

**OCC EXHIBIT NO. \_\_\_\_\_**

**BEFORE  
THE PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Application of )  
Ohio Power Company for Authority to )  
Establish a Standard Service Offer ) Case No. 16-1852-EL-SSO  
Pursuant to R.C. 4928.143, in the Form of )  
an Electric Security Plan. )

In the Matter of the Application of Ohio )  
Power Company for Approval of Certain ) Case No. 16-1853-EL-AAM  
Accounting Authority. )

**DIRECT TESTIMONY  
OF  
DANIEL J. DUANN, Ph.D.**

**On Behalf of**  
**The Office of the Ohio Consumers' Counsel**  
*10 West Broad Street, Suite 1800*  
*Columbus, Ohio 43215-3485*

**May 2, 2017**

## TABLE OF CONTENTS

	PAGE
I. INTRODUCTION.....	1
II. AEP OHIO’S PROPOSED RETURN ON EQUITY, COST OF DEBT, CAPITAL STRUCTURE, AND WEIGHTED COST OF CAPITAL.....	5
III. ANNUAL ADJUSTMENT TO AEP OHIO’S RETURN ON EQUITY, COST OF DEBT, AND WEIGHTED AVERAGE COST OF CAPITAL.....	24
IV. AEP OHIO’S PROPOSAL FOR INCENTIVE RATE MAKING FOR ITS DISTRIBUTION TECHNOLOGY INVESTMENT PLAN AND THE RIDER IT WOULD CHARGE CONSUMERS .....	34
V. AEP OHIO’S REQUEST REGARDING THE SIGNIFICANTLY EXCESSIVE EARNINGS TEST .....	40
VI. CONCLUSION .....	42

## LIST OF ATTACHMENTS

Attachment DJD-1

Attachment DJD-2

Attachment DJD-3

Attachment DJD-4

Attachment DJD-5

Attachment DJD-6

1    **I.       INTRODUCTION**

2

3    ***Q1.    PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION.***

4    ***A1.***    My name is Daniel J. Duann. My business address is 10 West Broad Street, Suite  
5            1800, Columbus, Ohio, 43215. I am a Principal Regulatory Analyst with the  
6            Office of the Ohio Consumers' Counsel ("OCC").

7

8    ***Q2.    PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND***  
9            ***PROFESSIONAL EXPERIENCE.***

10   ***A2.***    I received my Ph.D. degree in Public Policy Analysis from the Wharton School,  
11            University of Pennsylvania. I also have a M.S. degree in Energy Management  
12            and Policy from the University of Pennsylvania, and a M.A. degree in Economics  
13            from the University of Kansas. I completed my undergraduate study in Business  
14            Administration at the National Taiwan University, Taiwan, Republic of China. I  
15            was conferred by the Society of Utility and Regulatory Financial Analysts as a  
16            Certified Rate of Return Analyst in April 2011.

17

18            I was a Utility Examiner II in the Forecasting Section of the Ohio Division of  
19            Energy, Ohio Department of Development, from 1983 to 1985. The Forecasting  
20            Section was later transferred to the Public Utilities Commission of Ohio  
21            ("PUCO"). From 1985 to 1986, I was an Economist with the Center of Health  
22            Policy Research at the American Medical Association in Chicago. In late 1986, I  
23            joined the Illinois Commerce Commission as a Senior Economist at its Policy

*Direct Testimony of Daniel J. Duann, Ph.D.  
On Behalf of The Office of the Ohio Consumers' Counsel,  
PUCO Case No. 16-1852-EL-SSO et al.*

1       Analysis and Research Division. I was employed as a Senior Institute Economist  
2       at the National Regulatory Research Institute (“NRRI”) at The Ohio State  
3       University from 1987 to 1995. My work at NRRI involved public policy research  
4       and publications in many areas of utility regulation and energy policy. I was an  
5       independent consultant from 1996 to 2007.

6  
7       I joined the OCC in January 2008 as a Senior Regulatory Analyst. I was  
8       promoted to my current position in November 2011. My responsibilities are to  
9       assist the OCC by participating in various regulatory proceedings before the  
10      PUCO. These proceedings include rate cases, cost of capital, alternative  
11      regulation, fuel cost recovery, and other types of proceedings by Ohio’s water,  
12      electric, and gas utilities.

13

14   ***Q3. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY OR TESTIFIED***  
15   ***BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO?***

16   ***A3.*** Yes. I have submitted expert testimony or testified on behalf of the OCC before  
17      the PUCO in a number of cases. A list of these cases is included in Attachment  
18      DJD-1.

19

20   ***Q4. HAVE YOU PREVIOUSLY TESTIFIED BEFORE OTHER REGULATORY***  
21   ***AGENCIES AND LEGISLATURES?***

22   ***A4.*** Yes. I have testified before the Illinois Commerce Commission and the  
23      California Legislature on the restructuring and deregulation of electric utilities.

1   ***Q5.   WHAT IS THE PURPOSE OF YOUR TESTIMONY?***

2   ***A5.***   My testimony is to explain and support the positions of the Ohio Consumers'  
3           Counsel regarding certain components of the electric security plan ("Proposed  
4           ESP" or "Amended ESP") filed by the Ohio Power Company ("AEP Ohio", or the  
5           "Utility") on November 23, 2016.<sup>1</sup> Specifically, I comment and provide  
6           recommendations on four areas related to the Proposed ESP. The four areas are:  
7           (1)    the proposed return on equity ("ROE" or cost of equity), cost of  
8                   debt, and weighted average cost of capital ("WACC") for AEP  
9                   Ohio;  
10          (2)   the proposed annual adjustment to the baseline ROE and cost of  
11               debt and the resulting WACC;  
12          (3)   the incentive ROE of 75 basis points, or 0.75 percent added to the  
13               baseline ROE for capital investments made under the proposed  
14               Distribution Technology Investment Plan; and  
15          (4)   the request by AEP Ohio regarding the Significantly Excessive  
16               Earnings Test ("SEET") during the ESP period.

17  
18  
19   ***Q6.   PLEASE SUMMARIZE YOUR RECOMMENDATION.***

20   ***A6.***   My analysis and recommendations regarding the Proposed ESP are based on my  
21           knowledge and experience as a regulatory economist. I am not providing any  
22           legal or engineering analysis in my testimony. Based on my review and analysis,

---

<sup>1</sup> See *In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to Section 4928.143, Revised Code, in the Form of an Electric Security Plan*, PUCO Case No. 16-1852-EL-SSO et al, Application (November 23, 2016).

*Direct Testimony of Daniel J. Duann, Ph.D.  
On Behalf of The Office of the Ohio Consumers' Counsel,  
PUCO Case No. 16-1852-EL-SSO et al.*

1 I recommend that the PUCO not adopt the Proposed ESP. The Proposed ESP, if  
2 adopted, will result in unreasonable rates and terms of service for AEP Ohio's  
3 1.28 million residential customers and other customers. Furthermore, many of the  
4 proposals, rates, and terms of service contained in the Proposed ESP, contrary to  
5 the claim by AEP Ohio,<sup>2</sup> do not advance state electric services policy, in  
6 particular those delineated in Ohio Revised Code 4928.02. Specifically, I  
7 recommend the PUCO:

- 8 (1) reject the baseline ROE of 10.41 percent proposed by AEP Ohio  
9 because it overstates the return required by AEP Ohio considering  
10 its business and financial risks, current financial market  
11 conditions, and the ROEs authorized in recent years;
- 12 (2) accept my proposed ROE of 9.30 percent and a weighted average  
13 cost of capital of 7.67 percent;
- 14 (3) reject the annual ROE and cost of debt adjustment proposed by  
15 AEP Ohio because this annual adjustment mechanism is baseless  
16 and unreasonable, and it will unreasonably increase the volatility  
17 and uncertainty of rates and total bills of customers;
- 18 (4) reject the proposed incentive ROE adder of 75 basis points, or  
19 0.75 percent, to the baseline ROE for capital investments  
20 identified in the proposed Distribution Technology Investment  
21 Plan because AEP Ohio has not demonstrated the need for a

---

<sup>2</sup> See Application at 4 (November 23, 2011) and Direct Testimony of Andrea E. Moore, 15-25 (November 23, 2016).

1 higher ROE to attract capital for these investments and there is no  
2 public interest justification for a higher return to these so-called  
3 distribution technology investments<sup>3</sup>; and  
4 (5) reject the request by AEP Ohio for confirmation, in advance, of  
5 the SEET methodologies by which AEP Ohio intends to use for  
6 future SEET proceedings because such an advance confirmation  
7 by the PUCO is unnecessary and unreasonable.  
8

9 **II. AEP OHIO'S PROPOSED RETURN ON EQUITY, COST OF DEBT,**  
10 **CAPITAL STRUCTURE, AND WEIGHTED COST OF CAPITAL**  
11

12 ***Q7. PLEASE SUMMARIZE AEP OHIO'S PROPOSED RETURN ON EQUITY,***  
13 ***COST OF DEBT, CAPITAL STRUCTURE, AND WEIGHTED COST OF***  
14 ***CAPITAL.***

15 ***A7.*** AEP Ohio proposes a capital structure of 49.5 percent long-term debt and 50.5  
16 percent equity, a cost of debt of 6.01 percent, and a cost of equity (or return on  
17 equity, ROE), of 10.41 percent.<sup>4</sup> Based on these financial inputs, AEP Ohio  
18 proposes a weighted average cost of capital of 8.23 percent and a pre-tax WACC  
19 of 11.16 percent.<sup>5</sup>

---

<sup>3</sup> As discussed further in my testimony and by other OCC witness, OCC does not support AEP Ohio's proposal on the Distribution Technology Investment Plan and the Distribution Technology Rider.

<sup>4</sup> See Direct Testimony of Matthew D. Kyle, Exhibit MDK 3 (November 23, 2016).

<sup>5</sup> Id.

1   ***Q8. PLEASE SUMMARIZE YOUR EVALUATION OF AEP OHIO'S PROPOSED***  
2       ***RETURN ON EQUITY THAT IT WOULD BE INCLUDED IN CHARGES TO***  
3       ***CUSTOMERS.***

4   ***A8.***   The 10.41 percent ROE proposed by AEP Ohio<sup>6</sup> is overstated and unreasonable  
5       for customers to pay based on the financial and business risks of AEP Ohio and  
6       its parent company American Electric Power Company, Inc. ("AEP"), the current  
7       conditions of the financial markets and the economy, and the ROEs authorized for  
8       electric utilities in recent years in many jurisdictions. Furthermore, I have  
9       identified a number of unreasonable and unnecessary adjustments (or selections)  
10      to the data and methodology used by AEP Ohio in estimating its proposed ROE of  
11      10.41 percent. If these unreasonable and unnecessary adjustments made by AEP  
12      Ohio were corrected, the resulting estimated ROE for AEP Ohio would be lower  
13      (and would result in lower charges to consumers).

14

15   ***Q9. IS IT REASONABLE TO CONSIDER THE RETURN ON EQUITY***  
16       ***AUTHORIZED FOR ELECTRIC UTILITIES IN RECENT YEARS IN***  
17       ***SETTING THE RETURN ON EQUITY FOR AEP OHIO?***

18   ***A9.***   Yes. It is reasonable to examine the ROE authorized in recent years in Ohio and  
19       other jurisdictions to ascertain a reasonable ROE for AEP Ohio in this  
20       proceeding. The PUCO has expressed a similar view regarding AEP Ohio's

---

<sup>6</sup> See Direct Testimony of Adrien M. McKenzie, 6-7 (November 23, 2016).



*Direct Testimony of Daniel J. Duann, Ph.D.  
On Behalf of The Office of the Ohio Consumers' Counsel,  
PUCO Case No. 16-1852-EL-SSO et al.*

1 proposed ROE in its last approved ESP.<sup>7</sup> In its Opinion and Order, the PUCO  
2 states:

3 “We agree with Walmart and OCC that AEP Ohio’s requested  
4 ROE is too high, as gauged by comparison with the average  
5 reported ROE for comparable utilities since 2012 (Walmart Ex.1 at  
6 9-10).”

7  
8 Thus, the average ROE authorized in other jurisdictions in recent years can and  
9 should be considered in evaluating if the proposed ROE by AEP Ohio is  
10 reasonable for its consumers to pay.

11  
12 The basic principle in setting a reasonable ROE for a regulated utility is to choose  
13 a return on equity so that an ordinary investor can earn a return from investing in  
14 this regulated utility similar to the returns he or she can earn from other  
15 investments with similar risk. If such an ROE is authorized by the regulatory  
16 agency, the regulated utility is afforded an opportunity to attract capital at  
17 reasonable terms, to maintain its financial integrity, and to have funds available to  
18 conduct its regular business of providing utility services. In this regard, the  
19 average ROE authorized nationwide in recent years is a proxy for the opportunity  
20 cost (the return earned from an alternative investment such as another regulated  
21 utility) to an investor considering invest in AEP directly and AEP Ohio indirectly.  
22 Then the average ROE authorized in recent years is a valid and useful “yardstick”

---

<sup>7</sup> PUCO Case No. 13-2385-EL-SSO et al, Opinion and Order, 84 (February 25, 2015).

*Direct Testimony of Daniel J. Duann, Ph.D.  
On Behalf of The Office of the Ohio Consumers' Counsel,  
PUCO Case No. 16-1852-EL-SSO et al.*

1 in determining if a particular ROE is reasonable for AEP Ohio and for its  
2 consumers to pay, assuming it does not have any distinct and additional financial  
3 and business risks.

4  
5 ***Q10. DOES AEP OHIO HAVE ANY DISTINCT AND ADDITIONAL FINANCIAL***  
6 ***AND BUSINESS RISKS THAT SET IT APART FROM THE ELECTRIC***  
7 ***UTILITIES AS A GROUP?***

8 ***A10.*** No. I am not aware of any unusual and additional financial and business risks  
9 associated with AEP Ohio that differentiate it from the U.S. electric utilities as a  
10 group. I have reviewed the credit ratings, the filings made by AEP Ohio to the  
11 regulatory agencies, the presentations made by AEP to the investors, and  
12 information related to AEP Ohio and AEP in the trade publications. I did not find  
13 that the equity and debt investors of AEP Ohio or its parent company AEP are  
14 facing any unusual and additional financial and business risks to justify a higher  
15 ROE that consumers would pay than the average or typical ROE authorized for  
16 the electric utilities considered as a group.

17  
18 AEP Ohio and AEP are financially strong and stable. AEP has met most if not all  
19 the credit and financial metrics set by its management.<sup>8</sup> The actual returns on  
20 equity earned by AEP Ohio in recent years have been high and consistently higher  
21 than most of its peers in Ohio. AEP Ohio or one of its predecessor companies,

---

<sup>8</sup> April Investor Meetings Presentation (April 2017) available at  
<http://aep.com/investors/eventspresentationsandwebcasts/documents/AprilInvestorMeetings2017.pdf>

*Direct Testimony of Daniel J. Duann, Ph.D.  
On Behalf of The Office of the Ohio Consumers' Counsel,  
PUCO Case No. 16-1852-EL-SSO et al.*

1 Columbus Southern Power Company, is the only major Ohio electric utility that  
2 has been found by the PUCO to have significantly excessive earnings and ordered  
3 to provide refunds or credits to its customers three times since 2009.<sup>9</sup> A  
4 comparison of the earned return on equity between AEP Ohio and other major  
5 electric utilities in Ohio from 2012 to 2015 is shown in **Table 1**.

6 **Table 1: Earned ROE of Major Ohio Electric Distribution Utilities<sup>10</sup>**

Year	2015	2014	2013	2012
<b>AEP Ohio</b>	11.73%	12.01%	13.41%	7.72%
Duke Energy Ohio	4.56%	-9.90%	2.16%	3.38%
CEI	6.03%	3.31%	7.27%	3.56%
Ohio Edison	12.81%	11.23%	23.51%	14.11%
Toledo Edison	5.70%	5.39%	9.55%	4.30%
Dayton Power and Light	9.11%	9.87%	6.61%	6.79%

7

8 In addition, AEP Ohio has been operated in a favorable (or credit-supportive)  
9 regulatory environment where AEP Ohio was given numerous riders and stability  
10 charges unrelated to the costs of providing services. The PUCO recognized this  
11 and has found that:

12 “AEP Ohio’s requested ROE does not adequately account for the  
13 Company’s reduced exposure to risk from regulatory lag in light of  
14 the DIR and numerous other riders”.<sup>11</sup>

---

<sup>9</sup> It should be noted that the earned return on equity calculated in a SEET proceeding may not be the same as the earned return on equity reported or calculated in the financial statements filed with the regulatory agencies.

<sup>10</sup> Data calculated and compiled by OCC from FERC Form 1 filed by Ohio Electric Utilities to the PUCO. Reports available at <http://www.puco.ohio.gov/apps/directorylist/annualreports.cfm?filearea=3>.

<sup>11</sup> *In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to R.C. 4928.143, in the Form of an Electric Security Plan*, Case No. 13-2385-EL-SSO et al, Opinion and Order at 84 (February 25, 2015).

*Direct Testimony of Daniel J. Duann, Ph.D.  
On Behalf of The Office of the Ohio Consumers' Counsel,  
PUCO Case No. 16-1852-EL-SSO et al.*

1        Given its favorable regulatory environment in Ohio, it is no surprise that AEP  
2        Ohio has consistently earned the highest return on equity among the seven  
3        distribution subsidiaries of AEP in recent years. For example, As Table 2  
4        demonstrates, AEP Ohio has a higher ROE than every other regulated distribution  
5        subsidiaries in 2016. AEP Ohio even has a higher ROE than AEP's transmission  
6        subsidiary.

7        **Table 2: 2016 Earned ROEs of AEP Regulated Subsidiaries<sup>12</sup>**

<b>Distribution Subsidiaries</b>	<b>2016 Earned ROE (Non-GAAP Operating Earnings)</b>
AEP Ohio	13.9%
Appalachian Power	10.3%
Kentucky Power	7.5%
Indiana Michigan Power	11.7%
Public Service Company of Oklahoma	8.5%
Southwestern Electric Power	7.4%
AEP Texas	11.7%
<b>Average of Distribution Subsidiaries</b>	<b>10.1%</b>
AEP Transmission	12.1%
<b>Average of Regulated Subsidiaries</b>	<b>10.7%</b>

8  
9        In summary, AEP Ohio does not appear to exhibit any financial, operational, and  
10       regulatory risks that would make it more risky than the United States electric  
11       utilities as a group. By certain measurements, AEP Ohio may be less risky and  
12       should have a lower authorized ROE in comparison to the U.S. electric utilities as  
13       a group.

---

<sup>12</sup> April Investor Meetings Presentation at 7 (April 2017), available at  
<http://aep.com/investors/eventspresentationsandwebcasts/documents/AprilInvestorMeetings2017.pdf>

1   ***Q11. WHAT IS THE AVERAGE RETURN ON EQUITY AUTHORIZED FOR***  
2       ***ELECTRIC UTILITIES FOR THE FULL YEAR OF 2016 OR FOR THE***  
3       ***FOURTH QUARTER OF 2016?***

4   ***A11.*** The yearly and quarterly average ROEs authorized for the electric utilities are  
5       compiled by the Regulatory Research Associates. The full report of the January  
6       18, 2017 *Regulatory Focus* published by the Regulatory Research Associates is  
7       included in my testimony as Attachment DJD-2. As reported in the *Regulatory*  
8       *Focus*, for all the 42 cases (including both vertically integrated electric utilities  
9       and delivery-only electric utilities) decided in 2016, the average ROE authorized  
10      is 9.77 percent.<sup>13</sup> For the 18 cases decided in the fourth quarter of 2016, the  
11      average ROE authorized is 9.57 percent.<sup>14</sup> The 2016 full year average ROE  
12      authorized would be 9.60 percent if several limited issue rider cases, most notably  
13      the Virginia cases related to certain generation projects, were excluded.<sup>15</sup> The  
14      average ROE for the 12 delivery-only electric utilities, similar to AEP Ohio, is  
15      9.31 percent for the whole year of 2016.<sup>16</sup>

---

<sup>13</sup> See Attachment DJD-2, 1.

<sup>14</sup> See Attachment DJD-2, 4.

<sup>15</sup> See Attachment DJD-2, 1.

<sup>16</sup> See Attachment DJD-2, 6.

1   ***Q12. IS AEP OHIO'S PROPOSED ROE OF 10.41 PERCENT REASONABLE***  
2                   ***CONSIDERING THE AVERAGE ROE AUTHORIZED FOR ELECTRIC***  
3                   ***UTILITIES IN 2016?***

4   ***A12.*** No. I cannot conclude that the ROE of 10.41 percent proposed by AEP Ohio is  
5           reasonable because it is much higher than the national average of ROE authorized  
6           in 2016 (either 9.60 percent or 9.77 percent) or the average ROE authorized in the  
7           fourth quarter of 2016 (9.57 percent). If the comparison is further limited to  
8           delivery-only electric utilities, the difference between the ROE proposed by AEP  
9           Ohio and the 2016 national average of 9.31 percent is even more pronounced. It  
10          would be unfair to make customers pay AEP Ohio for an ROE that is too high, as  
11          is what AEP Ohio proposed.

12  
13          An examination of the spread of the ROE authorized in individual cases decided  
14          in 2016 can further confirm that the proposed ROE of 10.41 percent is overstated  
15          and unreasonable assuming that AEP Ohio or AEP does not have any additional  
16          financial or business risk in comparison to the electric utilities as a group.  
17          Specifically, there were only two cases (in North Dakota and Florida) out of 35  
18          cases nationwide that the regulated utilities were given an ROE higher than 10.41  
19          percent if those seven Virginia cases were excluded.<sup>17</sup> If the seven Virginia cases  
20          were included, there were only seven cases out of 42 cases that the regulated  
21          utilities were given an ROE higher than 10.41 percent.

---

<sup>17</sup> See Attachment DJD-2, 8-9.

*Direct Testimony of Daniel J. Duann, Ph.D.  
On Behalf of The Office of the Ohio Consumers' Counsel,  
PUCO Case No. 16-1852-EL-SSO et al.*

If the comparison is limited to those cases decided in the fourth quarter of 2016, there was only one out of 18 cases that the regulated utility was given an ROE higher than 10.41 percent.<sup>18</sup> If the comparison is limited to the 12 cases of distribution-only electric utilities, the highest ROE authorized in 2016 is 9.90 percent, well below the proposed ROE of 10.41 percent. A summary of the ROE authorized in the 12 distribution-only cases is shown in **Table 3**. The individual cases in the table are arranged according to the dates the cases were decided.

**Table 3 Distribution-Only Electric Utility Decisions in 2016<sup>19</sup>**

Date	Company	State	ROE authorized (%)
4/29/2016	Fitchburg Gas and Electric	MA	9.80
6/3/2016	Baltimore Gas and Electric	MD	9.75
6/15/2016	New York State Electric and Gas	NY	9.00
6/15/2016	Rochester Gas and Electric	NY	9.00
8/24/2016	Atlantic City Electric	NJ	9.75
9/30/2016	Massachusetts Electric	MA	9.90
11/15/16	Potomac Electric Power	MD	9.55
12/6/2016	Commonwealth Edison	IL	8.64
12/6/2016	Ameren Illinois	IL	8.64
12/12/2016	Jersey Central Power & Light	NJ	9.60
12/14/2016	United Illuminating Company	CT	9.10
12/19/2016	Emera Maine	ME	9.00
<b>Average</b>			<b>9.31</b>

***Q13. PLEASE IDENTIFY THE UNNECESSARY AND UNREASONABLE ADJUSTMENTS INCLUDED IN THE DATA AND METHODOLOGY USED BY AEP OHIO IN ESTIMATING ITS PROPOSED RETURN ON EQUITY.***

***A13.*** In addition to examining the ROE authorized for electric utilities in recent years, it is also useful in the evaluation process to review the data and methodology used

<sup>18</sup> See Attachment DJD-2, 9.

<sup>19</sup> Attachment DJD-2, 8-9.

*Direct Testimony of Daniel J. Duann, Ph.D.  
On Behalf of The Office of the Ohio Consumers' Counsel,  
PUCO Case No. 16-1852-EL-SSO et al.*

1 by AEP Ohio in estimating its proposed ROE of 10.41 percent. The data and  
2 methodology supporting AEP Ohio's proposed ROE are described in the  
3 testimony and workpapers of its witness, Adrien M. McKenzie. A summary of  
4 the estimated results using various methodologies are shown in Exhibit AMM-2  
5 of his testimony.

6  
7 Mr. McKenzie's testimony and workpapers indicate that he made several  
8 adjustments (or selections) in methodology and data that tend to overstate the  
9 estimated cost of equity, or ROE. Some of these adjustments in the methodology  
10 and data have been used by other financial analysts in estimating the ROE of a  
11 regulated utility. Some other financial analysts have chosen not to make these  
12 adjustments at all. Listed below are four adjustments included in AEP Ohio's  
13 ROE analysis that should be corrected in order to provide a reasonable ROE for  
14 AEP Ohio. The four adjustments that should be corrected are as follows:

- 15 (1) the exclusion of certain low cost of equity estimates in the  
16 Discounted Cash Flow ("DCF") analysis;<sup>20</sup>  
17 (2) the use of a higher-than-reasonable market risk premium of 8.2  
18 percent in the Capital Asset Pricing Model ("CAPM") analysis  
19 when the current bond yield is used as a proxy for risk-free  
20 return;<sup>21</sup>

---

<sup>20</sup> See Direct Testimony of Adrien M. McKenzie, 34-35 and Exhibit AMM-4, Page 3 of 3 (November 23, 2016).

<sup>21</sup> See Direct Testimony of McKenzie, Exhibit AMM-6, Page 1 of 2.



- 1           (3)     the inclusion of a size adjustment factor, which imply that a small  
2                     regulated utility is always riskier than a larger regulated utility, in  
3                     the CAPM analysis;<sup>22</sup> and  
4           (4)     the addition of a flotation cost adjustment in deriving the proposed  
5                     return on equity.<sup>23</sup>

6  
7     ***Q14. PLEASE EXPLAIN WHY THE EXCLUSION OF CERTAIN LOW COST OF***  
8     ***EQUITY (OR RETURN ON EQUITY) ESTIMATES MADE BY AEP OHIO***  
9     ***IN ITS DCF ANALYSIS IS UNREASONABLE.***

10    ***A14.*** In AEP Ohio's DCF analysis, seven low estimates of the cost of equity (ranged  
11           from 4.0 percent to 6.9 percent) out of a total 63 estimates were excluded because  
12           they were considered by AEP Ohio's witness as illogical estimates.<sup>24</sup> This  
13           exclusion is arbitrary and unreasonable. These low estimates of the cost of equity  
14           of certain electric utilities are the results of low earnings growth projections made  
15           by financial analysts. These low estimates of the cost of equity reflect reality of  
16           the marketplace. An estimated cost of equity lower than the "implied utility bond  
17           yield" simply means some financial analysts have concluded that it was better to  
18           invest in the debt (bonds) rather in the equity (common stock) of these few  
19           utilities. There is no evidence to suggest that the process of generating and the  
20           results of these low estimates of the cost of equity are illogical. Also, the cutoff

---

<sup>22</sup> See Direct Testimony of McKenzie, Exhibit AMM-6, Page 1 of 2.

<sup>23</sup> See Direct Testimony of McKenzie, Exhibit AMM-2, Page 1 of 1.

<sup>24</sup> See Direct Testimony of McKenzie, 34 and Exhibit AMM-4, Page 3 of 3.

*Direct Testimony of Daniel J. Duann, Ph.D.  
On Behalf of The Office of the Ohio Consumers' Counsel,  
PUCO Case No. 16-1852-EL-SSO et al.*

point of excluding these low estimates of cost of equity, approximately 7.25 percent as determined by the Implied Baa Utility Yield, is rather high and might inflate the estimated results.<sup>25</sup> Furthermore, there are some high estimates of cost of equity, ranging from 12.5 percent to 13.9 percent, which are not excluded in the DCF analysis. One can argue that these estimates are considered too high and thus too optimistic to be included in the DCF analysis.

***Q15. HOW SHOULD THIS ADJUSTMENT MADE BY AEP OHIO BE CORRECTED AND WHAT IS THE RESULT OF YOUR CORRECTION?***

***A15.*** My proposed correction regarding this unreasonable adjustment by AEP Ohio is to include all the estimated cost of equity from Value Line, IBES, Zacks, and br+sv Growth as calculated and reported in Mr. McKenzie's testimony, Exhibit AMM-4, Page 3 of 3. The corrected results for including all estimates for the DCF analysis are shown in Attachment DJD-3. A comparison of my corrected DCF results and the original results<sup>26</sup> are shown in **Table 4**.

**Table 4: Comparison of Corrected and Original DCF Results**

<b>Growth Rate</b>	<b>Corrected Average By OCC</b>	<b>Original Average By AEP Ohio</b>
Value Line	9.5%	10.3%
IBES	9.1%	9.4%
Zacks	9.1%	9.1%
br+sv	8.6%	9.1%
<b>Average</b>	9.1%	N.A.

<sup>25</sup> Direct Testimony of McKenzie, 37.

<sup>26</sup> Direct Testimony of McKenzie, 38.

1   ***Q16. PLEASE EXPLAIN WHY THE USE OF A MARKET RISK PREMIUM OF***  
2       ***8.20 PERCENT IN AEP OHIO'S CAPM ANALYSIS IS UNREASONABLE.***

3   ***A16.*** In its CAPM analysis, AEP Ohio selects a market risk premium of 8.2 percent  
4       when the current US long-term government bond yield of 2.90 percent is used as  
5       the risk-free rate (return).<sup>27</sup> My review indicated that this market risk premium  
6       selected by AEP Ohio is the difference between the expected market return (cost  
7       of equity) of 11.10 percent and the risk-free rate of 2.90 percent (as measured by  
8       the average yield on 30-year Treasury bonds for the six months ending February  
9       2016).

10  
11       I support the use of the 2.90 percent risk-free rate (return). But this market risk  
12       premium of 8.20 percent used by AEP Ohio in its CAPM analysis is overstated  
13       and unreasonable. First, this market risk premium of 8.20 percent is higher than  
14       most estimates of the market risk premium between five to seven percent used by  
15       many financial analysts and typically measured by the difference between the  
16       long-term equity market return and yield on U.S. government bonds. For  
17       example, from 1926 to 2015, the annualized total return for Large-Cap Stocks is  
18       12.0 percent (calculated as Arithmetic Mean) and the annualized total return for  
19       Long-Term Government Bonds 6.0 percent, the market risk premium is 6.0  
20       percent.<sup>28</sup> Second, the method used by AEP Ohio in calculating the market risk  
21       premium is confusing and unsupported. Specifically, when the projected bond

---

<sup>27</sup> Direct Testimony of McKenzie, Exhibit AMM-6, Page 1 of 2.

<sup>28</sup> 2016 SBBI Yearbook (John Wiley & Sons, Inc., Hoboken, New Jersey, 2016). Exhibit 6.9.

*Direct Testimony of Daniel J. Duann, Ph.D.  
On Behalf of The Office of the Ohio Consumers' Counsel,  
PUCO Case No. 16-1852-EL-SSO et al.*

1 yield of 4.1 percent is used as a proxy for risk-free rate (return), then the market  
2 risk premium is reduced to 7.0 percent, as calculated by the difference between  
3 expected market return (cost of equity) of 11.1 percent and the risk-free rate of 7.1  
4 percent.<sup>29</sup> There is no valid explanation why the market risk premium will be  
5 different in the same period of time when different risk-free rates are selected.  
6 The value of the market risk premium is supposed to represent the difference in  
7 the annualized returns of two different classes of investments (or assets) over an  
8 extended period of time and it should not fluctuate within a short period of time.  
9 This shifting in the values of the market risk premium as proposed by AEP Ohio  
10 in its CAPM analysis is unexplained and unreasonable.

11  
12 ***Q17. HOW SHOULD THIS ADJUSTMENT MADE BY AEP OHIO BE***  
13 ***CORRECTED AND WHAT IS THE RESULT OF YOUR CORRECTION?***

14 ***A17.*** In order to correct this unreasonably high market risk premium of 8.2 percent, I  
15 propose to use seven percent as the market risk premium. The results of this  
16 correction are shown in Attachment DJD-4. The corrected estimated ROE (using  
17 a market risk premium of seven percent) will be 9.06 percent instead of 10  
18 percent calculated by AEP Ohio (using a market risk premium of eight percent,  
19 and shown in McKenzie Exhibit AMM-6, Page 1 of 2).

20  
21 I do not support the use of projected bond yield as a proxy of the risk-free rate,  
22 and I will not make any corrected ROE calculation using the projected bond yield.

---

<sup>29</sup> Direct Testimony of McKenzie, Exhibit AMM-6, Page 2 of 2.

*Direct Testimony of Daniel J. Duann, Ph.D.  
On Behalf of The Office of the Ohio Consumers' Counsel,  
PUCO Case No. 16-1852-EL-SSO et al.*

1       The projected bond yield is subjective and has turned out to be unreliable  
2       repeatedly over the last few years. The proponents for using a projected bond  
3       yield probably fail to understand that the current bond yield has incorporated all  
4       the current and updated expectation of the market participants regarding the future  
5       direction of the interest rate and other financial and economic conditions. There  
6       is no need to incorporate another layer of future projections (which may be  
7       unreliable) by using the projected bond yield as the proxy of risk-free rate in the  
8       CAPM analysis.

9

10    ***Q18. PLEASE EXPLAIN WHY THE INCLUSION OF A SIZE ADJUSTMENT BY***  
11    ***AEP OHIO IN THE CAPM ANALYSIS IS UNREASONABLE.***

12    ***A18.*** In its CAPM analysis, AEP Ohio includes a Size Adjustment based on the results  
13       developed by Duff & Phelps.<sup>30</sup> For the electric utilities selected by AEP Ohio in  
14       its CAPM analysis, the different Size Adjustments range from a 163 basis point  
15       addition, or 1.63 percent, for the smallest (in terms of market capitalization)  
16       electric utility to a 36 basis points reduction, or -0.36 percent, for the largest  
17       electric utility. These so-called Size Adjustments are very substantial adjustments  
18       to the estimated cost of equity, or ROE. Overall, adding the Size Adjustment  
19       factor alone has increased the estimated average cost of equity (ROE) from 9.2  
20       percent to 10.0 percent,<sup>31</sup> a very significant increase in the estimated ROE. This

---

<sup>30</sup> Direct Testimony of McKenzie, Exhibit AMM-6, Page 1 of 2, footnote (f).

<sup>31</sup> Direct Testimony of McKenzie, Exhibit AMM-6, Page 1 of 2.

*Direct Testimony of Daniel J. Duann, Ph.D.*  
*On Behalf of The Office of the Ohio Consumers' Counsel,*  
*PUCO Case No. 16-1852-EL-SSO et al.*

1       so-called Size Adjustment in the CAPM analysis is unnecessary and  
2       unreasonable.

3  
4       The rationale for the Size Adjustment in the CAPM analysis is that the smaller  
5       electric utilities are viewed by the investors as riskier than the larger electric  
6       utilities and consequently a smaller electric utility will require a higher ROE (or  
7       cost of equity) to compensate the investor for the higher risk. It has been  
8       observed that over a longer period of time, the annualized return of smaller  
9       companies as a group (including mostly unregulated, non-utility corporations)  
10      tends to be higher than the annualized return of those larger and well-established  
11      companies (once again, mostly unregulated, non-utility entity) as a group. This  
12      difference in the annualized returns between small and large companies observed  
13      over a longer period of time may be correlated with the higher risk typically  
14      associated with smaller companies (once again, mostly unregulated non-utility  
15      companies) in comparison to the risk associated with larger corporation.

16      However, in my experience, there is no financial theory or empirical evidence to  
17      suggest that a smaller regulated utility is riskier than a larger regulated utility.

18      The risk profile associated with a regulated utility is quite different from the risk  
19      profile of a typical unregulated company that competes freely in the marketplace.

20      Some financial analysts do not use this so-called Size Adjustments at all. So the  
21      inclusion of a Size Adjustment in estimating the proposed ROE of AEP Ohio as a  
22      regulated electric utility is a not a proper application of a valid financial theory.

1   ***Q19. HOW SHOULD THIS ADJUSTMENT MADE BY AEP OHIO BE***  
2       ***CORRECTED AND WHAT IS THE RESULT OF YOUR CORRECTION?***

3   ***A19.*** The correction to this unreasonable inclusion of Size Adjustment is to eliminate  
4       the Size Adjustment completely, either as an addition or as a reduction to the  
5       estimated cost of equity. The results of this correction are shown in Attachment  
6       DJD-5. The corrected ROE under the CAPM analysis is 8.26 percent after the  
7       elimination of the Size Adjustment and the use of a market risk premium of seven  
8       percent. This corrected ROE of 8.26 percent represents a reduction of 80 basis  
9       points, or 0.80 percent, from the previous result of 9.06 percent with Size  
10      Adjustment.

11  
12   ***Q20. PLEASE EXPLAIN WHY ADDING A FLOTATION COST ADJUSTMENT***  
13       ***IN DERIVING THE PROPOSED ROE IS UNREASONABLE.***

14   ***A20.*** In deriving AEP Ohio's proposed ROE of 10.41 percent, AEP Ohio witness Mr.  
15       McKenzie includes a Flotation Cost Adjustment of 11 basis points, or 0.11  
16       percent.<sup>32</sup> This Flotation Cost Adjustment of 0.11 percent is calculated by  
17       multiplying AEP Ohio's issuance costs expense percentage (3.02 percent) to a  
18       representative dividend yield (3.5 percent).<sup>33</sup> This Flotation Cost Adjustment as  
19       proposed by AEP Ohio is unnecessary and unreasonable.

20  

---

<sup>32</sup> Direct Testimony of McKenzie, Exhibit AMM-2, Page 1 of 1.

<sup>33</sup> Direct Testimony of McKenzie, 53-54.

*Direct Testimony of Daniel J. Duann, Ph.D.*  
*On Behalf of The Office of the Ohio Consumers' Counsel,*  
*PUCO Case No. 16-1852-EL-SSO et al.*

1 I do not agree with the assertion by AEP Ohio that an upward adjustment to the  
2 cost of equity, or ROE, is the most appropriate mechanism to account for and  
3 collect from customers the flotation costs associated with equity issues.<sup>34</sup> Adding  
4 a Flotation Cost Adjustment to the estimated ROE represents a misunderstanding  
5 of the purpose and function of setting a reasonable ROE for a regulated utility.  
6 The purpose of an ROE is not to collect from customers previously incurred costs  
7 associated with issuing equity. The purpose of an ROE is to provide investor a  
8 currently-determined return on invested capital that is comparable to the returns  
9 that can be earned by the investors from alternative investments with comparable  
10 risks. Any flotation costs, if any, and the “market pressure” from supposed  
11 additional supply of common stock<sup>35</sup> should be already fully reflected in the  
12 market prices of common stock, per share earnings and dividend projections, and  
13 any other market factors of those electric utilities selected in estimating the cost of  
14 equity of AEP Ohio. Therefore, there is no need to make an additional Flotation  
15 Cost Adjustment of 11 basis points as proposed by AEP Ohio.<sup>36</sup>

---

<sup>34</sup> Direct Testimony of McKenzie, 52.

<sup>35</sup> Direct Testimony of McKenzie, 51.

<sup>36</sup> Direct Testimony of McKenzie, Exhibit AMM-2, Page 1 of 1.



**Q21. HOW SHOULD THIS FLOTATION COST ADJUSTMENT MADE BY AEP OHIO BE CORRECTED?**

**A21.** My correction regarding this unreasonable adjustment is simple and straightforward. There is no upward adjustment of the estimated ROE for the so-called flotation costs.

**Q22. WHAT IS YOUR RECOMMENDATION ON A REASONABLE RETURN ON EQUITY AND WEIGHTED AVERAGE COST OF CAPITAL FOR AEP OHIO IN THIS PROCEEDING?**

**A22.** A summary of the corrected ROE under the two most commonly used methods, the DCF and CAPM, and the average ROE authorized in 2016 is shown in **Table 5**.

**Table 5: Summary of ROE Results**

Description	ROE Percentage
DCF Average	9.10
DCF Average with Flotation Cost	9.21
CAPM	8.26
CAPM with Flotation Cost	8.37
Electric Utilities Average ROE Authorized in 2016	9.77
Delivery-only Electric Utility Average ROE Authorized in 2016	9.31
<b>Recommended ROE</b>	<b>9.30</b>

Based on my review of the corrected estimation of the cost of equity of AEP Ohio and the average of ROE recently authorized nationwide, I recommend the PUCO set 9.30 percent as a reasonable return on equity for AEP Ohio in this proceeding. This ROE of 9.30 percent would not be unfair for consumers to pay for AEP

1 Ohio's profit. Using this recommended ROE of 9.30 percent, and the cost of debt  
2 (6.01 percent) and capital structure (49.5 percent long-term debt and 50.5 percent  
3 equity) proposed by AEP Ohio, I recommend the weighted average cost of capital  
4 be set at 7.67 percent.

5

6 **III. ANNUAL ADJUSTMENT TO AEP OHIO'S RETURN ON EQUITY, COST**  
7 **OF DEBT, AND WEIGHTED AVERAGE COST OF CAPITAL**

8

9 ***Q23. WHAT IS AEP OHIO'S PROPOSAL REGARDING THE ANNUAL***  
10 ***ADJUSTMENT TO ITS WEIGHTED AVERAGE COST OF CAPITAL?***

11 ***A23.*** The proposal regarding the annual adjustment of its weighted average cost of  
12 capital is described by AEP Ohio's witness, Matthew D. Kyle.<sup>37</sup> Under this  
13 proposal, the weighted cost of capital will be adjusted annually using an adjusted  
14 ROE and an adjusted cost of debt. The cost of debt will be adjusted annually to  
15 reflect the actual per-books interest cost.<sup>38</sup> The ROE will be adjusted annually  
16 based on the annual change (from December to December) in the Moody's Baa  
17 Utility Bond Index ("Moody's Index").

18

19 AEP Ohio proposes to use the average Moody's Index for December 2015, which  
20 is 5.03 percent according to AEP Ohio, as the basis for calculating the annual

---

<sup>37</sup> Direct Testimony of Matthew D. Kyle, 6-8 (November 23, 2016).

<sup>38</sup> Direct Testimony of Kyle, 8.

adjustment to the ROE.<sup>39</sup> The change of the year-end Moody's Index from 5.03 percent in any given year in the ESP period will result in a similar change to the baseline ROE of 10.41% for the coming year. AEP Ohio proposes that the annually-adjusted ROE will have a floor of 10.2 percent and a cap of 12.5 percent.<sup>40</sup> Because AEP Ohio also proposes to have an incentive ROE adder of 75 basis points, or 0.75 percent, for those capital investments associated with Distribution Technology Rider, both the floor and the cap on the adjusted ROE applicable to the Distribution Technology Rider will be increased by 0.75 percent.<sup>41</sup>

***Q24. HOW WILL THE ANNUALLY ADJUSTED RETURN ON EQUITY AND COST OF DEBT AFFECT THE RATES AND TOTAL BILLS PAID BY CUSTOMERS?***

***A24.*** According to AEP Ohio, there are six existing or new riders that will have an annual investment carrying charge component associated with them.<sup>42</sup> The six riders are: Enhanced Service Reliability Rider, gridSMART Phase II, the Submetering Rider, the Distribution Investment Rider, the Distribution Technology Rider, and the Renewable Rider. Except for the Distribution Investment Rider, I am not offering an opinion on whether these existing or new

---

<sup>39</sup> Direct Testimony of Kyle, 7.

<sup>40</sup> Id.

<sup>41</sup> Direct Testimony of Kyle, 8.

<sup>42</sup> Direct Testimony of Kyle, 8.

*Direct Testimony of Daniel J. Duann, Ph.D.  
On Behalf of The Office of the Ohio Consumers' Counsel,  
PUCO Case No. 16-1852-EL-SSO et al.*

1 riders should be approved. Other Consumers' Counsel witness will address  
2 whether these six existing or proposed riders should be approved or not.

3  
4 As proposed by AEP Ohio, the annual investment carrying charges include four  
5 components: the weighted average cost of capital (or "Return"), Depreciation, FIT  
6 (federal income tax), and Property Taxes and General & Administrative  
7 Expenses.<sup>43</sup> AEP Ohio has estimated the annual investment carrying charges  
8 associated with capital investments with different years of investment life. Based  
9 on an initial WACC of 8.23 percent, (which is in turn based on an ROE of 10.41  
10 percent and a cost of debt of 6.01 percent, and a capital structure of 49.54 percent  
11 debt and 50.46 percent equity),<sup>44</sup> the annual investment carrying charges can  
12 range from 63.69 percent for an investment with a two-year life to 15.56 percent  
13 for an investment with a 30-year life.<sup>45</sup> These annual investment carrying charges  
14 are collected annually through their respective riders. The annual revenue  
15 requirement of a specific rider will typically include the annual investment  
16 carrying charges, operating expenses, and other costs if any.

17  
18 Consequently, a higher annual investment carrying charge will lead to a higher  
19 annual revenue requirement and higher rates to customers for a particular rider.

20 The amounts of the six riders to be collected from AEP Ohio's customers (if the

---

<sup>43</sup> Direct Testimony of Kyle, Exhibit MDK-5, Page 1 of 1.

<sup>44</sup> Direct Testimony of Kyle, 5.

<sup>45</sup> Direct Testimony of Kyle, Exhibit MDK-5, Page 1 of 1.

*Direct Testimony of Daniel J. Duann, Ph.D.  
On Behalf of The Office of the Ohio Consumers' Counsel,  
PUCO Case No. 16-1852-EL-SSO et al.*

1 riders were approved by the PUCO) will be affected directly by the adjustment of  
2 the annual investment carrying charges, which in turn are directly affected by the  
3 proposed annual adjustments of ROE and cost of debt. An upward adjustment of  
4 the ROE or the cost of debt will invariably lead to higher rates for these six  
5 existing and proposed riders assuming other components of the annual revenue  
6 requirement do not change. Similarly, a downward adjustment of the ROE and  
7 the cost of debt will lead to lower rates to customers for these six existing and  
8 proposed riders.

9

10 ***Q25. DO YOU SUPPORT THE PROPOSED ANNUAL ADJUSTMENT***

11 ***MECHANISM FOR RETURN ON EQUITY AND COST OF DEBT?***

12 ***A25.*** No. I do not support the proposed annual adjustment mechanism. First, I am not  
13 aware of the PUCO allowing the annual adjustment of ROE and cost of debt for a  
14 particular rider. Second, I am not aware of any financial theory or empirical  
15 evidence that can demonstrate the lock-step increase or decrease between the  
16 Moody's Index (a proxy of the average cost of the utility bonds) and the  
17 authorized ROE of a regulated utility.<sup>46</sup> Third, AEP Ohio's proposed adjustment  
18 mechanism for ROE and cost of debt is one-sided (favoring AEP Ohio and  
19 disfavoring consumers), down-ward resistant (the range of downward adjustment  
20 is much smaller than the range of upward adjustment), and will likely  
21 significantly increase the financial burden on AEP Ohio's customers as evidenced

---

<sup>46</sup> For example, according to AEP Ohio's proposal, a 50 basis points increase in the Moody's Index will lead to a 50 basis points increase in the ROE.

*Direct Testimony of Daniel J. Duann, Ph.D.  
On Behalf of The Office of the Ohio Consumers' Counsel,  
PUCO Case No. 16-1852-EL-SSO et al.*

1 by a potentially very high ROE of 13.25 percent<sup>47</sup> (from 11.16 percent<sup>48</sup> if there is  
2 no annual ROE adjustment) applicable to the Distribution Technology Rider.

3 Fourth, as a result of the fluctuating ROEs and costs of debt associated with the  
4 proposed annual adjustment mechanism during the ESP period and the large  
5 number of riders affected, there will likely be increased volatility and uncertainty  
6 in the electricity rates and total bills experienced by the AEP Ohio's customers.

7 Last, this proposed adjustment mechanism is unfair and harmful to consumers and  
8 only serves to unnecessarily further enrich AEP's shareholders. After all, AEP  
9 Ohio did not have any annual adjustment mechanism for the ROE and cost of debt  
10 used for a rider in place in its three ESPs (including the ESP currently in place)  
11 and its last two rate case proceedings when there was a persistent and significant  
12 decline in the cost of utility bonds.

13  
14 In summary, AEP Ohio has not demonstrated why the proposed annual  
15 adjustment of ROE and cost of debt for a rider is in the public interest or there is a  
16 financial need for AEP Ohio to be provided this annual adjustment mechanism. I  
17 support what the PUCO has done in the past regarding the setting of an ROE or  
18 cost of debt used for a rider in an ESP proceeding. Once an ROE or cost of debt  
19 is set, it should be used throughout the term of the ESP.

---

<sup>47</sup> 13.25% = 12.5% + 0.75%.

<sup>48</sup> 11.16% = 10.41% + 0.75%.

1    ***Q26. HAS THE PUCO APPROVED AN ANNUAL ADJUSTMENT MECHANISM***  
2           ***OF ROE AND COST OF DEBT FOR A RIDER OR IN A PAST RATE CASE?***

3    ***A26.*** No. I am not aware of any such regulatory treatment by the PUCO in the past. It  
4           is a well-established regulatory principle that the ROE and the cost of debt (or  
5           more broadly the rate of return) decided in a rate case or other types of regulatory  
6           proceedings should not change until the next rate case or a relevant proceeding.

7  
8    ***Q27. BASED ON YOUR UNDERSTANDING OF THE THEORY AND PRACTICE***  
9           ***OF SETTING THE RETURN ON EQUITY FOR A REGULATED UTILITY,***  
10           ***IS THERE A LOCK-STEP LINKAGE BETWEEN THE AUTHORIZED***  
11           ***RETURN ON EQUITY AND THE COST OF UTILITY DEBT?***

12   ***A27.*** No. I am not aware any such a lock-step linkage, between the cost of utility debt  
13           (as measured by the Moody's Index) and the authorized return on equity for a  
14           regulated utility. I am not aware of any financial or economics studies that have  
15           demonstrated or confirmed that, for example, a 50 basis points increase in the cost  
16           index of utility debt would lead to a 50 basis points increase in the authorized  
17           return on equity.

18  
19           Obviously, both the cost of utility debt and the authorized return on equity for  
20           regulated utilities are affected by current interest rate and interest rate expectation  
21           and other factors of the financial markets and the economy. But AEP Ohio's  
22           proposal suggesting that the cost (or a cost index) of utility debt and the  
23           authorized ROE will move in lock-step is unsupported and erroneous.

1   ***Q28. IS THERE ANY EMPIRICAL EVIDENCE TO SUPPORT THE LOCK-STEP***  
2       ***LINKAGE BETWEEN THE COST OF UTILITY DEBT AND THE***  
3       ***AUTHORIZED RETURN ON EQUITY OF A REGULATED UTILITY?***

4   ***A28.*** No. I am not aware of any such empirical evidence. My review of the cost index  
5       of utility bonds or index of corporate bonds and the authorized returns on equity  
6       of utilities in recent years does not support such a lock-step linkage. The changes  
7       in the authorized return on equity for regulated utilities are much more gradual  
8       than the change in the cost index of utility bonds or the cost index of corporate  
9       bonds. For example, the average monthly Moody's Baa Corporate Bond Index (it  
10      can be viewed as a proxy to the Moody's Utility Bond Index) has decreased from  
11      8.19 percent to 4.83 percent from December 1999 to December 2016. The  
12      monthly Moody's Baa Corporate Bond Index as compiled and published by the  
13      Economic Research Division of the Federal Reserve Bank of St. Louis for this  
14      period (1999 to 2016) is shown in Attachment DJD-6. During the same period,  
15      the yearly average authorized ROE for electric utilities nationwide, as compiled  
16      by the Regulatory Research Associates, only decreased from 10.77 percent to 9.77  
17      percent.<sup>49</sup>

---

<sup>49</sup> See Attachment DJD-2, 4.



***Q29. WILL THE PROPOSED FLOOR AND CAP TO THE ANNUAL  
ADJUSTMENT OF ROE PROTECT CUSTOMERS FROM SIGNIFICANT  
INCREASES AND VOLATILITY IN THE RATES OF THE SIX RIDERS  
IDENTIFIED BY AEP OHIO?***

***A29.*** No. The proposed floor of 10.2 percent and a cap of 12.5 percent will not protect the customers from significant increase and volatility in the rates of the six riders identified by AEP Ohio. This proposed floor and cap is one-sided and is designed mainly to increase the ROE and thus the revenues and profits of AEP Ohio. Using the baseline ROE proposed by AEP Ohio of 10.41 percent (which I do not support) and the proposed cap and floor, the maximum amount for any potential reduction in ROE is only 21 basis points, or 0.21 percent, while the maximum amount of potential increase in ROE is 209 basis points, or 2.09 percent. There is only a very small amount of reduction in ROE can be expected under the proposed annual adjustment mechanism even if the average cost of utility bonds decrease substantially and persistently in the future. Even more troubling than the very small chance of seeing a reduction in ROE is that the 10.2 percent floor proposed by AEP Ohio is much higher than the ROE of 9.30 percent proposed by the Consumers' Counsel. This proposed floor of ROE, if adopted by the PUCO, can actually restrict or nullify the PUCO's decision in adopting a lower baseline ROE.

1   ***Q30. WILL THE PROPOSED ANNUAL ADJUSTMENT MECHANISM OF***  
2       ***RETURN ON EQUITY AND COST OF DEBT BY AEP OHIO CONTRIBUTE***  
3       ***TO STABLE ELECTRICITY RATES?***

4   ***A30.*** No. The proposed adjustment mechanism of ROE and cost of debt will not  
5       contribute to the “objective” of maintaining stable electricity rates claimed by  
6       AEP Ohio in filing the Proposed ESP.<sup>50</sup> As discussed earlier, a total of six riders,  
7       if approved by the PUCO, will be affected by the proposed adjustment of annual  
8       ROE and cost of debt and these six riders collectively comprised a very  
9       significant part of the total monthly bill paid by AEP Ohio’s customers.  
10      Consequently, any fluctuation (more likely an increase) of the ROE and cost of  
11      debt as a result of the proposed annual adjustment and the resulting annual  
12      investment carrying charge will also significantly affect the rates and total bill of  
13      AEP Ohio’s customers.

14  
15      In addition, it is my experience that the interest rates and the cost index of utility  
16      bonds are notoriously difficult to predict even by the best economists and  
17      financial analysts. The cost (or cost index) of utility debt can be volatile and  
18      unpredictable. This volatility in electricity rates and costs may create budgeting  
19      and planning problems for AEP Ohio’s 1.28 million residential and many  
20      business and industrial customers. It is unfair and unreasonable to ask customers  
21      to assume this one-sided and totally unnecessary risk of rate and cost volatility.

22  

---

<sup>50</sup> See Application, 4 (November 23, 2016).

1   ***Q31. HAS AEP OHIO BEEN ALLOWED TO HAVE AN ANNUAL ADJUSTMENT***  
2       ***MECHANISM FOR RETURN ON EQUITY AND COST OF DEBT IN THE***  
3       ***PAST?***

4   ***A31.*** Based on my review of the last three ESP filings (starting in 2008) and the last  
5       two rate case (starting in 1999), I am not aware that AEP Ohio, Ohio Power  
6       Company, or Columbus Southern Power Company has been granted an annual  
7       adjustment mechanism for ROE and cost of debt for a rider in these proceedings.  
8       This is not a total surprise. Clearly, AEP Ohio might not want to put into place an  
9       annual adjustment mechanism that might lower its authorized ROE automatically  
10      when there was significant and persistent decline of the Moody's Index (that is  
11      the average cost of utility bonds) over this period of time. Now, with a perceived  
12      possible increase in interest rates, AEP Ohio is proposing an annual adjustment  
13      mechanism to increase the ROE automatically. AEP Ohio's proposal is patently  
14      unfair to consumers and unreasonable.

**IV. AEP OHIO'S PROPOSAL FOR INCENTIVE RATE MAKING FOR ITS  
DISTRIBUTION TECHNOLOGY INVESTMENT PLAN AND THE  
RIDER IT WOULD CHARGE CONSUMERS**

***Q32. WHAT IS AEP OHIO'S PROPOSED INCENTIVE RATE MAKING  
REGARDING ITS DISTRIBUTION TECHNOLOGY INVESTMENT PLAN  
AND RIDER FOR CHARGING CONSUMERS?***

***A32.*** AEP Ohio's proposal is described by its witness, Andrea E. Moore.<sup>51</sup> AEP Ohio is requesting an incentive ROE of 75 basis points, or 0.75 percent, be added to its proposed baseline ROE of 10.41 percent. This resulting enhanced ROE of 11.16 percent would be used to calculate the return on those capital investments identified in the Distribution Technology Investment Plan. This enhanced return on these investments will be collected through the proposed Distribution Technology Rider.<sup>52</sup> AEP Ohio also proposes that to the extent that it can borrow a portion of the capital from local Ohio banks, then the incentive ROE adder will be .25 percent instead of .75 percent.<sup>53</sup> However, it is not clear what are the local Ohio banks referred to here or whether borrowing from banks is the best (including least cost) option for funding capital investments. This is seemingly a vague statement, not a firm commitment, from AEP Ohio.

---

<sup>51</sup> Direct Testimony of Andrea E. Moore, 10-11 (November 23, 2016).

<sup>52</sup> Id.

<sup>53</sup> Id.

***Q33. DO YOU SUPPORT AEP OHIO'S PROPOSED INCENTIVE ROE ADDER  
OF 75 BASIS POINTS FOR ITS DISTRIBUTION TECHNOLOGY  
INVESTMENT PLAN AND A DISTRIBUTION TECHNOLOGY RIDER TO  
BE CHARGED TO CONSUMERS?***

***A33.*** No. I do not support AEP Ohio's incentive ROE proposal. The enhanced ROE for capital investments identified in the Distribution Technology Investment Plan is unnecessary, unreasonable and excessive. First, AEP Ohio has not demonstrated that it needs the enhanced ROE to compete for the necessary capital to make those capital investments (if those investments should even be made for charging to captive utility consumers). Second, I do not support the idea that AEP Ohio, as a regulated utility, should make any capital investments unrelated to the provision of electricity distribution services and then collect an exceedingly high return on and return of those capital investments. Those services related to the electric vehicle charging stations, batteries and microgrids, and smart street lightings, are not electricity distribution services. Most of AEP Ohio's customers will not use these services. They will not find these services useful and will not benefit from these services.

Third, even though I do not have any opinion on the need and merit of those capital investments associated with the Next Generation Communication System and the physical security of distribution infrastructure, I believe AEP Ohio should collect from customers the return on these capital investments through a base distribution rate case proceeding, not through a Distribution Technology Rider, if

1       these distribution-related investments are needed, prudently made, and meet other  
2       ratemaking standards.

3

4   ***Q34. HAS AEP OHIO DEMONSTRATED THAT IT NEEDS THE INCENTIVE***  
5       ***ROE ADDER TO OBTAIN THE CAPITAL FOR MAKING THOSE***  
6       ***INVESTMENTS IDENTIFIED IN THE DISTRIBUTION TECHNOLOGY***  
7       ***INVESTMENT PLAN?***

8   ***A34.*** No. AEP Ohio has not demonstrated that it needs the incentive ROE adder to  
9       obtain financing for its Distribution Technology Investment Plan. AEP Ohio has  
10      not indicated it would issue equity or separately and exclusively issue new debt  
11      for its capital investments associated with the Distribution Technology Investment  
12      Plan. Even if AEP Ohio choose to issue debt separately and exclusively for the  
13      Distribution Technology Investment Plan, the cost of that particular debt will  
14      likely be similar to those debts that may be issued by AEP Ohio at the same time  
15      without specific designation. The cost of the debt issued by AEP Ohio would be  
16      determined by the overall creditworthiness of AEP Ohio and its parent company,  
17      the conditions of the financial market and the general state of the economy. It is  
18      unlikely that AEP Ohio will issue a separate class of equity for financing those  
19      capital investments identified in the Distribution Technology Investment Plan.  
20      There is no indication that AEP Ohio will incur a higher cost of equity in  
21      financing those capital investments identified in the Distribution Technology  
22      Investment Plan.

1   ***Q35. HAS AEP OHIO DEMONSTRATED ANY ADDITIONAL OR HEIGHTENED***  
2       ***RISK ASSOCIATED WITH THOSE CAPITAL INVESTMENTS***  
3       ***IDENTIFIED IN THE DISTRIBUTION TECHNOLOGY INVESTMENT***  
4       ***PLAN?***

5   ***A35.*** No. AEP Ohio has not demonstrated any additional financial or business risk  
6       associated with those capital investments identified in the Distribution  
7       Technology Investment Plan.

9   ***Q36. IS THE INCENTIVE ROE PROPOSED BY AEP OHIO EXCESSIVE?***

10   ***A36.*** Yes. If the incentive ROE adder of 75 basis points is adopted, the resulting  
11       enhanced ROE (assuming a baseline ROE of 10.41 percent and which I do not  
12       support) will be 11.16 percent (10.41 percent plus 0.75 percent) for all capital  
13       investments identified in the Distribution Technology Investment Plan. This  
14       enhanced ROE can further increase to 13.25 percent (with the cap of 12.50  
15       percent plus the adder of 0.75 percent) if the proposed annual adjustment of ROE  
16       is adopted and there is indeed a marked increase in the average cost of utility  
17       bonds (as measured by the Moody's Index). The lowest ROE for capital  
18       investments identified in the Distribution Technology Investment Plan will be  
19       10.95 percent (the floor of 10.20 percent plus 0.75 percent). These levels of  
20       authorized ROE are excessive and unreasonable for charging to consumers in  
21       light of the national average of authorized ROE for electric utilities and  
22       distribution-only (such as AEP Ohio) electric utilities in recent years. As  
23       discussed earlier, the 2016 national average of authorized ROE of forty-two

*Direct Testimony of Daniel J. Duann, Ph.D.  
On Behalf of The Office of the Ohio Consumers' Counsel,  
PUCO Case No. 16-1852-EL-SSO et al.*

1 electric rate cases is approximately in the range of 9.60 percent to 9.77 percent.

2 The 2016 national average of authorized ROE of 12 wire-only electric rate cases,

3 which are more relevant to the case of AEP Ohio, is even lower at 9.31 percent.

4  
5 ***Q37. SHOULD AEP OHIO BE ALLOWED TO COLLECT FROM ITS CAPTIVE***  
6 ***CUSTOMERS AN ENHANCED RETURN ON THE INVESTMENTS, IF***  
7 ***ANY, RELATED TO ELECTRIC VEHICLE CHARGING STATIONS,***  
8 ***BATTERIES AND MICROGRIDS, AND SMART STREET LIGHTING?***

9 ***A37.*** No. I do not believe AEP Ohio's captive utility customers should be asked to pay  
10 for those investments related to electrical vehicle charging stations, batteries and  
11 microgrids, and smart street lighting. AEP Ohio is not required to provide these  
12 services and there are no economic efficiency justifications to define these  
13 services to be supplied by a monopoly supplier with guaranteed profits. In  
14 addition, most of AEP Ohio's customers do not use or benefit from these services.  
15 It is unreasonable and economically inefficient to ask the captive utility customers  
16 of AEP Ohio to subsidize the capital investments and provision of these services.  
17 Therefore, AEP Ohio should not be entitled to charge its captive customers for  
18 these services, including that AEP Ohio should not be allowed to charge  
19 customers for an enhanced ROE for these capital investments.



1   ***Q38. SHOULD AEP OHIO BE ALLOWED TO COLLECT AN ENHANCED***  
2           ***RETURN ON INVESTMENTS RELATED TO PHYSICAL SECURITY AND***  
3           ***NEXT GENERATION UTILITY COMMUNICATION SYSTEM THROUGH***  
4           ***THE DISTRIBUTION TECHNOLOGY RIDER?***

5   ***A38.*** I do not have an opinion on whether AEP Ohio should make the capital  
6           investments associated with the Next Generation Communication System and the  
7           physical security of distribution infrastructure. However, I believe these two  
8           types of investments are no different from other investments that AEP Ohio has  
9           routinely made in operating and maintaining its distribution grid. If these two  
10          types of capital investments are needed, prudently made, and used and useful,  
11          AEP Ohio can collect from customers the return on these capital investments after  
12          a rate case proceeding where AEP Ohio will be provided the opportunity to show  
13          these distribution investments are needed, prudently made, and used and useful.  
14          AEP Ohio should not be allowed to earn an enhanced ROE for those two types of  
15          distribution-related investments and collected a higher return through a separate  
16          rider.

**V. AEP OHIO'S REQUEST REGARDING THE SIGNIFICANTLY  
EXCESSIVE EARNINGS TEST**

***Q39. WHAT IS AEP OHIO'S REQUEST REGARDING THE SIGNIFICANTLY  
EXCESSIVE EARNINGS TEST IN THIS PROCEEDING?***

***A39.*** AEP Ohio's request regarding the significantly excessive earnings test ("SEET") is described by its witness, William A. Allen.<sup>54</sup> AEP Ohio requests that the PUCO should confirm in advance in this proceeding the methodology by which it has utilized in the past to be applicable throughout the ESP period.<sup>55</sup> The annual SEET test provides some protection for consumers against paying too much profit to electric utilities.

***Q40. HAS AEP OHIO MADE A SIMILAR REQUEST IN ITS MOST RECENTLY  
APPROVED ESP?***

***A40.*** Yes. AEP Ohio made a similar request in its most recently approved ESP.<sup>56</sup> The PUCO did not approve the request by AEP Ohio in that proceeding.<sup>57</sup>

---

<sup>54</sup> Direct Testimony of William A. Allen, 13-14 (November 23, 2017).

<sup>55</sup> Direct Testimony of William A. Allen, 14.

<sup>56</sup> See *In the Matter of the Application of Ohio Power Company for Authority to Establish Standard Service Offer Pursuant to R.C. 4928.143, in the Form of an Electric Security Plan*, Case No. 13-2385-EL-SSO et al., Direct Testimony of William A. Allen, 5-8 (December 20, 2013).

<sup>57</sup> See *In the Matter of the Application of Ohio Power Company for Authority to Establish Standard Service Offer Pursuant to R.C. 4928.143, in the Form of an Electric Security Plan*, Case No. 13-2385-EL-SSO et al., Opinion and Order, 87-88 (February 25, 2015).

*Direct Testimony of Daniel J. Duann, Ph.D.  
On Behalf of The Office of the Ohio Consumers' Counsel,  
PUCO Case No. 16-1852-EL-SSO et al.*

1    ***Q41. DO YOU BELIEVE THAT THE PUCO DECISIONS SHOULD MAINTAIN A***  
2            ***LEVEL OF CONSISTENCY?***

3    ***A41.*** Yes. I do support the concept of regulatory consistency. I believe regulatory  
4            consistency is important to the captive utility customers who will ultimately pay  
5            for all decisions made by the PUCO and the regulated utilities. AEP Ohio has  
6            cited regulatory consistency as the reason for its request regarding the SEET.  
7            However, regulatory consistency does not mean the PUCO needs to decide in  
8            advance the specific methodology to be used in a future proceeding. The PUCO  
9            did use different approaches and methods in deciding the SEET cases of AEP  
10           Ohio and other Ohio electric utilities in the past. This regulatory flexibility by the  
11           PUCO is also important for the PUCO to carry out its responsibility.

12  
13   ***Q42. IS AEP OHIO'S REQUEST REGARDING THE SEET IN THIS***  
14            ***PROCEEDING REASONABLE OR NECESSARY?***

15   ***A42.*** No. AEP Ohio's request is not reasonable or necessary. The PUCO's past  
16            opinions speak for themselves. It is unnecessary and unreasonable to ask the  
17            PUCO to declare in advance the methodology to be adopted as a standard in  
18            future proceedings.

1 **Q43. ARE YOU FAMILIAR WITH THE CIRCUMSTANCE REGARDING THE**  
2 **STIPULATION FOR THE 2014 AND 2015 SEET FILINGS CITED BY MR.**  
3 **ALLEN IN HIS TESTIMONY AT PAGE 13?**

4 **A43.** Yes. I am familiar with the circumstance upon which this particular settlement  
5 was filed. I have filed testimony on behalf of OCC opposed to the settlement.<sup>58</sup> It  
6 is my understanding that this particular settlement was never considered or  
7 adopted by the PUCO. Another settlement was filed later and it was approved  
8 and adopted by the PUCO.<sup>59</sup> Under that approved settlement, AEP Ohio has  
9 agreed to refund to customers (through a SEET Credit Rider) approximately \$20.3  
10 million to resolve its 2014 SEET proceeding.

11  
12 **VI. CONCLUSION**  
13

14 **Q44. DOES THIS CONCLUDE YOUR TESTIMONY?**

15 **A44.** Yes. However, I reserve the right to supplement my testimony in the event that  
16 additional testimony is filed, or if new information or data in connection with this  
17 proceeding becomes available.

---

<sup>58</sup> See *In the Matter of the Application of Ohio Power Company for Administration of the Significantly Excessive Earnings Test for 2014*, Case No. 15-1022-EL-UNC et al, Testimony of Daniel J. Duann (September 19, 2016).

<sup>59</sup> See *In the Matter of the Application of Ohio Power Company for Administration of the Significantly Excessive Earnings Test for 2014*, Case No. 15-1022-EL-UNC et al, Joint Stipulation and Recommendation, (December 21, 2016).

## **CERTIFICATE OF SERVICE**

I hereby certify that a true copy of the foregoing *Direct Testimony of Daniel J. Duann, Ph.D. on Behalf of the Office of the Ohio Consumers' Counsel* was served via electronic transmission to the persons listed below on this 2<sup>nd</sup> day of May 2017.

/s/ William J. Michael

William J. Michael

Assistant Consumers' Counsel

## **SERVICE LIST**

[Bojko@carpenterlipps.com](mailto:Bojko@carpenterlipps.com)  
[perko@carpenterlipps.com](mailto:perko@carpenterlipps.com)  
[mfleisher@elpc.org](mailto:mfleisher@elpc.org)  
[cmooney@ohiopartners.org](mailto:cmooney@ohiopartners.org)  
[paul@carpenterlipps.com](mailto:paul@carpenterlipps.com)  
[mleppla@theOEC.org](mailto:mleppla@theOEC.org)  
[tdougherty@theOEC.org](mailto:tdougherty@theOEC.org)  
[lhawrot@spilmanlaw.com](mailto:lhawrot@spilmanlaw.com)  
[dwilliamson@spilmanlaw.com](mailto:dwilliamson@spilmanlaw.com)  
[charris@spilmanlaw.com](mailto:charris@spilmanlaw.com)  
[ibatikov@vorys.com](mailto:ibatikov@vorys.com)  
[whitt@whitt-sturtevant.com](mailto:whitt@whitt-sturtevant.com)  
[campbell@whitt-sturtevant.com](mailto:campbell@whitt-sturtevant.com)  
[glover@whitt-sturtevant.com](mailto:glover@whitt-sturtevant.com)  
[tony.mendoza@sierraclub.org](mailto:tony.mendoza@sierraclub.org)  
[dborchers@bricker.com](mailto:dborchers@bricker.com)  
[eakhbari@bricker.com](mailto:eakhbari@bricker.com)  
[sechler@carpenterlipps.com](mailto:sechler@carpenterlipps.com)  
[cpirik@dickinsonwright.com](mailto:cpirik@dickinsonwright.com)  
[todonnell@dickinsonwright.com](mailto:todonnell@dickinsonwright.com)  
[wvorys@dickinsonwright.com](mailto:wvorys@dickinsonwright.com)  
[werner.margard@ohioattorneygeneral.gov](mailto:werner.margard@ohioattorneygeneral.gov)  
[Robert.eubanks@ohioattorneygeneral.gov](mailto:Robert.eubanks@ohioattorneygeneral.gov)

[stnourse@aep.com](mailto:stnourse@aep.com)  
[msmckenzie@aep.com](mailto:msmckenzie@aep.com)  
[fdarr@mwncmh.com](mailto:fdarr@mwncmh.com)  
[mpritchard@mwncmh.com](mailto:mpritchard@mwncmh.com)  
[Kurt.Helfrich@ThompsonHine.com](mailto:Kurt.Helfrich@ThompsonHine.com)  
[Stephanie.Chmiel@ThompsonHine.com](mailto:Stephanie.Chmiel@ThompsonHine.com)  
[Michael.Austin@ThompsonHine.com](mailto:Michael.Austin@ThompsonHine.com)  
[mkurtz@BKLawfirm.com](mailto:mkurtz@BKLawfirm.com)  
[kboehm@BKLawfirm.com](mailto:kboehm@BKLawfirm.com)  
[jkylercohn@BKLawfirm.com](mailto:jkylercohn@BKLawfirm.com)  
[rick.sites@ohiohospitals.org](mailto:rick.sites@ohiohospitals.org)  
[mwarnock@bricker.com](mailto:mwarnock@bricker.com)  
[dparram@bricker.com](mailto:dparram@bricker.com)  
[rdove@attorneydove.com](mailto:rdove@attorneydove.com)  
[rsahli@columbus.rr.com](mailto:rsahli@columbus.rr.com)  
[mjsettinieri@vorys.com](mailto:mjsettinieri@vorys.com)  
[glpetrucci@vorys.com](mailto:glpetrucci@vorys.com)  
[ibatikov@vorys.com](mailto:ibatikov@vorys.com)  
[joliker@igsenergy.com](mailto:joliker@igsenergy.com)  
[mdortch@kravitzllc.com](mailto:mdortch@kravitzllc.com)  
[amy.spiller@duke-energy.com](mailto:amy.spiller@duke-energy.com)  
[Elizabeth.watts@duke-energy.com](mailto:Elizabeth.watts@duke-energy.com)  
[joe.halso@sierraclub.org](mailto:joe.halso@sierraclub.org)

Attorney Examiner:

[Greta.see@puc.state.oh.us](mailto:Greta.see@puc.state.oh.us)  
[Sarah.parrot@puc.state.oh.us](mailto:Sarah.parrot@puc.state.oh.us)

**Daniel J. Duann, Ph.D.**  
**List of Testimonies Filed Before PUCO**

1. *Application of The Dayton Power and Light Company for Approval of Its Electric Security Plan*, Case No. 08-1094-EL-SSO (January 26, 2009).
2. *Application of Ohio American Water Company to Increase Its Rates for Water and Sewer Service Provided to Its Entire Service Area*, Case No. 09-391-WS-AIR (January 4, 2010).
3. *Application of Aqua Ohio, Inc. for Authority to Increase its Rates and Charges in its Masury Division*, Case No. 09-560-WW-AIR (February 22, 2010).
4. *Application of Aqua Ohio, Inc. for Authority to increase its Rates and Charges in its Lake Erie Division*, Case No. 09-1044-WW-AIR (June 21, 2010).
5. *In the Matter of the Fuel Adjustment Clauses for Columbus Southern Power Company and Ohio Power Company*, Case Nos. 09-872-EL-FAC and 09-873-EL-FAC (August 16, 2010).
6. *In the Matter of the Application of Columbus Southern Power Company for Approval of an Electric Security Plan; an Amendment to its Corporate Separation Plan; and the Sale or Transfer of Certain Generating Asset (Remand)*, Case Nos. 08-917-EL-SSO et al (June 30, 2011).
7. *In the Matter of the Application of The East Ohio Gas Company d/b/a Dominion East Ohio for Approval of Tariffs to Modify and further Accelerate its Pipeline Infrastructure Replacement Program and to Recover the Associated Costs et al.*, Case Nos. 11-2401-GA-ALT and 08-169-GA-ALT (July 15, 2011).
8. *In the Matter of the Application of Columbus Southern Power Company and Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to 4928.143, Ohio Rev. Code in the Form of an Electric Security Plan (ESP)*, Case Nos. 11-346-EL-SSO, et al (July 25, 2011).
9. *In the Matter of the Application of Columbus Southern Power Company and Ohio Power Company for Authority to Merge and Related Approval (ESP Stipulation)*, Case Nos. 10-2376-EL-UNC, et al (September 27, 2011).
10. *In the Matter of the 2010 Annual Filing of Columbus Southern Power Company and Ohio Power Company Required by Rule 4901:1-35-10, Ohio Administrative Code*, Case Nos. 11-4571-EL-UNC and 11-4572-EL-UNC (October 12, 2011).
11. *In the Matter of the Application of Ohio American Water Company to Increase Its Rates for Water and Sewer Service Provided to Its Entire Service Area*, Case No. 11-4161-WS-AIR (March 1, 2012).

12. *In the Matter of the Application of Columbus Southern Power Company and Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to 4928.143, Ohio Rev. Code in the Form of an Electric Security Plan (Modified ESP), Case Nos. 11-346-EL-SSO, et al (May 4, 2012).*
13. *In the Matter of the Application of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company For Authority to Establish a Standard Service Offer Pursuant to R.C. § 4928.143 in the Form Of an Electric Security Plan, Case No. 12-1230-EL-SSO (May 21, 2012).*
14. *In the Matter of the Application of Duke Energy Ohio, Inc., for an Increase in Electric Distribution Rates, et al. Case Nos. 12-1682-EL-AIR (February 19, 2013).*
15. *In the Matter of the Application of Duke Energy Ohio, Inc., for an Increase in Gas Rates, Case Nos. 12-1685-GA-AIR, et al (February 25, 2013).*
16. *In the Matter of the Application of Dayton Power & Light Company for Authority to Establish a Standard Service Offer in the Form Of an Electric Security Plan Pursuant to R.C. 4928.143, Case No. 12-426-EL-SSO et al. (March 1, 2013).*
17. *In the Matter of the Application of The Dayton Power and Light Company for Authority to Recover of Certain Storm-related Service Restoration Costs, Case Nos. 12-3062-EL-RDR, et al. (January 31, 2014).*
18. *In the Matter of the Application of The Dayton Power and Light Company for Authority to Recover of Certain Storm-related Service Restoration Costs, Case Nos. 12-3062-EL-RDR, et al. (May 23, 2014).*
19. *In the Matter of the Application of Aqua Ohio, Inc. to Increase Its Rates and Charges for Its Waterworks Service, Case No. 13-2124-WW-AIR (August 4, 2014).*
20. *In the Matter of the Application Seeking Approval of Ohio Power Company's Proposal to Enter into an Affiliate Power Purchase Agreement for Inclusion in the Power Purchase Agreement Ride, Case No. 14-1693-EL-RDR, et al. (September 11, 2015).*
21. *In the matter of the Application of Duke Energy Ohio, Inc. for Approval of an Alternative Rate Plan Pursuant to R.C. 4929.05, Revised Code, for an Accelerated Service Line Replacement Program, Case No. 14-1622-GA-ALT (November 6, 2015).*
22. *In the Matter of the Application of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company for Authority to Establish a Standard Service Offer Pursuant to R.C. 4928.141 in the Form of an Electric Security Plan, Case No. 14-1297-EL-SSO (June 22, 2016).*

23. *In the Matter of the Application of Ohio Power Company for Administration of the Significantly Excessive Earnings Test for 2014 Under Section 4928.143 (F), Revised Code, and Rule 4901:1-35-10, Ohio Administration Code.* 15-1022-EL-UNC et al. (August 15, 2016).
24. *In the Matter of the Application of Ohio Power Company for Administration of the Significantly Excessive Earnings Test for 2014 Under Section 4928.143 (F), Revised Code, and Rule 4901:1-35-10, Ohio Administration Code.* 15-1022-EL-UNC et al. (September 19, 2016).
25. *In the Matter of the Commission Review of the Capacity Charges of Ohio Power Company and Columbus Southern Power Company.* 10-2929-EL-UNC et al. (October 18, 2016).
26. *In the Matter of the Application of Aqua Ohio, Inc. for Authority to Increase Its Rates and Charges for its Waterworks Service.* 16-907-WW-AIR (December 19, 2016).





# REGULATORY FOCUS

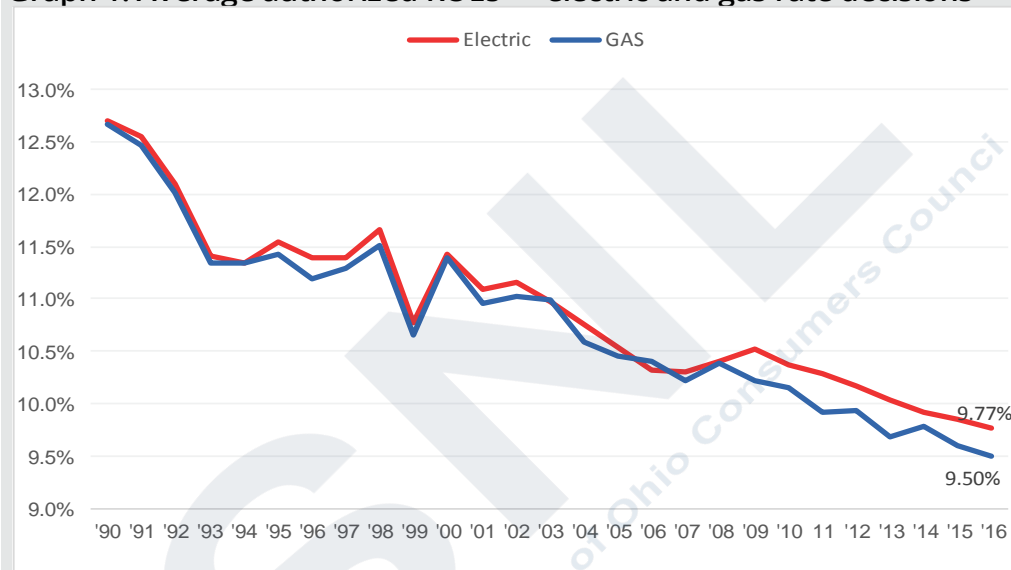
RRA is an offering of S&P Global Market Intelligence

January 18, 2017

## MAJOR RATE CASE DECISIONS — JANUARY-DECEMBER 2016

The average ROE authorized electric utilities was 9.77% in rate cases decided in 2016, compared to 9.85% in 2015. There were 42 electric ROE determinations in 2016, versus 30 in 2015. This data includes several limited issue rider cases; excluding these cases from the data, the average authorized ROE was 9.6% in rate cases decided in 2016, the same as in 2015. RRA notes that this differential in electric authorized ROEs is largely driven by Virginia statutes that authorize the State Corporation Commission to approve ROE premiums of up to 200 basis points for certain generation projects (see the [Virginia Commission Profile](#)). The average ROE authorized gas utilities was 9.5% in 2016 versus 9.6% in 2015. There were 24 gas cases that included an ROE determination in 2016, versus 16 in 2015.

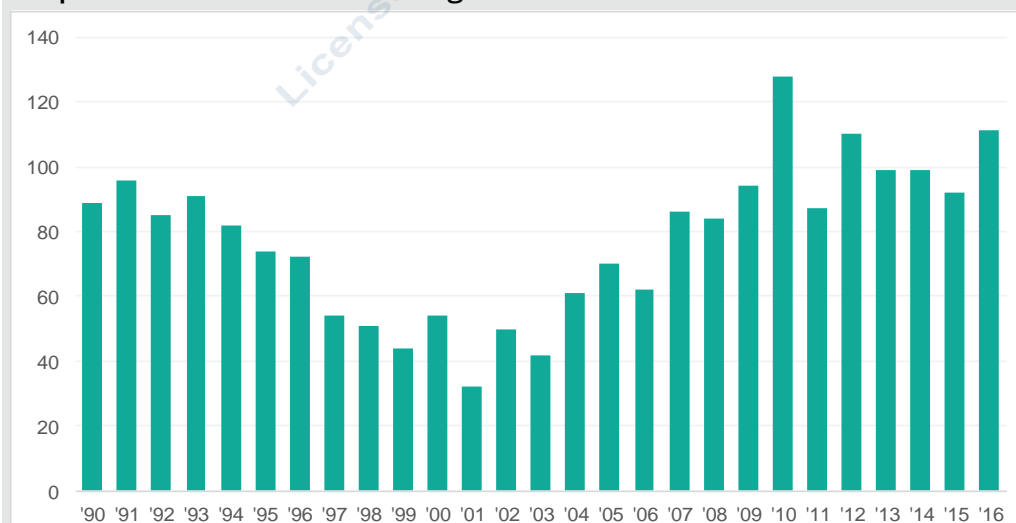
Graph 1: Average authorized ROEs — electric and gas rate decisions



Source: Regulatory Research Associates, an offering of S&P Global Market Intelligence

As shown in Graph 2 below, after reaching a low in the early-2000s, the number of rate case decisions for energy companies has generally increased over the last several years, peaking in 2010 at more than 125 cases.

Graph 2: Volume of electric and gas rate case decisions

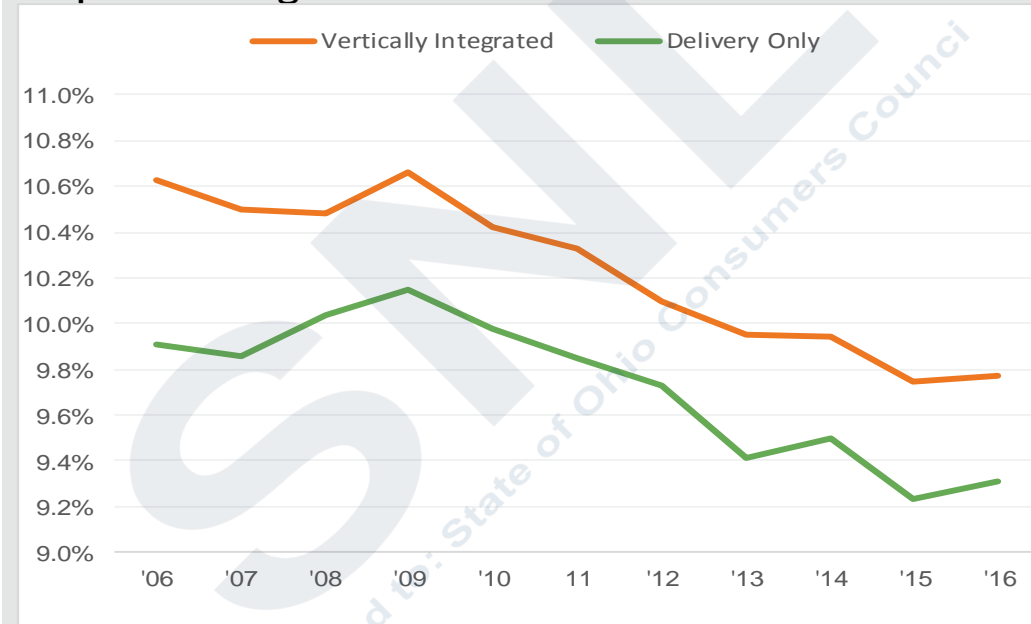


Source: Regulatory Research Associates, an offering of S&P Global Market Intelligence

Since 2010, the number of rate cases has moderated somewhat but has been 90 or more in the last five calendar years. There were 111 electric and gas rate cases resolved in 2016, 92 in 2015, 99 in both 2014 and 2013, and 110 in 2012, and this level of rate case activity remains robust compared to the late 1990s/early 2000s. Increased costs associated with environmental compliance, including possible CO<sub>2</sub> reduction mandates, generation and delivery infrastructure upgrades and expansion, renewable generation mandates and employee benefits argue for the continuation of an active rate case agenda over the next few years. In addition, if the Federal Reserve continues its policy initiated in December 2015 to gradually raise the federal funds rate, utilities eventually would face higher capital costs and would need to initiate rate cases to reflect the higher capital costs in rates. However, the magnitude and pace of any additional Federal Reserve action to raise the federal funds rate is quite uncertain.

Included in tables on pages 6 and 7 of this report are comparisons, since 2006, of average authorized ROEs by settled versus fully litigated cases, general rate cases versus limited issues rider proceedings and vertically integrated cases versus delivery only cases. For both electric and gas cases, no pattern exists in average annual authorized ROEs in cases that were settled versus those that were fully litigated. In some years, the average authorized ROE was higher for fully litigated cases, in others it was higher for settled cases, and in a few years the authorized ROE was similar for fully litigated versus settled cases. Regarding electric cases that involve limited issue riders, over the last several years the annual average authorized ROEs in these cases was typically at least 100 basis points higher than in general rate cases, driven by the ROE premiums authorized in Virginia. Limited issue rider cases in which an ROE is determined have had extremely limited use in the gas industry. Comparing electric vertically integrated cases versus delivery only proceedings, RRA finds that the annual average authorized ROEs in vertically integrated cases are from roughly 40 to 70 basis points higher than in delivery only cases, arguably reflecting the increased risk associated with generation assets.

**Graph 3: Average authorized electric ROEs**



Source: Regulatory Research Associates, an offering of S&P Global Market Intelligence

We note that this report utilizes the simple mean for the return averages. In addition, the average equity returns indicated in this report reflect the cases decided in the specified time periods and are not necessarily representative of the returns actually earned by utilities industry wide.

As a result of electric industry restructuring, certain states unbundled electric rates and implemented retail competition for generation. Commissions in those states now have jurisdiction only over the revenue requirement and return parameters for delivery operations, which we footnote in our chronology beginning on page 8, thus complicating historical data comparability. We note that from 2008 through 2015, interest rates declined significantly, and average authorized ROEs have declined modestly. We also note the increased utilization of limited issue rider proceedings that allow utilities to recover certain costs outside of a general rate case and typically incorporate previously-determined return parameters.

The table on page 4 shows the average ROE authorized in major electric and gas rate decisions annually since 1990, and by quarter since 2013, followed by the number of observations in each period. The tables on page 5 indicate the composite electric and gas industry data for all major cases summarized annually since 2002 and by quarter for the past eight quarters. The individual electric and gas cases decided in 2016 are listed on pages 8-13, with the decision date shown first, followed by the company name, the abbreviation for the state

issuing the decision, the authorized rate of return, or ROR, ROE, and percentage of common equity in the adopted capital structure. Next we indicate the month and year in which the adopted test year ended, whether the commission utilized an average or a year-end rate base, and the amount of the permanent rate change authorized. The dollar amounts represent the permanent rate change ordered at the time decisions were rendered. Fuel adjustment clause rate changes are not reflected in this study.

The table below tracks the average equity return authorized for all electric and gas rate cases combined, by year, for the last 27 years. As the table indicates, since 1990 authorized ROEs have generally trended downward, reflecting the significant decline in interest rates and capital costs that has occurred over this time frame. The combined average equity returns authorized for electric and gas utilities in each of the years 1990 through 2016, and the number of observations for each year are as follows:

### Composite Electric and Gas Average Annual Authorized ROEs: 1990 — 2016

Year	Average ROE (%)	Observations	Year	Average ROE (%)	Observations
1990	12.69	(75)	2004	10.67	(39)
1991	12.51	(80)	2005	10.50	(55)
1992	12.06	(77)	2006	10.39	(42)
1993	11.37	(77)	2007	10.30	(76)
1994	11.34	(59)	2008	10.42	(67)
1995	11.51	(49)	2009	10.36	(68)
1996	11.29	(42)	2010	10.28	(100)
1997	11.34	(24)	2011	10.21	(59)
1998	11.59	(20)	2012	10.08	(93)
1999	10.74	(29)	2013	9.92	(71)
2000	11.41	(24)	2014	9.86	(63)
2001	11.05	(25)	2015	9.76	(46)
2002	11.10	(43)	2016	9.67	(66)
2003	10.98	(47)			

Source: Regulatory Research Associates, an offering of S&P Global Market Intelligence

*Please Note: Historical data provided in this report may not match data provided on RRA's website due to certain differences in presentation, including the treatment of cases that were withdrawn or dismissed.*

Dennis Spurduto

©2017, Regulatory Research Associates, Inc., an offering of S&P Global Market Intelligence. All Rights Reserved. Confidential Subject Matter. WARNING! This report contains copyrighted subject matter and confidential information owned solely by Regulatory Research Associates, Inc. ("RRA"). Reproduction, distribution or use of this report in violation of this license constitutes copyright infringement in violation of federal and state law. RRA hereby provides consent to use the "email this story" feature to redistribute articles within the subscriber's company. Although the information in this report has been obtained from sources that RRA believes to be reliable, RRA does not guarantee its accuracy.

## Average Equity Returns Authorized January 1990 - December 2016

Year	Period	Electric Utilities		Gas Utilities	
		ROE %	(# Cases)	ROE %	(# Cases)
1990	Full Year	12.70	(44)	12.67	(31)
1991	Full Year	12.55	(45)	12.46	(35)
1992	Full Year	12.09	(48)	12.01	(29)
1993	Full Year	11.41	(32)	11.35	(45)
1994	Full Year	11.34	(31)	11.35	(28)
1995	Full Year	11.55	(33)	11.43	(16)
1996	Full Year	11.39	(22)	11.19	(20)
1997	Full Year	11.40	(11)	11.29	(13)
1998	Full Year	11.66	(10)	11.51	(10)
1999	Full Year	10.77	(20)	10.66	(9)
2000	Full Year	11.43	(12)	11.39	(12)
2001	Full Year	11.09	(18)	10.95	(7)
2002	Full Year	11.16	(22)	11.03	(21)
2003	Full Year	10.97	(22)	10.99	(25)
2004	Full Year	10.75	(19)	10.59	(20)
2005	Full Year	10.54	(29)	10.46	(26)
2006	Full Year	10.32	(26)	10.40	(15)
2007	Full Year	10.30	(38)	10.22	(35)
2008	Full Year	10.41	(37)	10.39	(32)
2009	Full Year	10.52	(40)	10.22	(30)
2010	Full Year	10.37	(61)	10.15	(39)
2011	Full Year	10.29	(42)	9.92	(16)
2012	Full Year	10.17	(58)	9.94	(35)
2013	1st Quarter	10.28	(14)	9.57	(3)
	2nd Quarter	9.84	(7)	9.47	(6)
	3rd Quarter	10.06	(7)	9.60	(1)
	4th Quarter	9.91	(21)	9.83	(11)
	Full Year	10.03	(49)	9.68	(21)
2014	1st Quarter	10.23	(8)	9.54	(6)
	2nd Quarter	9.83	(5)	9.84	(8)
	3rd Quarter	9.87	(12)	9.45	(6)
	4th Quarter	9.78	(13)	10.28	(6)
	Full Year	9.91	(38)	9.78	(26)
2015	1st Quarter	10.37	(9)	9.47	(3)
	2nd Quarter	9.73	(7)	9.43	(3)
	3rd Quarter	9.40	(2)	9.75	(1)
	4th Quarter	9.62	(12)	9.68	(9)
	Full Year	9.85	(30)	9.60	(16)
2016	1st Quarter	10.29	(9)	9.48	(6)
	2nd Quarter	9.60	(7)	9.42	(6)
	3rd Quarter	9.76	(8)	9.47	(4)
	4th Quarter	9.57	(18)	9.60	(8)
	Full Year	9.77	(42)	9.50	(24)

Source: Regulatory Research Associates, an offering of S&amp;P Global Market Intelligence

**Electric Utilities--Summary Table**

	Period	ROR %	(# Cases)	ROE %	(# Cases)	Cap. Struc.	(# Cases)	\$ Mil.	(# Cases)
2002	Full Year	8.72	(20)	11.16	(22)	46.27	(19)	-475.4	(24)
2003	Full Year	8.86	(20)	10.97	(22)	49.41	(19)	313.8	(12)
2004	Full Year	8.44	(18)	10.75	(19)	46.84	(17)	1,091.5	(30)
2005	Full Year	8.30	(26)	10.54	(29)	46.73	(27)	1,373.7	(36)
2006	Full Year	8.32	(26)	10.32	(26)	48.54	(25)	1,318.1	(39)
2007	Full Year	8.18	(37)	10.30	(38)	47.88	(36)	1,405.7	(43)
2008	Full Year	8.21	(39)	10.41	(37)	47.94	(36)	2,823.2	(44)
2009	Full Year	8.24	(40)	10.52	(40)	48.57	(39)	4,191.7	(58)
2010	Full Year	8.01	(62)	10.37	(61)	48.63	(57)	4,921.9	(78)
2011	Full Year	8.00	(43)	10.29	(42)	48.26	(42)	2,595.1	(56)
2012	Full Year	7.95	(51)	10.17	(58)	50.69	(52)	3,080.7	(69)
2013	Full Year	7.66	(45)	10.03	(49)	49.25	(43)	3,328.6	(61)
2014	Full Year	7.60	(32)	9.91	(38)	50.28	(35)	2,053.7	(51)
2015	1st Quarter	7.74	(10)	10.37	(9)	51.91	(9)	203.6	(11)
	2nd Quarter	7.04	(9)	9.73	(7)	47.83	(6)	819.5	(17)
	3rd Quarter	7.85	(3)	9.40	(2)	51.08	(3)	379.6	(5)
	4th Quarter	7.22	(13)	9.62	(12)	48.24	(12)	488.7	(19)
	Full Year	7.38	(35)	9.85	(30)	49.54	(30)	1,891.5	(52)
2016	1st Quarter	7.03	(9)	10.29	(9)	46.06	(9)	311.2	(12)
	2nd Quarter	7.42	(7)	9.60	(7)	49.91	(7)	117.7	(9)
	3rd Quarter	7.23	(8)	9.76	(8)	49.11	(8)	499.1	(13)
	4th Quarter	7.38	(17)	9.57	(18)	49.93	(17)	1,421.4	(23)
	Full Year	7.28	(41)	9.77	(42)	48.91	(41)	2,349.4	(57)

**Gas Utilities--Summary Table**

	Period	ROR %	(# Cases)	ROE %	(# Cases)	Cap. Struc.	(# Cases)	\$ Mil.	(# Cases)
2002	Full Year	8.80	(20)	11.03	(21)	48.29	(18)	303.6	(26)
2003	Full Year	8.75	(22)	10.99	(25)	49.93	(22)	260.1	(30)
2004	Full Year	8.34	(21)	10.59	(20)	45.90	(20)	303.5	(31)
2005	Full Year	8.25	(29)	10.46	(26)	48.66	(24)	458.4	(34)
2006	Full Year	8.44	(17)	10.40	(15)	47.24	(16)	392.5	(23)
2007	Full Year	8.11	(31)	10.22	(35)	48.47	(28)	645.3	(43)
2008	Full Year	8.49	(33)	10.39	(32)	50.35	(32)	700.0	(40)
2009	Full Year	8.15	(29)	10.22	(30)	48.49	(29)	438.6	(36)
2010	Full Year	7.99	(40)	10.15	(39)	48.70	(40)	776.5	(50)
2011	Full Year	8.09	(18)	9.92	(16)	52.49	(14)	367.0	(31)
2012	Full Year	7.98	(30)	9.94	(35)	51.13	(32)	264.0	(41)
2013	Full Year	7.39	(20)	9.68	(21)	50.60	(20)	494.9	(38)
2014	Full Year	7.65	(27)	9.78	(26)	51.11	(28)	529.2	(48)
2015	1st Quarter	6.41	(2)	9.47	(3)	50.41	(2)	168.9	(9)
	2nd Quarter	7.29	(3)	9.43	(3)	50.71	(3)	34.9	(8)
	3rd Quarter	7.35	(1)	9.75	(1)	42.01	(1)	103.9	(8)
	4th Quarter	7.54	(10)	9.68	(9)	50.40	(10)	186.5	(15)
	Full Year	7.34	(16)	9.60	(16)	49.93	(16)	494.1	(40)
2016	1st Quarter	7.12	(6)	9.48	(6)	50.83	(6)	120.2	(11)
	2nd Quarter	7.38	(6)	9.42	(6)	50.01	(6)	276.3	(16)
	3rd Quarter	6.59	(5)	9.47	(4)	48.44	(4)	106.3	(8)
	4th Quarter	6.71	(7)	9.60	(8)	48.74	(7)	733.1	(19)
	Full Year	6.95	(24)	9.50	(24)	49.56	(23)	1,235.9	(54)

Source: Regulatory Research Associates, an offering of S&amp;P Global Market Intelligence

## Electric Average Authorized ROEs: 2006 — 2016

### Settled versus Fully Litigated Cases

Year	All Cases		Settled Cases		Fully Litigated Cases	
	ROE %	(# Cases)	ROE %	(# Cases)	ROE %	(# Cases)
2006	10.32	(26)	10.26	(11)	10.37	(15)
2007	10.30	(38)	10.42	(14)	10.23	(24)
2008	10.41	(37)	10.43	(17)	10.39	(20)
2009	10.52	(40)	10.64	(16)	10.45	(24)
2010	10.37	(61)	10.39	(34)	10.35	(27)
2011	10.29	(42)	10.12	(16)	10.39	(26)
2012	10.17	(58)	10.06	(29)	10.28	(29)
2013	10.03	(49)	10.12	(32)	9.85	(17)
2014	9.91	(38)	9.73	(17)	10.05	(21)
2015	9.85	(30)	10.07	(14)	9.66	(16)
2016	9.77	(42)	9.80	(17)	9.74	(25)

### General Rate Cases versus Limited Issue Riders

Year	All Cases		General Rate Cases		Limited Issue Riders	
	ROE %	(# Cases)	ROE %	(# Cases)	ROE %	(# Cases)
2006	10.32	(26)	10.34	(25)	9.80	(1)
2007	10.30	(38)	10.31	(37)	9.90	(1)
2008	10.41	(37)	10.37	(35)	11.11	(2)
2009	10.52	(40)	10.52	(38)	10.55	(2)
2010	10.37	(61)	10.29	(58)	11.87	(3)
2011	10.29	(42)	10.19	(40)	12.30	(2)
2012	10.17	(58)	10.01	(52)	11.57	(6)
2013	10.03	(49)	9.81	(42)	11.34	(7)
2014	9.91	(38)	9.75	(33)	10.96	(5)
2015	9.85	(30)	9.60	(24)	10.87	(6)
2016	9.77	(42)	9.60	(32)	10.31	(10)

### Vertically Integrated Cases versus Delivery Only Cases

Year	All Cases		Vertically Integrated Cases		Delivery Only Cases	
	ROE %	(# Cases)	ROE %	(# Cases)	ROE %	(# Cases)
2006	10.32	(26)	10.63	(15)	9.91	(10)
2007	10.30	(38)	10.50	(26)	9.86	(11)
2008	10.41	(37)	10.48	(26)	10.04	(9)
2009	10.52	(40)	10.66	(28)	10.15	(10)
2010	10.37	(61)	10.42	(41)	9.98	(17)
2011	10.29	(42)	10.33	(28)	9.85	(12)
2012	10.17	(58)	10.10	(39)	9.73	(13)
2013	10.03	(49)	9.95	(31)	9.41	(11)
2014	9.91	(38)	9.94	(19)	9.50	(14)
2015	9.85	(30)	9.75	(17)	9.23	(7)
2016	9.77	(42)	9.77	(20)	9.31	(12)

Source: Regulatory Research Associates, an offering of S&P Global Market Intelligence

## Gas Average Authorized ROEs: 2006 — 2016

### Settled versus Fully Litigated Cases

Year	All Cases		Settled Cases		Fully Litigated Cases	
	ROE %	(# Cases)	ROE %	(# Cases)	ROE %	(# Cases)
2006	10.40	(15)	10.26	(7)	10.53	(8)
2007	10.22	(35)	10.24	(22)	10.20	(13)
2008	10.39	(32)	10.34	(20)	10.47	(12)
2009	10.22	(30)	10.43	(13)	10.05	(17)
2010	10.15	(39)	10.30	(12)	10.08	(27)
2011	9.92	(16)	10.08	(8)	9.76	(8)
2012	9.94	(35)	9.99	(14)	9.92	(21)
2013	9.68	(21)	9.80	(9)	9.59	(12)
2014	9.78	(26)	9.51	(11)	9.98	(15)
2015	9.60	(16)	9.60	(11)	9.58	(5)
2016	9.50	(24)	9.43	(14)	9.61	(10)

### General Rate Cases versus Limited Issue Riders

Year	All Cases		General Rate Cases		Limited Issue Riders	
	ROE %	(# Cases)	ROE %	(# Cases)	ROE %	(# Cases)
2006	10.40	(15)	10.40	(15)	—	(0)
2007	10.22	(35)	10.22	(35)	—	(0)
2008	10.39	(32)	10.39	(32)	—	(0)
2009	10.22	(30)	10.22	(30)	—	(0)
2010	10.15	(39)	10.15	(39)	—	(0)
2011	9.92	(16)	9.91	(15)	10.00	(1)
2012	9.94	(35)	9.93	(34)	10.40	(1)
2013	9.68	(21)	9.68	(21)	—	(0)
2014	9.78	(26)	9.78	(26)	—	(0)
2015	9.60	(16)	9.60	(16)	—	(0)
2016	9.50	(24)	9.49	(23)	9.70	(1)

Source: Regulatory Research Associates, an offering of S&P Global Market Intelligence



## Electric Utility Decisions

Date	Company	State	ROR		Common Equity as % of Capital	Test Year	Rate Base	Amt. \$ Mil. Footnotes
			%	ROE %				
1/5/16	MDU Resources Group	ND	7.95	10.50	50.27	12/16	—	15.1 (B,LIR,1)
1/6/16	Avista Corporation	WA	7.29	9.50	48.50	9/14	—	-8.1 (B)
1/28/16	Northern Indiana-- Public Service Co.	IN	—	—	—	—	—	0.0 (LIR,2)
2/2/16	Kentucky Utilities Company	VA	—	—	—	12/14	—	5.5 (B)
2/23/16	Entergy Arkansas	AR	4.52	9.75	28.46	3/15	—	219.7 (B,*)
2/29/16	Virginia Electric and Power Company	VA	7.90	11.60	49.99	3/17	Average	21.0 (LIR,3)
2/29/16	Virginia Electric and Power Company	VA	7.40	10.60	49.99	3/17	Average	-9.3 (LIR,4)
2/29/16	Virginia Electric and Power Company	VA	7.40	10.60	49.99	3/17	Average	6.6 (LIR,5)
2/29/16	Virginia Electric and Power Company	VA	7.40	10.60	49.99	3/17	Average	-16.8 (LIR,6)
3/16/16	Indianapolis Power & Light Company	IN	6.51	9.85	37.33	6/14	Year-end	29.6 (*)
3/25/16	MDU Resources Group	MT	—	—	—	12/14	—	7.4 (B,Z)
3/29/16	Virginia Electric and Power Company	VA	6.90	9.60	49.99	3/17	Average	40.4 (LIR,7)
<b>2016 1ST QUARTER: AVERAGES/TOTAL OBSERVATIONS</b>			<b>7.03</b>	<b>10.29</b>	<b>46.06</b>			<b>311.2</b>
			<b>9</b>	<b>9</b>	<b>9</b>			<b>12</b>
4/29/16	Fitchburg Gas and Electric Light Co.	MA	8.46	9.80	52.17	12/14	Year-end	2.1 (D)
6/3/16	Baltimore Gas and Electric Company	MD	7.28	9.75	51.90	11/15	Average	44.1 (D,R)
6/8/16	El Paso Electric Company	NM	7.67	9.48	49.29	12/14	Year-end	1.1
6/15/16	New York State Electric & Gas Corp.	NY	6.68	9.00	48.00	4/17	Average	29.6 (B,D,Z,8)
6/15/16	Rochester Gas and Electric Corp.	NY	7.55	9.00	48.00	4/17	Average	3.0 (B,D,Z,8)
6/23/16	San Diego Gas & Electric Co.	CA	—	—	—	12/16	Average	3.0 (B,Z,9)
6/30/16	Appalachian Power Company	WV	—	—	—	—	—	55.1 (B,LIR,10)
6/30/16	Virginia Electric and Power Company	VA	7.40	10.60	49.99	8/17	Average	-25.7 (LIR,11)
6/30/16	Virginia Electric and Power Company	VA	6.90	9.60	49.99	8/17	Average	5.4 (LIR,12)
<b>2016 2ND QUARTER: AVERAGES/TOTAL OBSERVATIONS</b>			<b>7.42</b>	<b>9.60</b>	<b>49.91</b>			<b>117.7</b>
			<b>7</b>	<b>7</b>	<b>7</b>			<b>9</b>
7/18/16	Northern Indiana Public Service Co.	IN	6.74	9.98	47.42	3/15	Year-end	72.5 (B,*)
8/9/16	Kingsport Power Company	TN	6.18	9.85	40.25	12/17	Average	8.6 (B)
8/10/16	Southwestern Public Service Co.	NM	—	—	—	—	—	23.5 (B)
8/10/16	Empire District Electric Company	MO	—	—	—	6/15	—	20.4 (B)
8/18/16	El Paso Electric Company	TX	—	—	—	3/15	—	40.7 (I,B)
8/18/16	UNS Electric, Inc.	AZ	7.22	9.50	52.83	12/14	Year-end	15.1
8/22/16	Virginia Electric and Power Company	VA	—	—	—	8/17	—	21.3 (LIR, B,13)
8/24/16	Atlantic City Electric Company	NJ	7.64	9.75	49.48	12/15	Year-end	45.0 (D,B)



## Electric Utility Decisions (continued)

Date	Company	State	ROR %	ROE %	Common Equity as % of Capital	Test Year	Rate Base	Amt. \$ Mil. Footnotes
9/1/16	PacifiCorp	WA	7.30	9.50	49.10	6/15	Year-end	13.7 (Z)
9/8/16	Upper Peninsula Power Company	MI	7.47	10.00	53.49	12/16	Average	4.6 (I,*)
9/28/16	Public Service Co. of New Mexico	NM	7.71	9.58	49.61	9/16	Average	61.2
9/28/16	KCP&L Greater Missouri Operations	MO	—	—	—	—	—	3.0 (B)
9/30/16	Massachusetts Electric Company	MA	7.58	9.90	50.70	6/15	Year-end	169.7 (D)
<b>2016</b>	<b>3RD QUARTER: AVERAGES/TOTAL OBSERVATIONS</b>		<b>7.23</b>	<b>9.76</b>	<b>49.11</b>			<b>499.3</b>
			<b>8</b>	<b>8</b>	<b>8</b>			<b>13</b>
10/6/16	Appalachian Power Company	VA	—	9.40	—	—	—	— (LIR)
10/19/16	South Carolina Electric & Gas Co.	SC	8.24	—	51.35	6/16	Year-end	64.4 (LIR, 14)
10/26/16	Northern States Power Company - WI	WI	—	—	—	12/17	—	24.5 (15)
11/9/16	Madison Gas and Electric Company	WI	7.89	9.80	57.16	12/17	Average	-3.3
11/10/16	Public Service Company of Oklahoma	OK	6.94	9.50	44.00	1/15	Year-end	14.5
11/15/16	Potomac Electric Power Company	MD	7.49	9.55	49.55	12/15	Average	52.5 (D)
11/18/16	Wisconsin Power and Light Company	WI	7.91	10.00	52.20	12/18	Average	9.4 (B,Z)
11/29/16	Florida Power & Light Company	FL	—	10.55	—	12/18	—	811.0 (B,Z)
12/1/16	Liberty Utilities (CalPeco Electric) LLC	CA	7.51	10.00	52.50	12/16	Average	8.3 (B)
12/6/16	Commonwealth Edison Company	IL	6.71	8.64	45.62	12/15	Year-end	130.9 (D)
12/6/16	Ameren Illinois Company	IL	7.28	8.64	50.00	12/15	Year-end	-8.8 (D)
12/6/16	Entergy Arkansas, Inc.	AR	—	—	—	12/17	—	54.4 (B)
12/7/16	Duke Energy Progress, LLC	SC	7.21	10.10	53.00	12/15	Year-end	56.2 (B,Z)
12/9/16	Monongahela Power Company	WV	—	—	—	6/16	—	25.0 (B,LIR,16)
12/12/16	Jersey Central Power & Light Co.	NJ	7.47	9.60	45.00	6/16	Year-end	80.0 (B,D)
12/14/16	United Illuminating Company	CT	7.08	9.10	50.00	12/15	Average	57.4 (D,Z)
12/15/16	Avista Corporation	WA	—	—	—	—	—	0.0 (17)
12/19/16	Black Hills Colorado Electric Utility Co.	CO	7.43	9.37	52.39	12/15	Average	0.6
12/19/16	Emera Maine	ME	7.45	9.00	49.00	12/14	Average	3.0 (D,Hy)
12/20/16	Georgia Power Company	GA	—	—	—	12/17	—	— (LIR,W,18)
12/22/16	Sierra Pacific Power Company	NV	6.65	9.60	48.03	12/15	—	-2.9 (B)
12/22/16	Virginia Electric and Power Company	NC	7.37	9.90	51.75	12/15	Year-end	34.7 (B,I)
12/23/16	Hawaiian Electric Company, Inc.	HI	—	—	—	—	—	0.0 (19)
12/28/16	Avista Corporation	ID	7.58	9.50	50.00	12/15	Average	6.3 (B)
12/30/16	Appalachian Power Company	VA	7.30	10.00	47.22	12/17	Average	3.3 (B,LIR,20)
<b>2016</b>	<b>4TH QUARTER: AVERAGES/TOTAL OBSERVATIONS</b>		<b>7.38</b>	<b>9.57</b>	<b>49.93</b>			<b>1,421.4</b>
			<b>17</b>	<b>18</b>	<b>17</b>			<b>23</b>
<b>2016</b>	<b>FULL YEAR: AVERAGES/TOTAL OBSERVATIONS</b>		<b>7.28</b>	<b>9.77</b>	<b>48.91</b>			<b>2,349.6</b>
			<b>41</b>	<b>42</b>	<b>41</b>			<b>57</b>

Source: Regulatory Research Associates, an offering of S&amp;P Global Market Intelligence

## Gas Utility Decisions

Date	Company	State	ROR %	ROE %	Common Equity as % of Capital	Test Year	Rate Base	Amt. \$ Mil. Footnotes
1/6/16	Oklahoma Natural Gas Company	OK	7.31	9.50	60.50	3/15	Year-end	30.0 (B)
1/6/16	Avista Corporation	WA	7.29	9.50	48.50	09/14	—	10.8 (B)
1/28/16	SourceGas Arkansas	AR	5.33	9.40	39.46	3/15	Year-end	8.0 (B,*)
2/10/16	Liberty Utilities (New England Nat. Gas)	MA	7.99	9.60	50.00	12/14	Year-end	7.8 (B)
2/16/16	Public Service Company of Colorado	CO	7.33	9.50	56.51	12/14	Average	39.2 (I,Z,R)
2/25/16	Black Hills Kansas Gas Utility Company	KS	—	—	—	10/15	Year-end	0.8 (LIR,21)
2/29/16	Avista Corporation	OR	7.46	9.40	50.00	12/16	Average	4.5
3/17/16	Atmos Energy Corporation	KS	—	—	—	3/15	—	2.2 (B)
3/30/16	Indiana Gas Company, Inc.	IN	—	—	—	6/15	Year-end	7.0 (LIR,22)
3/30/16	Northern Indiana Public Service Co.	IN	—	—	—	6/15	Year-end	7.6 (LIR,23)
3/30/16	Southern Indiana Gas and Electric Co.	IN	—	—	—	6/15	Year-end	2.3 (LIR,22)
<b>2016</b>	<b>1ST QUARTER: AVERAGES/TOTAL OBSERVATIONS</b>		<b>7.12</b> <b>6</b>	<b>9.48</b> <b>6</b>	<b>50.83</b> <b>6</b>			<b>120.2</b> <b>11</b>
4/21/16	Consumers Energy Company	MI	—	—	—	12/16	—	40.0 (I,B)
4/29/16	Fitchburg Gas and Electric Light Company	MA	8.46	9.80	52.17	12/14	Year-end	1.6
5/5/16	CenterPoint Energy Resources Corp.	MN	7.07	9.49	50.00	9/16	Average	27.5 (I)
5/11/16	Liberty Utilities (Midstates Nat. Gas)	MO	—	—	—	1/16	—	0.2 (LIR,24)
5/19/16	Delta Natural Gas Company	KY	—	—	—	12/15	Year-end	1.4 (LIR)
5/19/16	Laclede Gas Company	MO	—	—	—	2/16	Year-end	5.4 (LIR,25)
5/19/16	Missouri Gas Energy	MO	—	—	—	2/16	Year-end	3.6 (LIR,25)
6/1/16	Maine Natural Gas	ME	7.28	9.55	50.00	9/14	Average	2.5 (B,Z)
6/3/16	Baltimore Gas and Electric Company	MD	7.23	9.65	51.90	11/15	Average	47.9 (R)
6/15/16	New York State Electric & Gas Corporation	NY	6.68	9.00	48.00	4/17	Average	13.1 (B,Z,7)
6/15/16	Rochester Gas and Electric Corp.	NY	7.55	9.00	48.00	4/17	Average	8.8 (B,Z,7)
6/22/16	Northern Indiana Public Service Co.	IN	—	—	—	12/15	Year-end	6.7 (LIR,E,26)
6/23/16	San Diego Gas & Electric Co.	CA	—	—	—	12/16	Average	-1.6 (B,Z,27)
6/23/16	Southern California Gas Company	CA	—	—	—	12/16	Average	106.9 (B,Z,9)
6/29/16	Indiana Gas Company, Inc.	IN	—	—	—	12/15	Year-end	10.2 (LIR,28)
6/29/16	Southern Indiana Gas and Electric Co.	IN	—	—	—	12/15	Year-end	2.1 (LIR,28)
<b>2016</b>	<b>2ND QUARTER: AVERAGES/TOTAL OBSERVATIONS</b>		<b>7.38</b> <b>6</b>	<b>9.42</b> <b>6</b>	<b>50.01</b> <b>6</b>			<b>276.3</b> <b>16</b>

## Gas Utility Decisions (continued)

Date	Company	State	ROR %	ROE %	Common Equity as % of Capital	Test Year	Rate Base	Amt. \$ Mil. Footnotes
7/7/16	Cascade Natural Gas Corporation	WA	7.35	—	—	—	—	4.0 (B)
7/19/16	CenterPoint Energy Resources Corp.	OK	—	—	—	12/15	—	0.0 (B,29)
8/4/16	Atmos Energy Corporation	KY	—	—	—	5/17	—	0.5 (B)
8/22/16	Questar Gas Company	UT	—	—	—	—	—	— (30)
9/1/16	UGI Utilities, Inc.	PA	—	—	—	9/17	—	27.0 (B)
9/2/16	CenterPoint Energy Resources Corp.	AR	4.53	9.50	30.85	9/15	Year-end	14.2 (B,*)
9/23/16	New Jersey Natural Gas Company	NJ	6.90	9.75	52.50	6/16	Year-end	45.0 (B)
9/27/16	Texas Gas Service Company	TX	7.28	9.50	60.10	9/15	Year-end	8.8
9/29/16	Minnesota Energy Resources Corp.	MN	6.88	9.11	50.32	12/16	Average	6.8 (I,E)
2016	3RD QUARTER: AVERAGES/TOTAL OBSERVATIONS		6.59 5	9.47 4	48.44 4			106.3 8
10/26/16	Northern States Power Company - WI	WI	—	—	—	12/17	—	4.8 (15)
10/27/16	Columbia Gas of Maryland, Inc.	MD	—	—	—	4/16	—	3.7 (B)
10/27/16	Columbia Gas of Pennsylvania, Inc.	PA	—	—	—	12/17	—	35.0 (B)
10/28/16	Public Service Co. of North Carolina	NC	7.53	9.70	52.00	12/15	Year-end	19.1 (B)
11/9/16	Madison Gas and Electric Company	WI	—	9.80	—	12/17	—	3.1
11/14/16	Atmos Energy Corporation	KY	—	—	—	9/17	Year-end	5.0 (LIR,31)
11/15/16	Texas Gas Service Company	TX	—	—	—	12/15	—	6.8 (B)
11/18/16	Wisconsin Power and Light Company	WI	7.84	10.00	52.20	12/18	Average	9.4 (B,Z)
11/23/16	Baltimore Gas and Electric Company	MD	—	—	—	12/18	Average	6.1 (B,Z,LIR,32)
11/29/16	Kansas Gas Service Company	KS	—	—	—	—	—	15.5 (B)
12/1/16	Pacific Gas and Electric Company	CA	—	—	—	12/15	Average	100.0 (Tr,I, 33)
12/9/16	DTE Gas Company	MI	5.76	10.10	38.65	10/17	Average	122.3 (I,*)
12/14/16	Columbia Gas of Maryland, Inc.	MD	7.53	9.70	54.29	12/17	Average	1.2 (LIR,32)
12/15/16	KeySpan Gas East Corporation	NY	6.42	9.00	48.00	12/17	Average	112.0 (B,34)
12/15/16	Brooklyn Union Gas Company	NY	6.15	9.00	48.00	12/17	Average	272.1 (B,35)
12/15/16	Avista Corporation	WA	—	—	—	—	—	0.0 (17)
12/20/16	Columbia Gas of Virginia, Inc.	VA	—	—	—	12/17	Average	1.3 (LIR,36)
12/22/16	Columbia Gas of Kentucky, Inc.	KY	—	—	—	—	—	18.1 (B)
12/22/16	Sierra Pacific Power Company	NV	5.75	9.50	48.03	12/15	—	-2.4 (B)
2016	4TH QUARTER: AVERAGES/TOTAL OBSERVATIONS		6.71 7	9.60 8	48.74 7			733.1 19
2016	FULL YEAR: AVERAGES/TOTAL OBSERVATIONS		6.95 24	9.50 24	49.56 23			1,235.9 54

Source: Regulatory Research Associates, an offering of S&amp;P Global Market Intelligence

FOOTNOTES

A-	Average
B-	Order followed stipulation or settlement by the parties. Decision particulars not necessarily precedent-setting or specifically adopted by the regulatory body.
CWIP-	Construction work in progress
D-	Applies to electric delivery only
DCt	Date certain rate base valuation
E-	Estimated
F-	Return on fair value rate base
Hy-	Hypothetical capital structure utilized
I-	Interim rates implemented prior to the issuance of final order, normally under bond and subject to refund.
LIR	Limited-issue rider proceeding
M-	"Make-whole" rate change based on return on equity or overall return authorized in previous case.
R-	Revised
Te-	Temporary rates implemented prior to the issuance of final order.
Tr-	Applies to transmission service
U-	Double leverage capital structure utilized.
W-	Case withdrawn
YE-	Year-end
Z-	Rate change implemented in multiple steps.
*	Capital structure includes cost-free items or tax credit balances at the overall rate of return.

- (1) Rate increase approved in renewable resource cost recovery rider.
- (2) Case represents the company's transmission, distribution, and storage system improvement charge, or TDSIC rate adjustment mechanism. The case was dismissed by the Commission, with no rate change authorized.
- (3) Proceeding determines the revenue requirement for Rider B, which is the mechanism through which the company recovers costs associated with its plan to convert the Altavista, Hopewell, and Southampton Power Stations to burn biomass fuels.
- (4) Represents rate decrease associated with the company's Rider R proceeding, which is the mechanism through which the company recovers the investment in the Bear Garden generating facility.
- (5) This proceeding determines the revenue requirement for Rider S, which recognizes in rates the company's investment in the Virginia City Hybrid Energy Center.
- (6) Decrease authorized through a surcharge, Rider W, which reflects in rates investment in the Warren County Power Station.
- (7) Proceeding involves a new gas-fired generation facility, the Greenville County project, and creation of a new rider mechanism, Rider GV, to reflect the related revenue requirement in rates.
- (8) Rate increase effective 5/1/16; additional increases to be effective 5/1/17 and 5/1/18.
- (9) Settlement adopted with modifications. Rate increase effective retroactive to 1/1/16; additional increases to be effective 1/1/17 and 1/1/18.
- (10) Represents the company's joint expanded net energy cost, or ENEC, proceeding.
- (11) Represents rate decrease associated with the company's Rider BW proceeding, which is the mechanism through which the company recovers the investment in its Brunswick County Power Station.
- (12) Represents the rate increase associated with the company's Rider US-2, which is the mechanism through which the company recovers the revenue requirement associated with three new solar generation facilities.
- (13) Case involves the company's request to establish Rider U for recovery of investment and costs associated with a project to underground certain distribution lines.
- (14) The present case involves South Carolina Electric & Gas' request for a cash return on incremental V.C. Summer Units 2 and 3 construction work in progress (CWIP) and incorporates the 10.5% return on equity that was authorized in September 2015 for use in the Summer CWIP-related proceedings beginning in 2016.
- (15) The rate case is for the limited purpose of recovering anticipated increases in: generation and transmission fixed charges and fuel and purchased power expenses related to the interchange agreement with affiliate NSP-Minnesota; and, rate base investment.

FOOTNOTES (continued)

- (16) Case is a consolidated expanded net energy cost proceeding for Monongahela Power and affiliate Potomac Edison.
- (17) Rate increase rejected by commission.
- (18) As a result of the commission's adoption of a settlement in another proceeding, the company withdrew its rate increase request in this proceeding, and no rate change was implemented.
- (19) No change in base rates was sought by the company, and on 12/23/16, the commission issued an order closing this docket.
- (20) Case involves the company's G-RAC rider mechanism that addresses its investment in the Dresden Generating Plant, and establishes the revenue requirement for the rider to become effective 1/1/17.
- (21) Case involves the company's gas system reliability surcharge, or GSRS, rider and reflects investments made from July 1, 2014 through Oct. 31, 2015.
- (22) Case involves company's "compliance and system improvement adjustment" mechanism, and includes compliance-related investments made between Jan. 1 and June 30, 2015, and certain other investments made between July 1, 2014 and June 30, 2015.
- (23) Case establishes the rates to be charged to customers under the company's transmission, distribution and storage system improvement charge rate adjustment mechanism, and reflects investments made between July 1, 2014 and June 30, 2015.
- (24) Case involves the company's infrastructure system replacement surcharge rider and reflects incremental investments made from 6/1/15 through 1/31/16.
- (25) Case involves the company's infrastructure system replacement surcharge rider and reflects incremental investments made from 9/1/15 through 2/29/16.
- (26) Case establishes the rates to be charged to customers under the company's transmission, distribution and storage system improvement charge rate adjustment mechanism, and reflects investments made between 7/1/15 and 12/31/15.
- (27) Settlement adopted with modifications. Rate decrease effective retroactive to 1/1/16; rate increases to be effective 1/1/17 and 1/1/18.
- (28) Case involves company's "compliance and system improvement adjustment" mechanism, and includes compliance-related investments made between 7/1/15 and 12/31/15.
- (29) Case involves the company's performance based ratemaking plan.
- (30) On 8/22/16, the PSC approved the company's petition to withdraw the rate increase request, effectively closing the case. The request to withdraw the filing comported with provisions of a settlement filed in the Questar/Dominion Resources merger proceeding.
- (31) Case is an annual update to the company's pipe replacement program rider.
- (32) Case involves the company's strategic infrastructure development and enhancement, or STRIDE, rider.
- (33) Case involves the company's gas transmission and storage operations. The decision also authorized attrition rate increases of \$246 million for 2016, \$64 million for 2017 and \$105 million for 2018.
- (34) Adopted joint proposal provides for the company to implement a \$112 million rate increase effective 1/1/17, a \$19.6 million rate increase effective 1/1/18, and a \$27 million rate increase effective 1/1/19.
- (35) Adopted joint proposal provides for the company to implement a \$272.1 million rate increase effective 1/1/17, a \$41 million rate increase effective 1/1/18, and a \$48.9 million rate increase effective 1/1/19.
- (36) Case involves the company's investments under the Steps to Advance Virginia's Energy Plan.

Dennis Spurduto

## Attachment DJD-3: OCC-Corrected DCF Results

### DCF MODEL -ELECTRIC GROUP

#### COST OF EQUITY ESTIMATES

Company	V Line	IBES	Zacks	br+sv
ALLETE	10.5%	10.0%	10.0%	8.4%
Ameren Corp.	10.9%	9.5%	9.9%	8.5%
American Electric Power	8.8%	8.0%	8.6%	7.8%
Avista Corp.	8.8%	8.8%	8.8%	6.7%
CMS Energy Corp.	8.8%	10.5%	9.7%	8.3%
DTE Energy Co.	8.6%	8.5%	9.0%	8.1%
Edison International	6.7%	5.3%	8.6%	9.7%
El Paso Electric	6.7%	10.1%	9.8%	7.9%
Great Plains Energy	8.8%	10.7%	10.2%	6.8%
IDACORP, Inc.	4.0%	7.0%	7.0%	6.9%
Northwestern Corp.	10.1%	8.6%	8.6%	8.0%
Otter Tail Corp.	13.6%	10.6%	NA	12.9%
PG&E Corp.	13.9%	8.9%	7.9%	8.8%
Portland General Elec.	9.3%	9.0%	9.1%	8.1%
Sempra Energy	12.5%	11.6%	11.4%	10.7%
Westar Energy	9.3%	8.6%	8.5%	10.5%
<b>Average</b>	<b>9.5%</b>	<b>9.1%</b>	<b>9.1%</b>	<b>8.6%</b>

## Attachment DJD-4: OCC-Corrected CAPM Results with Adjusted Risk Premium

### CAPM - CURRENT BOND YIELD

#### ELECTRIC GROUP

Company	Risk -Free Rate	Risk Premium	Beta	Unadjusted Estimated ROE	Size Adjustment	Adjusted Estimated ROE
ALLETE	2.90%	7.00%	0.80	8.50%	1.49%	9.99%
Ameren Corp.	2.90%	7.00%	0.75	8.15%	0.57%	8.72%
American Electric Power	2.90%	7.00%	0.70	7.80%	-0.36%	7.44%
Avista Corp.	2.90%	7.00%	0.80	8.50%	1.49%	9.99%
CMS Energy Corp.	2.90%	7.00%	0.75	8.15%	0.57%	8.72%
DTE Energy Co.	2.90%	7.00%	0.75	8.15%	0.57%	8.72%
Edison International	2.90%	7.00%	0.70	7.80%	0.57%	8.37%
El Paso Electric	2.90%	7.00%	0.75	8.15%	1.63%	9.78%
Great Plains Energy	2.90%	7.00%	0.85	8.85%	0.99%	9.84%
IDACORP, Inc.	2.90%	7.00%	0.80	8.50%	0.99%	9.49%
Northwestern Corp.	2.90%	7.00%	0.70	7.80%	1.49%	9.29%
Otter Tail Corp.	2.90%	7.00%	0.85	8.85%	1.62%	10.47%
PG&E Corp.	2.90%	7.00%	0.70	7.80%	-0.36%	7.44%
Portland General Elec.	2.90%	7.00%	0.80	8.50%	0.99%	9.49%
Sempra Energy	2.90%	7.00%	0.80	8.50%	-0.36%	8.14%
Westar Energy	2.90%	7.00%	0.75	8.15%	0.86%	9.01%
<b>Average</b>				<b>8.26%</b>		<b>9.06%</b>

## Attachment DJD-5: OCC-Corrected CAPM Results with Adjusted Risk Premium and No Size Adjustment

### CAPM - CURRENT BOND YIELD

#### ELECTRIC GROUP

Company	Risk -Free Rate	Risk Premium	Beta	Unadjusted Estimated ROE	Size Adjustment	Adjusted Estimated ROE
ALLETE	2.90%	7.00%	0.80	8.50%	0.00%	8.50%
Ameren Corp.	2.90%	7.00%	0.75	8.15%	0.00%	8.15%
American Electric Power	2.90%	7.00%	0.70	7.80%	0.00%	7.80%
Avista Corp.	2.90%	7.00%	0.80	8.50%	0.00%	8.50%
CMS Energy Corp.	2.90%	7.00%	0.75	8.15%	0.00%	8.15%
DTE Energy Co.	2.90%	7.00%	0.75	8.15%	0.00%	8.15%
Edison International	2.90%	7.00%	0.70	7.80%	0.00%	7.80%
El Paso Electric	2.90%	7.00%	0.75	8.15%	0.00%	8.15%
Great Plains Energy	2.90%	7.00%	0.85	8.85%	0.00%	8.85%
IDACORP, Inc.	2.90%	7.00%	0.80	8.50%	0.00%	8.50%
Northwestern Corp.	2.90%	7.00%	0.70	7.80%	0.00%	7.80%
Otter Tail Corp.	2.90%	7.00%	0.85	8.85%	0.00%	8.85%
PG&E Corp.	2.90%	7.00%	0.70	7.80%	0.00%	7.80%
Portland General Elec.	2.90%	7.00%	0.80	8.50%	0.00%	8.50%
Sempra Energy	2.90%	7.00%	0.80	8.50%	0.00%	8.50%
Westar Energy	2.90%	7.00%	0.75	8.15%	0.00%	8.15%
<b>Average</b>				<b>8.26%</b>		<b>8.26%</b>



**Attachment DJD-6: Moody's Seasoned Baa Corporate Bond Yield©, Percent, Monthly, Not Seasonally Adjusted (1999 -2016)**

observation_date	BAA (%)	observation_date	BAA (%)	observation_date	BAA (%)	observation_date	BAA (%)
1999-01-01	7.29	2004-01-01	6.44	2009-01-01	8.14	2014-01-01	5.19
1999-02-01	7.39	2004-02-01	6.27	2009-02-01	8.08	2014-02-01	5.10
1999-03-01	7.53	2004-03-01	6.11	2009-03-01	8.42	2014-03-01	5.06
1999-04-01	7.48	2004-04-01	6.46	2009-04-01	8.39	2014-04-01	4.90
1999-05-01	7.72	2004-05-01	6.75	2009-05-01	8.06	2014-05-01	4.76
1999-06-01	8.02	2004-06-01	6.78	2009-06-01	7.50	2014-06-01	4.80
1999-07-01	7.95	2004-07-01	6.62	2009-07-01	7.09	2014-07-01	4.73
1999-08-01	8.15	2004-08-01	6.46	2009-08-01	6.58	2014-08-01	4.69
1999-09-01	8.20	2004-09-01	6.27	2009-09-01	6.31	2014-09-01	4.80
1999-10-01	8.38	2004-10-01	6.21	2009-10-01	6.29	2014-10-01	4.69
1999-11-01	8.15	2004-11-01	6.20	2009-11-01	6.32	2014-11-01	4.79
1999-12-01	8.19	2004-12-01	6.15	2009-12-01	6.37	2014-12-01	4.74
2000-01-01	8.33	2005-01-01	6.02	2010-01-01	6.25	2015-01-01	4.45
2000-02-01	8.29	2005-02-01	5.82	2010-02-01	6.34	2015-02-01	4.51
2000-03-01	8.37	2005-03-01	6.06	2010-03-01	6.27	2015-03-01	4.54
2000-04-01	8.40	2005-04-01	6.05	2010-04-01	6.25	2015-04-01	4.48
2000-05-01	8.90	2005-05-01	6.01	2010-05-01	6.05	2015-05-01	4.89
2000-06-01	8.48	2005-06-01	5.86	2010-06-01	6.23	2015-06-01	5.13
2000-07-01	8.35	2005-07-01	5.95	2010-07-01	6.01	2015-07-01	5.20
2000-08-01	8.26	2005-08-01	5.96	2010-08-01	5.66	2015-08-01	5.19
2000-09-01	8.35	2005-09-01	6.03	2010-09-01	5.66	2015-09-01	5.34
2000-10-01	8.34	2005-10-01	6.30	2010-10-01	5.72	2015-10-01	5.34
2000-11-01	8.28	2005-11-01	6.39	2010-11-01	5.92	2015-11-01	5.46
2000-12-01	8.02	2005-12-01	6.32	2010-12-01	6.10	2015-12-01	5.46
2001-01-01	7.93	2006-01-01	6.24	2011-01-01	6.09	2016-01-01	5.45
2001-02-01	7.87	2006-02-01	6.27	2011-02-01	6.15	2016-02-01	5.34
2001-03-01	7.84	2006-03-01	6.41	2011-03-01	6.03	2016-03-01	5.13
2001-04-01	8.07	2006-04-01	6.68	2011-04-01	6.02	2016-04-01	4.79
2001-05-01	8.07	2006-05-01	6.75	2011-05-01	5.78	2016-05-01	4.68
2001-06-01	7.97	2006-06-01	6.78	2011-06-01	5.75	2016-06-01	4.53
2001-07-01	7.97	2006-07-01	6.76	2011-07-01	5.76	2016-07-01	4.22
2001-08-01	7.85	2006-08-01	6.59	2011-08-01	5.36	2016-08-01	4.24
2001-09-01	8.03	2006-09-01	6.43	2011-09-01	5.27	2016-09-01	4.31
2001-10-01	7.91	2006-10-01	6.42	2011-10-01	5.37	2016-10-01	4.38
2001-11-01	7.81	2006-11-01	6.20	2011-11-01	5.14	2016-11-01	4.71
2001-12-01	8.05	2006-12-01	6.22	2011-12-01	5.25	2016-12-01	4.83
2002-01-01	7.87	2007-01-01	6.34	2012-01-01	5.23	2017-01-01	4.66
2002-02-01	7.89	2007-02-01	6.28	2012-02-01	5.14	2017-02-01	4.64
2002-03-01	8.11	2007-03-01	6.27	2012-03-01	5.23	2017-03-01	4.68
2002-04-01	8.03	2007-04-01	6.39	2012-04-01	5.19		
2002-05-01	8.09	2007-05-01	6.39	2012-05-01	5.07		
2002-06-01	7.95	2007-06-01	6.70	2012-06-01	5.02		
2002-07-01	7.90	2007-07-01	6.65	2012-07-01	4.87		
2002-08-01	7.58	2007-08-01	6.65	2012-08-01	4.91		
2002-09-01	7.40	2007-09-01	6.59	2012-09-01	4.84		
2002-10-01	7.73	2007-10-01	6.48	2012-10-01	4.58		
2002-11-01	7.62	2007-11-01	6.40	2012-11-01	4.51		
2002-12-01	7.45	2007-12-01	6.65	2012-12-01	4.63		
2003-01-01	7.35	2008-01-01	6.54	2013-01-01	4.73		
2003-02-01	7.06	2008-02-01	6.82	2013-02-01	4.85		
2003-03-01	6.95	2008-03-01	6.89	2013-03-01	4.85		
2003-04-01	6.85	2008-04-01	6.97	2013-04-01	4.59		
2003-05-01	6.38	2008-05-01	6.93	2013-05-01	4.73		
2003-06-01	6.19	2008-06-01	7.07	2013-06-01	5.19		
2003-07-01	6.62	2008-07-01	7.16	2013-07-01	5.32		
2003-08-01	7.01	2008-08-01	7.15	2013-08-01	5.42		
2003-09-01	6.79	2008-09-01	7.31	2013-09-01	5.47		
2003-10-01	6.73	2008-10-01	8.88	2013-10-01	5.31		
2003-11-01	6.66	2008-11-01	9.21	2013-11-01	5.38		
2003-12-01	6.60	2008-12-01	8.43	2013-12-01	5.38		

**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

**5/2/2017 4:01:21 PM**

**in**

**Case No(s). 16-1852-EL-SSO, 16-1853-EL-AAM**

Summary: Testimony Direct Testimony of Daniel J. Duann, Ph.D. on Behalf of the Office of the Ohio Consumers' Counsel electronically filed by Ms. Deb J. Bingham on behalf of Michael, William J. Mr.