

FILE

EXHIBIT NO. _____

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of)
Columbus Southern Power Company for)
Approval of its Electric Security Plan; an)
Amendment to its Corporate Separation)
Plan; and the Sale or Transfer of Certain)
Generating Assets)

Case No. 08- 917-EL-~~UNC~~
SSO

and)

In the Matter of the Application of)
Ohio Power Company for Approval of)
its Electric Security Plan; and an)
Amendment to its Corporate Separation)
Plan)

Case No. 08- 918-EL-~~UNC~~
SSO

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

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DR. ANIL MAKHIJA
PUCO CASE NO. - 08-917-EL-UNC
PUCO CASE NO. - 08-918-EL-UNC

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4 DR. ANIL MAKHIJA
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9 PUCO CASE NO. 08-918-EL-UNC
10

11 **PERSONAL DATA**

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

13 A. My name is Anil Kumar Makhija. My business address is 700 E Fisher Hall, Fisher
14 College of Business, The Ohio State University, Columbus, Ohio 43210.

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

16 A. My occupation is Professor of Finance. I am a tenured full Professor, and I hold the
17 David A. Rismiller Professorship at the Fisher College of Business, The Ohio State
18 University. I am also the Chairman of the Finance Department at the Fisher College of
19 Business. I also serve as an Associate Dean for the Fisher College.

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

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

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

26 A. I was an Assistant Professor at the Katz Graduate School of Business, University of
27 Pittsburgh, from 1981 to 1988, with a Visiting Assistant Professorship from 1984 to 1985
28 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 Professor at The Ohio State University. Since 2002, I have been the
3 Chairman of the Finance Department at Ohio State, and have held the David A. Rismiller
4 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 *Financial Review*, *Multinational*
14 *Finance Journal*, and *The Pacific-Basin Finance Journal*. I have served as a reviewer for
15 dozens of journals.

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

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

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

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

14 **Q. PLEASE DESCRIBE ANY TESTIMONY OR SUBMISSION OF EXPERT**
15 **REPORTS.**

16 A. I have appeared as an expert witness before FASB on the Accounting of Phase-In Plans,
17 Abandonments, and Disallowances of Plant Costs for Regulated Enterprises: Makhija,
18 Anil K. "Position Paper on the Amendment of Financial Accounting Standards Board
19 Statement No. 71 for Accounting of Phase-in Plans, Abandonments, and Disallowances
20 of Plant Costs for Regulated Enterprises," FASB Documents, Expert Witness before
21 FASB, Stamford, Connecticut.

22 I have also submitted a report on Generic Determination of Rate of Return:
23 Makhija, Anil K. and Howard E. Thompson, "A Generic Determination of Rate of Return

1 on Common Equity." Federal Energy Regulatory Commission, Docket No.
2 RM80-36-000. I have also testified as an expert witness in Pennsylvania Courts on
3 valuation and dividend policy.

4 **Q. HAVE YOU BEEN INVITED TO MAKE PRESENTATIONS BEFORE**
5 **EXECUTIVES ON FINANCIAL ISSUES OR PARTICIPATE IN EXECUTIVE**
6 **DEVELOPMENT PROGRAMS?**

7 A. Yes. I have made presentations before executives of dozens of US and foreign
8 corporations. These include the following organizations: American Electric Power,
9 American Gas Association, Chilectra (Electric Utility, Santiago, Chile), Endesa, (Electric
10 Utility, Santiago, Chile), Nationwide, OCLC, Owens-Corning, Banc One, Mellon Bank,
11 Westinghouse, Weirton Steel, GKN (in USA, Spain, U.K. and Australia), Universidad del
12 Pacifico (Lima, Peru), Universidad Santa Maria (Guayaquil, Ecuador), BARNA
13 (Dominican Republic), Thrift (J.C. Penney), POSCO, EXPEX (program for growing
14 companies), Ryder Corporation, Young Presidents' Organization, Medical Center (OSU),
15 Emory University, Fisher's Management Certificate Program and its Management
16 Program for Athletics, Affiliated Business Services, Casey Equipment, Czech
17 Management Center (near Prague, Czech Republic), Univ. of Pittsburgh Management
18 Development Program, Aeroquip/Trinova Corporation, OSU Law School, Universidad
19 Catolica de Valparaiso (Valparaiso, Chile), New Sabina, Textron (Bell Helicopters,
20 Cessna), Limited Brands, Life Style Communities, KAIST (South Korea), Dubrovnik
21 Banking and Finance Series/IFC (Croatia), among others.

1 **PURPOSE OF TESTIMONY**

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

3 A. I have been asked by Ohio Power Company (OPCo) and Columbus Southern Power
4 Company (CSPCo) (collectively, AEP Ohio) to develop a methodology that implements
5 the significantly excessive earnings test described in Section 4928.143 (F), Ohio Rev.
6 Code, enacted as part of Ohio Amended Substitute Senate Bill No. 221 (S.B. 221).
7 Hereinafter, I refer to Section 4928.143 (F) of S.B. 221 as the Significantly Excessive
8 Earnings Test. Since both OPCo and CSPCo are wholly-owned subsidiaries of American
9 Electric Power (AEP) and share in its electric and financial pools, the methodology for
10 the implementation of the Significantly Excessive Earnings Test cannot be isolated to the
11 two operating companies but must incorporate the business and financial risks of AEP.
12 A return on equity (ROE) for each OPCo and CSPCo is isolated, however, and
13 considered in my analysis. My focus is on the development of a methodology for the
14 future application of the Significantly Excessive Earnings Test, which is expected to be
15 first applied in 2010.

16
17 **SUMMARY OF TESTIMONY AND CONCLUSIONS**

18 **Q. PLEASE PROVIDE A SUMMARY OF THE METHODOLOGY THAT YOU**
19 **RECOMMEND USING TO DETERMINE SIGNIFICANTLY EXCESSIVE**
20 **EARNINGS.**

21 A. The Significantly Excessive Earnings Test lays out the principles underlying the
22 determination of "significantly excessive earnings," but it does not spell out the specific
23 methodology to implement these principles. I propose specific methodological steps to

1 implement the Significantly Excessive Earnings Test, and recommend how the
2 Commission should apply them to OPCo and CSPCo.

3 I start by noting that the Significantly Excessive Earnings Test requires a book
4 measure of earnings, ROE, calculated as net income divided by beginning book equity,
5 instead of stock returns. To develop a benchmark against which to judge the ROE values
6 of OPCo and CSPCo, I outline a method of comparing them to the mean ROE of a group
7 of publicly traded companies with similar business and financial risks (Comparable Risk
8 Peer Group) as the Significantly Excessive Earnings Test requires and against the mean
9 ROE for a Utility Peer Group of firms. To assess what degree of deviation can be
10 classified as "significantly excessive," I draw statistical confidence intervals around the
11 mean ROEs of the Comparable Risk Peer Group and the Utility Peer Group. I believe
12 that a confidence interval with a 95 percent level of confidence (a traditional level) is
13 appropriate. Since normal fluctuations can occur, deviations above and below the mean
14 ROE of the comparison group would not necessarily imply that OPCo or CSPCo have
15 remarkably different earned returns compared to the mean ROE. The upper bound of that
16 confidence interval offers a starting point for considering whether to classify earnings as
17 significantly excessive. For example, if OPCo and CSPCo are riskier than the Utility
18 Peer Group, then returns above the upper bound would be commensurate with those
19 risks. In addition, risks integral to the Significantly Excessive Earnings Test must also be
20 taken into consideration when making judgments regarding earned returns.

21 For risk measures, I invoke the widely-used Capital Asset Pricing Model to
22 estimate beta coefficients. Beta coefficients are the most appropriate way to measure risk
23 for this analysis because they capture risk that can not be avoided by equity investors

1 through diversification and, therefore, require commensurate compensation. In particular,
2 I use betas published by Value Line, a highly regarded investment advisory firm. I also
3 corroborate these betas with my own estimates. This approach allows me to examine the
4 ROEs for OPCo and CSPCo in the context of their beta risk. Furthermore, I examine the
5 source of this risk, separating it into business risk and financial risk. Business risk refers
6 to the risk arising from the business operations of the firm, while financial risk comes
7 from the extent of debt usage, or leverage. While a company may have discretion in its
8 choice of financing, business risks are typically unavoidable in the short run. I consider
9 both risks, using standard methods to obtain unlevered betas in order to measure business
10 risk, and various equity ratios to measure financial risk. The Significantly Excessive
11 Earnings Test specifically refers to both of these risks as considerations in assessing
12 whether the ROE is significantly excessive.

13 While it is traditional to make comparisons between utilities, the Significantly
14 Excessive Earnings Test requires comparison with other publicly traded firms of
15 comparable business and financial risk. To implement this aspect of the Significantly
16 Excessive Earnings Test, I form a portfolio of publicly traded firms, irrespective of each
17 firm's industry affiliation, to match the business and financial risks of AEP (and, thus, for
18 OPCo and CSPCo). OPCo's and CSPCo's ROEs can then be compared against the mean
19 for this Comparable Risk Peer Group.

20 **Q. PLEASE DESCRIBE THE CONCLUSIONS THAT YOU REACHED.**

21 A. Forming a Comparable Risk Peer Group and adopting the other above-mentioned specific
22 steps is an appropriate methodology for testing for significantly excessive earnings
23 during the same period relative to publicly traded companies, including utilities, which

1 face comparable business and financial risks. This methodology has the advantage over
2 one that relies simply on the Utility Peer Group because, having already matched on
3 risks, the earned returns of the subject utility and the Comparable Risk Peer Group firms
4 are truly comparable. In contrast, when using the Utility Peer Group, differences in
5 earned rates have to be judged in light of the differences in risks between the subject
6 utility and its Utility Peer Group firms. Indeed, I start with a comparison against the
7 Utility Peer Group firms below and illustrate how the need to adjust the earned rates for
8 risk differences makes this comparison less than straight-forward. Thus, I propose using
9 a Comparable Risk Peer Group as the best methodology to implement the Significantly
10 Excessive Earnings Test, even though it is common practice to compare electric utilities
11 with other electric utilities. To illustrate my approach, I reviewed the data for the prior
12 three years (2007, 2006, and 2005) and compared my findings for the Comparable Peer
13 Risk Group to the earnings of both AEP and the Companies.

14 I find that if the methodology were applied, using 2007 data, the earned ROEs
15 used by the Commission to apply the test for OPCo and CSPCo would have had to
16 exceed 27.33 percent to be considered significantly excessive. Similarly, the Companies'
17 earned returns used by the Commission to apply the test would have had to exceed 22.59
18 percent for 2006 and 21.19 percent for 2005 to be considered significantly excessive.

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

20 A. The remainder of my testimony is presented in the following order. First, I present the
21 relevant provision of S.B. 221, Section 4928.143(F), which contains the Significantly
22 Excessive Earnings Test. I discuss the principles that Section 4928.143(F) provides and
23 that I incorporate into my methodology for implementing that earnings test. I also

1 describe the details of my methodology for implementing the Significantly Excessive
2 Earnings Test. Second, I compare the ROE, business, and financial risks of OPCo and
3 CSPCo with a Utility Peer Group. Third, I form a group of publicly traded companies,
4 including utilities (the Comparable Risk Peer Group) that face business and financial
5 risks comparable to those that the Companies face, and then compare the ROE values of
6 OPCo and CSPCo with the mean ROE of this group. Finally, I present a summary of my
7 conclusions.

8
9 **SECTION 4928.143(F), OHIO REV. CODE**

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

13 **A.** The following is the portion of Section 4928.143(F) Ohio Rev. Code, that contains the
14 Significantly Excessive Earnings Test:

15 “With regard to the provisions that are included in an electric security plan under
16 this section, the commission shall consider, (1) following the end of each annual
17 period of the plan, if any such adjustments resulted in excessive earnings (2) as
18 measured by whether the earned return on common equity of the electric
19 distribution utility (3) is significantly in excess of the return on common equity
20 that was earned during the same period by publicly traded companies, (4)
21 including utilities, (5) that face comparable business and financial risk, with such
22 (6) adjustments for capital structure as may be appropriate. Consideration also
23 shall be given to the (7) capital requirements of future committed investments in

1 this state. The burden of proof for demonstrating that (8) significantly excessive
2 earnings did not occur shall be on the electric distribution utility. If the
3 commission finds that such adjustments, in the aggregate, did result in
4 significantly excessive earnings, it shall require the electric distribution utility (9)
5 to return to consumers the amount of the excess by prospective adjustments;
6 provided that, upon making such prospective adjustments, the electric distribution
7 utility shall have the right to terminate the plan and immediately file an
8 application pursuant to section 4928.142 of the Revised Code. Upon termination
9 of a plan under this division, rates shall be set on the same basis as specified in
10 division (C)(2)(b) of this section, and the commission shall permit the continued
11 deferral and phase-in of any amounts that occurred prior to that termination and
12 the recovery of those amounts as contemplated under that electric security plan. In
13 making its determination of significantly excessive earnings under this division,
14 the commission shall not consider, directly or indirectly, the revenue, expenses, or
15 earnings of any affiliate or parent company.” (Underlining and numbering have
16 been added).

17 Section 4928.143(F) lays out the principles by which “significantly excessive earnings”
18 will be determined. Above, I have underlined and numbered portions of that statute that
19 are the key components I have evaluated to develop a methodology for capturing and
20 implementing these principles. The approach that I took was to address how best to
21 capture comparability for both business risk and financial risk for the pool of publicly
22 traded companies, including utilities, as required by the legislation.

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

3 A. This implies that the excessive earnings test will be applied on an annual basis. It is my
4 understanding that the first period the test will be in effect will be 2009, with the analysis
5 completed in 2010. However, I did confirm the utility of the methodology that I
6 developed by applying it separately to each of the years, 2007, 2006, and 2005 for each
7 Company.

8 Following a narrow interpretation of the Significantly Excessive Earnings Test, it
9 may be considered sufficient to examine earnings only for one year. However, if a year
10 of relatively high earnings is preceded by a year of lower returns, that information may be
11 valuable to the Commission in assessing whether there are and, if so, the magnitude of
12 excess earnings for the specific year being reviewed. Consequently, I conclude that it
13 would be appropriate to also examine the average of the earnings for a three-year period
14 to avoid overweighting any short-term fluctuations occurring in the year under review.

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

17 A. A practical issue is related to the timing of the application of the Significantly Excessive
18 Earnings Test. Compustat represents a widely acknowledged source for accurate financial
19 and accounting data for publicly traded U.S. corporations, and its release marks the
20 availability of reliable data. The complete set of Compustat data for a calendar year
21 typically is not fully released until the end of July of the next year. For example,
22 Compustat recently announced that the full data for 2007 are likely to be released
23 sometime during the last week of July, 2008. This means that the earliest date for a

1 complete application of the Significantly Excessive Earnings Test for a particular year
2 should typically be no sooner than the end of August of the next year. Please note, as
3 discussed below, that the Significantly Excessive Earnings Test calls for comparison with
4 publicly traded companies, which involves drawing peers from the universe of publicly
5 traded firms, not just utilities.

6 **Q. WHAT ARE THE METHODOLOGICAL IMPLICATIONS OF (2) "AS**
7 **MEASURED BY THE EARNED RETURN ON COMMON EQUITY?"**

8 A. The Significantly Excessive Earnings Test looks at the actual earnings during the past
9 year, and not the prospective forward-looking expected return (which would have
10 entailed a cost of capital estimation). This makes the exercise markedly different from
11 the cost of capital discussions in traditional rate hearings. Moreover, since neither OPCo
12 nor CSPCo have traded equity, the accounting measure of earned rate of return on book
13 common equity, ROE, as measured by net income divided by beginning book equity, is
14 applicable. I have therefore used this traditional measure in my analysis. Yet, a word of
15 caution should be added. Since OPCo and CSPCo are wholly owned by AEP, their debt
16 levels and consequently book equity amounts are ultimately supported by AEP.
17 Arguably, the blended ROE for OPCo and CSPCo (that is, for AEP Ohio) is more
18 meaningful than their individual ROEs. Consequently, I also consider their combined
19 ROE. In addition, for comparison purposes only, I routinely examine the ROE for AEP
20 as a whole throughout my analysis.

21 As a methodological issue, even if the stock is traded, use of stock rates of return
22 is not consistent with the Significantly Excessive Earnings Test. Stock returns are the
23 sum of dividend yield and capital gains or losses from the change in stock prices. The

1 capital gains or losses component is based on end-of-year stock prices. However, year-
2 end stock prices reflect investor expectations of future performance, which is not
3 appropriate to include in the context of the Significantly Excessive Earnings Test.
4 Nevertheless, since earnings are a determinant of stock price movements, I also examine
5 stock returns for AEP as a reflection of earnings.

6 It should also be noted that, for the purpose of complying with the new
7 legislation, the traditional accounting measure, ROE, may overstate the actual earned rate
8 experienced by the common equity outstanding at the start of a year if there are
9 acquisitions that add to the net income during the year. Consequently, as a robustness
10 check, I also examine an alternative ROE, which is defined as net income divided by
11 ending book equity.

12 **Q. WHAT ARE THE METHODOLOGICAL IMPLICATIONS OF (3)**
13 **"SIGNIFICANTLY IN EXCESS OF THE RETURN ON COMMON EQUITY**
14 **THAT WAS EARNED DURING THE SAME PERIOD BY PUBLICLY TRADED**
15 **COMPANIES?"**

16 **A.** I address the methodological implication of "significantly excessive" returns later in my
17 testimony. With regard to the comparison that this principle calls for, the statutory
18 language recognizes that it is appropriate to compare the Companies' earned returns to a
19 broader group than simply other electric utilities. Electric utilities are typically compared
20 to a peer group comprised of other electric utilities. Yet, different electric utilities may
21 face significantly different business and financial risks than other electric utilities even
22 though they are in the same industry. Thus, even if a utility has a much higher (or lower)

1 ROE in a given year compared to other electric utilities, one must take into account
2 differences in risks before concluding that the ROE is indeed excessive (or inadequate).

3 **Q. WHY UNDERTAKE A BROAD REVIEW OF PUBLICLY TRADED**
4 **COMPANIES?**

5 A. That is the basis by which significantly excessive earnings are to be judged. S.B. 221
6 presumes this approach, although it does not preclude a comparison with other utilities as
7 well. Instead of the traditional approach of first calculating differences in ROE between
8 an electric utility and its peer electric utilities, and then assessing whether the difference
9 is remarkable in terms of differences in risks, the Significantly Excessive Earnings Test
10 standard is to match risks across all publicly traded companies first. Thus, instead of
11 simply using a traditional comparison with other utilities, the legislation directs that
12 another peer group be defined based on "comparable" risk characteristics, irrespective of
13 the industries from which these peer firms are drawn. ROEs can be compared after
14 matching the subject electric utility on the basis of risk with the broadly drawn peer
15 group. While this approach goes a considerable distance in forming a "new" comparable
16 peer group, the challenge lies in matching characteristics. The choice and definition of
17 the relevant characteristics – or risk profile—takes on a greater importance in this
18 approach. To the extent that the match will not be perfect, there is still some residual need
19 to take differences from peer characteristics into account in assessing whether the ROE of
20 the subject utility is truly excessive.

21 I adopt both approaches here, developing a methodology through which electric
22 distribution utilities, such as OPCo and CSPCo, may be compared against a Comparable

1 Risk Peer Group (where firms with matching characteristics are drawn from any industry)
2 as well as against a Utility Peer Group.

3 **Q. HOW WAS THE ANALYSIS OF THE COMPARABLE RISK PEER GROUP**
4 **COMPLETED?**

5 A. The Comparable Risk Peer Group can be formed based on several procedures. One
6 procedure is to identify specific industries (or firms) with matching characteristics
7 (business risks) and to use this to develop a peer group. This approach has the benefit of
8 selecting peers based on prior knowledge of the industries (firms). The disadvantage lies
9 in the difficulties associated with identifying non-utility industries (firms) with
10 characteristics that sufficiently match the subject utility. An alternative procedure is to
11 start with the universe of publicly traded U.S. firms. This is the procedure I have
12 adopted.

13 Using data from both Value Line and Compustat, for every firm I first calculated
14 the characteristics of interest – business risk and financial risk (which are highlighted by
15 S.B. 221 and are discussed later in my testimony). Using a standard decile portfolio
16 technique, I then divided firms into 10 different business risk groups (lowest to highest)
17 and 10 different financial risk groups (lowest to highest). From these 100 cells (10 x 10
18 cells), I chose the cell that has AEP in it. That cell, by design, captures firms that have
19 comparable business and financial risk to AEP. This was repeated for each of the three
20 years, 2007, 2006, and 2005, in order to identify publicly traded companies, including
21 utilities, that faced comparable business and financial risks to OPCo and CSPCo during
22 that three-year period. I should also note that to the extent that business risks (in
23 particular) and potentially the financial risks of OPCo and CSPCo (AEP Ohio) differ

1 from that of AEP, this should be taken into account in establishing whether their ROEs
2 are excessive.

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

5 A. To form the Peer Utility Group for OPCo and CSPCo, I chose the peers for AEP. The
6 main reason is that to match the business and financial risk characteristics one needs
7 market data, which are available for AEP and its traded peers in the electric utility
8 industry. Moreover, both OPCo and CSPCo are wholly-owned subsidiaries that
9 participate in the electric and financial pools of AEP. Thus, AEP is an excellent starting
10 point (likely a close proxy) for the business and financial risks of OPCo and CSPCo.
11 Indeed, analysts have noted this close relationship between the parent firm AEP and both
12 OPCo and CSPCo. Writing for Standard and Poor’s *RatingsDirect*, Todd Shipman says
13 in the July 13, 2007 issue: “The ratings on Ohio Power Co. are based on the consolidated
14 credit profile of American Electric Power Co, Inc. (AEP). Ohio Power’s liquidity is
15 managed by its parent...Corporate Credit Rating: BBB/Stable/-.” Literally, Mr. Shipman
16 uses the same language to equate Columbus Southern Power’s financial condition to its
17 parent, AEP (July 12, 2007 issue).

18 Specifically, I form the Utility Peer Group using all firms in AEP’s 4-Digit SIC
19 Code (4911), which are listed on the New York Stock Exchange (NYSE), and which
20 have a 2007 year-end market capitalization (market value of equity) in excess of \$10
21 billion. The 4-Digit SIC Code 4911 includes electric utilities from central and eastern
22 US, but excludes those from the west (4- Digit SIC Code 4913). I excluded SIC Code
23 4913 firms (Electric Utilities – West) because of differences in weather and operating

1 characteristics. Electric utilities from the central U.S. were assigned to a separate 4-Digit
2 SIC Code, 4912, until 2005. These firms are included as peers. Firms listed on the
3 NYSE are more comparable to AEP than those listed on the NASDAQ or OTC markets
4 because they are more mature, larger, and have more trading liquidity. Finally, size, as
5 measured by market capitalization, is an important firm characteristic, with larger firms
6 generally being less risky.

7 **Q. HOW DO YOU MEASURE THE RISK FACED BY COMMON STOCK**
8 **INVESTORS?**

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

16 According to the CAPM, investors face diversifiable and non-diversifiable risks.
17 By portfolio diversification, they are left with only market-related risks, captured by a
18 beta coefficient, β . Beta coefficient measures by how many percent the value of a
19 security rises (falls) if the market – proxied, for example, by S&P 500 index – rises (falls)
20 by one percent. That is, a stock with $\beta=2$ on average rises (falls) by two percent if the
21 U.S. market rises (falls) by one percent. Naturally, the higher the security's beta, the
22 more the security's value fluctuates as a consequence of market movements, and the
23 riskier the security is. Consequently, this beta coefficient is my main measure of risk,

1 though as a robustness check I consider other measures as well. This beta coefficient can
2 be estimated by a regression using the so-called market model:

$$3 \quad R_{jt} = \alpha_j + \beta_j R_{Mt} + \varepsilon_{jt} \quad (1)$$

5
6 where R_{jt} is the rate of return on stock j over the interval t , R_{Mt} is the rate of return on a
7 market portfolio over the same interval, α_j is the intercept of the regression line, β_j is the
8 slope of the regression line (also referred to as the risk measure, beta coefficient), and ε_{jt}
9 is the residual term in the regression. Since the regression can only be run with historical
10 data, the resulting beta is usually adjusted to be applicable to the future.

11 I use Value Line, a highly reputable source of data used widely by investors, as
12 my source for beta coefficients. The Value Line beta is calculated through regression
13 analysis where the dependent variable is weekly percent changes in stock price and the
14 independent variable is weekly percent changes in the New York Stock Exchange
15 Composite Index over a period of the past five years. The regression betas are then
16 adjusted for their long-term tendency to converge toward a value of one, using values
17 available to investors at the start of each year. I have used Value Line betas (β_{VL}) as a
18 measure of risk faced by common stock.

19 As a robustness measure, I also calculated the betas myself, replicating the
20 procedure adopted by Merrill Lynch, β_{ML} , and Bloomberg. In this procedure, I
21 completed a regression analysis of monthly stock returns for the past 60 months on the
22 percentage monthly changes for the S&P 500 index. The slope of the line is the historical

1 beta, β_H . Then, I make the Merrill Lynch adjustment for the general tendency of betas to
2 move towards a value of one:

3
4
$$\beta_{ML} = 0.33 \times 1.0 + 0.67 \times \beta_H \quad (2)$$

5

6 There are some known biases of the CAPM, though there are not as of yet standard
7 adjustments for them, nor is it a frequent practice to make corrections for them. One bias
8 is that for high risk (high beta) stocks it overstates the risk, while for low risk (low beta)
9 stocks it understates risk. To the extent that AEP betas are greater than 1.0, the actual
10 beta risk will be somewhat lower. However, CAPM has a second bias. CAPM betas
11 understate the risk of smaller firms' stock. (See Banz, R. W., The relationship between
12 return and market value of common stocks, *Journal of Financial Economics*, Vol. 9 No.
13 1, 1981, 3-18.) This means that for OPCo and CSPCo, the actual betas would be higher
14 than those (if correctly estimated and) attributed to them based on AEP betas. It is
15 important to note that these are countervailing biases that should limit errors in beta-
16 based risk measurement in this situation.

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

21 Q. **WHAT ARE THE METHODOLOGICAL IMPLICATIONS OF THE**
22 **REQUIREMENTS TO LOOK AT COMPANIES (5) "THAT FACE**

1 **COMPARABLE BUSINESS AND FINANCIAL RISK” AND TO MAKE (6)**
2 **“ADJUSTMENTS FOR CAPITAL STRUCTURE AS MAY BE APPROPRIATE?”**

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

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

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

19 I understand that Mr. Craig Baker of AEP provides testimony on the unique
20 business risks faced by electric utilities such as AEP Ohio in Ohio.

21 Financial risk arises from the debt obligations of the firm. Since principal
22 repayments and interest take precedence over payments to common stockholders, debt
23 leverage makes the financial return to common stockholders riskier. Principle No. 6

1 recognizes that different levels of financial risks result from different capital structures,
2 and so it may be appropriate to make adjustments to a firm's capital structure when
3 applying a comparable risk methodology.

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

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

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

15
16
$$\beta_A = \beta_E / [1 + (1 - T)(D/E)] \quad (3)$$

17

18 **Q. WHAT OTHER COMPARISONS OF BUSINESS RISK DID YOU COMPLETE?**

19 A. Even though the CAPM is widely used and the methodology for obtaining business risk
20 has been practiced for decades since Hamada's 1972 paper, I also examine Value Line
21 Safety Rankings. According to Value Line, the safety rankings are a measure of the total
22 risk of a stock compared to their stock universe of about 1700 stocks. Besides financial

1 strength, it incorporates the “price stability” of the stock, which reflects the standard
2 deviation of weekly percent changes in the price over the last five years.

3 **Q. HOW DID YOU MEASURE FINANCIAL RISK?**

4 A. To measure financial risk, I used the Book Equity Ratio (Bk-Eqty Ratio), which is the
5 Book Value of Equity_t / Total Book Assets_t. I chose this ratio because fixed income
6 investors and credit rating agencies look at book equity to determine leverage and
7 financial risk. Moreover, compared to a market-value based ratio, a book-based leverage
8 ratio is more stable from year-to-year.

9 Nevertheless, as an alternative, I also employ the Market Equity Ratio (Mkt-Eqty
10 Ratio), which is the Market Value of Equity_t / [Market Value of Equity_t + (Total Book
11 Assets_t – Book Value of Equity_t)]. Market values of debt and preferred stock are proxied
12 by their book values (=Book Assets – Book Value of Equity), a common practice.
13 Preferred stock and especially debt markets are relatively illiquid compared to stock
14 markets, making their prices less reliable. Moreover, their book values, unlike those of
15 stock, are a workable approximation of their market values. This market-based measure
16 of equity values, reflecting changing share prices, shows far greater variability than a
17 measure based on book terms alone. (See Figure 15.2 in Chapter 15, page 389 of Richard
18 A. Brealey, Stewart Myers, and Franklin Allen, *Principles of Corporate Finance*,
19 McGraw-Hill Irwin, New York, NY, 2008.) Arguably, this market-based measure more
20 accurately reflects the changing financial condition of the firm than the book-value based
21 measure.

22 For the Utility Peer Group, I compare the business and financial risks using these
23 measures to assess if the ROE for OPCo and CSPCo should be different. In the second

1 approach, I use these measures to form the Comparable Risk Peer Group itself, and then
2 compare the ROEs for OPCo and CSPCo with the mean ROE for the Comparable Risk
3 Peer Group.

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

6 A. This provision allows electric utilities to "prepare" for future capital requirements, which
7 will reduce free cash flow and could financially constrain the firms. Thus, what would
8 otherwise appear to be significantly excessive earnings may be left without penalty if the
9 extra earnings will help finance future investments. This mitigating factor is specifically
10 included in S.B. 221. I consider current and projected capital expenditures (Capex/Total
11 Assets) to address this aspect of the legislation.

12 **Q. WHAT ARE THE METHODOLOGICAL IMPLICATIONS OF (8)**
13 **"SIGNIFICANTLY EXCESSIVE EARNINGS?"**

14 A. It is natural for the ROEs of OPCo and CSPCo to differ from the mean or median ROE
15 for the Comparable Risk Peer Group or the Utility Peer Group in any given year. Normal
16 business fluctuations (caused by any number of factors, such as weather for example)
17 imply that such random deviations are expected even if there are no differences in
18 business or financial risks. To determine whether the difference is merely a random
19 deviation or not, I apply standard statistical theory, which is a reasonable method of
20 looking at this data. Next, I describe my procedures broadly, and take a more practical
21 approach.

22 To test whether a particular company's ROE differs from the typical (average)
23 ROE for comparable firms (in our analysis proxied by the Comparable Risk Peer Group

1 or the Utility Peer Group), statistical theory helps to create “bands” – called “confidence
2 intervals” in statistics – around the group’s average ROE. In addition, I am able to link
3 the width of such confidence intervals with the probability that the difference between the
4 company’s and group’s average ROE is not merely a random deviation. It is considered
5 non-random if the company’s ROE lies outside the confidence interval. The wider the
6 confidence interval, the higher the likelihood that a company’s ROE will fall outside for
7 reasons other than just random chance. Ultimately, the term “significantly excessive
8 earnings” in my analysis refers to situations when a company’s ROE lies outside
9 confidence intervals wide enough that there is at least a 95 percent probability that the
10 company’s and the group’s average ROE differ for reasons other than random
11 fluctuation. The 95 percent threshold is most frequently accepted in statistics to
12 determine “significant” differences.

13 I estimate confidence intervals and conduct one-sample t-tests (which are
14 applicable to small as well as large samples). I am interested in testing the hypothesis
15 that a given observed ROE (for AEP, OPCo, or CSPCo) is significantly different from the
16 mean for all other comparable firms, proxied here by a peer sample (the Comparable Risk
17 Peer Group or the Utility Peer Group). That is, generally speaking, could the observed
18 ROE be no different from the mean for all other comparable firms? If the observed ROE
19 is denoted by μ_0 , the mean ROE for all firms by μ , and the mean and standard deviation
20 for the sample of n peer firms by \bar{x} and s, respectively, then the t-statistic is

21
22
$$t = \{(\bar{x} - \mu_0)(n)^{0.50}\}/s$$

1 The statistic is distributed as Student's t with $(n-1)$ degrees of freedom. The standard
2 error of the mean, s_{μ} , is $s/(n)^{0.5}$, and it estimates the standard deviation of the sample
3 mean. Then, the upper bound and lower bounds for the confidence interval with $(1-\alpha)$
4 level of confidence are $(x - s_{\mu} t_{\alpha})$ and $(x + s_{\mu} t_{\alpha})$, respectively.

5 The t -test and the confidence interval can be broadly interpreted as follows. The
6 upper bounds and lower bounds of the confidence interval define a range of values for
7 ROE. It is an estimated range within which, if the observed ROE of a company falls, it
8 can be ruled out with $(1-\alpha)$ level of confidence that the ROE of the company and that of
9 comparable firms is similar. If the ROE of the company falls outside of this range, then
10 according to the t -test, the ROE may be statistically different from that of comparable
11 firms.

12 The choice of the level of confidence for the confidence interval affects the width
13 of the interval, which in turn affects whether an ROE falls within or outside the
14 confidence interval. To understand the role of the level of confidence, suppose that μ is
15 the mean value and σ is the standard deviation of the following normal distribution.

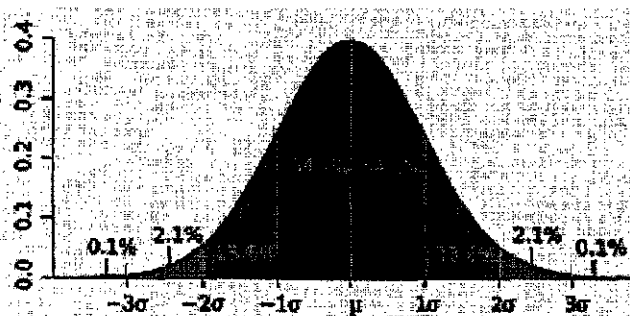


Figure 1: Normal Distribution

19 About two-thirds of the values drawn from a normal distribution fall within one standard
20 deviation around the mean, which allows a large proportion (about one of three instances)

1 to fall outside the 1 standard deviation (-1σ to $+1\sigma$) range. Such a confidence level will
2 categorize too many firms as earning significantly excessive returns. Next, consider
3 deviations that are greater than 2 standard deviations on either side. This occurs about 5
4 percent of the time or 1 out of every 20 instances. Finally, contrast this with deviations
5 that fall beyond 3 standard deviations from the mean. These have a likelihood of only 0.3
6 percent or less than 1 out of 100 times, which makes it a rare occurrence. That is, too
7 many firms with very high ROE values will not appear to have significantly excessive
8 earnings when using a 3-standard deviation rule. Going with the reasonable middle
9 ground, I propose that ROE values that fall outside of the 2 standard deviations (-2σ to
10 $+2\sigma$) range generally be considered significantly excessive earnings. This 95 percent
11 confidence interval from $(\mu - 2\sigma)$ to $(\mu + 2\sigma)$ is also most frequently used to test for
12 statistical significance in a variety of financial and other matters.

13 Note that the number of sample firms is also material. Instead of forming 100
14 cells (10×10) to identify the Comparable Risk Peer Group, we could have chosen to
15 form only 25 cells (5×5). The resulting Comparable Risk Peer Group would have more
16 firms in it, which would produce tighter confidence intervals (recall that the standard
17 error of the mean, s_{μ} , is $s/(n)^{0.5}$, with sample size n in the denominator. On the other
18 hand, a small sample may lead to a wider confidence interval, reducing the likelihood of
19 categorizing firms as having significantly excessive earnings. (If an increase in sample
20 size is accompanied by a wider dispersion, larger s , then there may also be a
21 countervailing increasing effect on standard errors). While the Significantly Excessive
22 Earnings Test is silent regarding how many firms should form the Comparable Risk Peer
23 Group, it provides other guidance that is helpful in this regard. In particular, the

1 Significantly Excessive Earnings Test requires that the risk characteristics of the chosen
2 set of firms matches those of the subject utility. Thus, the choice of number of cells is
3 one that better matches the business and financial risks of the Comparable Risk Peer
4 Group with those of OPCo and CSPCo. Consequently, I confirm this match of risks for
5 my 10 x 10 cell formation before using the confidence interval to form cutoffs for
6 excessive earnings. For example, the 5 x 5 cell formation produces a larger sample of
7 firms in the Comparable Risk Peer Group, but does not produce a better match of risks in
8 the illustration below.

9 If all relevant risks are not captured by the peer group, then the upper limit of the
10 confidence interval does not adequately reflect what is an acceptable ROE. These other
11 risks too must be factored in, using the upper limit of the confidence interval as the base
12 line. This is similar to the notion that "capital requirements of future committed
13 investments" constitute a mitigating factor in arriving at significantly excessive earnings.

14 **Q. WHAT ARE THE METHODOLOGICAL IMPLICATIONS OF (9) "TO RETURN**
15 **TO CONSUMERS THE AMOUNT OF THE EXCESS?"**

16 A. Note that S.B. 221 proposes an asymmetric test, since excessive earnings in a year are to
17 be returned, while shortfalls in prior years are left uncompensated. This in itself
18 constitutes an additional business risk for common equity holders. Indeed, analysts have
19 noted just this regarding the Significantly Excessive Earnings Test:

20 "The language is quite broad and allows the Public Utilities Commission of Ohio
21 (PUCO) considerable discretion in determining the comparable companies (which are not
22 limited to utilities) and what constitutes significant overearning....The earnings test may
23 be something of a "stick" for the PUCO to moderate the rate impact over time, especially

1 if market prices continue to rise.” Elizabeth A. Parrella, Merrill Lynch’s *Focus on Ohio*,
2 April 25, 2008.

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

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

15
16 **UTILITY PEER GROUP METHODOLOGY**

17 **Q. YOU STATED THAT YOU PREFER THE COMPARABLE RISK PEER GROUP**
18 **APPROACH TO THE UTILITY PEER GROUP APPROACH FOR**
19 **IMPLEMENTING THE SIGNIFICANTLY EXCESSIVE EARNINGS TEST.**
20 **BEFORE EXPLAINING YOUR PREFERRED APPROACH, WOULD YOU**
21 **FIRST EXPLAIN HOW YOU DEVELOPED YOUR UTILITY PEER GROUP**
22 **METHODOLOGY?**

1 A. Since it is traditional to compare electric utilities to firms in the same industry, I begin by
2 forming a Utility Peer Group. I require that the peers be drawn from AEP's 4-Digit SIC
3 Code (4911, Electric Utilities from Central or Eastern US), be listed on the New York
4 Stock Exchange (NYSE), and have a 2007 year-end market cap (market value of equity)
5 in excess of \$10 billion. I find that 15 electric utilities meet these criteria, and they are
6 listed in Exhibit I. These are all very large firms. The mean (median) market value of
7 equity for these firms, excluding AEP, is \$22.8 billion (\$22.6 billion), which is greater
8 than AEP's market cap of \$18.6 billion. Since we have formed this peer group based on
9 industry affiliation, firm characteristics – size, business and financial risk – can and do
10 differ. Since they do not trade, we can instead compare the Total Book Assets of OPCo
11 and CSPCo with the Utility Peer Group. With 2007 Total Book Assets of \$7.3 billion for
12 OPCo and \$3.8 billion for CSPCo, these have considerably smaller Total Book Assets
13 compared to AEP (\$40.4 billion) or the mean of the Peer Utility Group (\$31.6 billion).
14 Smaller firms are known to be riskier, suggesting that OPCo and CSPCo should be
15 assigned higher beta coefficients than the beta coefficient for AEP.

16 **Q. HOW DOES THE ROE OF OPCO AND CSPCO DIFFER FROM THAT FOR**
17 **THE PEER UTILITY GROUP?**

18 A. In Exhibit II, I provide the ROE for three years, 2007, 2006, and 2005, for each of the
19 Utility Peer Group firms and for AEP, OPCo and CSPCo. I define ROE in the traditional
20 manner, where ROE_t is measured by $Net\ Income_t / Book\ Equity_{t-1}$. For 2007, the ROE of
21 AEP (11.94 percent) and of OPCo (13.37 percent) are much lower than the mean (17.28
22 percent) of the other Utility Peer Group firms. On the other hand, the ROE for CSPCo is
23 considerably higher (24.44 percent). Before drawing a conclusion regarding CSPCo's

1 ROE for 2007 in this illustration, though, it is necessary to examine whether the business
2 and financial risks of CSPCo are higher than those for the Utility Peer Group, which
3 would lead to a higher benchmark to judge if the ROE is significantly excessive.
4 Furthermore, if we form the blended ROE for OPCo and CSPCo ($=\text{Sum of their Net}$
5 $\text{Incomes in 2007} / \text{Sum of their Equity Values in 2006}$), we obtain an ROE of 17.19
6 percent, which is essentially the same as the mean for the Utility Peer Group firms.
7 Finally, even though the Significantly Excessive Earnings Test is aimed at just the
8 previous annual period, it is instructive to see how equity has fared over the past three
9 years so that a one-year recent performance is not overweighted in importance. Doing so,
10 I find that the 3-year simple averages of the ROE for OPCo, CSPCo, and the Utility Peer
11 Group (excluding AEP) are 14.33 percent, 18.76 percent, and 14.05 percent, respectively,
12 and that this moderates differences between the three.

13 It is also useful to see how the ROE comparisons fare for the prior years, 2006
14 and 2005. Note in particular that the ROE for CSPCo in 2005 was merely 0.55 percent
15 different from the Utility Peer Group mean ROE. If CSPCo had higher business and
16 financial risks than the Utility Peer Group, it earned inadequate returns in that year.

17 **Q. BASED ON AN ANALYSIS USING THE UTILITY PEER GROUP, ARE YOU**
18 **ABLE TO ILLUSTRATE HOW YOU WOULD APPLY YOUR METHODOLOGY**
19 **TO THE COMPANIES?**

20 **A.** Yes. The Significantly Excessive Earnings Test will not be in effect until 2009, with the
21 first analysis not made until sometime in 2010 when sufficient data for 2009 becomes
22 available. However, I have applied the methodology, using both the Utility Peer Group

1 and the Comparable Risk Peer Group approaches, to 2005, 2006, and 2007 data, in order
2 to demonstrate the methodology's utility.

3 With regard to the Utility Peer Group, I begin with Exhibit III where I examine
4 how the ROEs of AEP, OPCo, and CSPCo sit relative to the confidence interval. In
5 Panel A of Exhibit III, I consider earned rates for 2007. Consider the 11.94 percent ROE
6 earned by AEP in that year. This ROE actually falls below the lower bound of the
7 confidence interval, which explains the statistically significant t-value of 2.71. Thus, we
8 can not rule out that AEP had a significantly lower ROE in 2007 relative to its utility
9 peers, based on this t-test. In fact, the likelihood that the ROE of AEP was significantly
10 lower is more than 98 percent based on the t-value of 2.71.

11 OPCo earned an ROE of 13.37 percent in 2007, which is just above the lower
12 bound of the confidence interval. Here too we can conclude that the evidence does not
13 support a significant difference from comparable firms.

14 CSPCo's ROE of 24.44 percent is above the upper bound of 21.54 percent. If the
15 Utility Peer Group is a truly comparable set of firms, then CSPCo would have exceeded
16 the benchmark ROE in 2007 by 2.90 percent. However, in order to make that judgment,
17 one needs to consider whether CSPCo faces greater business or financial risks compared
18 to the Utility Peer Group. As explained in more detail below, I conclude that CSPCo
19 does face greater risks.

20 In Panel B, we affirm our findings in Panel A with an alternative (arguably more
21 compelling) definition of ROE ($\text{=Net Income in 2007/Book Equity Year-End 2007}$). The
22 pattern of findings in Panel B mirrors that contained in Panel A.

1 Panel C considers stock price performance, which can only be tested for AEP as a
2 whole. The findings are that AEP significantly underperformed relative to the Utility
3 Peer Group for each of the three years. This is useful information because it suggests
4 that, if earnings are to be returned by a component of AEP considered to have earned
5 excessive earnings, it will come from shareholders who have already received inadequate
6 returns.

7 **Q. HOW DOES THE RISK OF AEP'S AND THE COMPANIES' COMMON**
8 **EQUITY DIFFER FROM THAT OF THE UTILITY PEER GROUP?**

9 A. I find that the Value Line Betas for AEP are higher than those for its Utility Peer Group
10 for each of the three years. As shown in Panels A and B of Exhibit V Part A, AEP's
11 Value Line Betas were 1.35, 1.20, and 1.15 in 2007, 2006, and 2005, respectively. The
12 corresponding mean values for the Utility Peer Group were 0.9857, 0.9000, and 0.8500,
13 respectively. Indeed, Panel C tests and confirms this inference for each of the three
14 years. Since, based on the evidence on ROE, I have found that AEP had lower or similar
15 earned rates compared to its Utility Peer Group, the higher risk of AEP's stock suggests
16 that its earnings were likely to have been inadequate.

17 To be sure that the inference of higher risk faced by AEP common equity is not
18 due to an overreliance on Value Line betas, I estimate my own Merrill Lynch betas,
19 report them in Panel A of Exhibit V Part B, and test to see if there is a significant
20 difference between these betas for AEP and its Utility Peer Group. The findings validate
21 the analysis with Value Line betas and confirm that AEP common stockholders faced
22 greater risks in each of the three years. The Value Line Betas at the start of each year are
23 used because they represent forward-looking information about risk available to investors

1 during that year. That is, lagged adjusted betas are used, which is a common practice.
2 However, Value Line betas published in the middle of the year of interest were also used,
3 as a robustness check, with similar results.

4 It is significant that AEP has a higher beta than its peers, considering that with the
5 exception of the Ohio companies the remaining AEP subsidiaries are all either
6 transmission and distribution businesses or vertically integrated utilities with traditional
7 ratemaking, which are all lower beta risks. If OPCo and CSPCo are as risky as AEP, they
8 are then also riskier than the Utility Peer Group. Given that smaller firms have higher
9 betas and the Ohio Companies have specific high risks, including regulatory uncertainties
10 as discussed above in the Merrill Lynch excerpt, AEP betas understate the betas for
11 OPCo and CSPCo. Even so, carrying over just the difference between AEP Value Line
12 beta for 2007 and the corresponding mean for the Utility Peer Group, OPCo and CSPCo
13 would be considered to have higher betas by 0.3643, which is a substantial increment in
14 beta risk and which gets translated into higher expected stock returns and ROEs. In fact,
15 according to finance theory, the expected return on a stock $E(R)$ can be computed as:

$$16 \quad E(R) = R_f + \beta * \text{Market Risk Premium}, \quad (4)$$

17
18
19 Where R_f stands for the “risk-free rate” (frequently proxied by the yield on the 20-year
20 U.S. Treasury) and “Market Risk Premium” reflects the extra percentage rate an investor
21 is expected to earn if she invests in the U.S. stock market index (proxied, say, by the S&P
22 500 index). Major reputable valuation textbooks estimate the “Market Risk Premium” to
23 range between 5 percent (see Copeland, Koller, Murrin: *Valuation: Measuring and*

1 *Managing the Value of Companies*. 2nd edition. New York: Wiley, 1995) to 8.5 percent
2 (see Ross, Westerfield, Jaffe, *Corporate Finance*, 8th edition, New York: Irwin/McGraw-
3 Hill, 2008). In addition, in a comprehensive 2000 study by Ivo Welch (see Welch, Ivo,
4 "Views of Financial Economists on the Equity Premium and on Professional
5 Controversies", *Journal of Business*, Volume 73, Issue 4, 2000) he states that, "The
6 consensus of 226 academic financial economists forecasts an arithmetic equity premium
7 of 7 percent per year over 10- and 30-year horizons and of 6-7 percent over 1- and 5-year
8 horizons."

9 Consequently, an incremental increase in beta of 0.3643 implies that returns to
10 OPCo and CSPCo stockholders should exceed the mean for the Utility Peer Group by
11 $0.3643 \times \text{Market Risk Premium}$. This value translates into an extra 2.55 percent in stock
12 returns if Welch's consensus of 7 percent for Market Risk Premium is used. Assuming
13 that the expected stock returns follow the expected ROEs, this increase should translate
14 into higher expected ROEs as well. In other words, the ROEs for OPCo and CSPCo
15 should be 19.83 percent ($= 17.28 \text{ percent mean ROE for Utility Peer Group} + 2.55$
16 percent). Before this difference in risk was considered, the upper bound of 95 percent
17 Confidence Interval was 21.54 percent. Adding in this risk adjustment of 2.55 percent
18 takes the upper bound to 24.09 percent. It has been argued that CSPCo may actually be
19 riskier than AEP, on account of its smaller size and special risks (for example, migration
20 risk). Under these circumstances, CSPCo's 24.44 percent ROE in 2007 would not
21 present a case of significantly excessive earnings.

22 The adjustment of ROE for risk differences shows that the correction is not
23 straight forward. While there is theory for determining the additional expected stock

1 returns corresponding to an increase in risk, it is not clear what should be the
2 corresponding correction in historic, earned book returns on equity. Consequently, I
3 believe it is preferable to match the subject utility against a group of firms with similar
4 risks first, making their earned rates truly comparable. This is an approach I adopt when
5 I formulate a Comparable Risk Peer Group.

6 **Q. HOW DOES THE BUSINESS RISK OF AEP, OPCO, AND CSPCO COMPARE**
7 **WITH THAT FOR THE UTILITY PEER GROUP?**

8 A. For business risk, I examine the unlevered Value Line betas for AEP and its Utility Peer
9 Group firms for the years 2007, 2006, and 2005. The findings are contained in Exhibit
10 VI Part A. AEP's unlevered betas are 0.8919, 0.7680, and 0.7003 for 2007, 2006, and
11 2005, respectively. In comparison, the corresponding mean unlevered betas for the
12 Utility Peer Group are 0.7216, 0.6124, and 0.5252, respectively. Panel C of the exhibit
13 shows that AEP had higher unlevered betas in each of the three years. Assigning AEP's
14 business risk to OPCo and CSPCo, I infer that OPCo and CSPCo have greater business
15 risks than the Utility Peer Group firms.

16 **Q. DO OTHER MEASURES ALSO SUGGEST THAT AEP EQUITY, AND THUS**
17 **CSPCO AND OPCO EQUITY, FACES GREATER BUSINESS RISK?**

18 A. Exhibit VI Part B, Panel A, contains Value Line Safety rankings. With a value of one
19 suggesting better safety, AEP has a rating of 3.00 in each of the three years. This
20 represents lower safety levels compared to the other firms in the Utility Peer Group,
21 which have mean safety rankings of 1.63, 1.85, and 2.00 for 2007, 2006, and 2005,
22 respectively. Thus, this alternative procedure confirms that AEP faces greater business
23 risk. By assignment, I infer that OPCo and CSPCo also face greater business risk given

1 that the remaining regulatory jurisdictions do not have as much uncertainty as faced in
2 Ohio.

3 **Q. HOW DOES THE FINANCIAL RISK OF AEP, OPCO AND CSPCO COMPARE**
4 **WITH THAT OF THE UTILITY PEER GROUP?**

5 A. In Panel A of Exhibit VII Part A, I examine financial risk with Book Equity Ratios
6 ($\text{=Book Value of Equity}_t/\text{Total Book Assets}_t$). AEP emerges with greater financial risk
7 for each of the three years since its Book Equity Ratio is lower in each case compared to
8 the mean or median for the Utility Peer Group. In Exhibit VII Part B, I find that the
9 Book Equity Ratio for AEP for 2007 is significantly lower than the peers at the standard
10 95 percent level of confidence. In 2005 too, it is lower, though at a 90 percent level of
11 confidence. In 2006, it is not significantly different from the Utility Peer Group, even
12 though the Book Equity Ratio for AEP is 0.2529, which is below both the mean (0.2628)
13 and median (0.2615) for its peers. Since these are book measures, I can estimate them for
14 OPCo and CSPCo as well. The Equity Ratios for both are higher than those for the mean
15 for the Utility Peer Group. However, since their bonds and other credit metrics are linked
16 with AEP's, these ratios do not properly reflect their entire financial risk.

17 I reexamine this issue in a number of ways. In Panel B of Exhibit VII Part A, I
18 consider a market-value based measure, the Market Equity Ratio (=Market Value of
19 $\text{Equity}/(\text{Market Value of Equity} + \text{Book Value of Other Claims})$). Lower values of
20 Market Equity Ratio imply greater financial risk because of greater fixed obligations.
21 These are reported in Panel B of the exhibit. Whereas the mean Market Equity Ratio for
22 the peer firms in 2007 is 49.77 percent, it is much lower at 38.10 percent for AEP. Other
23 years show a similar pattern of greater financial risk at AEP. Like the Book Equity

1 Ratios in Panel A, Market Equity Ratios are consistent with a pattern of greater financial
2 risk. In Exhibit VII Part C, I undertake t-tests to see if the Market Equity Ratios for AEP
3 differ from the mean of the Market Equity Ratios for the Utility Peer Group. In each
4 case, AEP has significantly more financial risk.

5 As an alternative procedure to financial ratios, I examine Value Line ratings of
6 company financial health in Exhibit VI Part B, Panel B. In each of the three years, AEP's
7 rating is worse than those of the majority of its peer group.

8 **Q. WHAT ARE YOUR FINDINGS REGARDING THE CAPITAL EXPENDITURES**
9 **FOR AEP, OPCO AND CSPCO?**

10 A. While the Significantly Excessive Earnings Test refers to only future capital
11 requirements, I examine both the current capital expenditures as well as the projected
12 capital expenditures. Actual high ongoing capital expenditures are unlikely to be
13 discontinued abruptly and are suggestive of future needs.

14 In Exhibit VIII, I see that AEP, OPCo, and CSPCo had higher Capex to Total
15 Assets ratios that are significantly greater than those of the peer firms.

16 The Companies' forecasted capital expenditures included in the AEP Form 10-K
17 filing for the fiscal year ended December 31, 2007 were as follows:

18				
19			(\$ millions)	
20		<u>2008</u>	<u>2009</u>	<u>2010</u>
21	CSPCo	404	351	330
22	OPCo	635	591	550
23				

24 Under S.B. 221, this trend of relatively high future capital expenditures also provides a
25 basis for maintaining higher earned rates of return.

1 Q. OVERALL, WHAT CONCLUSIONS DO YOU DRAW REGARDING OPCO'S
2 AND CSPCO'S EARNINGS FOR 2007 BASED ON THE COMPARISON WITH
3 THE UTILITY PEER GROUP?

4 A. I conclude that if the methodology were applied to OPCo and CSPCo, using the Utility
5 Peer Group approach, it would show that neither company earned significantly excessive
6 earnings in 2007. In fact, if its greater business and financial risks relative to the electric
7 utility peers are taken into account, OPCo should be considered to have earned an
8 inadequate ROE. While CSPCo had a considerably higher ROE, its earnings appear to be
9 commensurate with its risks. Finally, future capital requirements are likely to be high for
10 both firms, which provide a further cushion before their earnings would be seen to cross a
11 threshold that takes them into the range of "significantly excessive earnings."

12
13 **COMPARABLE RISK PEER GROUP METHODOLOGY**

14 Q. HOW DID YOU DEVELOP YOUR COMPARABLE RISK PEER GROUP?

15 A. In forming the matched sample of firms from the universe of firms available, I adopt the
16 approach that develops a portfolio of publicly traded firms, irrespective of their industry
17 affiliation, and that has similar business (unlevered beta) and financial (market equity
18 ratio) risks comparable to AEP. Since AEP is traded, and the operating companies,
19 OPCo and CSPCo, are not, the matching is done relative to AEP. I first divide firms into
20 10 groups based on their unlevered betas, and into 10 groups based on their market equity
21 ratios. From these 100 cells, I pick the cell which has AEP in it. This exercise is
22 repeated for each year, resulting in three different Comparable Risk Peer Groups as
23 shown in Exhibit IX. The Comparable Risk Peer Group for 2006 has 50 firms and for

1 2005 it has 54 firms. Without the full data released by Compustat at this point, I am
2 restricted to a considerably smaller sample of 25 firms for 2007's Comparable Risk Peer
3 Group. In each case, AEP itself has been excluded from the group.

4 For each matching Comparable Risk Peer Group sample, one can see a wide
5 distribution of representation across the spectrum of industries. Consistent with the
6 "significantly excessive earnings test," the publicly traded firms come from many
7 different industries, including utilities. Among the utilities appearing in these samples
8 are P G & E, Duke Energy, Dynegy, and Sempra. On the other hand, the fact that only a
9 handful of utilities appear as peers suggests that AEP's risks are better matched with
10 publicly traded firms outside of the utility industries. AEP, reflecting similarly on OPCo
11 and CSPCo, falls in the 8th riskiest group out of 10 based on financial risk (Book Equity
12 Ratio) and in the 6th riskiest group out of 10 based on business risk (Unlevered Beta).
13 This is a risk profile that does not match the typical electric utility.

14 The statistics in Panel A of Exhibit X Part A tell us that the matching
15 methodology has identified truly comparable Comparable Risk Peer Groups in terms of
16 both business risk (unlevered beta) as well as financial risk (book equity ratio). The
17 Comparable Risk Peer Group of firms for 2007 have a mean unlevered beta of 0.8872.
18 The unlevered beta for AEP in 2007 is 0.8919. As for the Book Equity Ratios, the mean
19 for the Comparable Risk Peer Sample is 0.2488, while it is 0.2497 for AEP. In Panel A
20 of Exhibit X Part B, I have provided similar information for 2006. The Comparable Risk
21 Peer Group of firms for 2006 have a mean unlevered beta of 0.7736. The unlevered beta
22 for AEP in 2006 is 0.7680. As for the Book Equity Ratios, the mean for the Comparable
23 Risk Peer Group sample in 2006 is 0.2518, while it is 0.2529 for AEP. While the match

1 is again close for Book Equity Ratios in 2005 (0.2605 versus 0.2475), only in the case of
2 unlevered betas in 2005 is there a noticeable difference in the Comparable Risk Peer
3 Group mean and the AEP figure. Overall, the procedure can be said to rather
4 successfully identify comparable Comparable Risk Peer Groups.

5 **Q. PLEASE EXPLAIN HOW, BASED ON AN ANALYSIS USING THE**
6 **COMPARABLE RISK PEER GROUP, YOU WERE ABLE TO APPLY YOUR**
7 **METHODOLOGY.**

8 **A.** As seen in Panel A of each of the Exhibits X, Parts A, B, and C, by design the procedure
9 produces Comparable Risk Peer Groups that are well matched by business and financial
10 risks. Consequently, I proceed to compare the earned rates. The ROE for AEP, OPCo,
11 CSPCo, and the mean/median Comparable Risk Peer Group for the years 2007, 2006, and
12 2005 are provided in Parts A, B, and C of Exhibit X (Panel A in each case).

13 Despite the smaller sample for 2007, I still have 25 firms in the Comparable Risk
14 Peer Group, which is more than those in the Utility Peer Group. Panel A of Exhibit X
15 Part A shows that AEP earned a lower ROE in 2007 compared to the mean and median
16 for the Comparable Risk Peer Group. This complements our earlier findings with the
17 Utility Peer Group. However, in Panel B we find that AEP still falls within the
18 confidence interval, which is not surprising given the greater variation of ROEs we
19 expect among the publicly traded firms. To be earning significantly excessive earnings
20 would require ROE values higher than the upper bound, an ROE greater than 27.33
21 percent. Neither OPCo nor CSPCo have ROE values greater than 27.33 percent in 2007,
22 and would not be considered to have had excessive earnings by this test, if it had been
23 applied to them in 2007. Next, I compare the ROE of OPCo, and CSPCo for 2006 with

1 the mean/median ROE values for the Comparable Risk Peer Group in 2006. Panel A of
2 Exhibit X Part B shows that OPCo had an ROE close to the mean of the Comparable
3 Risk Peer Group (12.93 percent for OPCo versus 12.63 percent for the group). CSPCo,
4 on the other hand, had an ROE that exceeded the mean ROE of the Comparable Risk
5 Peer Group (17.57 percent for CSPCo versus 12.63 percent for the group). In Panel B, I
6 check where the ROE figures for OPCo and CSPCo fall in the confidence interval, and
7 find that both rates are below the upper bound value of 22.59 percent. Neither OPCo's
8 nor CSPCo's earned returns on equity in 2006 would be classified as significantly
9 excessive if the statutory test were applicable to them in 2006.

10 In Exhibit X Part C, I compare the 2005 ROE figures for OPCo and CSPCo and
11 find that neither of them exceeds the upper bound of the confidence interval, 21.19
12 percent.

13 As a robustness check, I repeated the entire analysis after defining ROE as Net
14 Income_t/Book Equity_t (instead of Net Income_t/Book Equity_{t-1}). Again, I formed 100 cells
15 and chose the one with AEP in it as the Comparable Risk Peer Group. AEP, OPCo and
16 CSPCo all fell within the confidence interval, affirming the conclusion that their earned
17 rates were not significantly excessive.

18 I also examined the holding period stock returns and found that AEP
19 outperformed its Comparable Risk Peers in each of the three years. Since stock market
20 returns are based in part on stock prices that reflect future performance, they do not
21 strictly capture what transpired during a given year. Please recall that the Utility Peer
22 Groups had still higher stock market returns compared to AEP (Exhibit III, Panel C),
23 though they could expect lower returns given their lower risk. While it may be tempting

1 to glean earnings behavior for any year from stock price performance over the same year,
2 it may not be appropriate.

3
4 **CONCLUSION**

5 **Q. WHAT IS THE BEST METHOD TO MEASURE EXCESS EARNINGS UNDER**
6 **THE CRITERIA ESTABLISHED IN OH SENATE BILL 221?**

7 A. The Comparable Risk Peer Group methodology has a distinct advantage over that of the
8 Utility Peer Group approach. First, it produces a comparison of earned rates after both the
9 business and financial risks have been matched. This makes the earned rates truly
10 comparable. In the Utility Peer Group methodology, differences in ROE between the
11 subject utility and its Utility Peer Group can arise because of risk differences.
12 Consequently, an additional correction for risk differences – which is not so
13 straightforward-- is needed before the ROE figures become truly comparable. Second, it
14 matches better my understanding of the statutory language of Section 4928.143(F).

15 The Comparable Risk Peer Group methodology certainly addresses each of the
16 requirements for developing a comparable peer group according to the “significantly
17 excessive earnings test” included in S.B. 221. The firms are drawn from publicly traded
18 firms, including utilities. Both business and financial risks are also taken into account.

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

20 A. Yes, it does.

Exhibit I
AEP's Peers: Utility Peer Group

NYSE-listed Electric Utilities, all assigned to the 4911 4-Digit SIC Code, with 2007 year-end Market Cap (market value of equity) greater than \$10 billion are considered AEP's peer group for comparison purposes.

	Electric Utility	Ticker Symbol		Market Cap \$millions
1.	Ameren Corp.	AEE	Electric Util. (Central)	11,291.94
2.	Amer. Elec. Power	AEP	Electric Util. (Central)	18,643.88
3.	Allegheny Energy	AYE	Electric Utility (East)	10,637.12
4.	Constellation Energy	CEG	Electric Utility (East)	18,295.15
5.	Dominion Resources	D	Electric Utility (East)	27,378.65
6.	Duke Energy	DUK	Electric Utility (East)	25,454.54
7.	Consol. Edison	ED	Electric Utility (East)	13,288.42
8.	Entergy Corp.	ETR	Electric Util. (Central)	23,081.70
9.	Exelon Corp.	EXC	Electric Utility (East)	53,978.98
10.	FirstEnergy Corp.	FE	Electric Utility (East)	22,051.76
11.	FPL Group	FPL	Electric Utility (East)	27,609.84
12.	Public Serv. Enterprise	PEG	Electric Utility (East)	24,978.60
13.	Progress Energy	PGN	Electric Utility (East)	12,591.80
14.	PPL Corp.	PPL	Electric Utility (East)	19,443.69
15.	Southern Co.	SO	Electric Utility (East)	29,589.50

Exhibit II
Rates of Return on Book Equity (ROE) for AEP, its Utility Peer Group, and for OPCo and CSPCo for 2007, 2006, and 2005

Rates of Return on Book Equity for 2007, ROE 2007, are defined as Net Income for 2007/Book Equity for 2006. ROE 2006 and ROE 2005 are similarly defined. AEP's Peers are listed in Exhibit I.

	Company Name	ROE 2007	ROE 2006	ROE 2005
1.	Ameren Corp.	0.0956	0.1044	0.1193
2.	Amer. Elec. Power	0.1194	0.1208	0.1295
3.	Allegheny Energy	0.2402	0.1073	0.0457
4.	Constellation Energy	0.1635	0.1261	0.1311
5.	Dominion Resources	0.2398	0.0899	0.1320
6.	Duke Energy	0.0912	0.0981	0.0961
7.	Consol. Edison	0.1250	0.0990	0.0844
8.	Entergy Corp.	0.1417	0.1087	0.1032
9.	Exelon Corp.	0.2970	0.2273	0.2146
10.	FirstEnergy Corp.	0.1397	0.1064	0.1079
11.	FPL Group	0.1544	0.1174	0.1272
12.	Public Serv. Enterprise	0.2194	0.1475	0.1292
13.	Progress Energy	0.0620	0.0941	0.1013
14.	PPL Corp.	0.2922	0.1723	0.2091
15.	Southern Co.	0.1579	0.1496	0.1327
	Mean Excluding AEP	0.1728	0.1248	0.1238
	Median Excluding AEP	0.1561	0.1080	0.1233
	Ohio Power Co.	0.1337	0.1293	0.1668
	Columbus Southern Power Co.	0.2444	0.1891	0.1293

Comparison of 2007 CSPCo with Utility Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
roe2007	14	.1728252	.0197217	.0737919	.1302191	.2154314

mean = mean(roe2007) t = -3.6292
Ho: mean = 0.2444 degrees of freedom = 13

Ha: mean < 0.2444
Pr(T < t) = 0.0015

Ha: mean != 0.2444
Pr(|T| > |t|) = 0.0031

Ha: mean > 0.2444
Pr(T > t) = 0.9985

PANEL B: Comparing ROE 2007, where ROE 2007 = Net Income 2007/Book Equity 2007

Mean ROE for 2007, 2006, and 2005 Excluding AEP

Variable	Obs	Mean	Std. Dev.	Min	Max
ROE 2007	14	.1547143	.066816	.0598	.2716
ROE 2006	14	.1209786	.0399894	.0892	.2347
ROE 2005	14	.1136071	.0364802	.0508	.1939

ROE for 2007, 2006, and 2005 for AEP, OPCo, and CSPCo

	2007	2006	2005
Mean for Peers, Excl. AEP	0.1547	0.1210	0.1136
AEP	0.1083	0.1132	0.1210
OPCo	0.1172	0.1138	0.1391
CSPCo	0.2217	0.1757	0.1395

Comparison of 2007 AEP with Utility Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]
Sevenroe	14	.1547143	.0178573	.066816	.1161359 .1932927

mean = mean(Sevenroe) t = 2.5992
Ho: mean = 0.1083 degrees of freedom = 13

Ha: mean < 0.1083 Ha: mean != 0.1083 Ha: mean > 0.1083
Pr(T < t) = 0.9890 Pr(|T| > |t|) = 0.0220 Pr(T > t) = 0.0110

Comparison of 2007 OPCo with Utility Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]
Sevenroe	14	.1547143	.0178573	.066816	.1161359 .1932927

mean = mean(Sevenroe) t = 2.1008
Ho: mean = 0.1172 degrees of freedom = 13

Ha: mean < 0.1172 Ha: mean != 0.1172 Ha: mean > 0.1172
Pr(T < t) = 0.9721 Pr(|T| > |t|) = 0.0557 Pr(T > t) = 0.0279

Comparison of 2007 CSPCo with Utility Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Sevenroe	14	.1547143	.0178573	.066816	.1161359	.1932927

mean = mean(Sevenroe) t = -3.7512
Ho: mean = 0.2217 degrees of freedom = 13

Ha: mean < 0.2217
Pr(T < t) = 0.0012

Ha: mean != 0.2217
Pr(|T| > |t|) = 0.0024

Ha: mean > 0.2217
Pr(T > t) = 0.9988

PANEL C: Holding Period Stock Rates of Return (includes dividends and capital Gains)

Buy-and-Hold Annual Rates of Return ("cumret") for Utility Peer Group Excluding AEP

Variable	Obs	Mean	Std. Dev.	Min	Max
cumret07	14	.260957	.1756825	.0386436	.5192909
cumret06	14	.2198535	.1185758	.058378	.4505529
cumret05	14	.19454	.1546517	.0244644	.6057839

AEP Stock Rate of return 2007: 0.1314

AEP Stock Rate of return 2006: 0.1952

AEP Stock Rate of return 2005: 0.1237

Comparison of 2007 AEP returns with Utility Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
cumret07	14	.260957	.0469531	.1756825	.1595209	.362393

mean = mean(cumret07) t = 2.7593
Ho: mean = 0.1314 degrees of freedom = 13

Ha: mean < 0.1314
Pr(T < t) = 0.9919

Ha: mean != 0.1314
Pr(|T| > |t|) = 0.0162

Ha: mean > 0.1314
Pr(T > t) = 0.0081

Exhibit IV
Comparison of 2006 and 2005 Earned Returns to Common Equity for AEP, OPCo, and CSPCo
with those for the Utility Peer Group (listed in Exhibit 1)

Earned Returns to Common Equity are defined as:

ROE 2006 = Net Income 2006/Book Equity 2005

ROE 2005 = Net Income 2005/Book Equity 2004

PANEL A: Comparisons for 2006

Mean 2006 ROE for Utility Peer Group Excluding AEP: 0.1248

2006 ROE AEP: 0.1208

2006 ROE OPCo: 0.1293

2006 ROE CSPCo: 0.1891

Comparison of AEP with Utility Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
roe2006	14	.1248474	.0101676	.0380437	.1028816	.1468132

mean = mean(roe2006) t = 0.3981
Ho: mean = 0.1208 degrees of freedom = 13

Ha: mean < 0.1208 Ha: mean != 0.1208 Ha: mean > 0.1208
Pr(T < t) = 0.6515 Pr(|T| > |t|) = 0.6970 Pr(T > t) = 0.3485

Comparison of OPCo with Utility Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
roe2006	14	.1248474	.0101676	.0380437	.1028816	.1468132

mean = mean(roe2006) t = -0.4379
Ho: mean = 0.1293 degrees of freedom = 13

Ha: mean < 0.1293 Ha: mean != 0.1293 Ha: mean > 0.1293
Pr(T < t) = 0.3343 Pr(|T| > |t|) = 0.6686 Pr(T > t) = 0.6657

Comparison of CSPCo with Utility Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
roe2006	14	.1248474	.0101676	.0380437	.1028816	.1468132

mean = mean(roe2006) t = -6.3193
Ho: mean = 0.1891 degrees of freedom = 13

Ha: mean < 0.1891 Ha: mean != 0.1891 Ha: mean > 0.1891
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

PANEL A: Comparisons for 2005

Mean 2005 ROE for Utility Peer Group Excluding AEP: 0.1238

2005 ROE AEP: 0.1295

2005 ROE OPCo: 0.1668

2005 ROE CSPCo: 0.1293

Comparison of AEP with Utility Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
roe2005	14	.1238406	.0118104	.0441904	.0983258	.1493553

mean = mean(roe2005) t = -0.4792
Ho: mean = 0.1295 degrees of freedom = 13

Ha: mean < 0.1295 Ha: mean != 0.1295 Ha: mean > 0.1295
Pr(T < t) = 0.3199 Pr(|T| > |t|) = 0.6398 Pr(T > t) = 0.6801

Comparison of OPCo with Utility Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
roe2005	14	.1238406	.0118104	.0441904	.0983258	.1493553

mean = mean(roe2005) t = -3.6374
Ho: mean = 0.1668 degrees of freedom = 13

Ha: mean < 0.1668 Ha: mean != 0.1668 Ha: mean > 0.1668
Pr(T < t) = 0.0015 Pr(|T| > |t|) = 0.0030 Pr(T > t) = 0.9985

Comparison of CSPCo with Utility Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
roe2005	14	.1238406	.0118104	.0441904	.0983258	.1493553

mean = mean(roe2005) t = -0.4623
Ho: mean = 0.1293 degrees of freedom = 13

Ha: mean < 0.1293 Ha: mean != 0.1293 Ha: mean > 0.1293
Pr(T < t) = 0.3258 Pr(|T| > |t|) = 0.6515 Pr(T > t) = 0.6742

Exhibit V PART A **Comparison of AEP's Beta Risk with Utility Peer Group: Using Value Line Betas**

For comparison purposes, we use the 14 peers in Exhibit I.

PANEL A: UTILITY PEER GROUP'S Beta

	Obs	Mean	Median	Std. Dev.	Min	Max
2007	14	0.9857	0.9000	0.3532424	.7	2.1
2006	14	0.9000	0.8250	0.2961289	.6	1.8
2005	14	0.8500	0.7750	0.2503843	.6	1.6

PANEL B: AEP's Beta

2007: 1.35
2006: 1.20
2005: 1.15

PANEL C: T-Tests - Is AEP's Beta Significantly Different from that of the Utility Peer Group?

Test for 2007

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
2007 Beta	14	.9857143	.094408	.3532424	.7817582	1.18967

t = -3.8586

Ho: mean = 1.35 degrees of freedom = 13

Ha: mean < 1.35
Pr(T < t) = 0.0010

Ha: mean != 1.35
Pr(|T| > |t|) = 0.0020

Ha: mean > 1.35
Pr(T > t) = 0.9990

Test for 2006

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
2006 Beta	14	.9	.0791438	.2961289	.7290203	1.07098

Ho: mean = 1.20 t = -3.7906
degrees of freedom = 13

Ha: mean < 1.20	Ha: mean != 1.20	Ha: mean > 1.20
Pr(T < t) = 0.0011	Pr(T > t) = 0.0022	Pr(T > t) = 0.9989

Test for 2005

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
2005 Beta	14	.85	.066918	.2503843	.7054324	.9945676

Ho: mean = 1.15 t = -4.4831
degrees of freedom = 13

Ha: mean < 1.15	Ha: mean != 1.15	Ha: mean > 1.15
Pr(T < t) = 0.0003	Pr(T > t) = 0.0006	Pr(T > t) = 0.9997

Exhibit V PART B

Comparison of AEP's Beta Risk with Utility Peer Group: Using Merrill Lynch Betas (ML-Beta)

We follow the Merrill Lynch procedure to estimate betas. Monthly stock returns for the prior 60 months are regressed on the S & P 500 returns. These regression betas are then adjusted:

$$\text{Merrill Lynch Beta} = 0.33 \times 1.0 + 0.67 \times \text{Regression Beta}$$

PANEL A: Merrill Lynch Betas: Utility Peer Group versus AEP

		2007 ML-Beta	2006 ML-Beta	2005 ML-Beta
1.	Ameren Corp.	0.7253	0.5511	0.4439
2.	Allegheny Energy	1.1943	1.1139	0.9933
3.	Constellation Energy	0.6181	0.6851	0.6851
4.	Dominion Resources	0.4908	0.6382	0.5578
5.	Duke Energy	0.9598	1.0871	0.7789
6.	Consol. Edison	0.4707	0.4305	0.3099
7.	Entergy Corp.	0.531	0.4573	0.4037
8.	Exelon Corp.	0.5243	0.5444	0.5243
9.	FirstEnergy Corp.	0.5176	0.6248	0.4104
10.	FPL Group	0.5913	0.6784	0.4774
11.	Public Serv. Enterprise	0.4506	0.6985	0.6181
12.	Progress Energy	0.732	0.7052	0.5109
13.	PPL Corp.	0.3702	0.6784	0.8392
14.	Southern Co.	0.3702	0.2831	0.1759
	Mean	0.6104	0.6554	0.5521
	Amer. Elec. Pwr	1.0201	0.9531	0.6918

Exhibit VI PART A

For comparison purposes, we use the 14 peers in Exhibit 1.

PANEL A: UTILITY PEER GROUP'S Beta

	Obs	Mean	Median	Std. Dev.	Min	Max
2007	14	0.7216	0.6539	0.2924454	0.4792332	1.621746
2006	14	0.6124	0.5816	0.1717077	0.4121153	1.114488
2005	14	0.5252	0.5136	0.0753391	0.4118616	0.6976767

PANEL B: AEP's Unlevered Beta

```
2007: 0.8919
2006: 0.7680
2005: 0.7003
```

PANEL C: T-Tests - Is AEP's Unlevered Beta Significantly Different from that of the Utility Peer Group?

Test for 2007

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
UnBeta '07	14	.7215642	.0781593	.2924454	.5527113	.8904172

$$t = -2.1793$$

Ho: mean = 0.8919

degrees of freedom = 13

```
Ha: mean < 0.8919
Pr(T < t) = 0.0241
```

```
Ha: mean != 0.8919
Pr(|T| > |t|) = 0.0483
```

```
Ha: mean > 0.8919
Pr(T > t) = 0.9759
```

Test for 2006

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
UnBeta'06	14	.612371	.0458908	.1717077	.5132299	.7115121

Ho: mean = 0.7680 t = -3.3913
degrees of freedom = 13

Ha: mean < 0.7680 Ha: mean != 0.7680 Ha: mean > 0.7680
Pr(T < t) = 0.0024 Pr(|T| > |t|) = 0.0048 Pr(T > t) = 0.9976

Test for 2005

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
UnBeta'05	14	.5251874	.0201352	.0753391	.4816879	.568687

Ho: mean = 0.7003 t = -8.6968
degrees of freedom = 13

Ha: mean < 0.7003 Ha: mean != 0.7003 Ha: mean > 0.7003
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

Exhibit VI PART B
Alternative Measures of Business Risk: AEP Compared with the Utility Peer Group

PANEL A: Value Line Safety Rankings

Value Line Safety Rankings measures potential risks to common stock, with a ranking of 1.0 defined as lower risk.

		2005	2006	2007
1.	Ameren Corp.	1	1	2
2.	Allegheny Energy	4	4	4
3.	Constellation Energy	2	2	2
4.	Dominion Resources	2	2	2
5.	Duke Energy	.	.	2
6.	Consol. Edison	1	1	1
7.	Entergy Corp.	2	2	2
8.	Exelon Corp.	1	1	1
9.	FirstEnergy Corp.	3	2	2
10.	FPL Group	1	1	1
11.	Public Serv. Enterprise	3	3	3
12.	Progress Energy	2	2	2
13.	PPL Corp.	3	2	2
14.	Southern Co.	1	1	1
	Mean	2.00	1.85	1.93
	Amer. Elec. Pwr.	3.00*	3.00*	3.00*

*Denotes that the AEP figure is statistically significantly different from the mean for the other peer group sample.

PANEL B: Value Line Ratings of Company Financial Strength

		2005	2006	2007
1.	Ameren Corp.	A+	A+	A
2.	Allegheny Energy	C++	C++	C++
3.	Constellation Energy	A	A	A
4.	Dominion Resources	B++	B++	B++
5.	Duke Energy	.	.	A
6.	Consol. Edison	A++	A++	A++
7.	Entergy Corp.	A	A	A
8.	Exelon Corp.	A+	A+	A+
9.	FirstEnergy Corp.	B++	A	A
10.	FPL Group	A+	A+	A+
11.	Public Serv. Enterprise	B+	B+	B+
12.	Progress Energy	B++	B++	B++
13.	PPL Corp.	B+	B++	B++
14.	Southern Co.	A	A	A
	Amer. Elec. Pwr.	B++	B++	B++

Exhibit VII Part A
Financial Risk as Measured for 2007, 2006, and 2005 with Book and Market Equity Ratios (Bk-Eqty Ratio and Mkt-Eqty Ratio)
for AEP and Utility Peer Group (listed in Exhibit I)

Book Equity Ratio, Bk-Eqty Ratio, for 2007 is Book Value of Equity for year-end divided by Total Assets for year-end 2007. Bk-Eqty Ratios for other years are similarly calculated.

Market Equity Ratio, Mkt-Eqty Ratio, for 2007 is Market Value of Equity (No. of shares times price per share) for year-end 2007 divided by Market Value of Equity plus (Total Assets - Book Value of Equity). Thus, all non-equity items are assessed in book value terms. Mkt-Eqty Ratios for other years are similarly calculated.

PANEL A: Book Equity Ratios for AEP and Utility Peer Group

	Company Name	Bk-Eqty 2007 Ratio	Bk-Eqty 2006 Ratio	Bk-Eqty 2005 Ratio
1.	Ameren Corp.	0.3257	0.3622	0.3452
2.	Amer. Elec. Power	0.2497	0.2529	0.2475
3.	Allegheny Energy	0.2559	0.2009	0.1580
4.	Constellation Energy	0.2433	0.2378	0.2834
5.	Dominion Resources	0.2404	0.2023	0.2570
6.	Duke Energy	0.4265	0.3004	0.2987
7.	Consol. Edison	0.3202	0.3027	0.3220
8.	Entergy Corp.	0.2337	0.2654	0.3066
9.	Exelon Corp.	0.2209	0.2173	0.2224
10.	FirstEnergy Corp.	0.2799	0.2943	0.2878
11.	FPL Group	0.2676	0.2575	0.2660
12.	Public Serv. Enterprise	0.2571	0.2047	0.1992
13.	Progress Energy	0.3204	0.3009	0.2973
14.	PPL Corp.	0.2782	0.2493	0.2415
15.	Southern Co.	0.2705	0.2830	0.2932
	Mean Excluding AEP	0.2815	0.2628	0.2699
	Median Excluding AEP	0.2690	0.2615	0.2856
	Ohio Power Co.	0.3120	0.2945	0.2793
	Columbus Southern Power Co.	0.3051	0.2999	--

PANEL B: Market Equity Ratios for AEP and Utility Peer Group

	Company Name	Mkt-Eqty 2007 Ratio	Mkt-Eqty 2006 Ratio	Mkt-Eqty 2005 Ratio
1.	Ameren Corp.	0.4469	0.4901	0.4810
2.	Amer. Elec. Power	0.3810	0.3839	0.3594
3.	Allegheny Energy	0.5907	0.5251	0.4015
4.	Constellation Energy	0.5242	0.4300	0.4542
5.	Dominion Resources	0.4795	0.4145	0.4432
6.	Duke Energy	0.4717	0.5198	0.3965
7.	Consol. Edison	0.4082	0.4162	0.4038
8.	Entergy Corp.	0.4724	0.4594	0.4221
9.	Exelon Corp.	0.6015	0.5554	0.5202
10.	FirstEnergy Corp.	0.4885	0.4627	0.4245
11.	FPL Group	0.4844	0.4742	0.4412
12.	Public Serv. Enterprise	0.5422	0.4146	0.4032
13.	Progress Energy	0.4134	0.3978	0.3792
14.	PPL Corp.	0.5742	0.5056	0.4563
15.	Southern Co.	0.4697	0.4894	0.4981
	Mean Excluding AEP	0.4977	0.4682	0.4375
	Median Excluding AEP	0.4820	0.4684	0.4329

Exhibit VII Part B
Comparison of 2007, 2006, and 2005 Book Equity Ratios for AEP and its Utility Peer Group

Book Equity Ratio, Bk-Eqty Ratio, for 2007 is Book Value of Equity for year-end divided by Total Assets for year-end 2007. Bk-Eqty Ratios for other years are similarly calculated.

	<u>2007</u>	<u>2006</u>	<u>2005</u>
Mean, Excluding AEP	0.2815	0.2628	0.2699
Median, Excluding AEP	0.2690	0.2615	0.2856
AEP	0.2497	0.2529	0.2475

Test for 2007

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
SevenB...	14	.2814554	.0141962	.0531173	.2507864	.3121244
mean = mean(SevenBookEquityRatio)				t = 2.2369		
Ho: mean = 0.2497				degrees of freedom = 13		
Ha: mean < 0.2497		Ha: mean != 0.2497		Ha: mean > 0.2497		
Pr(T < t) = 0.9783		Pr(T > t) = 0.0434		Pr(T > t) = 0.0217		

Test for 2006

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
SixBoo...	14	.2627661	.0127367	.0476563	.2352501	.2902821
mean = mean(SixBookEquityRatio)				t = 0.7746		
Ho: mean = 0.2529				degrees of freedom = 13		
Ha: mean < 0.2529		Ha: mean != 0.2529		Ha: mean > 0.2529		
Pr(T < t) = 0.7738		Pr(T > t) = 0.4524		Pr(T > t) = 0.2262		

Test for 2005

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
FiveBo...	14	.2698814	.0134892	.0504718	.2407398	.299023
mean = mean(FiveBookEquityRatio)				t = 1.6592		
Ho: mean = 0.2475				degrees of freedom = 13		
Ha: mean < 0.2475		Ha: mean != 0.2475		Ha: mean > 0.2475		
Pr(T < t) = 0.9395		Pr(T > t) = 0.1210		Pr(T > t) = 0.0605		

Exhibit VII Part C

Comparison of 2007, 2006, and 2005 Market Equity Ratios for AEP and its Utility Peer Group

Market Equity Ratio, Mkt-Eqty Ratio, for 2007 is Market Value of Equity (No. of shares times price per share) for year-end 2007 divided by Market Value of Equity plus (Total Assets - Book Value of Equity). Thus, all non-equity items are assessed in book value terms. Mkt-Eqty Ratios for other years are similarly calculated.

	<u>2007</u>	<u>2006</u>	<u>2005</u>
Mean Mkt-Eqty Ratio for Peers (Excl. AEP)	0.4977	0.4682	0.4375
Mkt-Eqty Ratio AEP	0.3810	0.3839	0.3594

Test for 2007

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Mkt-Eqty Ratio 07	14	.4976853	.0162989	.060985	.4624736	.532897
mean = mean(Mkt-Eqty Ratio 2007)				t = 7.1591		
Ho: mean = 0.3810				degrees of freedom = 13		
Ha: mean < 0.3810		Ha: mean != 0.3810		Ha: mean > 0.3810		
Pr(T < t) = 1.0000		Pr(T > t) = 0.0000		Pr(T > t) = 0.0000		

Test for 2006

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Mkt-Eqty Ratio 06	14	.4682089	.0130179	.0487086	.4400854	.4963324
mean = mean(Mkt-Eqty Ratio 2006)				t = 6.4764		
Ho: mean = 0.3839				degrees of freedom = 13		
Ha: mean < 0.3839		Ha: mean != 0.3839		Ha: mean > 0.3839		
Pr(T < t) = 1.0000		Pr(T > t) = 0.0000		Pr(T > t) = 0.0000		

Test for 2005

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Mkt-Eqty Ratio 05	14	.4374993	.0110414	.0413131	.4136458	.4613528
mean = mean(Mkt-Eqty Ratio 2005)				t = 7.0733		
Ho: mean = 0.3594				degrees of freedom = 13		
Ha: mean < 0.3594		Ha: mean != 0.3594		Ha: mean > 0.3594		
Pr(T < t) = 1.0000		Pr(T > t) = 0.0000		Pr(T > t) = 0.0000		

Exhibit VIII
Comparison of AEP, OPCo and CSPCo Capital Expenditures (as a proportion of year-end total assets) with Utility Peer Group

For comparison purposes, we use the 14 peers in Exhibit 1.

PANEL A: UTILITY PEER GROUP'S Capex/TA Ratio

	Obs	Mean	Median	Std. Dev.	Min	Max
2007	14	0.0693	0.0678	.0155116	.0474782	.101526
2006	14	0.0470	0.0463	.0103294	.0343451	.0650704
2005	14	0.0445	0.0439	.0099727	.0272371	.0602394

PANEL B: AEP's Capex/TA Ratio

2007: 0.0881
2006: 0.0665
2005: 0.0488

Construction Expenditures/Total Assets

Ohio Power Co. = $933,162 / 7,343,663 = 0.1271$
Ohio Power Co. = $999,603 / 6,818,733 = 0.1466$

Construction Expenditures/Total Assets

Columbus Southern Power Co. 2007: $338,097 / 3,815,631 = 0.0886$
Columbus Southern Power Co. 2006: $306,559 / 3,520,689 = 0.0871$

PANEL C: T-Tests - Is AEP's Capex/TA Ratio Significantly Different from that of Utility Peer Group?

Test for 2007

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Ratio '07	14	.0693357	.0041457	.0155116	.0603795	.0782918

Ho: mean = 0.0881 t = -4.5263
degrees of freedom = 13

Ha: mean < 0.0881 Ha: mean != 0.0881 Ha: mean > 0.0881
Pr(T < t) = 0.0003 Pr(|T| > |t|) = 0.0006 Pr(T > t) = 0.9997

Test for 2006

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Ratio '06	14	.047043	.0027607	.0103294	.0410789	.053007

Ho: mean = 0.0665 t = -7.0480
degrees of freedom = 13

Ha: mean < 0.0665 Ha: mean != 0.0665 Ha: mean > 0.0665
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

Test for 2005

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Ratio '05	14	.0444649	.0026653	.0099727	.0387069	.050223

Ho: mean = 0.0488 t = -1.6265
degrees of freedom = 13

Ha: mean < 0.0488 Ha: mean != 0.0488 Ha: mean > 0.0488
Pr(T < t) = 0.0639 Pr(|T| > |t|) = 0.1278 Pr(T > t) = 0.9361

Exhibit IX
Comparable Risk Peer Group Firms for 2007, 2006, and 2005

In each year, 100 cells were formed based on 10 groups of business risk (unlevered betas from low to high) and 10 groups of financial risk (book equity ratios from high to low). Firms with abnormal profits (ROE>200%) or losses (ROE<-200%) were excluded from participation. The firms in the cell with AEP were defined as the Comparable Risk Peer Group. The procedure was repeated for each of the three years, 2007, 2006, and 2005.

PANEL A: 2007 – Comparable Risk Peer Group of 25 firms, excluding AEP

	Company Name	Industry	Sic Code
70.	Automatic Data Proc.	Computer Software/Svcs	7374
134.	Alaska Air Group	Air Transport	4512
166.	Amkor Technology	Semiconductor Equip	3674
240.	Aristotle Corp	Diversified Co.	5110
510.	Credit Acceptance	Financial Svcs. (Div.)	6141
711.	Con-way Inc.	Trucking	4210
754.	ChoicePoint Inc.	Information Services	6411
902.	Delphi Fin'l 'A'	Insurance (Life)	6311
1179.	Fording Canadian Coal	Coal	1220
1457.	Harleysville Group	Insurance (Prop/Cas.)	6331
1506.	Hovnanian Enterpr. 'A'	Homebuilding	1531
1783.	Kroger Co.	Grocery	5411
1892.	Loews Corp.	Financial Svcs. (Div.)	6331
2291.	Ocwen Finl Corp	Thrift	6035
2396.	Pep Boys	Retail Automotive	5531
2401.	PG&E Corp.	Electric Utility (West)	4931
2451.	Progressive (Ohio)	Insurance (Prop/Cas.)	6331
2530.	PartnerRe Ltd.	Reinsurance	6331
2798.	Schering-Plough	Drug	2834
2816.	Selective Ins. Group	Insurance (Prop/Cas.)	6331
2851.	Scotts Miracle-Gro	Household Products	2870
2900.	Standard Pacific Corp.	Homebuilding	1531
3165.	Tower Group Inc	Insurance (Prop/Cas.)	6331
3169.	Trex Co.	Building Materials	2400
3254.	Unitrin Inc.	Financial Svcs. (Div.)	6331

PANEL B: 2006 – Comparable Risk Peer Group of 50 firms, excluding AEP

	Company Name	Industry	Sic Code
119.	Adams Resources & Energy	Petroleum (Producing)	1300
154.	Argonaut Group	Insurance (Prop/Cas.)	6330
207.	Alfa Corp.	Financial Svcs. (Div.)	6100
388.	Aleris International Inc	Metals & Mining (Div.)	1000
712.	Burlington Northern	Railroad	4002
1057.	Charter Financial Corp	Thrift	6120
1068.	C & D Technologies	Electrical Equipment	3600
1191.	Connetics Corp.	Medical Supplies	8060
1299.	Crawford & Co. 'B'	Financial Svcs. (Div.)	6100
1310.	CuraGen Corp	Drug	2834
1538.	R.G. Barry Corporation	Shoe	3140
1656.	Duke Energy	Electric Utility (East)	4911
1681.	Dynegy Inc. 'A'	Natural Gas (Div.)	4929
1800.	Eastman Chemical	Chemical (Diversified)	2813
1829.	Enzon Pharmac.	Drug	2834
1944.	Farrel Corp.	Machinery	3500
2339.	Gen'l Communication 'A'	Telecom. Services	4810
2395.	GlaxoSmithKline ADR	Drug	2834
2521.	Hitachi Ltd. ADR	Foreign Electronics	9975
2845.	Iron Mountain	Industrial Services	7300
2857.	Insignia Systems	Industrial Services	7300
2938.	Jacuzzi Brands Inc	Industrial Services	7300
2952.	St. Joe Corp.	Homebuilding	1521
3023.	Kinder Morgan	Natural Gas (Div.)	4929
3050.	Kroger Co.	Grocery	5400
3114.	Lee Enterprises	Newspaper	2710
3308.	Moody's Corp.	Information Services	8900
3364.	Mesa Air Group	Air Transport	4510
3383.	M & F Worldwide	Food Wholesalers	5140
3702.	NEC Corp. ADR	Foreign Electronics	9975
4036.	PG&E Corp.	Electric Utility (West)	4913
4126.	Pharsight Corp	Medical Services	8000
4199.	PolyOne Corp	Chemical (Specialty)	2820
4306.	The Pantry Inc.	Retail (Special Lines)	5600
4313.	Penn Virginia Corp.	Natural Gas (Div.)	4929
4336.	Pioneer Natural Res.	Petroleum (Producing)	1300
4381.	Ryder System	Trucking	4200
4455.	Rogers Communication	Cable TV	4840
4488.	RLI Corp.	Insurance (Prop/Cas.)	6330
4531.	RPM Int'l	Chemical (Specialty)	2820
4561.	RTW Inc	Insurance (Prop/Cas.)	6330
4628.	Service Corp. Int'l	Diversified Co.	9913
4826.	Sony Corp. ADR	Foreign Electronics	9975
4909.	Sempra Energy	Electric Utility (West)	4913
4972.	Station Casinos	Hotel/Gaming	7000

5136.	Telefonica SA ADR	Telecom. Services	4810
5181.	Houston Expl Co	Petroleum (Producing)	1300
5281.	Transatlantic Hldgs.	Insurance (Prop/Cas.)	6330
5424.	Universal Amern Finl Corp	Insurance (Life)	6310
5875.	Zunicom Inc	Telecom. Equipment	4811

PANEL C: 2005 – Comparable Risk Peer Group of 54 firms, excluding AEP

	Company Name	Industry	Sic Code
74.	ACR Group Inc.	Electrical Equipment	3600
211.	Alfa Corp.	Financial Svcs. (Div.)	6100
600.	Gen'l Cable	Electrical Equipment	3600
653.	Ball Corp.	Packaging & Container	2640
825.	CSK Auto Corp	Retail Automotive	5531
947.	Ceres Group Inc	Insurance (Life)	6310
1001.	Charter Financial Corp	Thrift	6120
1423.	Dana Corp.	Auto Parts	3716
1510.	DOV Pharmaceutical Inc	Drug	2834
1533.	Duratek Inc.	Environmental	4953
1627.	EDP - Electricidade de Portuga	Power	4900
1709.	Encore Med Corp	Medical Supplies	8060
1921.	Florida Gaming Corp	Hotel/Gaming	7000
1968.	FMC Corp.	Chemical (Basic)	2810
2063.	Frontier Oil	Petroleum (Integrated)	2900
2126.	Genesis Energy	Oilfield Svcs/Equip.	3533
2211.	Georgia-Pacific Group	Paper/Forest Products	2600
2244.	GlaxoSmithKline ADR	Drug	2834
2338.	Harrah's Entertain.	Hotel/Gaming	7000
2364.	Hitachi Ltd. ADR	Foreign Electronics	9975
2626.	World Fuel Services	Industrial Services	7300
2968.	Lamson & Sessions	Electrical Equipment	3600
3200.	Meadowbrook Ins Grou	Insurance (Prop/Cas.)	6330
3346.	Manitowoc Co.	Machinery	3500
3479.	NEC Corp. ADR	Foreign Electronics	9975
3493.	Nat'l Medical Health Card Sys	Healthcare Information	7375
3528.	Noble Romans	Restaurant	5812
3619.	NYMAGIC Inc.	Financial Svcs. (Div.)	6100
3627.	Wild Oats Markets	Grocery	5400
3666.	Olin Corp.	Chemical (Basic)	2810
4050.	Pactiv Corp.	Packaging & Container	2640
4060.	Phillips-Van Heusen	Apparel	2300
4118.	Ryder System	Trucking	4200
4222.	Rock-Tenn 'A'	Packaging & Container	2640
4225.	RLI Corp.	Insurance (Prop/Cas.)	6330
4317.	SAFECO Corp.	Insurance (Prop/Cas.)	6330
4365.	Service Corp. Int'l	Diversified Co.	9913
4469.	Selective Ins. Group	Insurance (Prop/Cas.)	6330
4552.	Sony Corp. ADR	Foreign Electronics	9975
4586.	Stolt Offshore SA	Oilfield Svcs/Equip.	3533
4690.	Station Casinos	Hotel/Gaming	7000
4836.	Telephone & Data	Telecom. Services	4810
4847.	Telefonica SA ADR	Foreign Telecom.	4812
5054.	Tupperware Brands	Household Products	2840
5083.	United Auto Group	Auto & Truck	3710

5108.	Utd. Fire & Casualty	Insurance (Prop/Cas.)	6330
5116.	Universal Amern Finl Corp	Insurance (Life)	6310
5300.	Verizon Communic.	Telecom. Services	4810
5379.	WestJet Airlines Ltd.	Air Transport	4510
5390.	Lyon William Homes	R.E.I.T.	6720
5444.	White Mtns Ins Group Ltd	Financial Svcs. (Div.)	6100
5467.	Weyerhaeuser Co.	Paper/Forest Products	2600
5468.	Wyeth	Drug	2834
5531.	Zunicom Inc	Telecom. Equipment	4811

Exhibit X Part A (2007)

Comparison of OPCo and CSPCo with Comparable Risk Peer Group for 2007

	ROE	Unlevered Beta	Book Equity Ratio
Legislated Peer Group (mean)	0.1391	0.8872	0.2488
Comparable Risk Peer Group (median)	0.1510	0.8874	0.2470
AEP	0.1194	0.8919	0.2497
OPCo	0.1337		
CSPCo	0.2444		

Comparable Risk Peer Group Range for Unlevered Beta = 0.8528 to 0.9365

Comparable Risk Peer Group Range for Book Equity Ratio = 0.1873 to 0.2972

PANEL B: Are AEP, OPCo, and CSPCo ROE different from the mean of the Comparable Risk Peer Group?

AEP and Comparable Risk Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
roe2007	25	.1391366	.0650187	.3250933	.0049446	.2733285

```
mean = mean(roe2007)                                t = 0.3036
Ho: mean = 0.1194                                degrees of freedom = 24
```

Ha: mean < 0.1194	Ha: mean != 0.1194	Ha: mean > 0.1194
Pr(T < t) = 0.6180	Pr(T > t) = 0.7641	Pr(T > t) = 0.3820

OPCo and Comparable Risk Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
roe2007	25	.1391366	.0650187	.3250933	.0049446	.2733285

mean = mean(roe2007) t = 0.0836
Ho: mean = 0.1337 degrees of freedom = 24

Ha: mean < 0.1337 Ha: mean != 0.1337 Ha: mean > 0.1337
Pr(T < t) = 0.5330 Pr(|T| > |t|) = 0.9341 Pr(T > t) = 0.4670

CSPCo and Comparable Risk Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
roe2007	25	.1391366	.0650187	.3250933	.0049446	.2733285

mean = mean(roe2007) t = -1.6190
Ho: mean = 0.2444 degrees of freedom = 24

Ha: mean < 0.2444 Ha: mean != 0.2444 Ha: mean > 0.2444
Pr(T < t) = 0.0593 Pr(|T| > |t|) = 0.1185 Pr(T > t) = 0.9407

Exhibit X Part B (2006)
Comparison of OPCo and CSPCo with Comparable Risk Peer Group for 2006

Panel A: ROE, Unlevered Beta (Business Risk), Book Equity Ratio (Financial Risk)

	ROE	Unlevered Beta	Book Equity Ratio
Comparable Risk Peer Group (mean)	0.1263	0.7736	0.2518
Comparable Risk Peer Group (median)	0.1410	0.7662	0.2456
AEP	0.1208	0.7680	0.2529
OPCo	0.1293		
CSPCo	0.1757		

Comparable Risk Peer Group Range for Unlevered Beta = 0.7213 to 0.8295

Comparable Risk Peer Group Range for Book Equity Ratio = 0.2016 to 0.3174

PANEL B: Are AEP, OPCo, and CSPCo ROE different from the mean of the Comparable Risk Peer Group?

AEP and Comparable Risk Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
roe2006	50	.126322	.0495504	.3503746	.0267467	.2258974

mean = mean(roe2006) t = 0.1114
Ho: mean = 0.1208 degrees of freedom = 49

Ha: mean < 0.1208 Ha: mean != 0.1208 Ha: mean > 0.1208
Pr(T < t) = 0.5441 Pr(|T| > |t|) = 0.9117 Pr(T > t) = 0.4559

OPCo and Comparable Risk Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
roe2006	50	.126322	.0495504	.3503746	.0267467	.2258974

mean = mean(roe2006) t = -0.0601
Ho: mean = 0.1293 degrees of freedom = 49

Ha: mean < 0.1293 Ha: mean != 0.1293 Ha: mean > 0.1293
Pr(T < t) = 0.4762 Pr(|T| > |t|) = 0.9523 Pr(T > t) = 0.5238

OPCo and Comparable Risk Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
roe2006	50	.126322	.0495504	.3503746	.0267467	.2258974

mean = mean(roe2006) t = -0.9965
Ho: mean = 0.1757 degrees of freedom = 49

Ha: mean < 0.1757 Ha: mean != 0.1757 Ha: mean > 0.1757
Pr(T < t) = 0.1619 Pr(|T| > |t|) = 0.3239 Pr(T > t) = 0.8381

Exhibit X Part C (2005)
Comparison of OPCo and CSPCo with Comparable Risk Peer Group for 2005

Panel A: ROE, Unlevered Beta (Business Risk), Book Equity Ratio (Financial Risk)

	ROE	Unlevered Beta	Book Equity Ratio
Comparable Risk Peer Group (mean)	0.1462	0.7466	0.2605
Comparable Risk Peer Group (median)	0.1360	0.7500	0.2632
AEP	0.1295	0.7003	0.2475
OPCo	0.1668		
CSPCo	0.1395		

Comparable Risk Peer Group Range for Unlevered Beta = 0.6995 to 0.7982

Comparable Risk Peer Group Range for Book Equity Ratio = 0.2016 to 0.3183

Exhibit X Part C (2005)
Comparison of OPCo and CSPCo with Comparable Risk Peer Group for 2005

PANEL B: Are AEP, OPCo, and CSPCo ROE different from the mean of the Comparable Risk Peer Group?

AEP and Comparable Risk Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
roe2005	54	.1461913	.032746	.240633	.0805112	.2118715
mean = mean(roe2005)				t =	0.5097	
Ho: mean = 0.1295				degrees of freedom =	53	
Ha: mean < 0.1295		Ha: mean != 0.1295		Ha: mean > 0.1295		
Pr(T < t) = 0.6938		Pr(T > t) = 0.6124		Pr(T > t) = 0.3062		

OPCo and Comparable Risk Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
roe2005	54	.1461913	.032746	.240633	.0805112	.2118715
mean = mean(roe2005)				t =	-0.6293	
Ho: mean = 0.1668				degrees of freedom =	53	
Ha: mean < 0.1668		Ha: mean != 0.1668		Ha: mean > 0.1668		
Pr(T < t) = 0.2659		Pr(T > t) = 0.5318		Pr(T > t) = 0.7341		

CSPCo and Comparable Risk Peer Group

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
roe2005	54	.1461913	.032746	.240633	.0805112	.2118715
mean = mean(roe2005)				t =	0.2043	
Ho: mean = 0.1395				degrees of freedom =	53	
Ha: mean < 0.1395		Ha: mean != 0.1395		Ha: mean > 0.1395		
Pr(T < t) = 0.5806		Pr(T > t) = 0.8389		Pr(T > t) = 0.4194		