

EXHIBIT NO. _____

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the 2010 Annual Filing)	
of Columbus Southern Power Company and)	
Ohio Power Company Required by)	Case No. 11-4571-EL-UNC
Rule 4901:1-35-10, Ohio Administrative)	Case No. 11-4572-EL-UNC
Code.)	

DIRECT TESTIMONY
OF
DR. ANIL K. MAKHIJA
ON BEHALF OF
COLUMBUS SOUTHERN POWER COMPANY
AND
OHIO POWER COMPANY

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DR. ANIL K. MAKHJA
CASE NO. 11-4571-EL-UNC AND
CASE NO. 11-4572-EL-UNC

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2 THE PUBLIC UTILITIES COMMISSION OF OHIO
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4 DR. ANIL K. MAKHIJA
5 ON BEHALF OF
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7 OHIO POWER COMPANY
8 CASE NO.
9

10 **PERSONAL DATA**

11 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

12 A. My name is Anil Kumar Makhija. My business address is 842 Fisher Hall, Fisher
13 College of Business, The Ohio State University, Columbus, Ohio 43210.

14 **Q. WHAT IS YOUR OCCUPATION AND POSITION?**

15 A. My occupation is Professor of Finance. I am a tenured full Professor, and I hold the
16 Dean's Distinguished Professorship at the Fisher College of Business, The Ohio State
17 University. Previously, I have served as the Chairman of the Finance Department at the
18 Fisher College of Business, and as an Associate Dean for the Fisher College.

19 **Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?**

20 A. I have a Bachelors Degree (B.Tech.) in Chemical Engineering from the Indian Institute of
21 Technology, New Delhi, a Masters of Business Administration (MBA) with a
22 Management Science major from Tulane University in New Orleans, and a Doctorate
23 (PhD.) in Finance from the University of Wisconsin – Madison.

24 **Q. PLEASE DESCRIBE YOUR PROFESSIONAL BACKGROUND.**

25 A. I was an Assistant Professor at the Katz Graduate School of Business, University of
26 Pittsburgh, from 1981 to 1988, with a Visiting Assistant Professorship from 1984 to 1985
27 at the University of Wisconsin – Madison. For the period 1989 to 1998, I was an

1 Associate Professor and then a full Professor at the University of Pittsburgh. From 1999,
2 I have been a full Professor at The Ohio State University. From 2002 to 2009, I served as
3 the Chairman of the Finance Department at The Ohio State University, and have held the
4 David A. Rismiller Professorship since 2005.

5 My primary research and teaching interests are in the field of Corporate Finance,
6 in which I focus on issues relating to capital structure, investment policy, and corporate
7 governance. My research has appeared in top academic journals, including *Journal of*
8 *Finance*, *Journal of Financial Economics*, *Journal of Financial and Quantitative*
9 *Analysis*, *Journal of Business*, *Journal of Corporate Finance*, *Financial Management*
10 *Journal*, *Journal of Banking and Finance*, *Journal of Economic Behavior and*
11 *Organization*, and many other reputable journals.

12 I currently serve as the co-editor of *Advances in Financial Economics*. I also
13 serve on the editorial boards of other journals such as *Multinational Finance Journal*, and
14 *The Pacific-Basin Finance Journal*. I have served as a reviewer for dozens of journals.

15 I have chaired ten doctoral dissertations, and my students have gone on to serve
16 on the faculties of major universities in the U.S. and abroad. I am also the recipient of
17 the *University Alumni Award for Distinguished Teaching*, the highest teaching award
18 granted by The Ohio State University. For nine of the ten past years, students in the
19 Executive MBA program at Ohio State have chosen me for the *Outstanding Faculty*
20 *Award*.

21 Besides presenting research at the major finance conferences, *American Finance*
22 *Association Meetings*, *Western Finance Association Meetings*, *National Bureau of*
23 *Economic Research*, University of Michigan's *Mitsui Conference*, *Financial*

1 *Management Association Meetings*, etc., I have been invited to present seminars at
2 dozens of universities in the U.S. and abroad. My work has been featured on *Fox*
3 *Business News*, *US News and World Report* blog, *Chicago Tribune*, *The Motley Fool*,
4 *Columbus Dispatch*, *St. Louis Dispatch*, *Business First*, *CBS* podcast, etc.

5 **Q. PLEASE DESCRIBE YOUR WORK ON ELECTRIC UTILITIES.**

6 A. My specialization is in applying Finance theory to Electric Utilities. I have examined and
7 published on the following topics related to electric utilities:

- 8 • Comparison of alternative models for estimating the cost of equity capital for electric
9 utilities,
- 10 • Determinants of earned rates of return on equity of electric utilities,
- 11 • The diversification policies of electric utilities,
- 12 • Executive compensation and corporate performance in electric and gas utilities,
- 13 • Nuclear power plant investment and plant cancellation decisions of electric utilities,
- 14 • The impact on ratepayers and consumers of alternative regulatory policies such as
15 AFUDC for the treatment of construction expenditures,
- 16 • SEC regulation of public utility diversification, and
- 17 • The impact of regulation on the risk of electric utilities, etc.

18 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC UTILITIES**
19 **COMMISSION OF OHIO?**

20 A. Yes, I have provided Direct Testimony and Rebuttal Testimony on behalf of Columbus
21 Southern Power Company (CSP) and Ohio Power Company (OPCo) (collectively, “AEP
22 Ohio” or the “Companies”) in their 2008 electric security plan (ESP) proceeding, Case
23 Nos. 08-917-EL-SSO and 08-918-EL-SSO 2008 ESP). My testimony in that proceeding

1 addressed issues regarding the implementation of the Significantly Excessive Earnings
2 Test (SEET) of Section 4928.143(F), Ohio Revised Code. In addition, I participated on
3 behalf of AEP Ohio in the April 1, 2010 oral presentation to the PUCO Commissioners in
4 Case No. 09-786-EL-UNC, during which I provided answers to various questions from
5 the Commissioners regarding SEET implementation issues. I also provided Direct
6 Testimony and Rebuttal Testimony on behalf of the Companies in Case No. 10-1261-EL-
7 UNC in which the Commission conducted the annual significantly excessive earnings
8 reviews and applied the SEET to the Companies earnings during 2009. I also have
9 provided Direct Testimony regarding the risks that the Companies bear and costs that
10 they incur as a result of their Provider of Last Resort (POLR) obligations in the remand
11 phase of Case Nos. 08-917-EL-SSO and 08-918-EL-SSO and in their pending ESP
12 proceeding, Case Nos. 11-346-EL-SSO and 11-348-EL-SSO.

13 **PURPOSE OF TESTIMONY**

14 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS CASE?**

15 A. OPCo and CSP asked me to develop a methodology to implement the SEET for their
16 earnings during 2010. I previously developed such a methodology for AEP Ohio in
17 connection with its 2008 ESP. Pursuant to Section 4928.143(F), the SEET must be
18 applied on an annual basis to the earned return on equity (ROE) of each electric utility
19 which has an ESP. Calendar year 2009 was the first annual period for AEP Ohio's
20 current ESP, and in Case No. 10-1261-EL-UNC I applied the SEET methodology that I
21 had previously developed in the 2008 ESP proceeding to the Companies' earned ROEs
22 for 2009. Now, AEP Ohio has asked me again to present a SEET methodology that may
23 be used to review the earned ROEs for 2010 for CSP and OPCo.

1 **SUMMARY OF TESTIMONY**

2 **Q. PLEASE PROVIDE A SUMMARY OF THE METHODOLOGY THAT YOU**
3 **RECOMMEND USING TO DETERMINE SIGNIFICANTLY EXCESSIVE**
4 **EARNINGS.**

5 A. I propose specific methodological steps to implement the SEET, and carry them out on
6 CSP and OPCo for the year 2010.

7 I identify the group of firms with comparable business and financial risks, the
8 Comparable Risk Peer Group, using well-established metrics. For business risk, I
9 employ unlevered betas. For financial risk, I use the book equity ratio. From the
10 universe of prominent firms, covered in the Value Line *Standard Edition* as of June 6,
11 2011, I employ a 5 x 5, or 25 cell, methodology to identify the Comparable Risk Peer
12 Group of firms that match CSP and OPCo on unlevered betas and on book equity ratios.
13 In particular, using quintiles to form portfolios, I divide firms into 5 different business
14 risk groups (lowest to highest unlevered betas) and 5 different financial risk groups
15 (lowest to highest book equity ratios). The firms in the same cell as CSP and OPCo, by
16 design, form the Comparable Risk Peer Group. Measuring their earned rates (ROEs) as
17 normal earnings on average common equity, I obtain that group's mean ROE and the
18 standard deviation of the group members' ROEs. I then define the Threshold ROE as the
19 mean ROE for the Comparable Risk Peer Group plus 1.96 times the standard deviation of
20 the ROEs for the Comparable Risk Peer Group. It is against this Threshold ROE that the
21 ROEs for CSP and OPCo for 2010 should be compared. I conclude that the 1.96-
22 standard deviation adder employed to construct the Threshold ROE, which corresponds
23 to a 95% confidence level, is appropriate because (1) it is the established practice to use

1 that confidence level, and (2) because it provides for a reasonably acceptable risk of false
2 positives. As I later show through several examples, 1.96 standard deviations,
3 corresponding to a 95% confidence level, are commonly used to determine if the
4 difference between two figures is significant. I refer to this methodology as my Base
5 Case. It is my preferred methodology for several reasons. First, it best targets
6 comparable firms that match CSP and OPCo in business and financial risk, which is what
7 the SEET requires. Second, it delivers a reliably large sample of comparable risk firms
8 (68 firms). Third, it is objective, relying upon market-based measures of risk. Fourth,
9 because it is a methodology that may be readily replicated, it is predictable. Indeed, last
10 year I applied the same procedure for the SEET for the year 2009. Consequently, it is the
11 results from this Base Case that I support in my testimony.

12 I confirm the findings from my Base Case analysis by repeating the analysis with
13 additional criteria for business and financial risks to form the Comparable Risk Peer
14 Group again. Along with unlevered betas, I also employ capital intensity to measure
15 business risk. Similarly, along with book equity ratios, I also use the S & P Long-Term
16 Issuer Credit Rating to measure financial risk. Thus, my findings are not overly reliant
17 on a single business or financial risk metric. I also conduct other robustness checks to
18 establish the reliability of my Base Case findings, using for example a 10 x 10, or 100
19 cell, methodology on a larger population of firms (Value Line's full *DATAFILE*) to form
20 the Comparable Risk Peer Group.

21 I conclude that that my Base Case methodology offers an implementation of the
22 requirements of the SEET that adheres to the language of the statute.
23

1 **Q. PLEASE DESCRIBE YOUR FINDINGS AND CONCLUSIONS.**

2 A. I find that for 2010 the mean ROE of the Comparable Risk Peer Group is 11.48% and the
3 standard deviation of the Comparable Risk Peer Group ROEs is 5.68%. Multiplying the
4 5.68% standard deviation by 1.96 produces an adder of 11.13%. Therefore, I conclude
5 that the Threshold ROE for 2010 for CSP and OPCo, which is the sum of the mean ROE
6 and the adder, is 22.62%.

7 (Last year, for 2009 applying the same methodology, I arrived at a mean ROE of
8 the Comparable Risk Peer Group of 11.04% and the standard deviation of the
9 Comparable Risk Peer Group ROEs of 5.85 %. This yielded a threshold of 22.51%,
10 notably similar to the threshold for 2010).

11 **Q. WHAT WOULD THE THRESHOLD BE, ACCORDING TO THE**
12 **COMMISSION'S OPINION AND ORDER (CASE NO. 10-1261-EL-UNC), GIVEN**
13 **THE MEAN ROE OF 11.48% THAT YOU HAVE DETERMINED FOR THE**
14 **COMPARABLE RISK PEER GROUP?**

15 A. The Commission concluded in its Opinion and Order in Case No. 10-1261-EL-UNC
16 regarding the application of the SEET to 2009 that in determining the threshold "the
17 appropriate percentage to be added to the mean of the comparable group of companies is
18 60 percent" (page 27 of Opinion and Order). This suggests that the threshold in this case,
19 with a mean of 11.48%, should be 18.37%. Respectfully, I do not subscribe to the
20 methodology that leads to this threshold, because it does not explicitly take into account
21 the observed variation of ROEs for the Comparable Risk Peer Group.

1 **Q. PLEASE EXPLAIN HOW YOUR TESTIMONY IS ORGANIZED.**

2 A. The remainder of my testimony is presented in the following order. To begin with, I
3 present the relevant provision of S.B. 221, Section 4928.143(F), which contains the
4 Significantly Excessive Earnings Test. I discuss the principles that Section 4928.143(F)
5 provides and that I incorporate into my methodology for implementing that earnings test.
6 This is the second formal application of the SEET for CSP and OPCo, and I believe that
7 considerable experience was gained from the debate during the prior application on the
8 year 2009 and the dry run conducted as part of the 2008 ESP, as well as from the
9 Commission's Finding and Order, issued June 30, 2010, and Entry on Rehearing, issued
10 August 26, 2010, in Case No. 09-786-EL-UNC (also referred to collectively as the
11 "SEET Workshop Orders").

12 Next, I describe the details of my methodology for implementing the Significantly
13 Excessive Earnings Test. The basis of my methodology, which I also presented in the
14 Companies' past ESP proceedings, is the selection of a group of publicly traded
15 companies, including utilities that face business and financial risks comparable to those
16 that the Companies face (the Comparable Risk Peer Group). I then determine a
17 significantly excessive earnings threshold for the Companies using data from that
18 Comparable Risk Peer Group. These constitute my Base Case findings, which I prefer for
19 reasons that I detail later. I affirm the robustness of my Base Case findings by repeating
20 my methodology with additional criteria for business and financial risks to form the
21 Comparable Risk Peer Group again. I also conduct other robustness checks to establish
22 the reliability of my Base Case findings.

23 Finally, I present a summary of my findings and conclusions.

1

2 **SECTION 4928.143(F), OHIO REV. CODE**

3 **Q. WHAT ARE THE RELEVANT METHODOLOGICAL ISSUES IN THE**
4 **IMPLEMENTATION OF THE SIGNIFICANTLY EXCESSIVE EARNINGS**
5 **TEST OF SECTION 4928.143(F), OHIO REV. CODE?**

6 A. The following is the part of Section 4928.143(F) Ohio Rev. Code that contains the
7 Significantly Excessive Earnings Test. I have highlighted relevant portions that provide
8 direction on the development of a methodology for the implementation of the SEET:

9 “With regard to the provisions that are included in an electric security plan under
10 this section, the commission shall consider, (1) following the end of each annual
11 period of the plan, if any such adjustments resulted in excessive earnings (2) as
12 measured by whether the earned return on common equity of the electric
13 distribution utility (3) is significantly in excess of the return on common equity
14 that was earned during the same period by publicly traded companies, (4)
15 including utilities, (5) that face comparable business and financial risk, with such
16 (6) adjustments for capital structure as may be appropriate. Consideration also
17 shall be given to the (7) capital requirements of future committed investments in
18 this state. The burden of proof for demonstrating that (8) significantly excessive
19 earnings did not occur shall be on the electric distribution utility. If the
20 commission finds that such adjustments, in the aggregate, did result in
21 significantly excessive earnings, it shall require the electric distribution utility (9)
22 to return to consumers the amount of the excess by prospective adjustments;
23 provided that, upon making such prospective adjustments, the electric distribution

1 utility shall have the right to terminate the plan and immediately file an
2 application pursuant to section 4928.142 of the Revised Code. Upon termination
3 of a plan under this division, rates shall be set on the same basis as specified in
4 division (C)(2)(b) of this section, and the commission shall permit the continued
5 deferral and phase-in of any amounts that occurred prior to that termination and
6 the recovery of those amounts as contemplated under that electric security plan.

7 (10) In making its determination of significantly excessive earnings under this
8 division, the commission shall not consider, directly or indirectly, the revenue,
9 expenses, or earnings of any affiliate or parent company.” (Underlining and
10 numbering have been added).

11 Section 4928.143(F) lays out the principles by which “significantly excessive
12 earnings” will be determined. Above, I have underlined and numbered portions of that
13 statute that are the key components I have evaluated to develop a methodology for
14 capturing and implementing these principles. The approach that I take is to address how
15 best to capture comparability for both business risk and financial risk from the pool of
16 publicly traded companies, including utilities, as required by the legislation. There are
17 other important principles stated in the excerpt above, such as what may be the cause of
18 any significantly excessive earnings, e.g., “if any such adjustments resulted in excessive
19 earnings,” that I do not address. I also do not examine what are the ROEs for CSP and
20 OPCo for 2010 *after* taking into account appropriate and permissible adjustments to their
21 earnings. Nor do I address issues related to the manner and amounts to be returned to
22 customers in the case of a determination of significantly excessive earnings. The primary
23 focus of my work is the determination of that threshold earned rate of return on common

1 equity (Threshold ROE) above which the ROEs for CSP, and OPCo in 2010 might be
2 deemed to be significantly excessive.

3 **Q. WHAT ARE THE METHODOLOGICAL IMPLICATIONS OF (1)**
4 **“FOLLOWING THE END OF EACH ANNUAL PERIOD?”**

5 A. This implies that the excessive earnings test will be applied on an annual basis. It is now
6 in effect for the second time for CSP and OPCo regarding their earned rates for the year
7 2010.

8 **Q. ARE THERE ANY CONCERNS REGARDING THE TIMING OF WHEN THE**
9 **ANNUAL TEST CAN BE DONE?**

10 A. Yes. Major data providers, such as Value Line and Compustat, update accounting
11 information after firms file their 10K forms, which is usually required within 90 days
12 following the end of their fiscal year. For firms whose 2010 fiscal year finishes at the
13 end of the first quarter of 2011, full data may not typically be available till July. This
14 suggests that the filings for the test be set for some time in late August.

15 **Q. WHAT ARE THE METHODOLOGICAL IMPLICATIONS OF (2) “AS**
16 **MEASURED BY THE EARNED RETURN ON COMMON EQUITY?”**

17 A. The Significantly Excessive Earnings Test looks at the actual earnings during the past
18 year, and not the prospective forward-looking expected return (which would have
19 entailed a cost of capital estimation). This makes the exercise markedly different from
20 the cost of capital discussions in traditional rate hearings. Moreover, since neither OPCo
21 nor CSP have traded equity, the accounting measure of earned rate of return on book
22 common equity, ROE, as measured by net income divided by book equity, is applicable.
23 I have therefore used this traditional measure in my analysis.

1 As a methodological issue, even if the stock is traded, use of stock rates of return
2 is not consistent with the Significantly Excessive Earnings Test. Stock returns are the
3 sum of dividend yield and capital gains or losses from the change in stock prices. The
4 capital gains or losses component is based on end-of-year stock prices. However, year-
5 end stock prices reflect investor expectations of future performance, which is not
6 appropriate to include in the context of the Significantly Excessive Earnings Test, which
7 is a retrospective review.

8 In calculating the book ROE, we need to decide on the earnings (numerator) and
9 the equity (denominator) that belong to common shareholders for the test year. The
10 intent of SEET has been interpreted to be directed at earnings derived from the normal
11 functioning of the firm and not from one-time exceptional events (Finding and Order,
12 Case No. 09-786-EL-UNC, June 30, 2010). Consequently, I use profit after deduction of
13 all expenses including taxes, minority interests, and preferred dividends paid or
14 accumulated, but before any non-recurring, special, and extraordinary items. In Value
15 Line terms that is *Net Income Before Non-recurrings & Extras* minus *Preferred*
16 *Dividends Paid Accumulated*. This is the primary measure of earnings to common equity
17 that I use in my analysis. The Value Line definition of these earnings reads as follows:
18 “Profit after deducting total income taxes, after-tax minority interest and discontinued
19 items, but before preferred dividends paid and accumulated and non-recurring and
20 extraordinary items.” There is an arguable case regarding what constitutes the normal
21 course of business, and whether discontinued items should be treated like other one-time
22 items. The question is: what are the normal ongoing earnings of a comparable firm? Are
23 they before or after the adjustment of discontinued items? Consequently, I also employ a

1 second measure, which is called *Net Income Before Discontinueds, Non-recurrings, and*
2 *Extras* by Value Line. This is defined as “Profit after deduction of all expenses including
3 taxes and minority interests, but before deduction of preferred dividends paid and
4 accumulated and before non-recurring, special and extraordinary items.” As a practical
5 matter, I find that the results and conclusions are virtually unaffected by this choice
6 between the two definitions of earnings. So, though I report findings with both measures,
7 my remarks are limited to ROE based on *Net Income Before Non-recurrings & Extras*
8 minus *Preferred Dividends Paid Accumulated*. It should be noted that Preferred
9 Dividends are removed in both measures, since we are interested in the earned rates to
10 common shareholders.

11 Next, I turn to the denominator. It should also be noted that, for the purpose of
12 complying with the new legislation, the traditional accounting measure, ROE, may
13 overstate the actual earned rate experienced by the common equity outstanding at the
14 start of a year if there are acquisitions that add to the net income during the year.
15 Similarly, equity issuances and retirements during the year would imply that rates of
16 return based on beginning of year equity again misstate the earned rates. Consequently, I
17 employ the average of beginning-of-the-year and end-of-the-year book common equity
18 for the denominator in calculating ROE. The Value Line variable used is *Common*
19 *Equity Reported*, which “represents the sum of the value of the common stock at par, the
20 surplus of capital received (over par) plus retained earnings.”

21 I believe that my above accounting definitions of the earned return on common
22 equity, ROE, are consistent with those in the Commission’s SEET Workshop Orders.

1 **Q. WHAT ARE THE METHODOLOGICAL IMPLICATIONS OF (3)**
2 **“SIGNIFICANTLY IN EXCESS OF THE RETURN ON COMMON EQUITY**
3 **THAT WAS EARNED DURING THE SAME PERIOD BY PUBLICLY TRADED**
4 **COMPANIES?”**

5 A. I address the methodological implication of “significantly excessive” returns later in my
6 testimony. With regard to the comparison that this principle calls for, the statutory
7 language recognizes that it is appropriate to compare the Companies’ earned returns to a
8 broader group than simply other electric utilities. Electric utilities are typically compared
9 to a peer group comprised of other electric utilities. Yet, different electric utilities may
10 face significantly different business and financial risks than other electric utilities even
11 though they are in the same industry. For example, within Ohio there are differences
12 based on whether a utility has all three businesses, generation, transmission, and
13 distribution, or whether it provides service in only some segments of the electric
14 business. Thus, even if a utility has a much higher (or lower) ROE in a given year
15 compared to other electric utilities, one would have to take into account differences in
16 risks between the subject utility and the other utilities before concluding that the ROE is
17 indeed excessive (or inadequate).

18 **Q. WHY UNDERTAKE A BROAD REVIEW OF PUBLICLY TRADED**
19 **COMPANIES?**

20 A. That is the basis by which significantly excessive earnings are to be judged. S.B. 221
21 presumes this approach, although it does not preclude a comparison with other utilities as
22 well. Instead of the traditional approach of first calculating differences in ROE between
23 an electric utility and its peer electric utilities, and then assessing whether the difference

1 is remarkable in terms of differences in risks, the Significantly Excessive Earnings Test
2 standard is to match risks across all publicly traded companies first. Thus, instead of
3 simply using a traditional comparison with other utilities, the legislation directs that
4 another peer group be defined based on “comparable” risk characteristics, irrespective of
5 the industries from which these peer firms are drawn. ROEs can be compared after
6 matching the subject electric utility on the basis of risk with the broadly drawn peer
7 group.

8 The approach to implementing S. B. 221, which I have sponsored, invokes
9 specific metrics to measure the business and financial risks of the subject utility, and then
10 proceeds to identify a comparison group with matching business and financial risks.
11 Another approach, such as the one sponsored by Michael J. Vilbert on behalf of the
12 FirstEnergy Ohio electric utilities in Case No. 08-935-EL-SSO and 10-1265-EL-UNC,
13 implicitly attempted to capture the business risk of the subject utility by specifying a set
14 of 10 industries that are assumed to have similar business risk. (Dr. J. Randall
15 Woolridge, on behalf of the Office of the Ohio Consumers’ Counsel, in AEP Ohio’s 2008
16 ESP and 2010 SEET (which reviewed earnings during 2009) Proceedings, also started
17 out by specifying a so-called “proxy group” of firms that are supposed to reflect the
18 business risk of the subject utility.) I believe that my approach, which does not prejudge
19 what firms, or what types of firms, face comparable risks, is the more comprehensive
20 and, in the end, more reliable approach. Although I am not a lawyer, as an expert in
21 finance, I also believe that my approach respects the statutory directives.

22 **Q. HOW WAS THE ANALYSIS OF THE COMPARABLE RISK PEER GROUP**
23 **COMPLETED?**

1 A. The procedure I have sponsored starts with the universe of all publicly traded U.S. firms,
2 and then proceeds to identify those firms that face business and financial risks that match
3 those of the subject electric utility. The challenge in this approach is to defend and apply
4 the metrics for business and financial risk reliably. Later, in my testimony, I show that
5 my metrics are derived from well-grounded financial theory, and that additional metrics
6 can be used to shore up the measurement of business and financial risks.

7 The alternative Vilbert procedure is to identify specific industries *believed* to have
8 matching characteristics (business risk) and to use only members of these industries to
9 develop a peer group. This approach has the benefit of selecting peers based on prior
10 knowledge of the industries (firms). The disadvantage lies in the difficulties associated
11 with identifying, at the outset, all non-utility industries which have members with
12 characteristics that sufficiently match the subject electric utility, and the likelihood that
13 the approach will inadvertently miss firms whose risks, while matching those of the
14 subject utility, come from industries excluded from the exercise at the outset. The
15 problem with this approach (and of the Woolridge approach) is that it may fail to
16 accurately reflect the business risk of the particular subject utility. In that regard, it is
17 notable that this approach will yield one Comparable Risk Peer Group for all utilities in
18 Ohio, and indeed all others across the country as well.

19 I start with all the U.S.-domiciled firms in the *Value Line Standard Edition* for
20 2010 which covers 1700 U.S. and foreign firms from about 100 industries. There are
21 several reasons for focusing on this starting sample, though as a robustness check I repeat
22 my analysis with the full population of firms covered on June 6, 2011 by Value Line's
23 *DATAFILE* (U.S.-domiciled firms with available data is a smaller set discussed later).

1 *The Standard Edition* constitutes Value Line's flagship product because it provides
2 comprehensive coverage for the more prominent firms, which are more likely candidates
3 for comparison to our subject utilities than the many small firms included in the larger
4 population. This is also the sample set used most commonly by others engaged in the
5 SEET application. At any rate, I repeat my analysis with the larger sample in
6 *DATAFILE*, just as I did in the 2008 ESP and 2010 SEET (for 2009 earnings)
7 Proceedings.

8 Using the data in Value Line's *Standard Edition*, for every firm I first calculated
9 the characteristics of interest – business risk and financial risk in 2010 (which are
10 highlighted by S.B. 221 and are discussed later in my testimony). Using quintiles to form
11 portfolios, I then divided firms into 5 different business risk groups (lowest to highest)
12 and 5 different financial risk groups (lowest to highest). From these 25 cells (5 x 5 cells),
13 I chose the cell that has AEP in it in terms of business risk. That cell, by design, captures
14 firms that have comparable business risk to AEP. Since S. B. 221 requires us to focus on
15 the business and financial risks of the subject utilities, CSP and OPCo, and not the parent
16 utility, I check that the chosen cell is well-suited for that purpose, and that using AEP's
17 business risk is the appropriate starting points. Note that CSP and OPCo do not have
18 traded stock, and their business risk is not directly observable. On the other hand, their
19 financial risk (based on their use of leverage is directly observable, and so we can choose
20 the cells that contain CSP and OPCo based on their financial risks. This is how I form my
21 Comparable Risk Peer Group for my Base Case test of the SEET. This is the same
22 methodology that I used in the application of the SEET on the year 2009. (I also repeat

1 and report results with the procedure using 10 x 10, or 100, cells, akin to what I did in my
2 direct testimony in AEP Ohio's 2008 ESP Proceeding.)

3 **Q. WHAT ARE THE METHODOLOGICAL IMPLICATIONS OF (4) "INCLUDING**
4 **UTILITIES?"**

5 A. While S. B. 221 opens up the possibilities for the inclusion of non-utility firms in the
6 Comparable Risk Peer Group, it does not exclude other utilities from entering the
7 comparable group. In fact, given the similarity of the business, selected other utilities are
8 naturally expected to have similar business and financial risks compared with the subject
9 utilities. Consequently, I propose a "smell test," for the Comparable Risk Peer Group,
10 according to which we expect a readily apparent representation of other utilities in the
11 comparable group.

12 **Q. WHAT ARE THE METHODOLOGICAL IMPLICATIONS OF THE**
13 **REQUIREMENTS TO LOOK AT COMPANIES (5) "THAT FACE**
14 **COMPARABLE BUSINESS AND FINANCIAL RISK?"**

15 A. The Significantly Excessive Earnings Test in S.B. 221 requires that business and
16 financial risks be taken into account in identifying the sample of comparable firms.

17 Business risk is the risk arising from day-to-day business operations. For an
18 electric utility, the list of sources from which business risk can arise is extensive.
19 Business risk includes uncertainty associated with the revenue stream, the uncertainty
20 associated with operating and maintenance expenses, regulatory risks, fluctuations in
21 weather and demand, and many more. These are the risks that an all-equity firm's
22 business operations face, which are separate from the additional risks that a firm with
23 debt capital faces.

1 Business risks for electric utilities are higher in Ohio than in other states. For
2 example, there is migration risk since customers have come-and-go-rights, while the
3 electric utility retains provider of last resort status at tariff rates. In another example, the
4 Significantly Excessive Earnings Test is asymmetrical, since there is no provision to
5 recover past under-recoveries of revenues if the earned rates turn out to be inadequate.
6 There is also a requirement in Ohio to have transmission and distribution available for
7 customer generation and distributed generation, a form of asset risk.

8 Financial risk arises from the debt obligations of the firm. Since principal
9 repayments and interest take precedence over payments to common stockholders, debt
10 leverage makes the financial return to common stockholders riskier. Principle No. 6
11 recognizes that different levels of financial risks result from different capital structures,
12 and so it may be appropriate to make adjustments to a firm's capital structure when
13 applying a comparable risk methodology.

14 **Q. HOW DO YOU MEASURE THE RISKS FACED BY COMMON STOCK**
15 **INVESTORS?**

16 A. To examine the risks faced by common equity holders, I use the Capital Asset Pricing
17 Model (CAPM). The CAPM has come to be the preeminent model for the measurement
18 of risk. In fact, the development of the CAPM was cited in awarding the Nobel Prize to
19 William Sharpe in 1990. Furthermore, according to the survey of CFOs undertaken by
20 John Graham and Campbell R. Harvey ("The theory and practice of corporate finance:
21 Evidence from the field," *Journal of Financial Economics* 61 (2001), 187-243), CAPM is
22 by far the most widely used model for taking risk into account.

According to the CAPM, investors face diversifiable and non-diversifiable risks. By portfolio diversification, they are left with only market-related risks, captured by a beta coefficient, β . Beta coefficient measures by how many percent the value of a security rises (falls) if the market – proxied, for example, by S&P 500 index – rises (falls) by one percent. That is, a stock with $\beta=2$ on average rises (falls) by two percent if the U.S. market rises (falls) by one percent. Naturally, the higher the security's beta, the more the security's value fluctuates as a consequence of market movements, and the riskier the security is. Consequently, this beta coefficient is my main measure of risk, though as a robustness check I consider another measure, capital intensity, as well. This beta coefficient can be estimated by a regression using the so-called market model:

$$R_{jt} = \alpha_j + \beta_j R_{Mt} + \varepsilon_{jt} \quad (1)$$

where R_{jt} is the rate of return on stock j over the interval t , R_{Mt} is the rate of return on a market portfolio over the same interval, α_j is the intercept of the regression line, β_j is the slope of the regression line (also referred to as the risk measure, beta coefficient), and ε_{jt} is the residual term in the regression. Since the regression can only be run with historical data, the resulting beta is usually adjusted to be applicable to the future.

I use Value Line, a highly reputable source of data used widely by investors, as my source for beta coefficients. The Value Line beta is calculated through regression analysis where the dependent variable is weekly percent changes in stock price (R_{jt}) and the independent variable is weekly percent changes in the New York Stock Exchange Composite Index (R_{Mt}) over a period of the past five years. The regression betas are then

1 adjusted for their long-term tendency to converge toward a value of one. I have used
2 Value Line betas (β_{VL}) as a measure of risk faced by common stock.

3 There are some known biases of the CAPM, though there are not as of yet
4 standard adjustments for them, nor is it a frequent practice to make corrections for them.
5 One bias is that for high risk (high beta) stocks it overstates the risk, while for low risk
6 (low beta) stocks it understates risk. To the extent that AEP betas are less than 1.0
7 (Value Line betas for AEP were 0.70 for each of the four quarters of 2010), the actual
8 beta risk should be somewhat higher. CAPM also has a second bias. CAPM betas
9 understate the risk of smaller firms' stock. (See Banz, R. W., The relationship between
10 return and market value of common stocks, *Journal of Financial Economics*, Vol. 9 No.
11 1, 1981, 3-18.) Based on both the biases, this means that for OPCo and CSP the actual
12 betas would be higher than those attributed to them based on AEP betas. Consequently,
13 by using AEP betas to impute the beta riskiness of CSP and OPCo, I offer a conservative
14 test. Note also that I use AEP beta to infer the riskiness of CSP and OPCo, and that it is
15 not AEP on which the SEET test is being applied. CSP and OPCo are not traded, and
16 their betas can therefore not be estimated directly.

17 CAPM betas, as measured by Value Line, only measure the risk faced by
18 stockholders, and not the cause of the risk. Underlying this risk are its fundamental
19 components which consist of business and financial risks. The Value Line betas reflect
20 the cumulative effect of these business and financial risks.

21 **Q. WHAT IS AN UNLEVERED BETA AND WHY PROPOSE TO INCLUDE IT IN**
22 **THE SIGNIFICANTLY EXCESSIVE EARNINGS TEST?**

A. To estimate business risk as viewed by the market, I take the total risk of the stock and “remove” the financial risk. The total risk of the stock is measured with CAPM betas (using the Value Line procedure), β_E . The business risk is measured by unlevering the CAPM betas to obtain the unlevered betas, β_A (also called asset betas).

The procedure for unlevering betas is well established and goes back to Robert Hamada. (See Robert Hamada, The effect of a firm’s capital structure on the systematic risk of common stock, *Journal of Finance* 27, 1972, 435-452.). If the market debt to equity ratio is denoted by D/E and the T is the corporate tax rate, then business risk, or unlevered beta, is given by:

$$\beta_A = \beta_E / [1 + (1 - T)(D/E)] \quad (3)$$

In sum, there are several compelling reasons to recommend the use of unlevered betas:

1. The unlevered beta is derived from the Capital Asset Pricing Model for which William Sharpe received the 1990 Nobel Prize. It captures the risk that shareholders cannot diversify away.
2. The survey of CFOs by John Graham and Campbell R. Harvey (“The theory and practice of corporate finance: Evidence from the field,” *Journal of Financial Economics* 61 (2001), 187-243) shows that by far the CAPM is the most widely used model for risk measurement.
3. Betas and the Capital Asset Pricing Model are regularly accepted by public utility commissions (PUCs) across the United States, including the Public

1 Utility Commission of Ohio. In particular, since Value Line betas are
2 routinely used before PUCs, shareholders may “count” their risk in terms of
3 Value Line betas.

4 4. Specifically, the use of unlevered betas was accepted by the Public Utility
5 Commission of Ohio as seen in the Testimony of Prof. Bradford Cornell (Case
6 No. 96-922-TP-UNC). Indeed, I use exactly the same formula for unlevered
7 betas as was employed by Prof. Cornell. Unlevered betas are not conceptually
8 removed from betas, since they are the corresponding betas if the firm were to
9 become an all-equity firm. That is, they are the betas left after the
10 “subtraction” of financial risk.

11 5. The use and calculation of unlevered betas goes back decades to Robert
12 Hamada (“The effect of a firm’s capital structure on the systematic risk of
13 common stock”, *Journal of Finance* 27, 1972, 435-452).

14 6. There has been no specific concern raised about betas or unlevered betas as
15 risk measures in any testimony filed on the SEET. In fact, Woolridge (on
16 behalf of Ohio Consumers Counsel) in AEP Ohio’s 2008 and 2009 ESP
17 Proceeding has used betas for the measurement of risk.

18 7. Unlevered betas are a summative measure of total business risk, while other
19 measures such as capital intensity (Revenues to Total Assets) capture only a
20 specific aspect of business risk.

21 To be sure, betas, and thus unlevered betas, too have been challenged in the
22 finance literature. However, as a practical matter, betas have greater acceptance than any

1 alternative measure of risk (John Graham and Campbell R. Harvey, *Journal of Financial*
2 *Economics* 61 (2001), 187-243).

3 A practical concern regarding betas may be that they can change over the year.
4 That may well be the strength of betas, however, because they actively reflect changes in
5 risk. As to the point in time at which one should measure betas, I employ the average of
6 the betas reported by Value Line during each of the four quarters of 2010. This is no
7 different from forming the average book equity ratio as a measure of financial risk over
8 the year, which is the type of averaging used by others who have participated in the
9 SEET debate in the past. However, this may have been a more relevant issue when
10 conducting the SEET on 2009, since the quarterly Value Line betas changed over the
11 year, 2009. On the other hand, this may be a moot issue for the SEET for 2010 since
12 Value Line reports the same beta, 0.70, for each of the four quarters of 2010.

13 Finally, there is also the practical issue that betas are only available for firms with
14 traded stock. This is not usually an issue for the formation of the comparable sample
15 since there are many traded firms (with Value Line betas available for them). So, we are
16 looking for those firms that have comparable unlevered beta risks that match the subject
17 utility, which itself need not be traded. In the case of Ohio electric utilities, these risks
18 can confidently be imputed from the traded parent firm. Using the parent's publicly
19 traded equity as a proxy for its utility subsidiaries' equity is standard practice in
20 regulatory proceedings. The SEET does not preclude us from estimating risks of the
21 subsidiary firm in the best way possible. Specifically, the SEET only says that "the
22 commission shall not consider, directly or indirectly, the revenue, expenses, or earnings
23 of any affiliate or parent company." Also, using AEP's betas for CSP and OPCo in the

1 SEET gives us a more conservative test since, according to both known biases regarding
2 estimated betas and actual risk, AEP's beta understates the risks for CSP and OPCo.

3 Besides the beta, formula (3) also requires on the right hand side, T, the tax rate,
4 and D/E, the debt-to-equity ratio. For T, I use the reported tax rate provided by Value
5 Line, *Reported Tax Rate* (taxes paid/pre-tax income). For D, I subtract from *Total*
6 *Reported Assets* the figure for the sum of common and preferred equity, *Reported*
7 *Shareholders' Equity*. These D values are calculated at year-ends for 2009 and 2010,
8 and then averaged. For E, it is feasible to estimate market values at the end of 2009 and
9 2010, using average shares outstanding, *Common Shares Outstanding*, and the *Average*
10 *Annual Price* of shares during 2010. The *Average Annual Price* is the average of the
11 weekly (Wednesday) prices for the year. In sum, I employ standard procedures to
12 estimate average (D/E) over the year 2010, just as I formulate averages for my other
13 variables over the year 2010.

14 **Q. WHAT OTHER COMPARISONS OF BUSINESS RISK DID YOU UNDERTAKE?**

15 A. Even though the CAPM is widely used and is the methodology for obtaining business
16 risk that has been practiced for decades since Hamada's 1972 paper, I also examine
17 capital intensity as an added measure. Capital Intensity, which is measured as the ratio of
18 Revenues to Total Assets, serves as an additional check to ensure that an important
19 business risk of the subject utility is taken into account. Though not a replacement for
20 unlevered beta -- which captures total business risk-- the additional use of capital
21 intensity reduces an over-reliance on a single measure of business risk. There is an
22 emerging convergence of opinion in the debate on the application of the SEET that
23 capital intensity is an important characteristic -- even if it does not capture all other

1 business risks – of electric utilities. King and Woolridge rely primarily on this
2 characteristic, though they define it differently. Vilbert defines it as Revenues to Total
3 Assets. I estimate it as (*Sales or Revenues* for 2010)/(Average of *Total Reported Assets*,
4 beginning and end of 2010).

5 **Q. WHAT ARE THE METHODOLOGICAL IMPLICATIONS OF THE**
6 **REQUIREMENTS TO MAKE (6) “ADJUSTMENTS FOR CAPITAL**
7 **STRUCTURE AS MAY BE APPROPRIATE?”**

8 A. My procedure incorporates capital structure in two ways. First, in arriving at the
9 unlevered beta, formula (3) takes the capital structure, (D/E), into account. Thus, the
10 business risk is found by unlevering Value Line betas.

11 The second manner in which capital structure is taken into account in my
12 methodology is in the formation of the cells. In dividing the cells into portfolios based on
13 financial risk, I pointedly take the financial risks of the subject utility into account. As I
14 discuss below, I use the book equity ratio for this purpose.

15 While the manner in which capital structure has been taken into account in the
16 application of the SEET has differed, there is no apparent controversy that adjustments
17 should be made on this account. After all, two firms with identical business risks may
18 pose dramatically different risks to common shareholders depending on how differently
19 the firms are financed. In part, the manner of taking leverage differences into account
20 flows from how different participants in the SEET debate have chosen to draw firms for
21 the comparable sample of publicly traded firms. If the comparison sample is somehow
22 known *a priori*, when for example it is selected by asserting that firms in certain
23 industries have the same business risks as the subject utility, then one can “undo” their

capital structure and “re-leverage” to determine earned rates had they had the same leverage as the subject utility. In the alternative approach, which I have adopted, comparison firms are identified taking capital structure, which reflects the financial risk, explicitly into account to begin with. Moreover, capital structure adjustments are made to overall risk (beta) to determine business risk (unlevered beta), which is also employed explicitly in the search for a comparable risk sample of publicly traded firms.

Q. HOW DID YOU MEASURE FINANCIAL RISK?

A. To measure financial risk, I used the book equity ratio, which is the (Average book value of equity beginning and end of 2010) / (Average of beginning and end of 2010 of total book assets). I chose this ratio because fixed income investors and credit rating agencies look at book equity to determine leverage and financial risk. Moreover, compared to a market-value based ratio, a book-based leverage ratio is more stable from year-to-year. (See Figure 14.2 in Chapter 14, page 344 of Richard A. Brealey, Stewart Myers, and Franklin Allen, *Principles of Corporate Finance*, McGraw-Hill Irwin, New York, NY, Tenth Edition, 2011.)

There is little controversy among proponents of different methodologies for the SEET regarding what constitutes financial risk and that some version of the book common equity ratio is an appropriate measure for it. While using the book equity ratio to illustrate the application of the SEET, I have also earlier made a case in my direct testimony in AEP Ohio’s 2008 ESP Proceeding for the market equity ratio. Changing market conditions are better captured by the market equity ratio. However, credit agencies do pay attention to the book equity ratio, and the book equity ratio is more stable. Consequently, it is with the book equity ratio, as defined above, that I conduct the

1 SEET here. Specifically, I use the average of *Common Equity Reported*, beginning and
2 end of 2010, divided by the average of *Total Reported Assets*, beginning and end of 2010.

3 **Q. WHAT OTHER COMPARISONS OF FINANCIAL RISK DID YOU**
4 **UNDERTAKE?**

5 A. Along with the book equity ratio, I also use Standard and Poor's Long-Term Issuer Credit
6 Rating as an additional measure of financial risk. In particular, AEP had an investment
7 grade rating (BBB in 2010), and I require investment grade ratings for the other
8 comparable firms as well. Given that the book equity ratio does not reflect changing
9 market conditions adequately, this credit rating provides a timely measure of financial
10 risk. This check on financial risk has also been invoked by others conducting the SEET.
11 Note however that Standard and Poor's Long-Term Issuer Credit Rating is not a
12 replacement for the more comprehensive measure of financial risk, the book equity ratio.
13 Rather, the rating is a metric that itself depends, at least in part, on the book equity ratio,
14 and focuses on the credit quality aspect of the issuer.

15 In sum, I am affirming my choice of comparables with multiple measures, so as
16 not to be overly reliant on any one measure. It should also be noted that the four
17 measures used here (unlevered beta, book equity ratio, capital intensity, and investment
18 grade status of the issuer) are widely used and well-grounded metrics. There is also
19 precedent for my approach of matching risks with multiple characteristics (See Eugene F.
20 Fama and Kenneth R. French, The Cross-Section of Expected Stock Returns, *Journal of*
21 *Finance* XLVII (2), June 1992, 427-465).

22 **Q. WHAT ARE THE METHODOLOGICAL IMPLICATIONS OF (7) "CAPITAL**
23 **REQUIREMENTS OF FUTURE COMMITTED INVESTMENTS?"**

1 A. This provision allows electric utilities to “prepare” for future capital requirements, which
2 will reduce free cash flow and could financially constrain the firms. Thus, what would
3 otherwise appear to be significantly excessive earnings may be left without penalty if the
4 extra earnings will help finance future investments. This mitigating factor is specifically
5 included in S.B. 221.

6 **Q. WHAT ARE THE METHODOLOGICAL IMPLICATIONS OF (8)**
7 **“SIGNIFICANTLY EXCESSIVE EARNINGS?”**

8 A. It is natural for the ROEs of OPCo and CSP to differ from the mean ROE for the
9 Comparable Risk Peer Group in any given year. Normal business fluctuations (caused by
10 any number of factors, such as weather for example) imply that such random deviations
11 are expected even if there are no differences in business or financial risks. To determine
12 whether the difference is merely a random deviation or not, I apply standard statistical
13 theory, which is a reasonable method of looking at this data. There appears to be
14 universal acceptance for using the mean return of the comparable group as a starting
15 benchmark in the determination of the threshold for significantly excessive earnings. The
16 mean return for a sample of returns, about which there appears to be no controversy, is of
17 course itself a statistical construct. Moreover, the description of the returns to the
18 comparable firms would be quite deficient if it was restricted to merely the mean without
19 a sense of the variation around that mean. This is just what the standard deviation is
20 capturing. In other words, the issue at hand, determination of threshold earned rates
21 (Threshold ROE), naturally lends itself to a statistical approach. This is not to say that
22 there is no place for judgment and that the SEET is a mechanical exercise. It is one thing
23 to determine the Threshold ROE rate from the comparable group of firms, and yet quite

another as to what is the ROE of the subject utility to be used to compare against the Threshold ROE or what the appropriate remedies should be in case of significantly excessive earnings.

Next, like others setting aside any issues regarding how the standard deviation for a sample may differ from that of the underlying population, I discuss implications of determining Threshold ROEs at various numbers of standard deviations above the mean for the Comparable Risk Peer Group:

For a normal distribution, and two-tailed cutoffs,

(a) 1.96-standard: 1.96 standard deviations above the mean, implies a Threshold ROE

= Mean ROE for the Comparable Risk Peer Group

+ 1.96*Standard Deviation of ROEs for the Comparable Risk Peer Group.

Among the realistic set of positive earned rates, this is equivalent to a chance of 2.5 out of 50, or 5%, of being deemed significantly excessive even though it is the result of normal fluctuation. That is, the likelihood of a false positive is 5%.

(b) 1.64-standard: 1.64 standard deviations above the mean, implies a Threshold ROE

= Mean ROE for the Comparable Risk Peer Group

+ 1.64*Standard Deviation of ROEs for the Comparable Risk Peer Group.

Among the realistic set of positive earned rates, this is equivalent to a chance of 5.0 out of 50, or 10%, of being deemed significantly excessive even though it is the result of normal fluctuation. That is, the likelihood of a false positive is 10%.

(c) 1.28-standard: 1.28 standard deviations above the mean, implies a Threshold ROE

= Mean ROE for the Comparable Risk Peer Group

+ 1.28*Standard Deviation of ROEs for the Comparable Risk Peer Group.

1 Among the realistic set of positive earned rates, this is equivalent to a chance of 10.0
2 out of 50, or 20%, of being deemed significantly excessive even though it is the result
3 of normal fluctuation. That is, the likelihood of a false positive is 20%.

4 Instead of focusing on the 5%, 10%, and 20% probabilities of false positives
5 among the realistic set of positive returns, we can also examine the implications of 1, 2,
6 or 3 standard deviation cutoffs, above and below the mean, in a normal distribution. So,
7 yet another way to assess the 1.96-standard deviations (or approximately 2 standard
8 deviations above and below the mean) adder is to compare it with a 1- or 3-standard
9 deviations adder. In a normal distribution, a 1-standard deviation adder would allow a
10 high proportion of ROEs, about one of three instances, to fall outside the 1 standard
11 deviation range above or below the mean. Such a confidence level would categorize too
12 many firms as earning significantly excessive returns. Contrast that with ROEs that fall
13 beyond 3 standard deviations above or below the mean. These would have a likelihood
14 of only 0.27%, 1 out of 370 instances, which would make ROEs falling beyond that range
15 about the mean a rarity. That is, a very high proportion of firms with high ROEs would
16 not appear to have significantly excessive earnings when using the 3-standard deviations
17 rule. Finally, consider the middle ground, deviations that are greater than or less than
18 about 2 standard deviations relative to the mean. This occurs about 5% of the time (or
19 95% level of confidence), or in 1 out of 20 instances, a reasonable frequency of cases
20 with significantly excessive earnings.

21 In this testimony, I apply the 1.96-standard because it is the most commonly
22 applied standard, and because it offers, in my opinion, a reasonably acceptable risk of
23 false positives.

1 **Q. CAN YOU DESCRIBE OTHER CIRCUMSTANCES IN WHICH THE 95%**
2 **CONFIDENCE LEVEL AND CORRESPONDING 1.96 STANDARD**
3 **DEVIATIONS HAS BEEN USED TO DEFINE WHEN A DIFFERENCE IS**
4 **SIGNIFICANT?**

5 A. Yes. For example, the annual report of the U. S. Department of Education (U. S. DOE)
6 titled *The Condition of Education* recommends that persons comparing sample estimates
7 among the data in that report use the 95% confidence level, and corresponding 1.96
8 standard deviations, to determine whether the difference between two figures is a “real
9 difference” and not “due to chance,” i.e., whether the difference is significant (U. S.
10 Department of Education, Institute of Education Sciences, *The Condition of Education*,
11 User’s Guide, Technical Guide, Data Analysis and Interpretation,
12 <http://nces.ed.gov/programs/coe/guide/g3c.asp>). The user’s guide for *The Condition of*
13 *Education* report explains that “For all indicators in *The Condition of Education* that
14 report estimates based on samples, differences between estimates (including increases or
15 decreases) are stated only when they are statistically significant. To determine whether
16 differences reported are statistically significant, two-tailed tests at the 0.05 level are
17 typically used.”

18 As another example, the Federal Energy Regulatory Commission’s Staff’s Final
19 Report on Price Manipulation in Western Markets/Fact-Finding Investigation of Potential
20 Manipulation of Electric and Natural Gas Prices, Docket No. PA02-2-000, at V-13
21 (March 2003), also provides support for the use of the 95% confidence level and related
22 1.96 standard deviations to measure significance:

1 “Statistical significance is usually measured at the 90- or 95-percent confidence
2 level. A coefficient is considered statistically significant at the 95-percent
3 confidence level if the value of zero is not within a band around the coefficient
4 value of 1.96 standard deviations.”

5 *See id.* at V-13, [http://www.ferc.gov/legal/maj-ord-reg/land-docs/part-2-03-26-](http://www.ferc.gov/legal/maj-ord-reg/land-docs/part-2-03-26-03.pdf)
6 03.pdf.

7 Yet another example comes from the United States Department of Justice
8 Programs, Bureau of Justice Statistics (BJS), which puts out an annual report called the
9 National Crime Victimization Survey. The publication describing the survey
10 methodology explains that to determine whether the difference between two rates in the
11 survey is statistically significant, the BJS uses a “z” score of 1.96, which “indicates that
12 the difference is significant at the 95% confidence level (or greater)[.]” The publication
13 goes on to say that, “In BJS reports, findings are normally significant at the 95%
14 confidence level. If the finding is significant at the 90% confidence level, words such as
15 ‘some evidence’ are used.” (Please see page 9,
16 http://bjs.ojp.usdoj.gov/content/pub/pdf/nevs_methodology.pdf).

17 Finally, a widely followed organization that has been conducting polls for over 75
18 years, Gallup, also uses a 95% confidence level. See, for example in the underlined
19 phrase below, in the Survey Methods presented with the report on a recent poll by Gallup
20 on President Obama’s job approval ratings, “Obama Weekly Job Approval Average at
21 New Low of 43%,” August 23, 2010, [http://www.gallup.com/poll/142634/Obama-](http://www.gallup.com/poll/142634/Obama-Weekly-Job-Approval-Average-New-Low.aspx)
22 Weekly-Job-Approval-Average-New-Low.aspx:
23

1 “Survey Methods

2 Results are based on telephone interviews conducted as part of Gallup Daily
3 tracking survey Aug. 16-22, 2010, with a random sample of 3,571 adults, aged 18
4 and older, living in all 50 U. S. states and the District of Columbia, selected using
5 random-digit-dial sampling.

6
7 For results based on the total sample of national adults, we can say with 95%
8 confidence that the maximum margin of sampling error is ± 2 percentage points.

9
10 Interviews are conducted with respondents on landline telephones”[Emphasis
11 added.]

12
13 **Q. WHY NOT USE A 1.64X OR A 1.28X STANDARD DEVIATION AS THE ADDER**
14 **TO CALCULATE THE THRESHOLD ROE?**

15 A. In my opinion, Threshold ROEs based on 1.64 or 1.28 standard deviations allow for too
16 high a risk of false positives. Focusing only on the realistic set of positive earned rates,
17 there are 5 out of 50 chances of naturally falling 1.64 standard deviations above the mean
18 even though they are not truly excessive earnings. That is, the likelihood of a false
19 positive conclusion – concluding that the earnings are significantly excessive when they
20 really are not – is 10%. With a threshold set at 1.28 standard deviations, the probability
21 of a mistaken determination of significantly excessive earnings is even greater, 20%.
22 These are high probabilities of false positives. Given the asymmetric nature of the
23 earnings test, a 1.64-standard or a 1.28-standard would create additional risk for Ohio
24 utilities, which may ultimately adversely affect consumers for whose benefit S. B. 221
25 has been enacted.

26 **Q. WHAT ARE THE METHODOLOGICAL IMPLICATIONS OF (9) “TO RETURN**
27 **TO CONSUMERS THE AMOUNT OF THE EXCESS?”**

28 A. Note that S.B. 221 proposes an asymmetric test, since significantly excessive earnings in
29 a year may be returned, while shortfalls in prior years are left uncompensated. This in

1 itself constitutes an additional business risk for common equity holders. Indeed, analysts
2 have noted just this regarding the Significantly Excessive Earnings Test:

3 “The language is quite broad and allows the Public Utilities Commission of Ohio
4 (PUCO) considerable discretion in determining the comparable companies (which are not
5 limited to utilities) and what constitutes significant overearning....The earnings test may
6 be something of a “stick” for the PUCO to moderate the rate impact over time, especially
7 if market prices continue to rise.” Elizabeth A. Parrella, Merrill Lynch’s *Focus on Ohio*,
8 April 25, 2008.

9 Besides highlighting this risk aspect, I do not address the manner and amount of
10 returns to customers in case there is a determination that CSP or OPCo earned
11 significantly excessive rates of return to common equity.

12 **Q. HOW IS YOUR METHODOLOGY AFFECTED BY THE REQUIREMENT**
13 **THAT (10) “IN MAKING ITS DETERMINATION OF SIGNIFICANTLY**
14 **EXCESSIVE EARNINGS UNDER THIS DIVISION, THE COMMISSION SHALL**
15 **NOT CONSIDER, DIRECTLY OR INDIRECTLY, THE REVENUE, EXPENSES,**
16 **OR EARNINGS OF ANY AFFILIATE OR PARENT COMPANY?”**

17 **A.** My application of the SEET is based on the earned rates for CSP and OPCo in 2010, and
18 not the earned rate for AEP. For financial risks, I use the book equity ratios that pertain
19 to CSP and OPCo. Since they are not traded, I turn to AEP’s unlevered beta to infer the
20 business risks of CSP and OPCo. Indeed, I believe that CSP and OPCo do not have the
21 same unlevered beta risks as AEP. Rather, I argue that they are riskier and that if their
22 equity was traded their directly estimated unlevered betas would be higher than AEP’s
23 and that needs to be taken into account.

1 Q. SECTION 4928.143(F) STATES THAT “[W]ITH REGARDS TO THE
2 PROVISIONS THAT ARE INCLUDED IN AN ELECTRIC SECURITY PLAN
3 UNDER THIS SECTION, THE COMMISSION SHALL CONSIDER ... IF ANY
4 SUCH ADJUSTMENTS RESULTED IN EXCESS EARNINGS” DOES THIS
5 LANGUAGE OF SECTION 4928.143(F) AFFECT YOUR METHODOLOGY FOR
6 IMPLEMENTING THE SIGNIFICANTLY EXCESSIVE EARNINGS TEST?

7 A. My testimony describes and supports a methodology to test whether an electric utility’s
8 earned return on equity may be significantly excessive. I do not address the extent to
9 which, if at all, particular ESP provisions or adjustments implemented by such provisions
10 might result in, or cause, excess earnings. Nor do I address how, in a specific case, the
11 Commission should, after applying the Significantly Excessive Earnings Test, identify
12 portions of the earned return that should be subject to a remedy, such as being returned to
13 customers.

14 **DETERMINATION OF THE THRESHOLD ROE FOR CSP AND OPCO FOR 2010**

15 Q. HOW DID YOU DEVELOP YOUR COMPARABLE RISK PEER GROUP? AND
16 WHAT SEET THRESHOLD ROE DOES THAT GROUP GENERATE?

17 A. I now describe my Base Case analysis for determining the Threshold ROE in 2010 for
18 CSP and OPCo. This is my preferred analysis because it best matches the business and
19 financial risks of the subject utilities, and thus adheres best to S. B. 221. For robustness
20 purposes, I perform several additional analyses, but as I point out later, they make some
21 compromises over this Base Case. Yet, given that the debate on the best methodology to
22 implement the SEET is still ongoing, there is a benefit to comparing my Base Case to the
23 alternatives.

1 In forming the matched sample of firms I start with all 1700 firms in Value Line's
2 *Standard Edition*. At the time of downloading the data, June 6, 2011, restricting the
3 sample to only U.S.-domiciled firms reduces the sample for 2010 to 1,369 firms. In order
4 to form matching portfolios of comparable firms, I make an initial check on data
5 availability. I require that the firm has a Value Line beta and unlevered beta, as well as
6 data on book equity, book equity ratio, and revenues. Since missing values can be
7 mistakenly entered as zeros, I simply check if these data are greater than zero. I do not
8 risk biasing my sample with this check on data availability since firms with negative or
9 zero values on these data are at any rate not appropriate matches with CSP or OPCo.
10 The resulting sample consists of 1,084 firms.

11 I adopt the approach that develops a portfolio of matches, irrespective of their
12 industry affiliation, but based on similarity of business (unlevered beta) and financial
13 (book equity ratio) risks comparable to CSP and OPCo. I first divide all firms into 5
14 quintiles based on their unlevered betas, and into 5 quintiles based on their book equity
15 ratios. From these 25 cells, I pick the cell which has CSP and OPCo in it. This is shown
16 for 2010 in Panels A and B of Table 1. It happens to be the case that both CSP and OPCo
17 fall in the same quintile with regard to book equity ratio. This is the second quintile in
18 which the book equity ratio ranges from 0.2686 to 0.3950 (Panel A). The book equity
19 ratios of CSP and OPCo are 0.3215 and 0.3600, respectively, in 2010. It is of course not
20 necessary that they will share the same cell for book equity ratio in future years.

21 For the unlevered beta, since CSP and OPCo are not traded, I use AEP's
22 unlevered beta, which is 0.2915 for 2010. This falls in the first quintile in Panel B. I am
23 interested in AEP's unlevered beta because it may be used as a proxy for the unlevered

1 betas of CSP and OPCo, consistent with standard utility practice. Since these are smaller
2 firms and low betas are known to understate risk, their unlevered betas are expected to be
3 higher than that of AEP. Thus, using AEP's unlevered beta as a proxy for CSP's and
4 OPCo's unlevered betas for the purpose of selecting the quintile makes for a conservative
5 test. Also, the upper end of the first quintile is 0.4650, so that CSP and OPCo, though
6 riskier than AEP's unlevered beta of 0.2915, should still fall comfortably within the
7 quintile.

8 Out of the potential 25 cells, the cell matching on *both* book equity ratio and
9 unlevered beta forms our Comparable Risk Peer Group. This group, from which AEP is
10 now purposely excluded, consists of some 68 firms. This is a large enough number so
11 that our results on the statistics (mean and standard deviations) of earned rates will not be
12 dominated by a few outlier firms.

13 Panel C. 1. shows that the mean book equity ratio of the Comparable Risk Peer
14 Group, 0.3145, is well matched with the book equity ratios for CSP (0.3215) and OPCo
15 (0.3600). By design, I have narrowed the set of comparable firms to those with book
16 equity ratios between 0.2686 to 0.3950 out of the full possible wide range of 0.0023 to
17 0.9672 for the 1,084 firms.

18 With respect to the unlevered betas, the comparable set is limited to the range
19 0.0862 to 0.4650 from a full possible wide range of 0.0862 to 2.5089. The mean for the
20 unlevered beta for the Comparable Risk Peer Group is 0.3527. This is higher than that
21 for AEP (0.2915), but then CSP and OPCo are expected to have higher unlevered betas.
22 Therefore, I conclude that the Comparable Risk Peer Group provides a good, likely
23 conservative, match for business risk as well.

1 In Panel D, I present the composition of the Comparable Risk Peer Group. It
2 naturally contains publicly-traded non-utility and utility firms, which conforms well with
3 S. B. 221. Furthermore, it satisfies the “smell test,” by which I propose that the
4 representation by utilities should be quite apparent. Some 48 out of the 68 comparable
5 group of firms (excluding AEP) or about 71% are utilities (Nat Gas Util, El Util, Oil/Gas
6 Dist, Tele Service, and Cable TV). If regulated industries are counted, the number of
7 firms in the comparable group goes up to 56/68 or about 82%. Recall that I did not
8 restrict my methodology to any particular industries. Some 12/68 or about 18% come
9 from non-regulated firms. The presence of non-utility/non-regulated firms in the
10 Comparable Risk Peer Group also meets the expectations of S. B. 221. It is also evidence
11 that a procedure that eliminates such firms to begin with risks excluding viable matching
12 firms of comparable business and financial risk from the SEET. Had we started with a
13 pre-set group of industries, we would have hard-wired the procedure to exclude such non-
14 utility firms from being potential candidates for the Comparable Risk Peer Group. It is
15 also notable that three of the four major Ohio electric utilities, AEP by design and DPL
16 and Duke, based on the similarity of their business and financial risks in 2010, appear in
17 the same Comparable Risk Peer Group. However, there is no *a priori* reason that their
18 risks and membership will remain the same in the future. In fact, First Energy is not in
19 the comparable group for 2010, even though it had been in the comparable group for
20 2009. The stability of the sample is reflected in the repeats from the Comparable Risk
21 Peer Group from the application of SEET to 2009. The 2010 Comparable Risk Peer
22 Group contains 47 firms that were present in the 2009 Comparable Risk Peer Group.
23 That is, 47/68 or 69% (about two-thirds) of the sample is a repeat. Again, this was not

1 forced, and with changes in the economy and fortunes of firms this may not necessarily
2 hold on an ongoing basis. While repeats are reassuring, it is also important to recognize
3 that other firms enter the Comparable Risk Peer Group, as firms change and some
4 become better matches.

5 In Panel E, I present the distribution of earned rates of return on common equity
6 (ROE) using the primary definition of (*Net Income Before Non-recurrings & Extras for*
7 *2010 minus Preferred Dividends Paid Accumulated for 2010*)/(*Average of Common*
8 *Equity Reported for end of 2009 and Common Equity Reported for end of 2010*). The
9 mean ROE for the Comparable Risk Peer Group is 11.4838% with a standard deviation
10 of 5.6809%. In Panel F, I reproduce the ROE, except that it is based on earnings before
11 discontinued items as well. The mean and standard deviations are virtually the same as
12 those in Panel E.

13 In Panel G, I calculate the Threshold ROE above which the earnings may be
14 considered significantly excessive under the SEET. The threshold earned rate is 22.62%
15 corresponding to a threshold set at 1.96 standard deviations above the mean ROE for the
16 Comparable Risk Peer Group.

17 **Q. DO YOU HAVE ANY OTHER OBSERVATIONS REGARDING THE**
18 **DISTRIBUTION OF ROE VALUES OF THE COMPARABLE PEER GROUP?**

19 A. There is one more notable feature of the distribution of ROEs for the Comparable Risk
20 Peer Group. Looking again at Panel E, the skewness of the distribution is 1.59, and the
21 kurtosis is 6.02. That is, the distribution is skewed to the right, and it has fat tails. A
22 distribution without any skewness would have a skewness value of zero, and a normal
23 distribution would have a kurtosis of 3. While a right-skewed fat-tailed distribution is not

1 a normal distribution, the question is, what is the implication of such a distribution for
2 our SEET test? Essentially, what this means is that when I apply the 1.96 standard
3 deviations above the mean standard, I actually have a higher probability of false positives
4 than what would be implied by a normal distribution. That is, the probability (among
5 positive returns) of a false positive, when using the Threshold ROE that I recommend, is
6 greater than 5%. Accordingly, this makes the Threshold ROE I used, based on the mean
7 plus 1.96 standard deviations, a more conservative Threshold than would be the case if
8 there were a normal distribution.

9 **Q. HOW DO YOUR FINDINGS FOR 2010 COMPARE WITH YOUR**
10 **APPLICATION OF SEET TO 2009?**

11 A. The mean ROE and its standard deviation for both Comparable Risk Peer Group are
12 similar: Means are 11.4838% and 11.0414% for 2010 and 2009, respectively. The
13 standard deviations are 5.6809% and 5.8524%, respectively. In this period, we see
14 stability in mean returns and standard deviations for the Comparable Risk Peer Groups.

15 **Q. IN YOUR EARLIER APPLICATION OF THE SEET IN THE 2008 ESP**
16 **PROCEEDING, YOU HAD REPORTED LARGER STANDARD DEVIATIONS**
17 **THAN YOUR METHODOLOGY PRODUCES IN THE CURRENT**
18 **APPLICATION. CAN YOU EXPLAIN WHY THE STANDARD DEVIATIONS**
19 **ARE LOWER IN YOUR CURRENT ESTIMATION?**

20 A. If one wanted to capture the full impact on common shareholders, net income *after*
21 discontinued, non-recurring and extraordinary items would do so. Indeed, that is the
22 bottom line frequently used in reporting net income (and earnings per share). This was
23 the measure I used in the 2008 ESP Proceeding to determine the earned return on

1 common equity. However, the one-time adjustments to income can produce large
2 fluctuations in earned rates, and raise the standard deviation of the earned rates, though it
3 may not reflect earnings in the firm's normal course of business. The Commission
4 clarified in its SEET Workshop Orders that the SEET should be directed at those earnings
5 that result in the normal functioning of the firm and not due to one-time exceptional
6 events. Consequently, in my subsequent analyses I use profit after deduction of all
7 expenses including taxes, minority interests, and preferred dividends paid or
8 accumulated, but before any non-recurring, special, and extraordinary items. In Value
9 Line terms that is *Net Before Discontinued Non Recurring Extra minus Preferred*
10 *Dividends Paid Accumulated*. In this respect, King, Woolridge, Vilbert, and indeed the
11 SEET Workshop Orders are all in agreement. Without the fluctuations introduced by the
12 one-time events, the standard deviations of earned returns are considerably lower in the
13 results I am reporting here.

14 **Q. IS THE METHODOLOGY YOU ARE USING NOW THE SAME AS THE**
15 **METHODOLOGY YOU PRESENTED IN THE 2010 SEET (FOR 2009**
16 **EARNINGS) PROCEEDING?**

17 A. Yes, the methodology has remained unchanged. I continue to use the unlevered beta to
18 measure business risk, and the book equity ratio to determine financial risk. I still form
19 cells after ranking all available firms, irrespective of their industry affiliations, according
20 to their business and financial risks. The Comparable Peer Risk Group is the set of firms
21 in the cell to which CSP and OPCo themselves belong based on their business and
22 financial risk. The mean plus 1.96 standard deviations of the ROE of the Comparable
23 Peer Risk Group firms defines the threshold beyond which returns are considered

1 significantly excessive earnings, here and in my testimony in the 2010 SEET (for 2009
2 earnings) proceeding.

3 Once again, just as for calendar year 2009, consistent with others who
4 implemented SEET, I use Value Line's *Standard Edition* of 1700 population of firms,
5 and form my Base Case analysis with 5 x 5, or only 25 cells. However, in my confirming
6 analysis I apply a 10 x 10, 100 cells, methodology, and find that my findings on the
7 threshold in my Base Case analysis are conservative. I provide a more detailed
8 discussion of this issue later in my testimony. Another issue raised in the 2008 ESP
9 dealt with the use of unlevered betas to measure business risk. Although I have already
10 provided above the rationale for my use of unlevered betas in my Base Case, again as in
11 my application to 2009, and as part of my confirming analysis I also invoke capital
12 intensity as an added measure of capital intensity. The findings, which too are described
13 in greater detail below, confirm that my Base Case findings are conservative.

14 In my Base Case, just as in my application to 2009, I have also followed the
15 recommendations of the Commission's SEET Workshop Orders. For example, as is
16 recommended I calculate ROE using the *Net Before Discontinued Non Recurring Extra*
17 *minus Preferred Dividends Paid Accumulated* for the numerator, and the average of
18 beginning and year-end equity values for the denominator.

19 **CONFIRMING ANALYSES**

20 **Q. DID YOU CONFIRM YOUR FINDINGS ON THRESHOLD EARNED RATES BY**
21 **APPLYING ADDITIONAL METRICS FOR BUSINESS AND FINANCIAL RISK**
22 **FOR FORMING THE COMPARABLE RISK PEER GROUP?**

1 A. Yes, I did. In Table 2, I repeat my analysis but, in addition to unlevered betas (for
2 business risk) and book equity ratios (for financial risk), I also require that the firms
3 entering the Comparable Risk Peer Group are also capital intensive and that they are
4 rated investment grade. The idea is to avoid being overly reliant on a single metric for
5 business risk (unlevered beta) or a single metric for financial risk (book equity ratio).
6 Specifically, I require that their capital intensity, measured as *Sales or Revenues for*
7 *2010/Average of Reported Total Assets for 2010*, is under one, and that the S & P Long-
8 Term Issuer Credit Rating in 2010 is investment grade. In order to meet these additional
9 restrictions and still get a workable sample size, I employ a 4 x 4, or 16 cell, methodology
10 with respect to book equity ratio and unlevered betas.

11 In Panel B, I report the mean and standard deviation of the earned rates for the 44
12 firms that now form the Comparable Risk Peer Group. The mean is 12.8505%, while the
13 standard deviation is 7.1817%. The Threshold ROE reported in Panel D is 26.93%,
14 which suggests that the findings for the Base Case are conservative (threshold of
15 22.48%), Table 1 (Panel G). Thus, I am able to propose my Base Case findings with
16 greater confidence.

17 Even so, a caveat should be added. In accommodating the additional criteria, we
18 get a reduced sample, which makes the confirmatory analysis less reliable than the Base
19 Case analysis. I voiced similar misgivings about the relative strengthen and preference
20 for my Base Case analysis in my application to 2009 last year.

1 **Q. IN YOUR EARLIER APPLICATION OF THE SEET IN AEP OHIO'S 2008 ESP**
2 **PROCEEDING, YOU HAD USED A 10 x 10, OR 100 CELL, METHODOLOGY.**
3 **YOU HAVE NOW USED A 5 x 5, OR 25 CELL, METHODOLOGY. WHAT IS**
4 **THE REASON FOR THIS MODIFICATION, AND HOW DOES IT IMPACT**
5 **YOUR FINDINGS?**

6 **A.** The choice of the 5 x 5, or 25 cell, methodology was prompted primarily by the available
7 set of 1,084 firms among the U. S. -domiciled firms in the *Value Line Standard Edition*
8 at the time of downloading the data (June 6, 2011). I made exactly the same choice last
9 year in my application of the SEET to 2009. Value Line's *Standard Edition* covers the
10 more prominent 1700 US and foreign firms, which are better candidates for matching
11 with our subject utilities than the many small firms included in the full *DATAFILE*
12 version of the database carried by Value Line. Since the *Standard Edition* has also been
13 used by most others in their application of the SEET, it has the added advantage of
14 comparability of analyses. But, there is a consequence to the use of the *Standard Edition*.
15 The smaller set of firms means that I form fewer cells (25) in matching the subject
16 utilities to identify peers of similar business and financial risks so that I can still obtain a
17 large Comparable Risk Peer Group (about 70 firms). (Even so, I did obtain a well-
18 matched Comparable Risk Peer Group relative to CSP and OPCo.)

19 To affirm my Base Case findings with the 10 x 10, or 100 cell, methodology, I
20 revert to the full *DATAFILE* version so that I have sufficient number of firms at the
21 outset. As of June 6, 2011, there are 2,063 U.S.-domiciled firms in the database after a
22 check on data availability. In Table 3, I form the 100 cells, and pick the one cell in which
23 CSP and OPCo should reside. These details are provided in Panels A and B of Table 3.

1 In Panel D, the mean ROE for the comparables is 11.7692% with a standard deviation of
2 ROE of 6.4367%. The corresponding Threshold ROE is shown in Panel F. The
3 threshold, using 1.96 standard deviations is 24.3852%, which too shows that the Base
4 Case findings are conservative (threshold of 22.4776%).

5 The size of the Comparable Risk Peer Group with the 10 x 10 methodology is
6 only 13, which is good reason to consider the Base Case more reliable. I came to the
7 same conclusion last year in my application of the SEET to 2009.

8 **FINDINGS AND CONCLUSIONS**

9 **Q. WHAT ARE YOUR FINDINGS AND CONCLUSIONS?**

10 A. I find that for 2010 the mean ROE of the Comparable Risk Peer Group is 11.48% and the
11 standard deviation for the Comparable Risk Peer Group is 5.68%. Multiplying the 5.68%
12 standard deviation by 1.96, corresponding to a 95% confidence level, produces an adder
13 of 11.13%. Consequently, I conclude that the Threshold ROE for 2010 for CSP and
14 OPCo, for purposes of applying the SEET, is 22.61%.

15 **Q. DOES THAT CONCLUDE YOUR TESTIMONY?**

16 A. Yes, it does.

Table 1
Forming the Comparable Sample and Rate Earned on Common Equity (ROE)
based on Financial Risk (average Book Equity Ratio)
and Business Risk (average Unlevered Betas) for 2010

Using Standard Edition Value Line Data

Panel A: Ranges of average Book Equity Ratio in full available data for 2010

	Values percentile	
	.0023302	0
1.	.2685702	20
2.	.3949849	40
3.	.5087643	60
4.	.6445144	80
5.	.9671582	100

AEP's average Book Equity Ratio for 2010 = 0.2708015

CSP's average Book Equity Ratio for 2010 = 0.321453

OPCo's average Book Equity Ratio for 2010 = 0.3599995

Panel B: Ranges of Unlevered Beta in full available data for 2010

	pct	percent
	.0862014	0
1.	.4649759	20
2.	.6603854	40
3.	.8005689	60
4.	.9721473	80
5.	2.5088990	100

AEP's average Unlevered Beta for 2010 = 0.2915216

Smaller firms (CSP and OPCo) typically have higher business risk (and betas)

Panel C: Distributions of Financial and Business Risks of 68 Comparable Group

(Excludes AEP)

C.1. Distribution of average Book Equity Ratio for 2010

	Percentiles	Smallest		
1%	.2697842	.2697842		
5%	.2741025	.2703544		
10%	.282807	.2711459	Obs	68
25%	.2898626	.2741025	Sum of Wgt.	68
50%	.3055782		Mean	.3144963
		Largest	Std. Dev.	.0325134
75%	.3330996	.3812279		
90%	.3748259	.381579	Variance	.0010571
95%	.3812279	.3821781	Skewness	.8646059
99%	.3949849	.3949849	Kurtosis	2.763713

AEP's average Book Equity Ratio for 2010 = 0.2708015

CSP's average Book Equity Ratio for 2010 = 0.321453

OPCo's average Book Equity Ratio for 2010 = 0.3599995

C. 2. Distribution of average Unlevered Beta for 2010

	Percentiles	Smallest		
1%	.1369963	.1369963		
5%	.268563	.1966471		
10%	.2832352	.2446901	Obs	68
25%	.3111336	.268563	Sum of Wgt.	68
50%	.3533089		Mean	.3526682
		Largest	Std. Dev.	.0625764
75%	.394485	.4488315		
90%	.4372338	.4578459	Variance	.0039158
95%	.4488315	.4593264	Skewness	-.5881559
99%	.4605678	.4605678	Kurtosis	3.894226

Panel D: Comparable Group (68 Firms) and AEP

	ticker	company name	industry	roe
37.	ALE	ALLETE	El Util-Cent	.0790344
40.	LNT	ALLIANT ENERGY	El Util-Cent	.1079401
48.	AEE	AMEREN CORP.	El Util-Cent	.0859731
50.	AEP	AMER. ELEC. POWER	El Util-Cent	.0932875
57.	AWK	AMER. WATER WORKS	Water Util	.065896
78.	WTR	AQUA AMERICA	Water Util	.1085956
96.	ATO	ATMOS ENERGY	Nat Gas Util	.0923974
103.	AVA	AVISTA CORP.	El Util-West	.0849035
134.	BKH	BLACK HILLS	El Util-West	.0591094
165.	CHG	CH ENERGY GROUP	El Util-East	.0879375
168.	CNL	CLECO CORP.	El Util-Cent	.1147051
205.	CV	CEN. VERMONT PUB. SE	El Util-East	.0832423
220.	CINF	CINCINNATI FINANCIAL	Ins Prop/Cas	.0559641
234.	CCE	COCA-COLA ENTERPRISE	Beverage	.1974059
258.	ED	CONSOL. EDISON	El Util-East	.0931018
259.	CEG	CONSTELLATION ENERGY	El Util-East	.0407639
289.	DPL	DPL INC.	El Util-Cent	.2506367
309.	DMND	DIAMOND FOODS	Food Process	.1389893
319.	D	DOMINION RESOURCES	El Util-East	.1355625
324.	DPS	DR PEPPER SNAPPLE	Beverage	.2068013
329.	DUK	DUKE ENERGY	El Util-East	.0798699
346.	EE	EL PASO ELECTRIC	El Util-West	.1178143
352.	EDE	EMPIRE DIST. ELEC.	El Util-Cent	.0753556
356.	ETP	ENERGY TRANSFER	Pipeline MLP	.1813961
416.	AJG	GALLAGHER (ARTHUR J.	Fin'l Serv.	.1741348
425.	GIS	GEN'L MILLS	Food Process	.2971373
441.	GXP	G'T PLAINS ENERGY	El Util-Cent	.0746053
508.	IM	INGRAM MICRO 'A'	Cmptrs & Per	.0986405
562.	KMB	KIMBERLY-CLARK	House Prod	.3255321
563.	KMP	KINDER MORGAN ENERGY	Pipeline MLP	.2309178
566.	KCG	KNIGHT CAPITAL GROUP	Sc Brokerage	.0788195
570.	KFT	KRAFT FOODS	Food Process	.1123171
576.	LG	LACLEDE GROUP	Nat Gas Util	.1026791
603.	MGEE	MGE ENERGY	El Util-Cent	.1123998
642.	PCS	METRO PCS COMMUNIC.	Tele Service	.1069712
658.	MYL	MYLAN INC.	Drug	.1062047
662.	NRG	NRG ENERGY	Power	.0622634
667.	NAFC	NASH FINCH CO.	Rtl/Whl Food	.1210639
681.	NJR	NEW JERSEY RESOURCES	Nat Gas Util	.1438101
690.	NEE	NEXTERA ENERGY	El Util-East	.1427009

702.	NWN	NORTHWEST NAT. GAS	Nat Gas Util	.1073899
708.	NVE	NV ENERGY INC.	El Util-West	.0690462
709.	OGE	OGE ENERGY	El Util-Cent	.1363846
739.	PNM	PNM RESOURCES	El Util-West	.0420004
764.	POM	PEPCO HOLDINGS	El Util-East	.0398303

776.	PNY	PIEDMONT NATURAL GAS	Nat Gas Util	.118074
777.	PNW	PINNACLE WEST CAPITA	El Util-West	.1000226
785.	POR	PORTLAND GENERAL	El Util-West	.0797703
795.	PGN	PROGRESS ENERGY	El Util-East	.0888105
799.	PEG	PUBLIC SERV. ENTERPR	El Util-East	.1698431

823.	RAI	REYNOLDS AMERICAN	Tobacco	.2238622
844.	SWY	SAFEWAY INC.	Rtl/Whl Food	.1186756
854.	SCG	SCANA CORP.	El Util-East	.1059006
866.	SHLD	SEARS HOLDINGS	Retail Store	.0262396
868.	SRE	SEMPRA ENERGY	El Util-West	.111913

881.	SKYW	SKYWEST	Air Transprt	.062132
893.	SJI	SOUTH JERSEY INDS.	Nat Gas Util	.1443131
894.	SO	SOUTHERN CO.	El Util-East	.1318255
895.	SUG	SOUTHERN UNION	Oil/Gas Dist	.084722
897.	SWX	SOUTHWEST GAS	Nat Gas Util	.0915529

930.	TE	TECO ENERGY	El Util-East	.1141689
933.	TECD	TECH DATA	Cmptrs & Per	.1019175
976.	UGI	UGI CORP.	Nat Gas Util	.1528148
1007.	VVC	VECTREN CORP.	El Util-Cent	.0942844
1020.	WGL	WGL HOLDINGS INC.	Nat Gas Util	.1023283

1047.	WR	WESTAR ENERGY	El Util-Cent	.0881443
1055.	WEC	WISCONSIN ENERGY	El Util-Cent	.1242636
1064.	XEL	XCEL ENERGY INC.	El Util-West	.0951709
1072.	AYR	AIRCASTLE LTD.	Fin'l Serv.	.0499708

Panel E: Earned Rates on Common Equity for 68 Comparable Firms (ROE)

	Percentiles	Smallest	
1%	.0262396	.0262396	
5%	.0420004	.0398303	
10%	.0591094	.0407639	Obs 68
25%	.0815561	.0420004	Sum of Wgt. 68
50%	.1042898		Mean .1148377
		Largest	Std. Dev. .0568091
75%	.133694	.2309178	
90%	.1974059	.2506367	Variance .0032273
95%	.2309178	.2971373	Skewness 1.586862
99%	.3255321	.3255321	Kurtosis 6.015521

Panel F: Earned Rates on Common Equity for 70 Comparable Firms Using Net Before Discontinued, Non-recurring, and Extraordinary Items but after preferred dividends paid and accumulated (ROE Before Discontinued, etc.)

	Percentiles	Smallest	
1%	.0262396	.0262396	
5%	.0499708	.0407639	
10%	.062132	.0420004	Obs 68
25%	.0815063	.0499708	Sum of Wgt. 68
50%	.1042898		Mean .1152653
		Largest	Std. Dev. .0563076
75%	.1341051	.2309178	
90%	.1974059	.2506367	Variance .0031706
95%	.2309178	.2971373	Skewness 1.627013
99%	.3255321	.3255321	Kurtosis 6.134332

Panel G: Threshold Earned Rates for Common Equity for CSP and OPCo in 2009

<u>Co Name</u>	<u>Mean of ROE of Comparables</u>	<u>Std. Dev. of ROE of Comparables</u>	<u>Threshold w/ 1.96 Std. Dev.</u>
CSP	0.1148377	0.0568091	0.226183536
OPCo	0.1148377	0.0568091	0.226183536

Table 2
Forming the Comparable Sample and Rate Earned on Common Equity (ROE)
based on Financial Risk (average Book Equity Ratio)
and Business Risk (average Unlevered Betas) for 2010

and

Additional criteria, Capital Intensity (Business Risk)
and S & P Issuer Long-Term Credit Rating (Financial Risk)

Using Standard Edition Value Line Data

Panel A: Distributions of Financial and Business Risks of Comparable Group

(Excludes AEP)

A. 1. Average Book Equity Ratio

Percentiles		Smallest		
1%	.2982804	.2982804		
5%	.2998444	.2987577		
10%	.304346	.2998444	Obs	44
25%	.310796	.3005617	Sum of Wgt.	44
50%	.3330996		Mean	.3539005
		Largest	Std. Dev.	.0468272
75%	.3969145	.4281111		
90%	.4253339	.4285569	Variance	.0021928
95%	.4285569	.435564	Skewness	.4069558
99%	.4372969	.4372969	Kurtosis	1.630903

A. 2. Average Unlevered Beta

Percentiles		Smallest		
1%	.1369963	.1369963		
5%	.2918076	.2832352		
10%	.2984995	.2918076	Obs	44
25%	.3454163	.2983136	Sum of Wgt.	44
50%	.3899468		Mean	.392033
		Largest	Std. Dev.	.077928
75%	.4585862	.4928979		
90%	.4901502	.5102108	Variance	.0060728
95%	.5102108	.5102921	Skewness	-.6013921
99%	.5180086	.5180086	Kurtosis	3.816605

Panel B: Earned Rates on Common Equity for Comparable Firms (ROE) when data are available

Percentiles		Smallest		
1%	.0407639	.0407639		
5%	.0518887	.0420004		
10%	.0591094	.0518887	Obs	44
25%	.0841066	.0559641	Sum of Wgt.	44
			Mean	.1285054
50%	.1095775		Std. Dev.	.0718173
		Largest		
75%	.1366316	.2561455		
90%	.2547457	.2731173	Variance	.0051577
95%	.2731173	.2873811	Skewness	1.310067
99%	.3439454	.3439454	Kurtosis	3.909871

Panel C: Earned Rates on Common Equity for 68 Comparable Firms Using Net Before Discontinued, Non-recurring, and Extraordinary Items but after preferred dividends paid and accumulated (ROE Before Discontinued, etc.) when data are available

Percentiles		Smallest		
1%	.0407639	.0407639		
5%	.0527986	.0420004		
10%	.0591094	.0527986	Obs	44
25%	.0847322	.0559641	Sum of Wgt.	44
			Mean	.1275442
50%	.1077683		Std. Dev.	.071911
		Largest		
75%	.1339335	.2561455		
90%	.2547457	.2731173	Variance	.0051712
95%	.2731173	.2873811	Skewness	1.344654
99%	.3439454	.3439454	Kurtosis	3.959912

Panel D: Threshold Earned Rates for Common Equity

Co Name	Mean of ROE of Comparables	Std. Dev. of ROE of Comparables	Threshld w/ 1.96 Std. Dev.
CSP	0.1285054	0.0718173	0.269267308
OPCo	0.1285054	0.0718173	0.269267308

Table 3

Forming the Comparable Sample and Rate Earned on Common Equity (ROE)
based on Financial Risk (average Book Equity Ratio)
and Business Risk (average Unlevered Betas) for 2010

Forming the Comparable Group by 10x10, or 100 cells, methodology
to match Financial and Business Risks Business Risk

Panel A: Ranges of average Book Equity Ratio in full available data for 2010
(DATAFILE, not Standard Edition)

	Values percentile	
	.0023302	0
1.	.1028913	10
2.	.2090443	20
3.	.3107311	30
4.	.3952597	40
5.	.4617036	50
6.	.5333153	60
7.	.6060663	70
8.	.6912782	80
9.	.7851580	90
10.	.9671582	100

. **** Both CSP and OPCo fall in cell 4: from 0.3107311 to 0.3952597

Panel B: Ranges of Unlevered Beta in full available data for 2010(DATAFILE,
not Standard Edition)

	Values percentile	
	.0862014	0
1.	.1568031	10
2.	.3361432	20
3.	.4825692	30
4.	.5871098	40
5.	.6881935	50
6.	.7695292	60
7.	.8499834	70
8.	.9545875	80
9.	1.091001	90
10.	2.508899	100

****Now we rely on AEP's unlevered beta of 0.2915216 which falls in cell
2: from 0.1568031 to 0.3361432

Panel C: Distributions of Financial and Business Risks of 41 Comparable Group

(Excludes AEP)

C.1. Distribution of average Book Equity Ratio for 2010

	Percentiles	Smallest		
1%	.3108609	.3108609		
5%	.3108609	.3115997		
10%	.3115997	.3124346	Obs	13
25%	.3125629	.3125629	Sum of Wgt.	13
50%	.3226927		Mean	.3338594
		Largest	Std. Dev.	.0281217
75%	.3322589	.3322589		
90%	.3812279	.3804493	Variance	.0007908
95%	.3832272	.3812279	Skewness	1.071882
99%	.3832272	.3832272	Kurtosis	2.423131

C.2. Distribution of average Unlevered Beta for 2010

	Percentiles	Smallest		
1%	.1773352	.1773352		
5%	.1773352	.1899935		
10%	.1899935	.2239373	Obs	13
25%	.2539717	.2539717	Sum of Wgt.	13
50%	.2918076		Mean	.274164
		Largest	Std. Dev.	.0493583
75%	.3134483	.3134483		
90%	.3179221	.3164358	Variance	.0024362
95%	.3197894	.3179221	Skewness	-.8985319
99%	.3197894	.3197894	Kurtosis	2.447177

Panel D: Earned Rates on Common Equity for Comparable Firms (ROE)

	Percentiles	Smallest		
1%	.039695	.039695		
5%	.039695	.0591094		
10%	.0591094	.0746053	Obs	13
25%	.0798699	.0798699	Sum of Wgt.	13
50%	.0923974		Mean	.1176926
		Largest	Std. Dev.	.0643671
75%	.1563301	.1563301		
90%	.2260388	.1912155	Variance	.0041431
95%	.2401492	.2260388	Skewness	.8666429
99%	.2401492	.2401492	Kurtosis	2.371356

Panel E: Earned Rates on Common Equity for Comparable Firms Using Net Before Discontinued, Non-recurring, and Extraordinary Items but after preferred dividends paid and accumulated (ROE Before Discontinued, etc.)

	Percentiles	Smallest		
1%	.039695	.039695		
5%	.039695	.0591094		
10%	.0591094	.0746053	Obs	13
25%	.0797344	.0797344	Sum of Wgt.	13
50%	.0923974		Mean	.1176878
		Largest	Std. Dev.	.0643853
75%	.1563301	.1563301		
90%	.2260388	.1912155	Variance	.0041455
95%	.2402223	.2260388	Skewness	.8670194
99%	.2402223	.2402223	Kurtosis	2.371918

Panel F: Threshold Earned Rates for Common Equity

<u>Co Name</u>	<u>Mean of ROE of Comparables</u>	<u>Std. Dev. of ROE of Comparables</u>	<u>Threshld w/ 1.96 Std. Dev.</u>
CSP	0.1176926	0.0643671	0.243852116
OPCo	0.1176926	0.0643671	0.243852116

Panel G: Test of Mean ROE to equal Mean ROE for Base Case (=0.1104143)

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]
roel_2~0	13	.1176926	.0178522	.0643671	.078796
.1565893					

```

mean = mean(roel_2010)
0.1599
Ho: mean = .1148377
12
Ha: mean < .1148377
Pr(T < t) = 0.5622
0.4378
Ha: mean != .1148377
Pr(|T| > |t|) = 0.8756
Ha: mean >
Pr(T > t) =
t =
degrees of freedom =

```