pipeline MLP		x	x	0.45	11.28%	29.25%
65.	Plains All Amer. Pipe.	PAA	Pipeline MLP		x	x	2.24	11.28%	18.29%
66.	Amer. States Water	AWR	Water Utility		x	x	0.34	6.09%	11.58%
67.	Amer. Water Works	AWK	Water Utility		x	x	0.19	5.81%	8.99%
68.	Aqua America	WTR	Water Utility		x	x	0.18	5.89%	11.00%
69.	California Water	CWT	Water Utility		x	x	0.30	6.19%	8.88%
70.	Conn. Water Services	CTWS	Water Utility		x	x	0.16	3.90%	9.88%
71.	Middlesex Water	MSEX	Water Utility		x	x	0.21	4.51%	7.77%
72.	Republic Services	RSG	Environmental		x	x	0.47	6.30%	8.62%
73.	Waste Connections	WCN	Environmental		x	x	0.45	7.08%	10.72%
74.	Waste Management	WM	Environmental		x	x	0.61	7.99%	15.55%
75.	CSX Corp.	CSX	Railroad		x	x	0.39	12.73%	21.28%
76.	Norfolk Southern	NSC	Railroad		x	x	0.36	11.63%	17.78%
77.	Union Pacific	UNP	Railroad		x		0.42		
78.	AT&T Inc.	T	Telecommunications Services		x	x	0.46	9.82%	13.80%
79.	Telephone & Data	TDS	Telecommunications Services		x	x	0.63	2.14%	3.02%
80.	U.S. Cellular	USM	Telecommunications Services		x	x	0.72	3.49%	4.34%
81.	Verizon Communic.	VZ	Telecommunications Services		x		0.50		
82.	Comcast Corp.	CMCSA	Cable TV		x	x	0.35	8.77%	11.94%
83.	DIRECTV	DTV	Cable TV		x		1.37		
84.	Time Warner Cable	TWC	Cable TV		x	x	0.40	8.95%	24.12%
85.	FedEx Corp.	FDX	Air Transport		x		1.47		
86.	Southwest Airlines	LUV	Air Transport		x		0.82		
87.	United Parcel Serv.	UPS	Air Transport		x		1.48		
88.	Con-way Inc.	CNW	Trucking		x		1.66		
89.	Hunt (J.B.)	JBHT	Trucking		x		2.01		
90.	Ryder System	R	Trucking		x		0.82		

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