

**BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Application of Duke Energy Ohio, Inc., for an Increase in Electric Distribution Rates.)))	Case No. 17-0032-EL-AIR
In the Matter of the application of Duke Energy Ohio, Inc., for Tariff Approval.))	Case No. 17-0033-EL-ATA
In the Matter of the Application of Duke Energy Ohio, Inc. for Approval to Change Accounting Methods.))	Case No. 17-0034-EL-AAM
In the Matter of the Application of Duke Energy Ohio, Inc. for Approval to Modify Rider PSR.)))	Case No. 17-0872-EL-RDR
In the Matter of the Application of Duke Energy Ohio, Inc. for Approval to Amend Rider PSR.)))	Case No. 17-0873-EL-ATA
In the Matter of the Application of Duke Energy Ohio, Inc. for Approval to Change Accounting Methods.)))	Case No. 17-0874-EL-AAM
In the Matter of the Application of Duke Energy Ohio, Inc. for Authority to Establish a Standard Service Offer Pursuant to Section 4928.143, Revised Code, in the Form of an Electric Security Plan, Accounting Modifications and Tariffs for Generation Service.)))))))))	Case No. 17-1263-EL-SSO
In the Matter of the Application of Duke Energy Ohio, Inc. for Authority to Amend Its Certified Supplier Tariff, P.U.C.O. No. 20.))))	Case No. 17-1264-EL-ATA
In the Matter of the Application of Duke Energy Ohio, Inc. for Authority to Defer Vegetation Management Costs.)))	Case No. 17-1265-EL-AAM

In the Matter of the Application of Duke)
Energy Ohio, Inc. to Establish Minimum)
Reliability Performance Standards) Case No. 16-1602-EL-ESS
Pursuant to Chapter 4901:1-10, Ohio)
Administrative Code.)

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

IN OPPOSITION TO THE JOINT STIPULATION AND RECOMMENDATION

**On Behalf of
The Office of the Ohio Consumers' Counsel**
*65 East State Street, 7th Floor
Columbus, Ohio 43215-4213*

June 25, 2018

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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 65 East State, 7th Floor,
5 Columbus, Ohio, 43215-4213. I am a Principal Regulatory Analyst with the
6 Office of the Ohio Consumers' Counsel ("OCC").

7

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

10 ***A2.*** I joined OCC in January 2008 as a Senior Regulatory Analyst. I was promoted to
11 my current position in November 2011. My primary responsibility is to assist
12 OCC by participating in regulatory proceedings before the Public Utilities
13 Commission of Ohio ("PUCO"). These proceedings include rate cases, cost of
14 capital, alternative regulation, fuel cost recovery, standard service offer, and other
15 types of cases filed by Ohio's electric, gas, and water utilities.

16

17 Prior to the OCC, I was a Utility Examiner II in the Forecasting Section of the
18 Ohio Division of Energy, Ohio Department of Development, from 1983 to 1985.
19 The Forecasting Section was later transferred to the PUCO. From 1985 to 1986, I
20 was an Economist with the Center for Health Policy Research at the American
21 Medical Association in Chicago. In late 1986, I joined the Illinois Commerce
22 Commission as a Senior Economist at its Policy Analysis and Research Division.
23 From 1987 to 1995, I was employed as a Senior Institute Economist at the

1 National Regulatory Research Institute (“NRRI”) at The Ohio State University.
2 NRRI has been a policy research center funded by state public utilities
3 commissions since 1976. My work at NRRI involved research, authoring
4 publications, and public services in many areas of utility regulation and energy
5 policy. I was an independent consultant from 1996 to 2007.

6
7 I received my Ph.D. degree in Public Policy Analysis from the Wharton School,
8 University of Pennsylvania. I also have an M.S. degree in Energy Management
9 and Policy from the University of Pennsylvania, and an M.A. degree in
10 Economics from the University of Kansas. I completed my undergraduate study
11 in Business Administration at the National Taiwan University, Taiwan, Republic
12 of China. I have been a Certified Rate of Return Analyst conferred by the Society
13 of Utility and Regulatory Financial Analysts since 2011.

14

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

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

1 ***Q4. HAVE YOU PREVIOUSLY TESTIFIED BEFORE OTHER REGULATORY***
2 ***AGENCIES AND LEGISLATURES?***

3 ***A4.*** Yes. I have testified before the Illinois Commerce Commission and the
4 California State Legislature (Senate) on the restructuring and deregulation of
5 electric utilities.

6
7 **II. PURPOSES AND RECOMMENDATIONS**

8
9 ***Q5. WHAT ARE THE PURPOSES OF YOUR TESTIMONY?***

10 ***A5.*** First, I will explain and support five OCC objections (OCC Objections 5 to 9)¹
11 related to the rate of return analysis in the Staff Report (“Staff Report”)² of the
12 pending distribution rate case filed by Duke Energy Ohio, Inc. (“Duke” or
13 “Utility”) on March 2, 2017 (“Rate Case Application”)³ (Case No. 17-32-EL-AIR
14 *et al.*). Second, I will explain OCC’s opposition, primarily from the rate of return
15 perspective, to the proposed Stipulation and Recommendation (“Settlement”)
16 filed by Duke on April 13, 2018.⁴ Third, I will respond to certain positions

¹ *In re Application of Duke Energy Ohio, Inc. for an Increase in Elec. Distribution Rates*, Case No. 17-0032-EL-AIR *et al.* (Rate Case Application), Objections to the PUCO Staff’s Report of Investigation by the Office of Ohio Consumers’ Counsel (October 26, 2017).

² Rate Case Application, Staff Report (September 26, 2017).

³ Rate Case Application, Application of Duke Energy Ohio, Inc. (March 2, 2017).

⁴ Rate Case Application, Stipulation and Recommendation (April 13, 2018). This Stipulation and Recommendation is purported to resolve all issues raised in the Rate Case Application and three other proceedings: the Application for an Electric Security Plan (“ESP Application”) filed on June 1, 2017 (Case No. 17-1263-EL-SSO *et al.*), the Application for modifying Price Stabilization Rider (“Rider PSR Application”) filed on March 31, 2017 (Case No. 17-872-EL-RDR, *et al.*), and the Application to establish Minimum Reliability Performance Standard (“Reliability Standard Application”) filed on July 22, 2016 (Case No. 16-1602-EL-ESS).

1 advocated in testimony filed by Duke on June 6, 2018, specifically, testimony that
2 discussed Duke's credit ratings and financial integrity, in the context of the
3 approval of the proposed Settlement and the Tax Cuts and Jobs Act of 2017
4 ("TCJA").⁵

5
6 ***Q6. PLEASE SUMMARIZE YOUR CONCLUSIONS.***

7 ***A6.*** Based on my experience as a regulatory economist and my review of the
8 Applications, testimony, and related materials of these proceedings, I conclude
9 that the return on equity ("ROE") and rate of return ("ROR") proposed in the
10 Staff Report of the Rate Case Application is excessive and unreasonable.⁶ Duke
11 and the Signatory Parties did propose a different set of ROE and ROR in the
12 proposed Settlement.⁷ However, the stipulated ROE and ROR in the proposed
13 Settlement are even higher than those midpoint ROE and ROR recommended in
14 the Staff Report, and thus even more excessive. Therefore, I conclude the
15 proposed Settlement, as a package, as well as the stipulated ROE and ROR, if
16 adopted by the PUCO, will harm customers and not benefit the public interest.
17 The adoption of these ROE and ROR by the PUCO will also violate important
18 regulatory principles and Ohio electric services policy.

⁵ See Rate Case Application, Supplemental Testimony of John L. Sullivan, III and Direct Testimony of Steven M. Fetter (June 6, 2018).

⁶ The Staff Report proposed a range of ROE of 9.22 percent to 10.24 percent with a midpoint of 9.73 percent and a range of ROR of 7.20 percent to 7.74 percent with a midpoint of 7.47 percent.

⁷ The proposed Settlement recommended a rate of return of 7.54 percent and a return on equity of 9.84 percent.

1 Additionally, I conclude that the positions advocated by Duke that the PUCO
2 should adopt the proposed Settlement, in particular the Price Stabilization Rider,
3 in order to enhance and maintain the credit ratings of Duke is without merit and
4 unreasonable. There is no credible evidence provided in these proceedings that
5 Duke's investment-grade credit rating will be significantly impacted by the
6 rejection of the proposed Settlement. On the other hand, the additional costs to
7 Duke's customers for rates and riders set by the PUCO to enhance or maintain
8 Duke's current credit ratings, as claimed by Duke to be desirable, are likely to be
9 much higher than the benefits (if any) that might result from enhancing and
10 maintaining Duke's credit ratings.

11
12 Furthermore, it is my understanding, as a regulatory economist, that existing Ohio
13 statutes and long-standing regulatory principles have amply protected the
14 financial integrity of Ohio's regulated utilities, including Duke. There is no need
15 for the PUCO to consider Duke's credit ratings separately and distinctly in setting
16 the rates and terms of service for Duke's distribution customers. PUCO simply
17 needs to adhere to its statutory responsibility. Duke, as part of a \$50 billion
18 corporation (the market value of Duke Energy Corporation), if properly managed,
19 should be able to maintain its own credit ratings and financial integrity.

20
21 ***Q7. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.***

22 ***A7.*** I recommend the PUCO reject the proposed Settlement, in particular because of
23 the unreasonably high ROE and ROR included in the proposed Settlement. I

1 recommend the PUCO adopt OCC's objections to the Staff Report in the Rate
2 Case Application and set a return on equity of 8.28 percent and a rate of return of
3 6.75 percent for Duke.⁸ In addition, I recommend that the base distribution
4 revenue requirement and all riders and charges with a revenue gross-up factor for
5 federal corporate income tax, should be calculated using an updated gross revenue
6 conversion factor based on current federal corporate income tax rate, in addition
7 to any other proper adjustments. In doing so, the PUCO can ensure the benefits
8 intended and associated with the Tax Cuts and Jobs Act of 2017 are timely passed
9 along to Duke's distribution customers.

10
11 **III. THE RATE OF RETURN ANALYSIS IN THE STAFF REPORT IS**
12 **FLAWED AND UNREASONABLE**

13
14 ***Q8. WHAT ARE THE REGULATORY PRINCIPLES COMMONLY USED IN***
15 ***SETTING A REASONABLE RATE OF RETURN FOR A REGULATED***
16 ***UTILITY SUCH AS DUKE?***

17 ***A8.*** Based on my own experience and knowledge, the regulatory principles in setting
18 a reasonable rate of return (and its associated components such as return on
19 equity, cost of debt, and capital structure) for a regulated utility in the United
20 States are well-established and recognized. There is really no dispute regarding

⁸ The calculation of OCC's recommended return on equity and rate of return will be provided later in my testimony.

these fundamental regulatory principles. Because I will refer to them frequently later in my testimony, they are summarized here:

- (1) The resulting rates (as set based on the authorized rate of return) paid by the customers of the regulated utility should be just and reasonable;
- (2) The regulated utility should have funds available to continue its normal course of business;
- (3) The regulated utility should have access to capital (both equity and debt) at reasonable cost under current market conditions; and
- (4) The shareholders of the regulated utility should be provided the opportunity (not a guarantee) to earn a fair (but not excessive) return on their invested capital in comparison to other investments available.

Q9. PLEASE SUMMARIZE THE RATE OF RETURN ANALYSIS IN THE STAFF REPORT.

A9. The Staff Report in the Rate Case Application used both the Capital Asset Pricing Model (“CAPM”) and the Discounted Cash Flow Model (“DCF”) to estimate Duke’s return on equity. In the Staff Report, the estimated return on equity was 8.88 percent under CAPM and 9.77 percent under DCF.⁹ Then, the Staff Report

⁹ Staff Report at 19.

1 applied a 0.25 weight to the result of the CAPM and a 0.75 weight to the DCF
2 result in calculating a baseline ROE of 9.55 percent.¹⁰ Assuming a one hundred
3 basis point range of uncertainty, the Staff Report proposed a ROE range of 9.05
4 percent to 10.05 percent.¹¹ The Staff Report then made an additional allowance
5 (using an adjustment factor of 1.019) to the range of baseline ROE to account for
6 hypothetical equity issuance and other costs. The final recommended range of
7 return on equity in the Staff Report was 9.22 percent to 10.24 percent.¹²

8
9 The Staff Report accepted the capital structure and the long-term debt cost
10 proposed by Duke in calculating the overall rate of return.¹³ By combining its
11 recommended range of ROE with a cost of long-term debt of 5.16 percent and a
12 stand-alone capital structure of 49.25 percent debt and 50.75 percent equity, the
13 Staff Report recommended a range for the overall rate of return of 7.20 percent to
14 7.74 percent.¹⁴ The midpoint of the range of the ROE would be 9.73 percent, and
15 the midpoint of the range of the ROR would be 7.47 percent.

¹⁰ *Id.*

¹¹ *Id.*

¹² *Id.*

¹³ Staff Report at 18.

¹⁴ *Id.*

**Q10. PLEASE SUMMARIZE OCC'S OBJECTIONS REGARDING THE RATE OF
RETURN ANALYSIS IN THE STAFF REPORT.**

A10. The rate of return analysis in the Staff Report of Duke's Rate Case Application is flawed and unreasonable and violates the second and third prong of the PUCO's three-part test for approval of a settlement. OCC has filed five objections to the rate of return analysis in the Staff Report.¹⁵ OCC objects to the "risk-free return" of 4.45 percent and the "equity risk premium" of seven percent used in the CAPM analysis of the Staff Report. The risk-free return and equity risk premium used in the Staff Report are both overstated and unreasonable. OCC also objects to the use of unequal weights (0.25 and 0.75, respectively) to the results obtained through the CAPM and DCF analyses in calculating the baseline ROE. Additionally, OCC objects to the increase of a baseline ROE for equity issuance and other costs as proposed in the Staff Report. The use of such an adder will unnecessarily increase the ROE and ROR of Duke. Furthermore, OCC objects to the ranges of overall rate of return and return on equity recommended in the Staff Report because they are derived from flawed data and methodology and far exceed the ROR and ROE authorized in recent rate cases for similar electric utilities nationwide.

¹⁵ Objections to the PUCO Staff's Report of Investigation by the Office of Ohio Consumers' Counsel (October 26, 2017).

Q11. PLEASE EXPLAIN OCC OBJECTION 5.

A11. In a rate of return analysis, the risk-free return used in the CAPM analysis is typically derived from the actual yields (or interest rates) of long-term (usually from ten-year maturity to 30-year maturity) United States Treasury notes and bonds. The actual yields of these government notes and bonds are considered by many financial analysts as a good proxy for risk-free return. However, the risk-free return of 4.45 percent used in the Staff Report was based on the forecasted (instead of actual) yields of 30-year Treasury bonds by the Congressional Budget Office (4.1 percent) and the Bureau of Labor Statistics (4.8 percent).¹⁶ The Staff Report did not indicate when these two yield forecasts were made or what time period (for example, next year or next five years) the forecasted yields were referring.

This estimated risk-free return of 4.45 percent used in the Staff Report was overstated and unreasonable for various reasons. First, this proposed “risk free return” of 4.45 percent in the Staff Report was not supported by actual financial market conditions. I have reviewed the daily yields of the U.S. Treasury bonds from January 3, 2017 through December 29, 2017 compiled by the U.S. Department of the Treasury.¹⁷ It is included here as Attachment DJD-2. During this time, the actual yields of U.S. Treasury notes and bonds were consistently

¹⁶ Staff Report at 18.

¹⁷ See <https://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yieldYear&year=2017>.

1 below three percent and considerably lower than the 4.45 percent used in the Staff
2 Report.

3
4 Second, the Staff Report exclusively used the yields of 30-year U.S. Treasury
5 bonds and did not consider the yields of Treasury notes and bonds with a shorter
6 maturity.¹⁸ This would unnecessarily overstate the risk-free return to be used in
7 the CAPM analysis. The yield on a debt security with a longer maturity is almost
8 always higher than the yield on a debt security with a shorter maturity. The yields
9 of U.S. Treasury notes and bonds with different maturity should be used in
10 estimating a risk-free return for the CAPM analysis. The PUCO Staff has
11 consistently used the average actual yields of the U.S. Treasury notes and bonds
12 with different maturity as a proxy for the risk-free return used in the CAPM
13 analysis. For example, in the Staff Report for the last Duke electric distribution
14 rate case (PUCO Case No. 12-1682-EL-AIR et al.), the actual yields of the 10-
15 year U.S. Treasury notes and 30-year U.S. Treasury bonds were used in
16 estimating the risk-free return.¹⁹ The resulting risk-free return in the Staff Report
17 in that case was 2.255 percent. Staff has not offered nor is there any valid reason
18 to depart from this well-established practice in its review of the Rate Case
19 Application.

¹⁸ Staff Report at 18.

¹⁹ See PUCO Case No. 12-1682-EL-AIR et al., Staff Report at 17 (Jan. 4, 2013).

1 Third, the forecasted yields of long-term government bonds are subjective and
2 have frequently turned out to be wrong, especially over a longer forecasting
3 period. I have seen some forecasts (or testimonies) that were predicting or
4 supporting rising and higher interest rates into the future. They all turned out to
5 be wrong. For example, in PUCO Case No. 12-1682-EL-AIR *et al.*, Duke's
6 witness in that case and in this case, Roger A. Morin, Ph.D. indicated he relied on
7 "the forecast yields on 30-year U.S. Treasury bonds from three prominent
8 sources: Global Insight, Value Line, and Consensus Economics Inc." in
9 developing his risk-free return in that case.²⁰ Dr. Morin further proclaimed that²¹:

10 The average 30-year long-term bond yield forecast from the three
11 sources is 3.6% in 2014, 4.3% in 2015, 5.0% in 2016, and 5.4% in
12 2017. The average over the 2015-2017 period is 4.6%, which also
13 matches the Global Insight 2015 forecast.

14
15 Dr. Morin himself concluded in his direct testimony in the same case that "The
16 average 30-year long-term bond yield forecast of 4.7% is a reasonable estimate of
17 the risk-free rate for purpose of a forward-looking CAPM analysis."²²

²⁰ See PUCO Case No. 12-1682-EL-AIR *et al.*, Supplemental Direct Testimony of Roger A. Morin, Ph.D. at 9-10 (Feb. 19, 2013).

²¹ *Id* at 10.

²² See PUCO Case No. 12-1682-EL-AIR *et al.*, Direct Testimony of Roger A. Morin, Ph.D. at 34 (July 20, 2012).

It is not surprising that these forecasted yields from the three “prominent” sources were way off from the actual yields of the 30-year U.S. Treasury bonds during the 2014 to 2017 period. The actual yields were much lower than those forecasted yields. A comparison of the actual yields with the forecasted yields as reported by Dr. Morin in his 2013 testimony is shown in Table 1. Interestingly, it turned out the average actual yields of the ten-year and 30-year U.S. Treasury bonds of 2.255 percent used in the Staff Report as the risk-free return in that case was more accurate than the forecasted yields cited in Dr. Morin’s 2013 testimony.

Table 1
A Comparison of Forecasted and Actual Yields of 30-Year Treasury Bonds
(2014 to 2017)

		2014	2015	2016	2017
Forecasted Yield cited by Dr. Morin	Global Insight	4.1	4.6	5.3	5.4
	Value Line	3.4	4.0	4.5	n.a.
	Consensus Economics Inc.	3.4	4.4	5.1	5.4
	Average	3.6	4.3	5.0	5.4
Actual Yield Reported by U.S. Department of Treasury	Highest	3.92	3.22	3.19	2.93
	Lowest	2.74	2.25	2.14	2.37
	Average	3.33	2.74	2.67	2.65

In summary, the Staff Report does not explain why it deviates from the well-established method of estimating the risk-free return in this proceeding or why it is reasonable to do so. A risk-free return used in a CAPM should be based on the actual market yields rather than any forecasted yields. Based on my review of the actual yields of U.S. Treasury notes and bonds in recent years, the risk-free return used in the CAPM analysis should be no higher than three percent at this time.

1 ***Q12. PLEASE EXPLAIN OCC OBJECTION 6.***

2 ***A12.*** The Staff Report proposed an equity risk premium of seven percent for its CAPM
3 analysis.²³ The Staff Report indicated this equity risk premium was a derived
4 spread of arithmetic mean total returns between large company stocks (12.1
5 percent) and long-term government bonds (5.1 percent) in 2014.²⁴ This “equity
6 risk premium” of seven percent proposed in the Staff Report is overstated and
7 should be reduced accordingly. I have not been able to confirm the mean total
8 returns of 5.1 percent for long-term government bonds cited in the Staff Report. I
9 have reviewed the source indicated in the Staff Report, the *Ibbotson SBBI 2015*
10 *Classical Yearbook*, and found that the arithmetic means annual total return for
11 the period of 1926 to 2014 for long-term government bonds was 6.1 percent, not
12 5.1 percent as cited in the Staff Report.²⁵ See Attachment DJD-3. If this error
13 were corrected, the resulting equity premium, as calculated using the Staff
14 Report’s methodology, would be six percent, not seven percent.²⁶

15

16 I have also reviewed more recent financial data (for the period of 1926 through
17 the end of 2016) regarding the long-term market returns of different classes of
18 assets (equity, government bonds, and corporate bonds) compiled in a similar
19 report. Specifically, my review of the annual total returns compiled in the *Duff &*

²³ Staff Report at 18.

²⁴ *Id.*

²⁵ See *Ibbotson SBBI 2015 Classic Yearbook* at 40, Table 2-1, Morningstar, Inc., Chicago, Illinois, 2015.

²⁶ 6% = 12.1% - 6.1%.

1 *Phelps 2017 SBBI Yearbook*²⁷ (which is a re-named publication to the *Ibbotson*
2 *SBBI 2015 Classical Yearbook*) would indicate the equity risk premium (as
3 calculated by the difference between the arithmetic means of the annual returns of
4 large corporations and government bonds for the period of 1926 to 2016) is
5 approximately six percent.²⁸ See Attachment DJD-4. If the risk premium were
6 calculated by the difference between the geometric means of annual returns for
7 the same period, the equity risk premium would be 4.5 percent.²⁹ Both
8 measurements are below the seven percent equity risk premium cited in the Staff
9 Report. In summary, a reasonable estimate of the equity risk premium currently
10 is likely to be six percent instead of seven percent.

11
12 ***Q13. PLEASE EXPLAIN OCC OBJECTION 7.***

13 ***A13.*** In this proceeding, the Staff Report applied different and unequal weights (0.25
14 and 0.75, respectively) to the results obtained through the CAPM and DCF
15 analyses to calculate a baseline ROE.³⁰ The Staff Report indicated that this
16 unequal weighting was due to the relatively low “beta” value of the comparable
17 companies in the proxy group.³¹ This seems to indicate a lower average “beta” of
18 the proxy group would make the CAPM result less reliable or relevant when

²⁷ See *Duff & Phelps 2017 SBBI Yearbook* at 2-6, Exhibit 2.3, John Wiley & Sons, Inc. Hoboken, New Jersey, 2017.

²⁸ 6% = 12.0% - 6.0%.

²⁹ 4.5% = 10.0% - 5.5%.

³⁰ Staff Report at 19.

³¹ *Id.*

1 estimating Duke's return on equity. I am not aware of any financial theory or
2 empirical evidences that would support this implied conclusion of the Staff
3 Report. All things being equal, a lower "beta" will lead to a lower estimated ROE
4 under the CAPM. But a lower estimated ROE resulting from the CAPM does not
5 diminish the validity or the reasonableness of the CAPM result. Based on my
6 understanding of the theoretical basis of CAPM, a lower average "beta" is exactly
7 the parameter that should be included to reflect the expected result that an
8 investment with a lower risk (as reflected through a lower volatility) such as a
9 regulated utility would require a lower return. A lower "beta" is not a reason to
10 under-weigh the CAPM result.

11
12 This assignment of unequal weights to the CAPM and DCF results is also a
13 departure from the well-established method used in the Staff Reports of many
14 electric and gas distribution rate cases in the past. In these past proceedings, the
15 Staff Reports typically calculated the simple average (that is equal weightings) of
16 the CAPM and DCF results as the baseline ROEs until recently.³² The Staff
17 Report has failed to provide an adequate and reasonable justification or
18 explanation for this change in its method of analysis.

³² See, e.g., PUCO Case No. 08-709-EL-AIR, Staff Report at 14-16 (Jan. 27, 2009); PUCO Case No. 11-0351-EL-AIR, Staff Report at 14-16 (Sept. 15, 2011); PUCO Case No. 07-551-EL-AIR, Staff Report at 15-17 (Dec. 4, 2007); PUCO Case No. 07-589-GA-AIR, Staff Report at 15 (Dec. 20, 2007); PUCO Case No. 07-829-GA-AIR, Staff Report at 22 (May 23, 2008); PUCO Case No. 08-72-GA-AIR, Staff Report at 12 (Aug. 21, 2008); PUCO Case No. 11-4161-WS-AIR, Staff Report at 14 (Jan. 31, 2012); PUCO Case No. 09-1044-WW-AIR, Staff Report at 16 (May 21, 2010).

1 ***Q14. PLEASE EXPLAIN OCC OBJECTION 8.***

2 ***A14.*** The Staff Report proposed an adjustment factor of 1.019 to the baseline ROE to
3 account for equity issuance and other costs.³³ This proposed adjustment factor of
4 1.019 was not based on Duke's actual financial data in this proceeding. Rather,
5 this adjustment factor was based on the retained earnings and common equity data
6 of a Duke electric distribution rate case almost ten years ago (PUCO Case No. 08-
7 709-EL-AIR, *et al.*). According to the Staff Report, this number of 1.019 was
8 chosen because Duke has negative retained earnings in the pending Rate Case
9 Application.³⁴ By allowing this adjustment, the Staff Report increased the
10 recommended ROE from a range of 9.05 percent to 10.05 percent to a range of
11 9.22 percent to 10.24 percent.³⁵

12

13 I do not support this adjustment of the baseline ROE for equity issuance and other
14 costs. This adjustment is unnecessary and unreasonable. First, the addition of an
15 equity issuance and other costs to a baseline ROE is contrary to established
16 regulatory principles of setting a reasonable rate of return for a regulated utility.
17 This adjustment in the Staff Report reflected a misunderstanding of the purpose
18 and function of setting a reasonable ROE for a regulated utility. As discussed
19 earlier, the purpose of setting a ROE is to provide the investors an opportunity to
20 earn a currently-determined return on invested capital that is comparable to the

³³ Staff Report at 19.

³⁴ *Id.*

³⁵ *Id.*

1 returns that can be earned by the investors from alternative investments with
2 comparable risks. The purpose of setting a reasonable ROE and a reasonable ROR
3 for a regulated utility is not to authorize the regulated utility to collect from
4 customers previously incurred costs associated with issuing equity. Any equity
5 issuance and other costs should have already fully reflected in the market prices
6 of common stock, per share earnings and dividend projections, and other market
7 signals of those electric utilities selected in the comparable group. There is no
8 need to make an additional equity issuance and other costs adjustment after the
9 fact.

10
11 Second, even if an adjustment for equity issuance and other costs can be allowed,
12 there is no actual cost basis for the proposed adjustment factor of 1.019. As
13 indicated in the Staff Report, this adjustment factor of 1.019 was based on the
14 retained earnings and common equity data presented in Duke's electric
15 distribution rate case almost ten years ago. It was not based on the financial
16 information filed in the pending Rate Case Application. There was also no
17 demonstration in the Staff Report that Duke was likely to incur these costs soon or
18 the magnitude of these costs. The Staff Report simply used a generic 3.5 percent
19 "add-on" as a proxy for equity issuance and other costs.³⁶ This addition of an
20 arbitrary and unproven equity issuance and other costs would unreasonably
21 increase the cost of electric services to Duke's customers.

³⁶ Staff Report at 145, Schedule D-1.1.

1 ***Q15. PLEASE EXPLAIN OCC OBJECTION 9.***

2 ***A15.*** OCC objects to the recommended ROE and ROR in the Staff Report. The Staff
3 Report recommended a range of ROE of 9.22 percent to 10.24 percent and a range
4 of ROR of 7.20 percent to 7.74 percent. The midpoint ROE was 9.73 percent and
5 the midpoint ROR 7.47 percent. As discussed above, the ROE and ROR
6 proposed in the Staff Report were derived using unreasonable data or
7 methodology. In addition, the recommended ROE and ROR in the Staff Report
8 were much higher than those authorized in rate cases for electric distribution
9 utilities in recent years in many other jurisdictions.

10

11 Specifically, as reported in an industry publication, *Regulatory Focus*, the average
12 ROE authorized for the twelve delivery-only electric utilities (similar to Duke) in
13 rate cases decided in 2016 was 9.31 percent.³⁷ The average ROE authorized for
14 the fourteen delivery-only electric utilities in rate case decided in 2017 was
15 9.43%.³⁸ Similarly, the average authorized rate of return for all electric utilities
16 (including delivery-only electric utilities) in cases decided in 2016 was 7.28%³⁹
17 and 7.18% for cases decided in 2017.⁴⁰ They are all below the midpoint ROE and
18 ROR recommended in the Staff Report. There is no justification to authorize

³⁷ Regulatory Research Associates, *Regulatory Focus: Major Rate Case Decisions – January-December 2016* (January 18, 2017) at 6 (Attachment DJD-5).

³⁸ Regulatory Research Associates, *Regulatory Focus: Major Rate Case Decisions 2017* (January 30, 2018) at 7 (Attachment DJD-6).

³⁹ Attachment DJD-5 at 9.

⁴⁰ Attachment DJD-6 at 11.

1 Duke a return on equity or a rate of return that is significantly higher than those
2 authorized for electric distribution utilities nationwide.

3

4 ***Q16. WHY SHOULD THE PUCO CONSIDER THE RETURN ON EQUITY AND***
5 ***RATE OF RETURN RECENTLY AUTHORIZED FOR ELECTRIC***
6 ***DISTRIBUTION UTILITIES NATIONWIDE IN THIS PROCEEDING?***

7 ***A16.*** As discussed earlier, one of the fundamental principles in setting a reasonable
8 ROE for a regulated utility is to set a return on equity so that an ordinary investor
9 can earn a return from investing in this regulated utility comparable to the returns
10 he or she expects to earn from other investments with similar risk. If such a
11 comparable ROE is authorized by the regulatory agency, the regulated utility is
12 afforded an opportunity to attract capital at reasonable terms, to maintain its
13 financial integrity, and to have funds available to conduct its normal business of
14 providing utility services. In this regard, the average ROE authorized nationwide
15 in recent years can be viewed as a proxy for the opportunity cost to an investor
16 considering investing in Duke Energy Corporation (the publicly-traded parent
17 company of Duke) directly and Duke indirectly. Then the average ROE
18 authorized in recent years in Ohio and other jurisdictions can be considered a
19 useful “yardstick” in determining if a return on equity or a rate of return is
20 reasonable for Duke and for its consumers to pay.

1 The PUCO has expressed a similar view regarding the consideration of the
2 average reported ROE for comparable utilities in the past.⁴¹ For example, in its
3 Opinion and Order approving an ESP of AEP Ohio, the PUCO stated:

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

8
9 In addition, Duke (or Duke's witness in the pending Rate Case Application) has
10 advocated in the past (for example, the last electric distribution rate case of Duke)
11 the use of the authorized ROEs of comparable utilities in setting a reasonable
12 return on equity for a regulated utility.⁴² This is yet another indication that it is
13 reasonable for the PUCO to consider the average return on equity and rate of
14 return authorized for distribution-only electric utilities in rate cases decided in
15 recent years in other jurisdictions when setting a reasonable ROE and ROR for
16 Duke in this proceeding.

⁴¹ PUCO Case No. 13-2385-EL-SSO *et al.*, Opinion & Order, 84 (Feb. 25, 2015).

⁴² PUCO Case No. 12-1682-EL-AIR *et al.*, Supplemental Direct Testimony of Morin at 3.

**Q17. HAS DUKE DEMONSTRATED ANY DISTINCT AND ADDITIONAL
FINANCIAL AND BUSINESS RISKS THAT SET IT APART FROM THE
ELECTRIC DISTRIBUTION UTILITIES AS A GROUP?**

A17. No. I am not aware of any unusual and additional financial and business risks associated with Duke that differentiate it from the U.S. electric distribution utilities as a group. I have reviewed the credit ratings, the filings made by Duke to the regulatory agencies, and the presentations made by Duke Energy Corporation (Duke's parent company) to its investors. I have not found the equity and debt security investors of Duke or its parent company were facing any unusual and additional financial and business risks to justify a much higher ROE that consumers would pay than the average or typical ROE authorized for the electric utilities considered as a group.

Instead, I concluded that Duke has operated in a favorable (or credit-supportive) regulatory environment in Ohio where Duke as well as other electric utilities were given a number of riders and stability charges unrelated to the costs of providing services. The credit rating agency recognized this and has recently revised Duke's outlook from "stable" to "positive" and affirmed Duke's existing credit ratings.⁴³ In its Credit Action report, Moody's noted that the "positive" outlook recognized Duke's financial credit metrics to remain strong and Duke would continue to benefit from numerous riders and trackers as they resulted in more

⁴³ Moody's Investors Service, *Rating Action: Moody's revises Duke Ohio outlook to positive, ratings affirmed* (August 10, 2017) (Attachment DJD-7).

1 stable and predictable cash flow for the utility. In short, it seems that Duke does
2 not appear to exhibit any financial, operational, and regulatory risks that would
3 make it riskier than the U.S. electric distribution utilities as a group. There is no
4 valid reason to give Duke a return on equity or a rate of return that is much higher
5 than those recently authorized for electric distribution utilities in Ohio and other
6 jurisdictions.

7

8 **IV. A RATE OF RETURN OF 6.75 PERCENT IS REASONABLE AND FAIR**
9 **FOR DUKE’S CUSTOMERS AND SHAREHOLDERS**

10

11 ***Q18. PLEASE SUMMARIZE OCC’S PROPOSED ADJUSTMENTS TO THE***
12 ***STAFF REPORT’S RECOMMENDED RETURN ON EQUITY AND RATE***
13 ***OF RETURN TO PROTECT CONSUMERS.***

14 ***A18.*** Based on the five OCC objections discussed above, I propose several adjustments
15 (four addressing issues related to the data and methodology used and one
16 addressing the overall recommendation) to the rate of return analysis and
17 recommended ROE and ROR in the Staff Report. These OCC-proposed
18 adjustments are:

- 19 (1) To adopt a “risk-free return” of three percent for the CAPM
20 analysis;
- 21 (2) To adopt an “equity risk premium” of six percent for the
22 CAPM analysis;

- (3) To weigh equally the results of CAPM and DCF analyses in calculating a baseline ROE;
- (4) To remove the PUCO Staff-proposed allowance in ROE for generic and hypothetical equity issuance and other costs; and
- (5) To adopt a return on equity of 8.28 percent and a rate of return of 6.75 percent for Duke's Ohio electricity distribution operation in these proceedings.

Q19. PLEASE EXPLAIN THE CALCULATION OF OCC'S RECOMMENDED RETURN ON EQUITY AND RATE OF RETURN FOR DUKE.

A19. If OCC's proposed adjustments to the risk-free return and equity risk premium were adopted, the CAPM-derived ROE would be reduced from 8.88 percent to 6.80 percent.

$$6.80\% = 3\% + (0.633 \times 6.00\%).$$

If OCC's proposed adjustment of equally weighing the CAPM and DCF results were adopted as well, the baseline cost of common equity would be the average (8.28 percent) of the CAPM result (6.80 percent, as calculated above) and DCF result (9.77 percent).

$$8.28\% = (0.5 \times 6.80\%) + (0.5 \times 9.77\%).$$

If OCC's proposed elimination of the equity issuance and related costs adjustment were accepted, the OCC-proposed baseline ROE at 8.28 percent would not be

adjusted upward. By using the same capital structure (49.25 percent debt and 50.75 percent equity) and the cost of long-term debt (5.16 percent), the overall rate of return for Duke would be 6.75 percent.

$$6.75\% = (0.4925 \times 5.16\%) + (0.5075 \times 8.28\%).$$

This 6.75 percent is OCC's recommended rate of return for Duke in these proceedings. This rate of return of 6.75 percent, gross-up for the prevailing federal corporate income tax rate of 21 percent can be applied in calculating the revenue requirements of the base distribution service and the Distribution Capital Investment Rider ("Rider DCI") and other riders and charges with a return on incremental capital investments if these riders and charges were approved by the PUCO. Other OCC witnesses will discuss if these proposed riders and charges are reasonable and should be approved.

V. THE PUCO SHOULD REJECT THE PROPOSED SETTLEMENT TO PROTECT DUKE'S CUSTOMERS.

Q20. WHAT IS THE THREE-PRONG TEST THAT THE PUCO COMMONLY USES IN EVALUATING A PROPOSED SETTLEMENT?

A20. The PUCO typically analyzes a proposed settlement under a three-prong test.⁴⁴

⁴⁴ See, for example, *In the Matter of the Application of Columbus Southern Power Company and Ohio Power Company, Individually and, if Their Proposed Merger is Approved, as a Merged Company collectively, AEP Ohio) for an Increase in Electric Distribution Rates*, PUCO Case No. 11-351-EL-AIR et al. Opinion and Order at 8-10 (December 14, 2011).

Specifically, the PUCO will consider:

- (1) Is the proposed settlement a product of serious bargaining among capable, knowledgeable parties?
- (2) Does the proposed settlement, as a package, benefit customers and the public interest?
- (3) Does the proposed settlement package violate any important regulatory principle or practice?

In addition to these three criteria, the PUCO also routinely considers whether the parties to the proposed Settlement represent diverse interests.⁴⁵ If the PUCO determines that a proposed settlement does not meet each of the three criteria outlined above, the settlement would not be adopted.

Q21. WHAT IS YOUR RECOMMENDATION REGARDING THE PROPOSED SETTLEMENT?

A21. I recommend that the PUCO reject the proposed Settlement because it fails the three-prong test under which settlements are evaluated by the PUCO. Specifically, the proposed Settlement, as a package, does not benefit customers or the public interest. Also, the terms and conditions of the proposed Settlement do not comport with the electric service policies of the State of Ohio and they violate important regulatory principles. My evaluation of the proposed Settlement is

⁴⁵ See *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*, Case No. 10-388-EL-SSO, Opinion and Order at 48 (August 25, 2010).

1 mainly from the effects of an unreasonably high rate of return and an overstated
2 Gross Revenue Conversion Factor on the revenue requirements of base
3 distribution service and Rider DCI paid by Duke's customers.

4
5 ***Q22. WHAT ARE THE RATE OF RETURN, RETURN ON EQUITY, AND GROSS***
6 ***REVENUE CONVERSION FACTOR RECOMMENDED IN THE***
7 ***PROPOSED SETTLEMENT?***

8 ***A22.*** The proposed Settlement stipulates a capital structure of 49.25 percent long-term
9 debt and 50.75 percent equity, and a return on equity of 9.84 percent in setting the
10 rate of return for Duke in these proceedings.⁴⁶ The overall rate of return agreed
11 upon in the proposed Settlement is 7.54 percent.⁴⁷ The cost of long-term debt
12 would be 5.16 percent based on the stipulated rate of return, return on equity and
13 capital structure.

14
15 The proposed Settlement also stipulates that, in calculating the base distribution
16 revenue requirement, a Gross Revenue Conversion Factor ("GRCF") of
17 1.5673731, will be used.⁴⁸ This GRCF, the same as the one used in the Staff
18 Report of the Rate Case Application,⁴⁹ is calculated based on a federal corporate
19 income tax rate of 35 percent.⁵⁰ The proposed Settlement specifies the use of a

⁴⁶ Stipulation and Recommendation at 7.

⁴⁷ *Id.*

⁴⁸ Stipulation and Recommendation, Attachment D, Schedule A-1, page 1 of 1.

⁴⁹ Staff Report, Schedule A-1, page 1 of 1.

⁵⁰ Staff Report, Schedule A-2, page 1 of 1.

1 pre-tax return of 8.94 percent in calculating the revenue requirement of Rider
2 DCI.⁵¹ This 8.94 percent pre-tax return is based on a federal corporate income tax
3 rate of 21 percent.⁵²
4

5 **VI. THE PROPOSED SETTLEMENT AS A PACKAGE DOES NOT BENEFIT**
6 **THE CUSTOMERS AND THE PUBLIC INTEREST**
7

8 ***Q23. PLEASE EXPLAIN WHY THE PROPOSED SETTLEMENT PACKAGE***
9 ***DOES NOT SATISFY THE SECOND PRONG THAT REQUIRES A***
10 ***SHOWING THAT THE SETTLEMENT BENEFITS CUSTOMERS AND***
11 ***THE PUBLIC INTEREST.***

12 ***A23.*** The second-prong test used by the PUCO in approving a settlement requires a
13 showing that the proposed Settlement, as a package, will benefit customers and
14 the public interest. My analysis, however, indicates that Duke's customers and the
15 public will not benefit from the proposed Settlement. Duke's customers will be
16 paying approximately \$40.4 million per year in additional costs through a higher
17 (than it otherwise would be) base distribution rates if the proposed Settlement
18 (with a higher ROR and a higher GRCF) is adopted. More specifically, under the
19 proposed Settlement, Duke's customers will be forced to accept a \$19.2 million
20 rate reduction and forego a likely \$59.6 million base rate reduction they are
21 entitled to.

⁵¹ Stipulation and Recommendation at 12.

⁵² *Id.*

1 The higher rate of return as recommended in the proposed Settlement will also
2 result in a higher pre-tax rate of return applicable to Rider DCI and possibly other
3 riders and charges than it otherwise would be. The amount of those additional
4 costs to be collected from Duke's customers resulting from the unreasonably
5 higher pre-tax rate of return applicable to Rider DCI and other riders cannot be
6 estimated precisely at this time. Nevertheless, these additional costs in Rider DCI
7 and other riders and charges from a higher and unreasonable rate of return could
8 be substantial. More importantly, there is no demonstration that Duke's
9 customers or the public will receive sufficient offsetting benefits by agreeing to a
10 higher rate of return and a higher Gross Revenue Conversion Factor as
11 recommended in the proposed Settlement.

12
13 It should be noted that I am not the OCC witness addressing or sponsoring all
14 required adjustments to the annual revenue requirement of the base distribution
15 rate, Rider DCI or other riders and charges to be collected from Duke's
16 customers. My testimony here is mainly to estimate the additional costs to be
17 borne by Duke's customers because of the overstated and unreasonable rate of
18 return and Gross Revenue Conversion Factor included in the proposed Settlement.

**Q24. PLEASE EXPLAIN YOUR CALCULATION OF THE ADDITIONAL
REVENUE REQUIREMENT OF BASE DISTRIBUTION SERVICE IF THE
PROPOSED SETTLEMENT IS APPROVED BY THE PUCO.**

A24. The annual revenue requirement of \$467,775,683 and the proposed annual revenue decrease of \$19,177,171, recommended in the proposed Settlement are unreasonable.⁵³ Duke's customers are entitled to a much larger rate reduction if a reasonable rate of return and an updated Gross Revenue Conversion Factor are used in calculating the required revenue requirement of base distribution service. This erroneous and unreasonable annual revenue requirement of base distribution service recommended in the proposed Settlement is calculated by using an excessively high rate of return of 7.54 percent and a Gross Revenue Conversion Factor ("GRCF") of 1.5613731.⁵⁴ In order to estimate a reasonable annual revenue requirement, I will instead use a rate of return of 6.75 percent and a GRCF of 1.2846742. This GRCF of 1.2846742 is calculated by another OCC witness, David J. Effron based on a federal corporate income tax rate of 21 percent.⁵⁵ This GRCF of 1.2846742 seems also consistent with the GRCF proposed in the Settlement to calculate the pre-tax return of 8.94 percent for Rider DCI.

⁵³ Stipulation and Recommendation, Attachment D, Schedule A-1, page 1 of 1.

⁵⁴ *Id.*

⁵⁵ Direct Testimony of David J. Effron, Schedule DJE-1, page 3.

1 I will use the same Stipulated Rate Base, Stipulated Current Operating Income,
2 and Adjusted Operating Revenue included in the proposed Settlement Schedule
3 A-1 for my calculation. This does not mean that I support or agree with these or
4 other items recommended in Schedule A-1 of the proposed Settlement.

5
6 My calculation indicates that, using a lower rate of return of 6.75 percent and a
7 lower GRCF of 1.2846742, the annual revenue requirement for base distribution
8 service paid by Duke's customers would be reduced to \$427,383,601. The
9 support for my calculation is shown in Attachment DJD-8.

10

11 Based on my calculation, Duke's customers should see a reduction in base rate
12 revenue requirement approximately of \$59,569,253 (from the stipulated Adjusted
13 Operating Revenue of \$486,952,854 to Revenue Requirement of \$427,383,601)
14 instead of a reduction of \$19,177,171 (from the stipulated Adjusted Operating
15 Revenue of \$486,952,854 to Revenue Requirement of \$467,775,683) as
16 recommended in the proposed Settlement. Consequently, if the proposed
17 Settlement is approved, Duke's customers will be asked to pay an additional
18 \$40.4 million (the difference between a \$59.6 million rate reduction and a \$19.2
19 million rate reduction) in base distribution rate annually as a result of the higher
20 rate of return and GRCF recommended in the proposed Settlement.

Q25. IS THE SETTLEMENT RECOMMENDATION OF AN 8.94 PERCENT PRE-TAX RATE OF RETURN IN CALCULATING THE REVENUE REQUIREMENT OF RIDER DCI REASONABLE?

A25. No. The pre-tax rate of return of 8.94 percent used in calculating Rider DCI is unreasonable because it is based on an unreasonably high rate of return of 7.54 percent (and an associated return on equity of 9.84 percent). As discussed earlier, this pre-tax rate of return of 8.94 percent proposed in the Settlement does reflect an updated GRCF that is based on the current federal corporate income tax rate of 21 percent. However, this pre-tax rate of return of 8.94 percent applicable to Rider DCI and possibly other riders with a return on capital investment component should still be reduced to reflect a more reasonable return on equity of 8.28 percent (and rate of return of 6.75 percent) as recommended by OCC. If the OCC-recommended rate of return of 6.75 percent is adopted, the pre-tax rate of return applicable to Rider DCI would be reduced to 7.94 percent.⁵⁶

The increase in the pre-tax rate of return on capital investment from 7.94 percent to 8.94 percent, as recommended in the proposed Settlement, will increase the annual revenue requirement of Rider DCI. Because the amount of capital investment (that is actual plant in service) to be included in calculating Rider DCI is still to be updated quarterly, the additional costs of Rider DCI resulting from an unreasonable pre-tax rate of return cannot be determined precisely at this time.

⁵⁶ 7.94% = (0.4925 x 5.16%) + (0.5075 x 8.28%) x 1.2846742.

***Q26. IS IT REASONABLE TO CONTINUE USING A GROSS REVENUE
CONVERSION FACTOR OF 1.5613731 BASED ON A FEDERAL
CORPORATE INCOME TAX RATE OF 35 PERCENT TO CALCULATE
THE BASE DISTRIBUTION REVENUE REQUIREMENT AS
RECOMMENDED IN THE PROPOSED SETTLEMENT?***

A26. No. It is unreasonable to continue to use a GRCF of 1.5613731 to calculate the annual revenue requirement of Duke's base distribution rate. A GRCF of 1.2846742 based on the current prevailing federal corporate income tax rate of 21 percent should be used. By not using a reasonable and updated Gross Revenue Conversion Factor, the proposed Settlement would result in a Revenue Requirement or Recommended Revenue Increase for base distribution service that is much higher than it otherwise should be. The resulting base distribution rates will be unjust and unreasonable. This is a violation of the second prong used by the PUCO in approving a settlement.

The use of an unreasonably high GRCF would also effectively allow Duke to earn a rate of return and a return on equity that are much higher than those recommended in the proposed Settlement. In other words, under the proposed Settlement, Duke's shareholders are given a return on the distribution-related rate base that is much higher than those can be earned by investing in other investments with comparable risks. This is a violation of a fundamental regulatory principle of utility regulation. Consequently, the proposed Settlement fails to satisfy the third prong used by the PUCO.

**VII. THE PROPOSED SETTLEMENT VIOLATES IMPORTANT
REGULATORY PRINCIPLES AND OHIO'S ELECTRIC SERVICES
POLICY**

***Q27. DOES THE PROPOSED SETTLEMENT FAIL THE THIRD PRONG OF
THE THREE-PRONG TEST?***

A27. Yes. In addition to failing the second prong test because the Settlement as a package harms customers and does not benefit the public interest, the proposed Settlement violates important regulatory principles and state policies. Specifically, the proposed Settlement, if approved by the PUCO, will entail significant higher costs for Duke's customers in base distribution rate, Rider DCI, and possibly other riders and charges. Additionally, the proposed Settlement will allow Duke to earn a much higher rate of return than the 7.54 percent proposed in the Settlement and the rate of returns authorized for electric distribution utilities nationwide in recent years.

***Q28. DOES THE PROPOSED SETTLEMENT VIOLATE THE REGULATORY
PRINCIPLE THAT THE RATES PAID BY UTILITY CUSTOMERS
SHOULD BE JUST AND REASONABLE?***

A28. Yes. As discussed earlier, one of the fundamental regulatory principles in public utility regulation in the United States (including Ohio) is:

1 “The resulting rates (as set based on the authorized rate of return)
2 paid by the customers of the regulated utility should be just and
3 reasonable”.

4 The proposed Settlement does not meet this requirement because it will result in
5 base distribution rates, Rider DCI, and possibly other riders and charges that are
6 unjust and unreasonable. Specifically, as calculated earlier in my testimony, the
7 additional annual cost of the base distribution service to be collected from Duke’s
8 customers, if the proposed Settlement is adopted, is estimated to be approximately
9 \$40.4 million. There will be other unreasonable cost increases in Rider DCI and
10 other riders even though the exact amounts cannot be determined at this time.

11
12 ***Q29. DOES THE PROPOSED SETTLEMENT VIOLATE THE REGULATORY***
13 ***PRINCIPLE THAT THE SHAREHOLDERS OF A REGULATED UTILITY***
14 ***BE PROVIDED THE OPPORTUNITY TO EARN A FAIR (BUT NOT***
15 ***EXCESSIVE) RETURN ON THEIR INVESTED CAPITAL?***

16 ***A29.*** Yes. As discussed earlier, another fundamental regulatory principle in public
17 utility regulation is:

18 “The shareholders of the regulated utility should be provided
19 the opportunity (not a guarantee) to earn a fair (but not
20 excessive) return on their invested capital in comparison to
21 other investments available”.

1 The proposed Settlement does not meet this requirement because it allows Duke
2 to earn an excessively high rate of return of 9.16 percent from its electric rate base
3 and a corresponding return on equity of 13.04 percent. These re-calculated ROR
4 and ROE are much higher than those stipulated in the proposed Settlement, the
5 midpoint of the range of ROR and ROE proposed in the Staff Report, and OCC's
6 recommended ROR and ROE in my testimony here.

7
8 Based on information compiled in a trade publication, *Regulatory Focus*, the rate
9 of return of 9.16 percent and return on equity of 13.04 percent resulting from the
10 proposed Settlement are much higher than the nationwide averages for ROEs and
11 RORs authorized in recent years. There is no valid reason for the PUCO to
12 authorize such an exceedingly high ROR of 9.16 percent and ROE of 13.04
13 percent for Duke given the average ROR and ROE authorized for distribution-
14 only electric utilities nationwide in recent years. Consequently, if the proposed
15 Settlement is adopted, the shareholder of Duke (that is the parent company, Duke
16 Energy Corporation) is being provided the opportunity to earn an excessively high
17 return on their invested capital in comparison to other investments available.

18
19 ***Q30. PLEASE EXPLAIN YOUR CALCULATION OF THE RATE OF RETURN***
20 ***OF 9.16 PERCENT AND RETURN ON EQUITY OF 13.04 PERCENT THAT***
21 ***DUKE IS ALLOWED TO EARN UNDER THE PROPOSED SETTLEMENT.***

22 ***A30.*** Even though the stipulated rate of return is 7.54 percent and return on equity is
23 9.84 percent under the proposed Settlement, the use of an overstated GRCF of

1 1.5613731 in calculating the annual revenue requirement of the base distribution
2 service allows Duke to earn a much higher return on equity (13.04 percent) and
3 rate of return (9.16 percent) on its distribution-related rate base.

4
5 Specifically, based on a stipulated Rate Base of \$1,302,465,298 and a stipulated
6 rate of return of 7.54 percent included in the proposed Settlement, the Required
7 Operating Income will be \$98,205,883.

8
$$\$98,205,883 = \$1,302,466,298 \times 7.54\%.$$

9
10 Using a Gross Revenue Conversion Factor of 1.5613731 (as specified in the
11 Settlement for base distribution rate), the Revenue Collected for supporting the
12 Required Operating Income will be \$153,336,025.⁵⁷

13
$$\$153,336,025 = \$98,205,883 \times 1.5613731.$$

14
15 Because Duke is currently operating under a much lower federal corporate
16 income tax of 21 percent, a lower GRCF of 1.2846742 should be used in addition
17 to all other possible adjustments resulting from the lower tax rate. With a lower
18 GRCF, the actual or realized operating income from the Revenue collected for
19 supporting the Required Operating Income will be much higher at \$119,357,907
20 (instead of \$98,205,883 as previously calculated).

21
$$\$119,357,907 = \$153,336,025 / 1.2846742.$$

⁵⁷ This amount of \$153,336,025 (Revenue Collected for supporting Required Operating Income) can be verified as following: $\$153,336,025 = (\$110,488,130 \times 1.5613731) - \$19,177,171$. There is a \$2 difference due to rounding.

1 This operating income of \$119,357,907 as divided by the stipulated rate base of
2 \$1,302,465,298 will result in a rate of return of 9.16 percent.

3 $9.16\% = \$119,357,907 / \$1,302,465,298.$

4 By using the same capital structure (49.25% debt and 50.75% equity) and cost of
5 debt (5.16%), the re-calculated return on equity, associated with the rate of return
6 of 9.16 percent, will be 13.04 percent, not the 9.84 percent stated in the proposed
7 Settlement.

8 $9.16\% = (0.4925 \times 5.16\%) + (0.5075 \times 13.04\%).$

9

10 ***Q31. DOES THE PROPOSED SETTLEMENT VIOLATE IMPORTANT STATE***
11 ***ELECTRIC SERVICES POLICY?***

12 ***A31.*** Yes. The proposed Settlement, if approved by the PUCO, with its associated
13 unreasonably high cost of basic electric services and potential additional costs in
14 Rider DCI and other riders and charges in Duke's service territory, will be
15 detrimental to the welfare of many Ohioans and the Ohio economy. I find the
16 proposed Settlement, at a minimum, would violate state electric services policy
17 regarding: (1) the availability to consumers of adequate, reliable, safe, efficient,
18 non-discriminatory, and reasonably priced retail electric service; (2) the protection
19 of at-risk populations; and (3) the state's effectiveness in the global economy.⁵⁸

20

⁵⁸ Ohio Revised Code 4928.02 (A), (L), and (N).

1 As discussed earlier, the proposed Settlement, if approved by the PUCO, will
2 substantially increase the cost of basic distribution service to customers within
3 Duke's service territory. A higher and unreasonably-priced electric service will
4 negatively affect many, if not all, residential, commercial and industrial customers
5 within Duke's service territory. Specifically, a higher than reasonably-priced
6 electric distribution service will reduce the availability to consumers of adequate,
7 reliable, safe, efficient, nondiscriminatory, and reasonably priced retail electric
8 service.

9
10 Similarly, a higher and unreasonably-priced electric distribution service will be
11 especially challenging to those Duke customers who are least able to pay for
12 electricity or those may be at higher risk without electricity due to medical and
13 other conditions. Those at-risk customers may already have difficulty in paying
14 or obtaining electric service for various reasons. The substantial additional costs
15 resulting from the proposed Settlement will likely have negative effects in
16 protecting those at-risk population.

17
18 A higher and unreasonably-priced electric distribution service will also be a
19 barrier to facilitate Ohio's effectiveness in the global economy. The negative
20 impacts of a higher price on the economy are well known to economists and
21 policymakers. A higher price of electricity will reduce the purchasing power of
22 Duke's many residential customers. These residential customers will have less
23 money to spend on other goods and services after paying for their higher monthly

1 electricity bills. Consequently, those commercial customers of Duke such as
2 restaurants and shops that serving the residential customers are likely to see their
3 sales and earnings decline when their customers have less money to spend. A
4 higher price of electricity will increase the costs of manufacturing in Ohio and
5 make those Ohio-based industrial companies in Duke's service territory less
6 competitive. The prices of Ohio-manufactured goods and services will likely to
7 increase because of higher price of electricity. The market shares of Ohio's
8 export to other states and other countries will likely to decline as a result of a
9 higher price of electricity from the proposed Settlement.

10
11 **VIII. PUCO SHOULD NOT IMPOSE UNREASONABLE AND UNJUST RATES**
12 **ON CUSTOMERS IN ORDER TO MAINTAIN OR ENHANCE DUKE'S**
13 **CREDIT RATINGS**

14
15 ***Q32. DO YOU SUPPORT THE POSITIONS ADVOCATED BY DUKE THAT THE***
16 ***PUCO SHOULD ADOPT THE PROPOSED SETTLEMENT, IN***
17 ***PARTICULAR THE PRICE STABILIZATION RIDER, IN ORDER TO***
18 ***MAINTAIN OR ENHANCE DUKE'S CREDIT RATINGS?***

19 **A32.** No. Duke's position is without merit and unreasonable. I do not support this
20 position. My own observation indicates that at this time Duke and its parent
21 company (Duke Energy Corporation) are financially healthy as measured by
22 market capitalization, earnings (in particular the ROE for Duke's electricity
23 operation in recent years), cash flows, credit ratings, and dividends paid to their

1 shareholders. This position as advanced by Duke is nothing but a ploy to persuade
2 the PUCO to approve a flawed and unreasonable Settlement at the expense of
3 Duke's customers.

4
5 Furthermore, it is my understanding, as a regulatory economist, that existing Ohio
6 statutes and long-standing regulatory principles already in place can adequately
7 protect the financial integrity of Ohio's regulated utilities, including Duke. There
8 is no need for the PUCO to consider Duke's credit ratings separately and
9 distinctly in setting the rates and terms of service for Duke's distribution
10 customers.

11
12 ***Q33. WILL DUKE LOSE ITS INVESTMENT GRADE CREDIT RATING IF THE***
13 ***PROPOSED SETTLEMENT WERE REJECTED BY THE PUCO?***

14 ***A33.*** No. There is no credible evidence that Duke's credit ratings (or credit quality) will
15 be significantly impacted by the rejection of the proposed Settlement or several
16 components of the Settlement. Given its current healthy financial condition, credit
17 rating and a "supportive" regulatory environment in Ohio, it is very unlikely that
18 Duke will lose its investment grade credit rating if the proposed Settlement were
19 rejected by the PUCO.

20
21 Duke currently has an A-minus rating with a Stable outlook from S&P and a Baa1
22 rating with a Positive outlook from Moody's.⁵⁹ These credit ratings of Duke are

⁵⁹ Direct Testimony of Steven M. Fetter at 6 (June 6, 2018).

1 several notches above the minimum credit rating considered as Investment Grade
2 by S&P and Moody's. In order for Duke to fall below the Investment Grade
3 credit rating, the two rating agencies have to conclude that the financial impacts
4 (if any) of the rejection of the proposed Settlement on Duke are so severe, so
5 long-lasting, and substantially beyond the control of Duke that a multiple notch
6 downgrading is warranted. By all account, this is very unlikely to happen.
7

8 ***Q34. WILL THE RATES AND CHARGES, UNDER THE PROPOSED***
9 ***SETTLEMENT, TO BE COLLECTED FROM DUKE'S CUSTOMERS BE***
10 ***REDUCED IF DUKE'S CREDIT RATING WAS UPGRADED AND DUKE'S***
11 ***COST OF DEBT REDUCED?***

12 ***A34.*** No. The cost of long-term debt of Duke that is used in setting the rates and
13 charges under the proposed Settlement has already been decided at 5.16 percent.
14 It will not be changed with or without the approval of the proposed Settlement.
15 Consequently, the rates and charges decided through the proposed Settlement and
16 to be collected from Duke's customers will not be changed as a result of the
17 change (if any) in Duke's credit rating and cost of issuing debt securities (if any).
18 In other words, if the approval of the proposed Settlement can indeed lead to an
19 upgrade of Duke's credit rating and such an upgrade can indeed lead to a lowering
20 of the cost of debt, the savings in the cost of debt to Duke will not be passed along
21 to Duke's customers. The savings in the cost of debt to Duke will go directly into
22 the profit of Duke. On the other hand, any additional costs to Duke's customers
23 for rates and riders set by the PUCO in order to enhance or maintain Duke's

1 current credit ratings are real and substantial and will be collected from its
2 customers after the approval of the proposed Settlement.
3

4 ***Q35. DOES THE INTEREST OF THE BOND HOLDERS OF DUKE ALIGN***
5 ***WITH THE PUBLIC INTEREST AND THE INTEREST OF DUKE'S***
6 ***CUSTOMERS?***

7 ***A35.*** No. The interest of the bond holders of Duke, as reflected in the credit
8 rating reports and assignments, do not align with the public interest or the
9 interest of Duke's customers. For the bond holders and the rating
10 agencies, the most important consideration in assign the credit rating of a
11 regulated utility is whether the regulated utility can pay the bond holders
12 the interests and principle on time. For example, Moody's Investor
13 Service indicates its credit ratings are "its current opinions of the relative
14 future credit risk of entities, credit commitments, or debt, or debt-like
15 securities."⁶⁰ It further defines "credit risk" as "the risk that an entity may
16 not meet its contractual, financial obligations as they come due and any
17 estimated financial loss in the event of default."⁶¹
18

19 On the other hand, the PUCO's responsibility, as a regulatory agency vested with
20 public trust and the protection of public interest is much broader. The PUCO

⁶⁰ Moody's Investors Service, *Rating Action: Moody's revises Duke Ohio outlook to positive, ratings affirmed* (August 10, 2017) at 3.

⁶¹ *Id.*

1 needs to consider whether the rates charged to customers are just and reasonable,
2 whether the financial integrity of the utility is not threatened unnecessarily, and
3 whether the public safety, convenience, and the general economy are properly
4 safeguarded. All these considerations are not necessarily reflected in a credit
5 rating analysis by the rating agencies.

6
7 A useful example of such a divergency in interests is the PUCO's consideration of
8 the effects of the Tax Cuts and Jobs Act of 2017 ("TCJA") and the credit rating
9 agencies' consideration of the TCJA. Specifically, the PUCO affirmed that "we
10 intend that all impacts resulting from The Tax Cuts and Jobs Act of 2017 will be
11 returned to customers, whether through this proceeding or through a case-by-case
12 determination for each affected utility."⁶²

13
14 On the other hand, as cited in the testimony of Duke's witness Steven M. Fetter,
15 the three rating agencies (Moody's, Fitch's, and S&P) have generally adopted a
16 negative outlook regarding the TCJA.⁶³ Specifically, S&P argued that "The
17 impact of tax reform on utilities is likely to be negative to varying degrees
18 depending on a company's tax position going into 2018, how its regulator react,
19 and how the company reacts in return."⁶⁴ S&P further stated that "The impact
20 could be sharpened or softened by regulators depending on how much they want

⁶² Case No 18-47-AU-COI, Second Entry on Rehearing (April 25, 2018) at 1.

⁶³ Direct Testimony of Steven M. Fetter at 11-13.

⁶⁴ *Id.* at 12.

1 to lower utility rates immediately instead of using some of the lower revenue
2 requirement from tax reform to allow the utility to retain the cash for
3 infrastructure investment or other expenses.”⁶⁵

4
5 Obviously, this is not a proceeding to debate the proper way of addressing the
6 effects of the TCJA. The discussion here is to show that the interest of the bond
7 holders of a regulated utility, as generally represented in a credit rating, does not
8 always align with the interest of the utility customers and the general public, as
9 vested in a regulatory agency such as the PUCO.

10
11 ***Q36. CAN THE ESTABLISHED REGULATORY PRINCIPLES AMPLY***
12 ***PROTECT THE FINANCIAL INTEGRITY OF A REGULATED UTILITY***
13 ***SUCH AS DUKE?***

14 ***A36.*** Yes. They can. For example, three out of four of the fundamental regulatory
15 principles I outlined above are developed and tested over a long period of time.
16 They are:

17 “The regulated utility should have funds available to continue its
18 normal course of business”;

19 “The regulated utility should have access to capital (both equity
20 and debt) at reasonable cost under current market conditions”; and

21 “The shareholders of the regulated utility should be provided the

⁶⁵ *Id.* at 12-13.

1 opportunity (not a guarantee) to earn a fair (but not excessive)
2 return on their invested capital in comparison to other investments
3 available.”
4

5 These regulatory principles have endured and promoted a well-functioning and
6 growing regulated utility industry over a long period of time. The PUCO should
7 simply adhere to these fundamental regulatory principles and Ohio Statutes, rather
8 than any hypothetical prognosis about the credit rating of Duke, in evaluating the
9 proposed Settlement. It would be contrary to sound regulatory policies and
10 established regulatory principles for the PUCO to set the rates and terms of
11 service paid by customers solely or mainly to enhance or maintain Duke’s credit
12 ratings. Duke, if properly managed, should be able to enhance or maintain its
13 credit ratings and financial integrity on its own.
14

15 **IX. CONCLUSION**
16

17 ***Q37. PLEASE SUMMARIZE YOUR RECOMMENDATION.***

18 ***A37.*** I recommend the PUCO adopt OCC’s objections and proposed adjustments
19 regarding the rate of return analysis in the Staff Report of Duke’s Rate Case
20 Application. In doing so, the PUCO should set an after-tax rate of return of 6.75
21 percent and a return on equity of 8.28 percent for Duke. I also recommend the
22 PUCO to adopt a Gross Revenue Conversion Factor of 1.2846742, which is based
23 on the current federal corporate income tax rate of 21 percent and calculated by

1 another OCC witness, in setting the revenue requirement of the base distribution
2 service. I recommend the PUCO reject the proposed Settlement filed by Duke on
3 April 13, 2018 because, for all of the reasons identified earlier in this testimony, it
4 fails the PUCO's three-prong test for approving a settlement. Finally, I
5 recommend that PUCO not separately and distinctly consider Duke's credit rating
6 when evaluating the proposed Settlement or a particular rider (such as the Price
7 Stabilization Rider) or charges included in the Settlement.

8

9 ***Q38. DOES THIS CONCLUDE YOUR TESTIMONY?***

10 ***A38.*** Yes. However, I reserve the right to supplement my testimony in the event that
11 additional testimony is filed, or if new information or data in connection with this
12 proceeding becomes available.

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 25th day of June 2018.

/s/ William J. Michael

William J. Michael

Assistant Consumers' Counsel

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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).*
27. *In the Matter of the Application of Columbia Gas of Ohio, Inc. for Approval of an Alternative Form of Regulation. 16-2422-GA-ALT (September 28, 2017).*

Daily Treasury Yield Curve Rates (%)

Date	1 Mo	3 Mo	6 Mo	1 Yr	2 Yr	3 Yr	5 Yr	7 Yr	10 Yr	20 Yr	30 Yr
1/3/2017	0.52	0.53	0.65	0.89	1.22	1.5	1.94	2.26	2.45	2.78	3.04
1/4/2017	0.49	0.53	0.63	0.87	1.24	1.5	1.94	2.26	2.46	2.78	3.05
1/5/2017	0.51	0.52	0.62	0.83	1.17	1.43	1.86	2.18	2.37	2.69	2.96
1/6/2017	0.5	0.53	0.61	0.85	1.22	1.5	1.92	2.23	2.42	2.73	3
1/9/2017	0.5	0.5	0.6	0.82	1.21	1.47	1.89	2.18	2.38	2.69	2.97
1/10/2017	0.51	0.52	0.6	0.82	1.19	1.47	1.89	2.18	2.38	2.69	2.97
1/11/2017	0.51	0.52	0.6	0.82	1.2	1.47	1.89	2.18	2.38	2.68	2.96
1/12/2017	0.52	0.52	0.59	0.81	1.18	1.45	1.87	2.17	2.36	2.68	3.01
1/13/2017	0.52	0.53	0.61	0.82	1.21	1.48	1.9	2.2	2.4	2.71	2.99
1/17/2017	0.52	0.55	0.62	0.8	1.17	1.42	1.84	2.14	2.33	2.66	2.93
1/18/2017	0.48	0.53	0.63	0.82	1.23	1.51	1.93	2.24	2.42	2.74	3
1/19/2017	0.47	0.52	0.62	0.83	1.25	1.53	1.97	2.28	2.47	2.77	3.04
1/20/2017	0.46	0.5	0.62	0.82	1.2	1.5	1.95	2.28	2.48	2.79	3.05
1/23/2017	0.46	0.51	0.59	0.79	1.16	1.43	1.88	2.19	2.41	2.72	2.99
1/24/2017	0.5	0.51	0.62	0.81	1.21	1.49	1.94	2.27	2.47	2.78	3.05
1/25/2017	0.48	0.5	0.61	0.82	1.23	1.52	1.99	2.33	2.53	2.84	3.1
1/26/2017	0.49	0.51	0.62	0.82	1.21	1.49	1.95	2.3	2.51	2.82	3.08
1/27/2017	0.49	0.52	0.63	0.82	1.22	1.48	1.94	2.28	2.49	2.8	3.06
1/30/2017	0.49	0.51	0.63	0.81	1.22	1.48	1.94	2.28	2.49	2.82	3.08
1/31/2017	0.5	0.52	0.64	0.84	1.19	1.46	1.9	2.24	2.45	2.78	3.05
2/1/2017	0.5	0.51	0.65	0.83	1.22	1.49	1.93	2.27	2.48	2.8	3.08
2/2/2017	0.5	0.52	0.64	0.84	1.21	1.48	1.92	2.27	2.48	2.8	3.09
2/3/2017	0.49	0.51	0.63	0.82	1.21	1.49	1.93	2.27	2.49	2.82	3.11
2/6/2017	0.48	0.53	0.62	0.79	1.16	1.43	1.86	2.19	2.42	2.76	3.05
2/7/2017	0.51	0.53	0.63	0.8	1.16	1.43	1.85	2.17	2.4	2.74	3.02
2/8/2017	0.52	0.54	0.63	0.79	1.15	1.4	1.81	2.14	2.34	2.68	2.96
2/9/2017	0.51	0.54	0.64	0.8	1.2	1.46	1.88	2.2	2.4	2.74	3.02
2/10/2017	0.51	0.55	0.64	0.81	1.2	1.47	1.89	2.22	2.41	2.75	3.01
2/13/2017	0.5	0.52	0.63	0.82	1.2	1.48	1.92	2.24	2.43	2.77	3.03
2/14/2017	0.51	0.54	0.66	0.84	1.25	1.53	1.98	2.29	2.47	2.81	3.07
2/15/2017	0.53	0.54	0.67	0.86	1.27	1.57	2.01	2.33	2.51	2.84	3.09
2/16/2017	0.51	0.53	0.66	0.82	1.22	1.5	1.95	2.26	2.45	2.8	3.05
2/17/2017	0.5	0.53	0.66	0.82	1.21	1.48	1.92	2.23	2.42	2.78	3.03
2/21/2017	0.49	0.53	0.69	0.83	1.22	1.5	1.93	2.24	2.43	2.78	3.04
2/22/2017	0.47	0.52	0.68	0.82	1.22	1.49	1.92	2.23	2.42	2.78	3.04
2/23/2017	0.39	0.51	0.66	0.81	1.18	1.44	1.87	2.2	2.38	2.75	3.02
2/24/2017	0.4	0.52	0.65	0.8	1.12	1.38	1.8	2.12	2.31	2.69	2.95
2/27/2017	0.44	0.5	0.68	0.81	1.2	1.46	1.87	2.18	2.36	2.72	2.98
2/28/2017	0.4	0.53	0.69	0.88	1.22	1.49	1.89	2.19	2.36	2.7	2.97
3/1/2017	0.46	0.63	0.79	0.92	1.29	1.57	1.99	2.29	2.46	2.81	3.06
3/2/2017	0.52	0.67	0.84	0.98	1.32	1.6	2.03	2.32	2.49	2.84	3.09
3/3/2017	0.56	0.71	0.84	0.98	1.32	1.59	2.02	2.32	2.49	2.83	3.08
3/6/2017	0.56	0.74	0.83	0.97	1.31	1.6	2.02	2.32	2.49	2.84	3.1
3/7/2017	0.55	0.76	0.87	1.02	1.32	1.62	2.05	2.34	2.52	2.85	3.11
3/8/2017	0.54	0.73	0.86	1.03	1.36	1.65	2.08	2.38	2.57	2.89	3.15
3/9/2017	0.5	0.73	0.88	1.04	1.37	1.67	2.13	2.43	2.6	2.94	3.19
3/10/2017	0.6	0.75	0.89	1.03	1.36	1.66	2.11	2.4	2.58	2.94	3.16
3/13/2017	0.69	0.79	0.93	1.06	1.4	1.69	2.14	2.43	2.62	2.97	3.2
3/14/2017	0.77	0.78	0.93	1.06	1.4	1.68	2.13	2.42	2.6	2.94	3.17
3/15/2017	0.71	0.73	0.89	1.02	1.33	1.59	2.02	2.31	2.51	2.87	3.11
3/16/2017	0.68	0.73	0.89	1.01	1.35	1.63	2.05	2.34	2.53	2.89	3.14
3/17/2017	0.71	0.73	0.87	1	1.33	1.6	2.03	2.31	2.5	2.86	3.11
3/20/2017	0.7	0.76	0.89	1.01	1.3	1.57	2	2.28	2.47	2.83	3.08
3/21/2017	0.76	0.77	0.91	1	1.27	1.54	1.96	2.24	2.43	2.79	3.04
3/22/2017	0.74	0.77	0.9	0.99	1.27	1.52	1.95	2.22	2.4	2.76	3.02
3/23/2017	0.73	0.76	0.9	0.99	1.26	1.52	1.95	2.23	2.41	2.76	3.02
3/24/2017	0.73	0.78	0.89	1	1.26	1.52	1.93	2.22	2.4	2.74	3

3/27/2017	0.73	0.78	0.91	1	1.27	1.51	1.93	2.2	2.38	2.73	2.98
3/28/2017	0.75	0.78	0.92	1.03	1.3	1.56	1.97	2.25	2.42	2.77	3.02
3/29/2017	0.76	0.78	0.92	1.04	1.26	1.53	1.93	2.21	2.39	2.74	2.99
3/30/2017	0.75	0.78	0.91	1.03	1.28	1.55	1.96	2.25	2.42	2.78	3.03
3/31/2017	0.74	0.76	0.91	1.03	1.27	1.5	1.93	2.22	2.4	2.76	3.02
4/3/2017	0.73	0.79	0.92	1.02	1.24	1.47	1.88	2.16	2.35	2.71	2.98
4/4/2017	0.77	0.79	0.92	1.03	1.25	1.47	1.88	2.16	2.36	2.72	2.99
4/5/2017	0.77	0.8	0.93	1.03	1.24	1.44	1.85	2.14	2.34	2.71	2.98
4/6/2017	0.78	0.79	0.94	1.05	1.24	1.45	1.87	2.15	2.34	2.72	2.99
4/7/2017	0.77	0.82	0.95	1.08	1.29	1.52	1.92	2.2	2.38	2.74	3
4/10/2017	0.77	0.82	0.97	1.07	1.29	1.52	1.91	2.18	2.37	2.72	2.99
4/11/2017	0.74	0.82	0.94	1.05	1.24	1.45	1.84	2.11	2.32	2.67	2.93
4/12/2017	0.77	0.81	0.95	1.04	1.24	1.44	1.81	2.09	2.28	2.65	2.92
4/13/2017	0.76	0.81	0.94	1.03	1.21	1.4	1.77	2.05	2.24	2.62	2.89
4/17/2017	0.76	0.83	0.94	1.04	1.21	1.42	1.79	2.07	2.26	2.65	2.92
4/18/2017	0.76	0.82	0.94	1.02	1.18	1.35	1.71	1.98	2.18	2.56	2.84
4/19/2017	0.75	0.81	0.94	1.02	1.19	1.38	1.74	2.02	2.21	2.59	2.87
4/20/2017	0.73	0.79	0.93	1.01	1.21	1.41	1.78	2.06	2.24	2.61	2.89
4/21/2017	0.72	0.79	0.92	0.99	1.2	1.4	1.77	2.05	2.24	2.61	2.89
4/24/2017	0.74	0.81	0.96	1.03	1.25	1.44	1.81	2.09	2.28	2.65	2.93
4/25/2017	0.73	0.82	0.98	1.09	1.29	1.49	1.87	2.15	2.35	2.71	2.99
4/26/2017	0.74	0.83	0.99	1.07	1.28	1.46	1.84	2.12	2.32	2.69	2.97
4/27/2017	0.7	0.81	0.98	1.06	1.25	1.44	1.81	2.1	2.3	2.68	2.96
4/28/2017	0.68	0.8	0.99	1.07	1.28	1.45	1.81	2.1	2.29	2.67	2.96
5/1/2017	0.67	0.83	0.98	1.09	1.28	1.48	1.84	2.13	2.33	2.71	3
5/2/2017	0.72	0.82	0.99	1.08	1.27	1.45	1.81	2.09	2.29	2.68	2.97
5/3/2017	0.73	0.85	1	1.1	1.3	1.5	1.86	2.14	2.33	2.7	2.97
5/4/2017	0.71	0.86	1	1.11	1.32	1.51	1.88	2.17	2.36	2.73	3
5/5/2017	0.71	0.9	1.01	1.1	1.32	1.52	1.89	2.17	2.36	2.73	2.99
5/8/2017	0.73	0.91	1.02	1.12	1.33	1.53	1.91	2.19	2.39	2.76	3.02
5/9/2017	0.74	0.91	1.04	1.14	1.37	1.57	1.94	2.22	2.42	2.79	3.04
5/10/2017	0.71	0.9	1.04	1.13	1.35	1.56	1.94	2.22	2.41	2.79	3.03
5/11/2017	0.68	0.89	1.04	1.13	1.35	1.55	1.93	2.2	2.39	2.78	3.03
5/12/2017	0.69	0.88	1.03	1.11	1.29	1.49	1.85	2.13	2.33	2.74	2.98
5/15/2017	0.73	0.9	1.02	1.11	1.31	1.49	1.86	2.14	2.34	2.76	3
5/16/2017	0.72	0.9	1.04	1.11	1.29	1.48	1.86	2.13	2.33	2.74	2.99
5/17/2017	0.72	0.9	1	1.08	1.26	1.42	1.76	2.03	2.22	2.65	2.91
5/18/2017	0.73	0.93	1.02	1.09	1.27	1.44	1.78	2.04	2.23	2.64	2.9
5/19/2017	0.71	0.92	1.03	1.1	1.28	1.45	1.79	2.05	2.23	2.63	2.9
5/22/2017	0.7	0.93	1.05	1.12	1.29	1.45	1.8	2.06	2.25	2.64	2.91
5/23/2017	0.76	0.92	1.08	1.14	1.31	1.49	1.84	2.1	2.29	2.68	2.95
5/24/2017	0.76	0.93	1.07	1.18	1.29	1.46	1.79	2.07	2.26	2.65	2.92
5/25/2017	0.72	0.94	1.08	1.16	1.3	1.46	1.78	2.06	2.25	2.65	2.92
5/26/2017	0.75	0.94	1.08	1.17	1.3	1.46	1.79	2.06	2.25	2.65	2.92
5/30/2017	0.77	0.93	1.07	1.16	1.28	1.44	1.76	2.02	2.21	2.61	2.88
5/31/2017	0.86	0.98	1.08	1.17	1.28	1.44	1.75	2.02	2.21	2.6	2.87
6/1/2017	0.82	0.98	1.07	1.16	1.28	1.45	1.76	2.02	2.21	2.6	2.87
6/2/2017	0.82	0.98	1.06	1.16	1.28	1.42	1.71	1.96	2.15	2.53	2.8
6/5/2017	0.83	0.96	1.06	1.16	1.32	1.45	1.74	1.99	2.18	2.56	2.84
6/6/2017	0.83	0.97	1.08	1.16	1.3	1.42	1.71	1.95	2.14	2.53	2.81
6/7/2017	0.84	1	1.09	1.17	1.32	1.45	1.74	1.99	2.18	2.56	2.84
6/8/2017	0.8	1.01	1.11	1.19	1.33	1.47	1.75	2	2.19	2.57	2.85
6/9/2017	0.8	1.01	1.13	1.2	1.35	1.5	1.77	2.02	2.21	2.59	2.86
6/12/2017	0.82	0.98	1.09	1.19	1.35	1.5	1.78	2.02	2.21	2.59	2.86
6/13/2017	0.89	1	1.12	1.22	1.38	1.51	1.79	2.02	2.21	2.6	2.87
6/14/2017	0.9	1.01	1.12	1.2	1.35	1.48	1.74	1.96	2.15	2.53	2.79
6/15/2017	0.86	1.02	1.13	1.21	1.35	1.49	1.76	1.98	2.16	2.52	2.78
6/16/2017	0.85	1.03	1.13	1.21	1.32	1.48	1.75	1.97	2.16	2.52	2.78
6/19/2017	0.85	1.02	1.13	1.22	1.36	1.52	1.8	2.02	2.19	2.53	2.79
6/20/2017	0.88	1.01	1.14	1.22	1.36	1.5	1.77	1.99	2.16	2.49	2.74
6/21/2017	0.85	0.99	1.12	1.22	1.36	1.5	1.78	2	2.16	2.48	2.73

6/22/2017	0.8	0.96	1.1	1.22	1.34	1.48	1.76	1.98	2.15	2.47	2.72
6/23/2017	0.76	0.97	1.1	1.21	1.34	1.48	1.77	1.98	2.15	2.48	2.71
6/26/2017	0.81	0.99	1.1	1.2	1.36	1.48	1.77	1.97	2.14	2.46	2.7
6/27/2017	0.89	1	1.13	1.22	1.38	1.53	1.83	2.04	2.21	2.52	2.75
6/28/2017	0.89	1.02	1.12	1.21	1.34	1.51	1.81	2.05	2.22	2.55	2.77
6/29/2017	0.88	1.04	1.14	1.23	1.38	1.53	1.85	2.1	2.27	2.59	2.82
6/30/2017	0.84	1.03	1.14	1.24	1.38	1.55	1.89	2.14	2.31	2.61	2.84
7/3/2017	0.96	1.06	1.13	1.24	1.41	1.6	1.93	2.19	2.35	2.65	2.86
7/5/2017	0.97	1.05	1.15	1.24	1.41	1.59	1.92	2.17	2.33	2.63	2.85
7/6/2017	0.95	1.04	1.14	1.23	1.4	1.6	1.94	2.21	2.37	2.68	2.9
7/7/2017	0.94	1.05	1.14	1.22	1.4	1.6	1.95	2.22	2.39	2.71	2.93
7/10/2017	0.95	1.04	1.13	1.23	1.4	1.59	1.93	2.2	2.38	2.7	2.93
7/11/2017	0.97	1.05	1.14	1.2	1.37	1.57	1.92	2.18	2.37	2.69	2.92
7/12/2017	0.94	1.05	1.13	1.21	1.35	1.53	1.88	2.14	2.33	2.65	2.89
7/13/2017	0.95	1.05	1.14	1.23	1.37	1.55	1.89	2.16	2.35	2.69	2.92
7/14/2017	0.93	1.04	1.12	1.22	1.35	1.54	1.87	2.13	2.33	2.67	2.91
7/17/2017	0.95	1.07	1.1	1.22	1.36	1.53	1.86	2.12	2.31	2.65	2.89
7/18/2017	0.95	1.07	1.11	1.19	1.36	1.52	1.82	2.08	2.27	2.61	2.85
7/19/2017	0.99	1.11	1.12	1.23	1.37	1.52	1.83	2.09	2.27	2.61	2.85
7/20/2017	1	1.15	1.12	1.22	1.37	1.51	1.82	2.08	2.27	2.6	2.83
7/21/2017	1	1.16	1.1	1.22	1.36	1.5	1.81	2.05	2.24	2.57	2.81
7/24/2017	1	1.17	1.12	1.23	1.37	1.53	1.83	2.07	2.26	2.59	2.83
7/25/2017	0.96	1.18	1.15	1.24	1.4	1.56	1.9	2.15	2.33	2.67	2.91
7/26/2017	1.02	1.13	1.14	1.23	1.36	1.5	1.83	2.09	2.29	2.65	2.89
7/27/2017	1.01	1.11	1.13	1.22	1.36	1.52	1.84	2.12	2.32	2.68	2.93
7/28/2017	1	1.08	1.13	1.22	1.34	1.51	1.83	2.1	2.3	2.65	2.89
7/31/2017	1	1.07	1.13	1.23	1.34	1.51	1.84	2.11	2.3	2.66	2.89
8/1/2017	1	1.08	1.15	1.22	1.34	1.5	1.8	2.07	2.26	2.61	2.86
8/2/2017	1.02	1.08	1.15	1.24	1.36	1.52	1.82	2.08	2.27	2.6	2.85
8/3/2017	1	1.08	1.13	1.22	1.34	1.49	1.79	2.05	2.24	2.56	2.81
8/4/2017	1	1.08	1.14	1.23	1.36	1.51	1.82	2.08	2.27	2.61	2.84
8/7/2017	0.99	1.02	1.14	1.22	1.36	1.52	1.81	2.07	2.26	2.6	2.84
8/8/2017	1	1.06	1.16	1.24	1.36	1.53	1.84	2.1	2.29	2.63	2.86
8/9/2017	1.01	1.06	1.15	1.21	1.33	1.5	1.81	2.06	2.24	2.59	2.82
8/10/2017	1.02	1.05	1.14	1.22	1.33	1.49	1.78	2.03	2.2	2.55	2.79
8/11/2017	0.99	1.03	1.14	1.21	1.3	1.43	1.74	2	2.19	2.55	2.79
8/14/2017	0.95	1.02	1.13	1.23	1.33	1.48	1.77	2.04	2.22	2.57	2.81
8/15/2017	0.97	1.04	1.16	1.23	1.35	1.51	1.83	2.09	2.27	2.6	2.84
8/16/2017	0.97	1.02	1.13	1.24	1.33	1.49	1.79	2.04	2.23	2.58	2.81
8/17/2017	0.95	1	1.11	1.24	1.32	1.46	1.76	2.01	2.19	2.54	2.78
8/18/2017	0.97	1.02	1.13	1.24	1.33	1.47	1.77	2.01	2.19	2.54	2.78
8/21/2017	0.95	1	1.11	1.23	1.32	1.46	1.76	2	2.18	2.52	2.77
8/22/2017	0.93	1	1.13	1.24	1.33	1.48	1.8	2.04	2.22	2.55	2.79
8/23/2017	0.98	1	1.11	1.22	1.32	1.45	1.76	1.99	2.17	2.51	2.75
8/24/2017	0.98	1.02	1.11	1.23	1.33	1.47	1.78	2.01	2.19	2.53	2.77
8/25/2017	0.99	1.03	1.11	1.23	1.35	1.47	1.77	2	2.17	2.51	2.75
8/28/2017	0.99	0.98	1.12	1.24	1.33	1.46	1.74	1.99	2.16	2.51	2.76
8/29/2017	0.96	1.03	1.13	1.23	1.33	1.43	1.7	1.96	2.13	2.48	2.74
8/30/2017	0.96	1.03	1.11	1.23	1.33	1.44	1.72	1.97	2.15	2.49	2.75
8/31/2017	0.95	1.01	1.08	1.23	1.33	1.44	1.7	1.95	2.12	2.47	2.73
9/1/2017	0.96	1.02	1.1	1.24	1.35	1.46	1.73	1.99	2.16	2.51	2.77
9/5/2017	1.3	1.03	1.13	1.23	1.3	1.4	1.65	1.9	2.07	2.43	2.69
9/6/2017	1.04	1.07	1.17	1.24	1.3	1.42	1.69	1.93	2.1	2.46	2.72
9/7/2017	0.98	1.05	1.15	1.21	1.27	1.38	1.63	1.88	2.05	2.4	2.66
9/8/2017	0.96	1.04	1.14	1.22	1.27	1.39	1.64	1.89	2.06	2.41	2.67
9/11/2017	0.97	1.05	1.16	1.24	1.32	1.44	1.71	1.96	2.14	2.49	2.75
9/12/2017	0.99	1.03	1.16	1.27	1.33	1.46	1.75	1.99	2.17	2.52	2.78
9/13/2017	0.99	1.04	1.16	1.27	1.35	1.48	1.78	2.01	2.2	2.53	2.79
9/14/2017	0.99	1.05	1.17	1.28	1.37	1.5	1.79	2.01	2.2	2.52	2.77
9/15/2017	0.98	1.05	1.17	1.3	1.39	1.53	1.81	2.04	2.2	2.52	2.77
9/18/2017	0.96	1.05	1.18	1.3	1.4	1.54	1.83	2.06	2.23	2.56	2.8

9/19/2017	0.97	1.04	1.19	1.31	1.4	1.55	1.84	2.07	2.24	2.57	2.81
9/20/2017	0.98	1.04	1.2	1.32	1.45	1.6	1.89	2.12	2.28	2.59	2.82
9/21/2017	0.99	1.04	1.19	1.31	1.45	1.59	1.89	2.11	2.27	2.57	2.8
9/22/2017	0.97	1.03	1.19	1.3	1.46	1.58	1.88	2.1	2.26	2.57	2.8
9/25/2017	0.97	1.05	1.19	1.3	1.44	1.56	1.85	2.07	2.22	2.53	2.76
9/26/2017	0.96	1.06	1.19	1.31	1.45	1.57	1.87	2.08	2.24	2.54	2.78
9/27/2017	0.99	1.07	1.2	1.33	1.47	1.6	1.91	2.14	2.31	2.62	2.86
9/28/2017	0.97	1.06	1.18	1.31	1.45	1.59	1.89	2.13	2.31	2.63	2.87
9/29/2017	0.96	1.06	1.2	1.31	1.47	1.62	1.92	2.16	2.33	2.63	2.86
10/2/2017	0.95	1.01	1.22	1.31	1.49	1.63	1.94	2.17	2.34	2.64	2.87
10/3/2017	1.01	1.07	1.21	1.32	1.47	1.62	1.92	2.15	2.33	2.63	2.87
10/4/2017	1	1.08	1.21	1.33	1.47	1.62	1.92	2.15	2.33	2.64	2.87
10/5/2017	1.02	1.07	1.21	1.35	1.49	1.63	1.94	2.17	2.35	2.65	2.89
10/6/2017	1.03	1.07	1.22	1.35	1.54	1.66	1.97	2.2	2.37	2.68	2.91
10/10/2017	1.03	1.08	1.26	1.42	1.51	1.64	1.95	2.18	2.35	2.65	2.88
10/11/2017	1.04	1.1	1.25	1.4	1.51	1.66	1.95	2.17	2.35	2.64	2.88
10/12/2017	0.99	1.09	1.27	1.41	1.51	1.66	1.95	2.16	2.33	2.62	2.86
10/13/2017	0.97	1.09	1.26	1.39	1.51	1.64	1.91	2.12	2.28	2.58	2.81
10/16/2017	0.97	1.1	1.24	1.42	1.54	1.68	1.95	2.15	2.3	2.58	2.82
10/17/2017	0.99	1.09	1.25	1.41	1.54	1.69	1.97	2.15	2.3	2.58	2.8
10/18/2017	0.99	1.09	1.24	1.42	1.59	1.7	1.99	2.19	2.34	2.62	2.85
10/19/2017	0.99	1.1	1.25	1.41	1.58	1.69	1.98	2.18	2.33	2.6	2.83
10/20/2017	0.99	1.11	1.27	1.43	1.6	1.72	2.03	2.24	2.39	2.67	2.89
10/23/2017	1	1.09	1.25	1.42	1.58	1.7	2.01	2.22	2.38	2.66	2.89
10/24/2017	1	1.12	1.27	1.43	1.6	1.73	2.05	2.26	2.42	2.7	2.92
10/25/2017	1.01	1.12	1.27	1.43	1.61	1.74	2.06	2.28	2.44	2.72	2.95
10/26/2017	0.99	1.11	1.29	1.43	1.63	1.76	2.07	2.3	2.46	2.74	2.96
10/27/2017	0.98	1.1	1.28	1.42	1.59	1.73	2.03	2.26	2.42	2.71	2.93
10/30/2017	0.97	1.12	1.24	1.42	1.58	1.71	2	2.22	2.37	2.66	2.88
10/31/2017	0.99	1.15	1.28	1.43	1.6	1.73	2.01	2.23	2.38	2.66	2.88
11/1/2017	1.06	1.18	1.3	1.46	1.61	1.74	2.01	2.22	2.37	2.63	2.85
11/2/2017	1.02	1.17	1.29	1.46	1.61	1.73	2	2.21	2.35	2.61	2.83
11/3/2017	1.02	1.18	1.31	1.49	1.63	1.74	1.99	2.19	2.34	2.59	2.82
11/6/2017	1.03	1.19	1.3	1.5	1.61	1.73	1.99	2.17	2.32	2.58	2.8
11/7/2017	1.05	1.22	1.33	1.49	1.63	1.75	1.99	2.17	2.32	2.56	2.77
11/8/2017	1.05	1.23	1.35	1.53	1.65	1.77	2.01	2.19	2.32	2.57	2.79
11/9/2017	1.07	1.24	1.36	1.53	1.63	1.75	2.01	2.2	2.33	2.59	2.81
11/10/2017	1.06	1.23	1.37	1.54	1.67	1.79	2.06	2.27	2.4	2.67	2.88
11/13/2017	1.07	1.24	1.37	1.55	1.7	1.82	2.08	2.27	2.4	2.67	2.87
11/14/2017	1.06	1.26	1.4	1.55	1.68	1.81	2.06	2.26	2.38	2.64	2.84
11/15/2017	1.08	1.25	1.39	1.55	1.68	1.79	2.04	2.21	2.33	2.58	2.77
11/16/2017	1.08	1.27	1.42	1.59	1.72	1.83	2.07	2.25	2.37	2.62	2.81
11/17/2017	1.08	1.29	1.42	1.6	1.73	1.83	2.06	2.23	2.35	2.59	2.78
11/20/2017	1.09	1.3	1.46	1.62	1.77	1.86	2.09	2.26	2.37	2.6	2.78
11/21/2017	1.15	1.3	1.45	1.62	1.77	1.88	2.11	2.27	2.36	2.58	2.76
11/22/2017	1.16	1.29	1.45	1.61	1.74	1.84	2.05	2.22	2.32	2.57	2.75
11/24/2017	1.14	1.29	1.45	1.61	1.75	1.85	2.07	2.23	2.34	2.58	2.76
11/27/2017	1.15	1.27	1.41	1.62	1.74	1.84	2.06	2.21	2.32	2.57	2.76
11/28/2017	1.16	1.3	1.46	1.61	1.75	1.85	2.07	2.24	2.34	2.58	2.77
11/29/2017	1.17	1.29	1.45	1.61	1.78	1.86	2.09	2.27	2.37	2.62	2.81
11/30/2017	1.14	1.27	1.44	1.62	1.78	1.9	2.14	2.31	2.42	2.65	2.83
12/1/2017	1.14	1.27	1.45	1.62	1.78	1.9	2.13	2.28	2.37	2.58	2.76
12/4/2017	1.16	1.29	1.45	1.66	1.8	1.93	2.15	2.29	2.37	2.58	2.77
12/5/2017	1.21	1.3	1.48	1.64	1.83	1.94	2.15	2.28	2.36	2.55	2.73
12/6/2017	1.18	1.3	1.48	1.68	1.78	1.92	2.11	2.25	2.33	2.53	2.71
12/7/2017	1.16	1.29	1.47	1.67	1.8	1.92	2.14	2.29	2.37	2.58	2.76
12/8/2017	1.14	1.28	1.45	1.65	1.8	1.92	2.14	2.29	2.38	2.59	2.77
12/11/2017	1.18	1.33	1.47	1.69	1.82	1.95	2.16	2.3	2.39	2.59	2.77
12/12/2017	1.26	1.34	1.49	1.7	1.83	1.95	2.18	2.32	2.4	2.6	2.79
12/13/2017	1.22	1.3	1.47	1.68	1.79	1.9	2.12	2.26	2.36	2.56	2.74
12/14/2017	1.21	1.32	1.48	1.7	1.82	1.92	2.14	2.27	2.35	2.53	2.71

12/15/2017	1.24	1.31	1.48	1.71	1.84	1.95	2.16	2.28	2.35	2.52	2.68
12/18/2017	1.26	1.38	1.51	1.7	1.84	1.94	2.17	2.3	2.39	2.57	2.74
12/19/2017	1.25	1.37	1.51	1.71	1.87	1.97	2.23	2.37	2.46	2.66	2.82
12/20/2017	1.22	1.38	1.51	1.72	1.87	1.98	2.24	2.4	2.49	2.71	2.88
12/21/2017	1.21	1.35	1.54	1.73	1.89	2.01	2.26	2.39	2.48	2.68	2.84
12/22/2017	1.15	1.33	1.54	1.73	1.91	2.01	2.26	2.4	2.48	2.68	2.83
12/26/2017	1.24	1.47	1.52	1.75	1.92	2.02	2.25	2.38	2.47	2.66	2.82
12/27/2017	1.18	1.44	1.53	1.75	1.89	1.99	2.22	2.34	2.42	2.59	2.75
12/28/2017	1.19	1.39	1.54	1.76	1.91	2	2.23	2.36	2.43	2.6	2.75
12/29/2017	1.28	1.39	1.53	1.76	1.89	1.98	2.2	2.33	2.4	2.58	2.74
Average	0.85	0.95	1.07	1.20	1.40	1.58	1.91	2.16	2.33	2.65	2.89

Sources: <https://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yieldYear&year=2017>

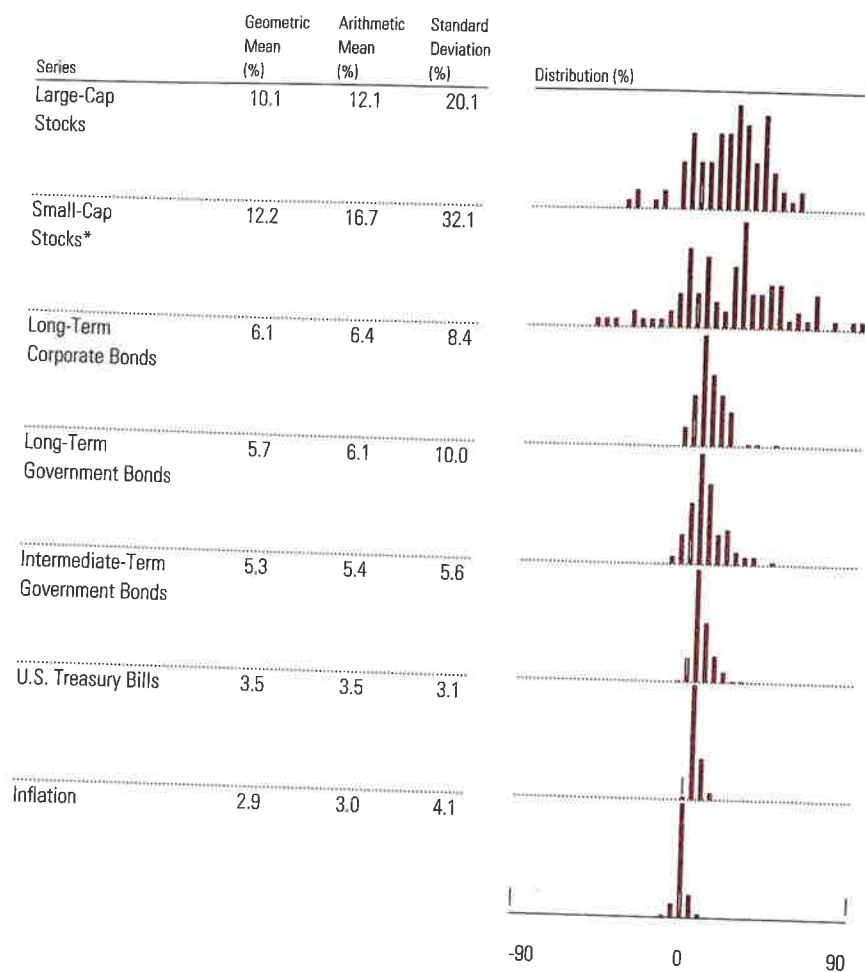
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2015 Classic Yearbook

Market Results for
Stocks, Bonds, Bills, and Inflation
1926–2014

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Table 2-1: Basic Series: Summary Statistics of Annual Total Returns



Data from 1926–2014. * The 1933 small-cap stocks total return was 142.9%.

Note that in Table 2-1, the arithmetic mean returns are always higher than the geometric mean returns. The difference between these two means is related to the standard deviation, or variability, of the series. [See Chapter 6.]

The “skylines,” or histograms, in Table 2-1 show the frequency distribution of returns in each asset class. The height of the large-cap stock skyline in the range between 10% to 20%, for example, shows the number of years in the 1926–2014 period that large-cap stocks had a return in that range. The histograms are shown in 5% increments to fully display the spectrum of returns as seen over the last 89 years, especially in stocks.

Riskier assets, such as large- and small-cap stocks, have low, spread-out skylines, reflecting the broad distribution of returns from very poor to very good. Less-risky assets, such as bonds, have narrow skylines that resemble a single tall building, indicating the tightness of the distribution around the mean of the series. The histogram for Treasury bills is one-sided, lying almost entirely to the right of the vertical line representing a zero return; that is, Treasury bills rarely experienced negative returns on a yearly basis over the 1926–2014 period (the only negative year was 1938). The inflation skyline shows both positive and negative annual rates. Although a few deflationary months and quarters have occurred recently, the last negative annual inflation rate occurred in 1954.

Appreciation, Income, and Reinvestment Returns

Table 2-2 provides further detail on the returns of large-cap stocks, long-term government bonds, and intermediate-term government bonds. Total annual returns are shown as the sum of three components: capital appreciation returns, income returns, and reinvestment returns. The capital appreciation and income components are explained in Chapter 3. The third component, reinvestment return, reflects monthly income reinvested in the total return index in subsequent months in the year. Thus, for a single month the reinvestment return is zero, but over a longer period of time it is nonzero. Because the returns in Table 2-2 are annual, reinvestment return is relevant.

The annual total return formed by compounding the monthly total returns does not equal the sum of the annual capital appreciation and income components; the difference is reinvestment return. A simple example illustrates this point. In 1995, an “up” year on a total return basis, the total annual return on large-cap stocks was 37.58%. The annual capital appreciation was 34.11% and the annual income return was 3.04%, totaling 37.15%. The remaining 0.43% (37.58% minus 37.15%) of the 1995 total return came from the reinvestment of dividends in the market. For more information on calculating annual total and income returns, see Chapter 5.

Monthly income and capital appreciation returns for large-cap stocks are presented in Appendix A: Tables A-2 and A-3, respectively. Monthly income and capital appreciation returns are presented for long-term government bonds in Appendix A: Tables A-7 and A-8; and for intermediate-term government bonds in Tables A-11 and A-12.

2017 SBBI Yearbook

Stocks, Bonds, Bills, and Inflation

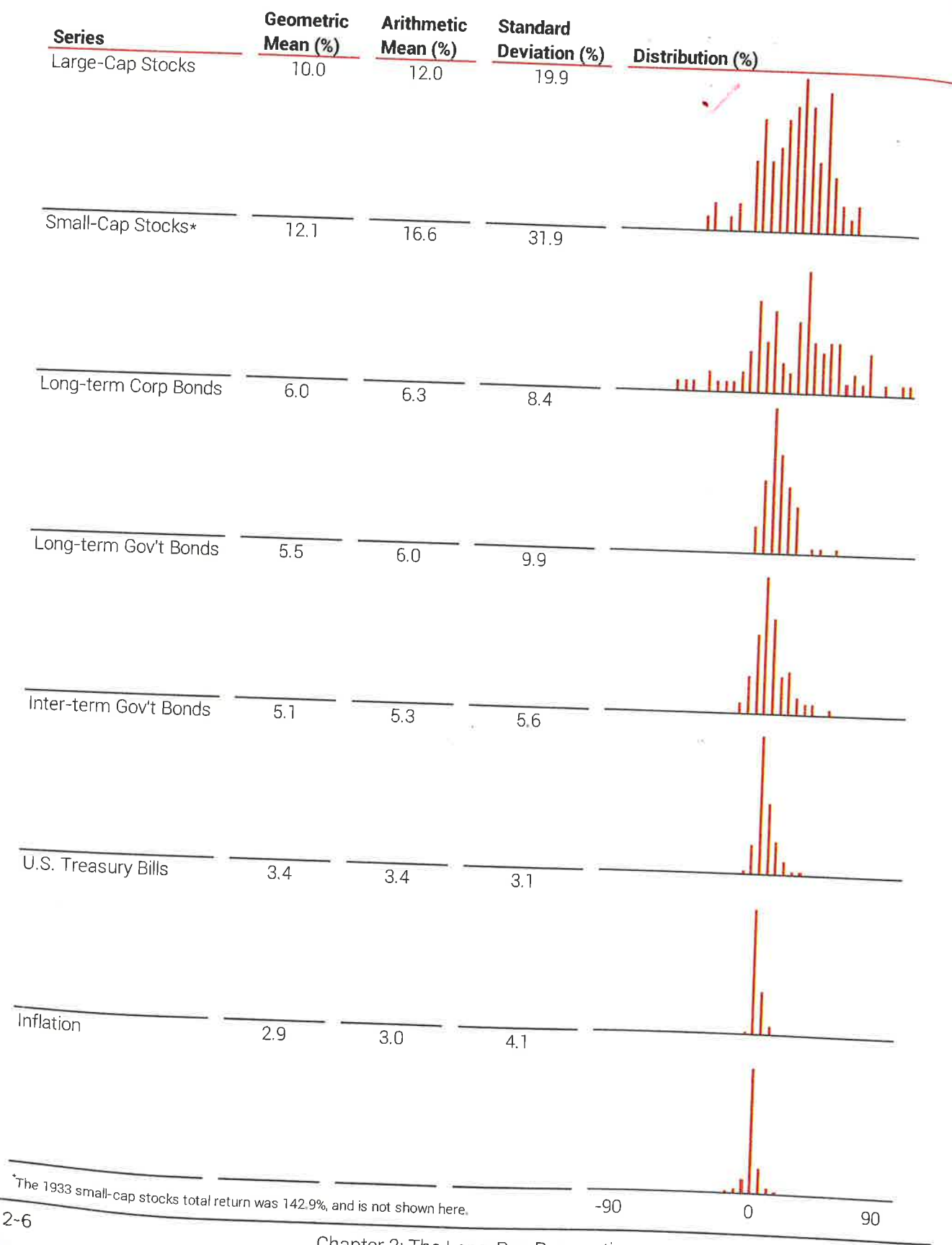
U.S. Capital Markets Performance by Asset Class 1926–2016

Duff & Phelps

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Exhibit 2.3: Basic Series, Summary Statistics of Annual Total Returns (%)
1926–2016





REGULATORY FOCUS

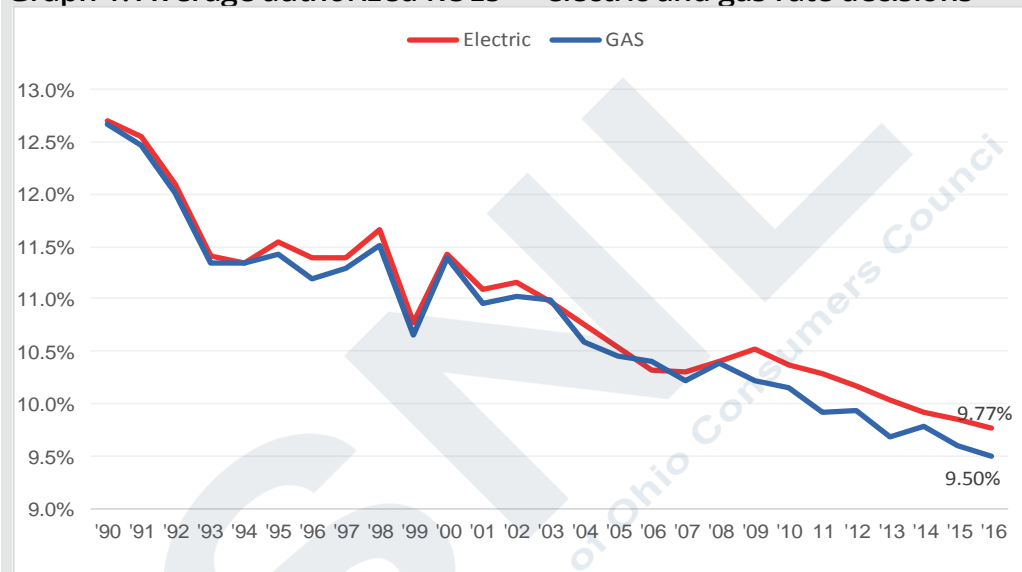
RRA is an offering of S&P Global Market Intelligence

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.

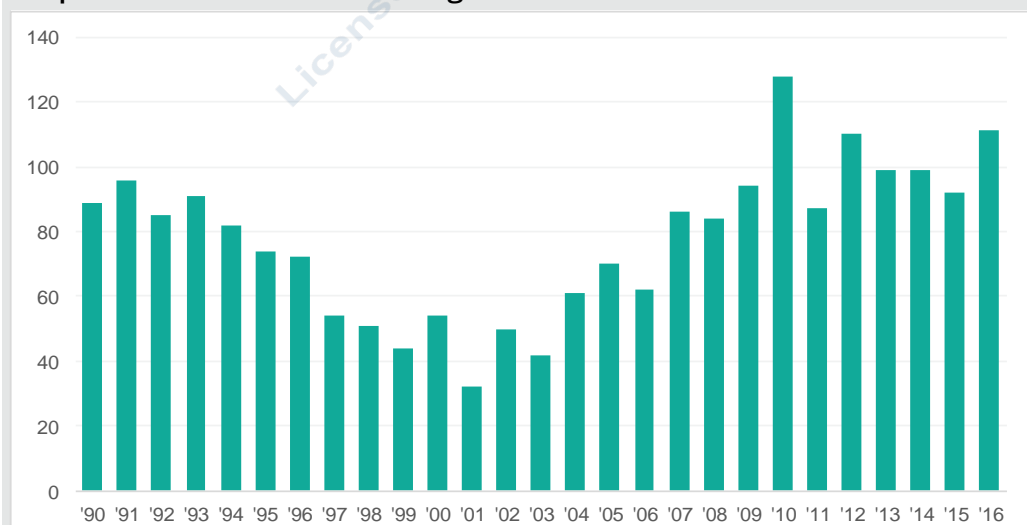
Graph 1: Average authorized ROEs — electric and gas rate decisions



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

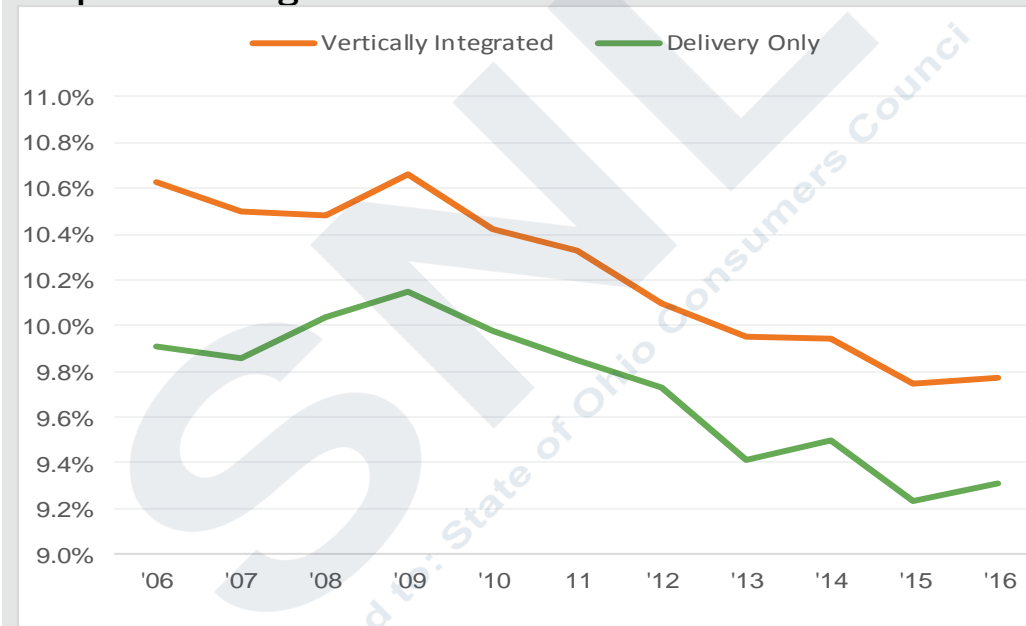


Source: Regulatory Research Associates, an offering of S&P Global Market Intelligence

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 CO₂ 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

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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&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&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)
2016	1ST QUARTER: AVERAGES/TOTAL		7.03	10.29	46.06			311.2
	OBSERVATIONS		9	9	9			12
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)
2016	2ND QUARTER: AVERAGES/TOTAL		7.42	9.60	49.91			117.7
	OBSERVATIONS		7	7	7			9
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)
2016	3RD QUARTER: AVERAGES/TOTAL OBSERVATIONS		7.23	9.76	49.11			499.3
			8	8	8			13
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)
2016	4TH QUARTER: AVERAGES/TOTAL OBSERVATIONS		7.38	9.57	49.93			1,421.4
			17	18	17			23
2016	FULL YEAR: AVERAGES/TOTAL OBSERVATIONS		7.28	9.77	48.91			2,349.6
			41	42	41			57

Source: Regulatory Research Associates, an offering of S&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)
2016	1ST QUARTER: AVERAGES/TOTAL OBSERVATIONS		7.12 6	9.48 6	50.83 6			120.2 11
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)
2016	2ND QUARTER: AVERAGES/TOTAL OBSERVATIONS		7.38 6	9.42 6	50.01 6			276.3 16

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&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

RRA Regulatory Focus

Major Rate Case Decisions 2017

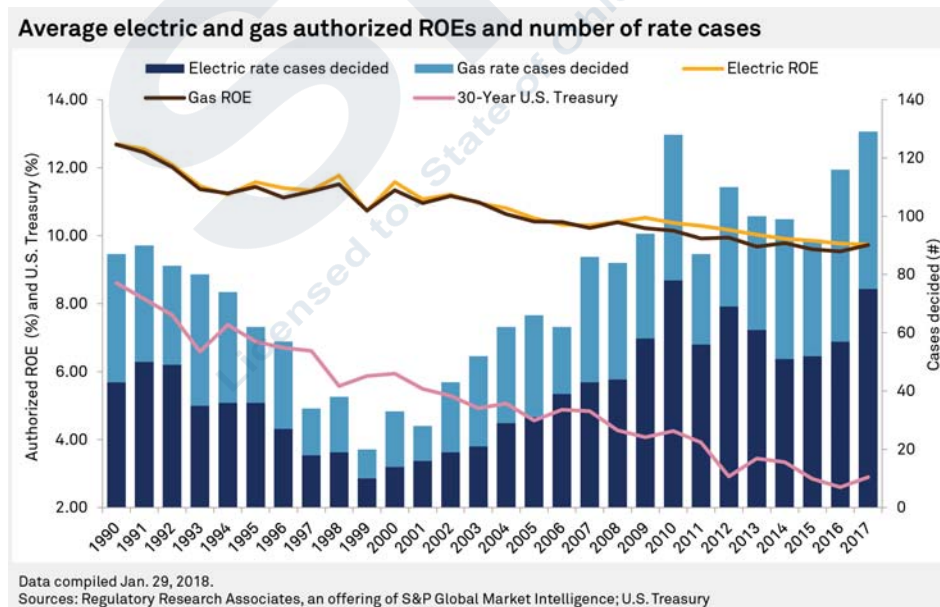
Rate case activity was brisk in 2017. The average ROE authorized electric utilities was 9.74% in rate cases decided in 2017, a record low, albeit marginally below 9.77% in 2016. There were 53 electric ROE determinations in 2017, versus 42 in 2016. This data includes several limited issue rider cases; excluding these cases from the data, the average authorized ROE was 9.68% in rate cases decided in 2017, marginally up from 9.6% in 2016. The 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](#)).

For vertically-integrated electric utilities, the average ROE authorized was 9.8% in 2017, versus 9.77% in 2016. For electric distribution utilities, the average ROE authorized was 9.43% in 2017, versus 9.31% in 2016.

The average ROE authorized gas utilities was 9.72% in 2017 versus 9.54% in 2016. There were 24 gas cases that included an ROE determination in 2017, versus 26 in 2016. RRA notes that the 2017 data includes an 11.88% ROE determination for an Alaska utility. Absent this "outlier," the 2017 gas ROE average is 9.63%.

In 2017, the median authorized ROE for all electric utilities was 9.6%, versus 9.75% in 2016. For gas utilities, the median authorized ROE in 2017 was 9.6%, versus 9.5% in 2016.

Over the last several years, the persistently low interest rate environment has put a downward pressure on authorized ROEs. As shown in the graph below, the annual average ROE has generally declined since 1990 and has been below 10% for electrics since 2014, and below 10% for gas utilities since 2011. In addition, after reaching a low in 1999, the number of rate case decisions for energy companies has generally increased over the last several years, peaking in 2010 and again in 2017.



There were 129 electric and gas rate cases resolved in 2017, 116 in 2016, 92 in 2015, 99 in 2014, 100 in 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, generation and delivery infrastructure upgrades and expansion, renewable generation mandates and

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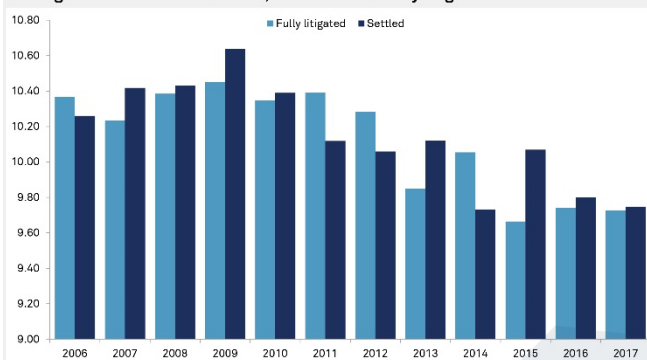
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employee benefits argue for the continuation of an active rate case agenda over the next few years.

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. Since the December 2015 hike, the Fed has increased the federal funds an additional four times, the latest hike in December 2017 to a target range of 1.25% to 1.5%. The Fed expects to continue to raise rates gradually in 2018 as the U.S. economy, including labor markets, remain strong. An increase in the rate of price inflation would point to additional Fed tightening, but a significant weakening in the economy would likely cause the Fed to reconsider further interest rate hikes. Also, higher interest rates and borrowing costs would increase the U.S. budget deficit, which is already quite significant, and is expected to further increase due to the enactment in December 2017 of tax reform legislation.

Included in tables on pages 7 and 8 of this report are comparisons, since 2006, of average authorized ROEs by settled versus fully litigated cases, general rate cases versus limited issue rider proceedings and vertically integrated cases versus delivery only cases.

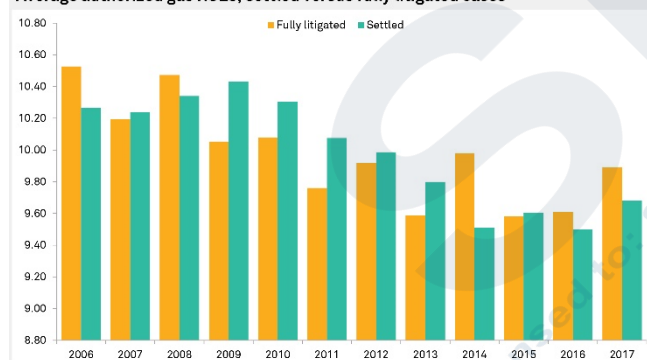
Average authorized electric ROEs, settled versus fully litigated cases



Data compiled Jan. 29, 2018.
Source: Regulatory Research Associates, an offering of S&P Global Market Intelligence

As shown in the graphs and tables, 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.

Average authorized gas ROEs, settled versus fully litigated cases



Data compiled Jan. 29, 2018.
Source: Regulatory Research Associates, an offering of S&P Global Market Intelligence

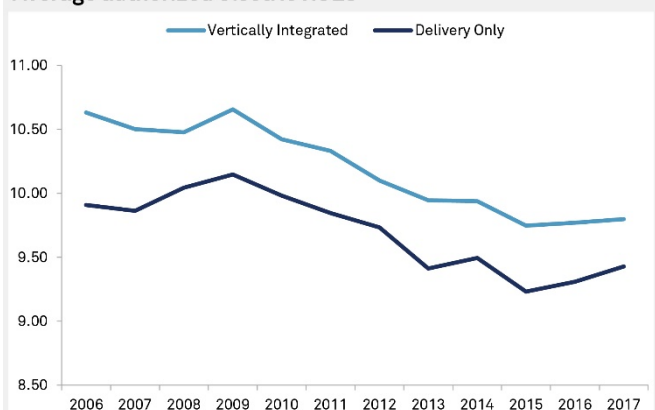
Regarding electric cases that involve limited issue riders, over the last several years the annual average authorized ROEs in these cases was typically at least 70 basis points higher than in general rate cases, driven by the ROE premiums authorized in Virginia. Limited issue rider cases in which an 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 typically are from roughly 40 to 70 basis points higher than in delivery only cases, arguably reflecting the increased risk associated with generation assets.

The simple mean is utilized 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

Average authorized electric ROEs



Data compiled Jan. 29, 2018.
Source: Regulatory Research Associates, an offering of S&P Global Market Intelligence

beginning on page 9, thus complicating historical data comparability. From 2008 through 2015, interest rates declined significantly, and average authorized ROEs have declined modestly. Also, limited issue rider proceedings that allow utilities to recover certain costs outside of a general rate case and typically incorporate previously determined return parameters have been increasingly utilized.

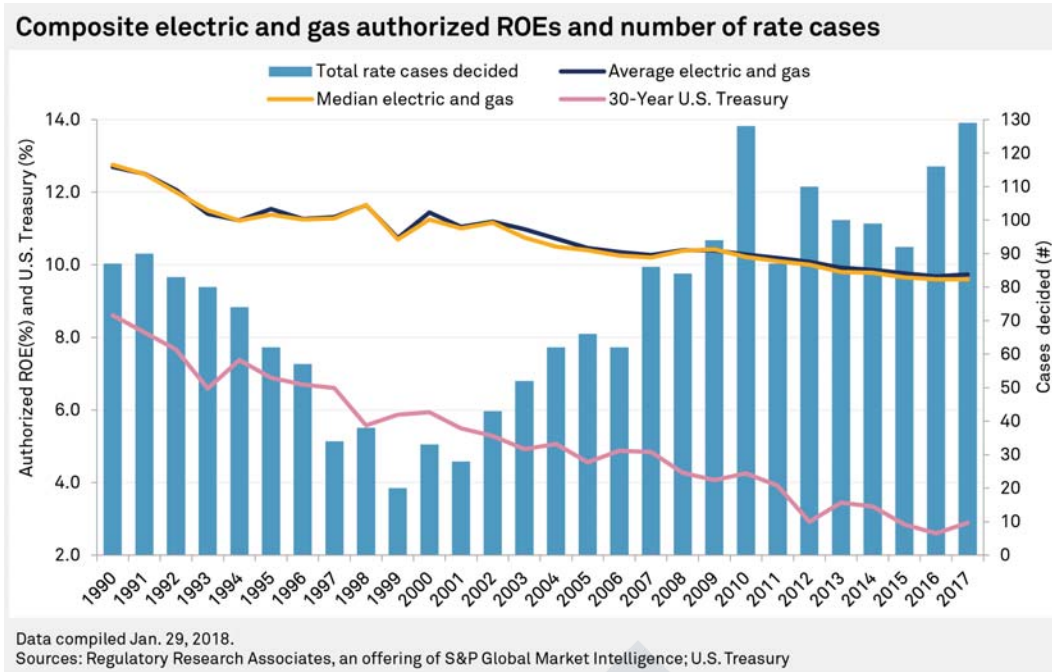
The table on page 5 shows the average ROE authorized in major electric and gas rate decisions annually since 1990, and by quarter since 2014, followed by the number of observations in each period. The tables on page 6 indicate the composite electric and gas industry data for all major cases summarized annually since 2003 and by quarter for the past eight quarters. The individual electric and gas cases decided in 2017 are listed on pages 9-13, 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 and graph below track the average and median equity return authorized for all electric and gas rate cases combined, by year, for the last 28 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 and median equity returns authorized for electric and gas utilities in each of the years 1990 through 2017, and the number of observations for each year are presented in the accompanying tables.

Composite electric and gas annual authorized ROEs: 1990 — 2017

Year	Average ROE (%)	Median ROE (%)	No. of Observations	Year	Average ROE (%)	Median ROE (%)	No. of Observations
1990	12.69	12.75	71	2004	10.72	10.50	43
1991	12.50	12.50	73	2005	10.46	10.40	50
1992	12.06	12.00	73	2006	10.35	10.25	41
1993	11.40	11.50	68	2007	10.26	10.20	73
1994	11.23	11.22	52	2008	10.40	10.39	69
1995	11.53	11.38	41	2009	10.39	10.43	70
1996	11.26	11.25	35	2010	10.28	10.22	100
1997	11.31	11.28	22	2011	10.19	10.10	58
1998	11.64	11.65	20	2012	10.09	10.00	93
1999	10.73	10.70	12	2013	9.92	9.80	70
2000	11.44	11.25	22	2014	9.86	9.78	64
2001	11.04	11.00	20	2015	9.76	9.65	46
2002	11.19	11.16	33	2016	9.68	9.60	68
2003	10.98	10.75	45	2017	9.73	9.60	77

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



Please Note: In an effort to align data presented in this report with data available in S&P Global Market Intelligence's online data base, earlier historical data provided in previous reports may not match historical data in this report due to certain differences in presentation, including the treatment of cases that were withdrawn or dismissed.

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ROEs authorized January 1990 - December 2017

Year	Period	Electric utilities			Gas utilities		
		Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations
1990	Full year	12.70	12.77	38	12.68	12.75	33
1991	Full year	12.54	12.50	42	12.45	12.50	31
1992	Full year	12.09	12.00	45	12.02	12.00	28
1993	Full year	11.46	11.50	28	11.37	11.50	40
1994	Full year	11.21	11.13	28	11.24	11.27	24
1995	Full year	11.58	11.45	28	11.44	11.30	13
1996	Full year	11.40	11.25	18	11.12	11.25	17
1997	Full year	11.33	11.58	10	11.30	11.25	12
1998	Full year	11.77	12.00	10	11.51	11.40	10
1999	Full year	10.72	10.75	6	10.74	10.65	6
2000	Full year	11.58	11.50	9	11.34	11.16	13
2001	Full year	11.07	11.00	15	10.96	11.00	5
2002	Full year	11.21	11.28	14	11.17	11.00	19
2003	Full year	10.96	10.75	20	10.99	11.00	25
2004	Full year	10.81	10.70	21	10.63	10.50	22
2005	Full year	10.51	10.35	24	10.41	10.40	26
2006	Full year	10.32	10.23	26	10.40	10.50	15
2007	Full year	10.30	10.20	38	10.22	10.20	35
2008	Full year	10.41	10.30	37	10.39	10.45	32
2009	Full year	10.52	10.50	40	10.22	10.26	30
2010	Full year	10.37	10.30	61	10.15	10.10	39
2011	Full year	10.29	10.17	42	9.92	10.03	16
2012	Full year	10.17	10.08	58	9.94	10.00	35
2013	Full year	10.03	9.95	49	9.68	9.72	21
2014	1st quarter	10.23	9.86	8	9.54	9.60	6
	2nd quarter	9.83	9.70	5	9.84	9.95	8
	3rd quarter	9.87	9.78	12	9.45	9.33	6
	4th quarter	9.78	9.80	13	10.28	10.20	6
	Full year	9.91	9.78	38	9.78	9.78	26
2015	1st quarter	10.37	9.83	9	9.47	9.05	3
	2nd quarter	9.73	9.60	7	9.43	9.50	3
	3rd quarter	9.40	9.40	2	9.75	9.75	1
	4th quarter	9.62	9.55	12	9.68	9.75	9
	Full year	9.85	9.65	30	9.60	9.68	16
2016	1st quarter	10.29	10.50	9	9.48	9.50	6
	2nd quarter	9.60	9.60	7	9.42	9.52	6
	3rd quarter	9.76	9.80	8	9.47	9.50	4
	4th quarter	9.57	9.58	18	9.68	9.73	10
	Full year	9.77	9.75	42	9.54	9.50	26
2017	1st quarter	9.87	9.60	15	9.60	9.25	3
	2nd quarter	9.63	9.50	14	9.47	9.60	7
	3rd quarter	9.66	9.60	5	10.14	9.90	6
	4th quarter	9.73	9.60	19	9.68	9.55	8
	Full year	9.74	9.60	53	9.72	9.60	24

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

Electric utilities — summary table

	Period	ROR (%)	Number of observations	ROE (%)	Number of observations	Capital structure	Number of observations	\$M	Number of observations
2003	Full year	9.08	18	10.96	20	49.32	18	312.9	21
2004	Full year	8.71	20	10.81	21	46.96	19	1,806.3	29
2005	Full year	8.44	23	10.51	24	47.34	23	936.1	31
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	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	499.3	13
	4th quarter	7.38	17	9.57	18	49.93	17	1,403.9	23
	Full year	7.28	41	9.77	42	48.91	41	2,332.1	57
2017	1st quarter	6.97	15	9.87	15	47.95	15	1,015.8	23
	2nd quarter	7.11	9	9.63	14	48.77	9	597.0	19
	3rd quarter	7.43	5	9.66	5	49.63	5	558.6	10
	4th quarter	7.32	19	9.73	19	49.51	19	593.8	23
	Full year	7.18	48	9.74	53	48.74	48	2,765.2	75

Gas utilities — summary table

	Period	ROR (%)	Number of observations	ROE (%)	Number of observations	Capital structure	Number of observations	\$M	Number of observations
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	7.43	21	9.68	21	50.60	20	498.7	39
2014	Full year	7.65	27	9.78	26	51.11	28	529.2	48
2015	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	7.11	11	9.68	10	50.27	10	761.1	24
	Full year	7.08	28	9.54	26	50.06	26	1,263.9	59
2017	1st quarter	7.20	2	9.60	3	51.57	3	71.0	9
	2nd quarter	7.27	5	9.47	7	49.15	5	85.2	13
	3rd quarter	7.07	8	10.14	6	46.58	7	128.6	17
	4th quarter	7.43	9	9.68	8	52.30	9	130.8	15
	Full year	7.26	24	9.72	24	49.88	24	415.6	54

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

Electric authorized ROEs: 2006 — 2017**Settled versus fully litigated cases**

Year	All cases			Settled cases			Fully litigated cases		
	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations
2006	10.32	10.23	26	10.26	10.25	11	10.37	10.12	15
2007	10.30	10.20	38	10.42	10.33	14	10.23	10.15	24
2008	10.41	10.30	37	10.43	10.25	17	10.39	10.54	20
2009	10.52	10.50	40	10.64	10.62	16	10.45	10.50	24
2010	10.37	10.30	61	10.39	10.30	34	10.35	10.10	27
2011	10.29	10.17	42	10.12	10.07	16	10.39	10.25	26
2012	10.17	10.08	58	10.06	10.00	29	10.28	10.25	29
2013	10.03	9.95	49	10.12	9.98	32	9.85	9.75	17
2014	9.91	9.78	38	9.73	9.75	17	10.05	9.83	21
2015	9.85	9.65	30	10.07	9.72	14	9.66	9.62	16
2016	9.77	9.75	42	9.80	9.85	17	9.74	9.60	25
2017	9.74	9.60	53	9.75	9.60	29	9.73	9.55	24

General rate cases versus limited issue riders

Year	All cases			General rate cases			Limited issue riders		
	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations
2006	10.32	10.23	26	10.34	10.25	25	9.80	9.80	1
2007	10.30	10.20	38	10.32	10.23	36	9.90	9.90	1
2008	10.41	10.30	37	10.37	10.30	35	11.11	11.11	2
2009	10.52	10.50	40	10.52	10.50	38	10.55	10.55	2
2010	10.37	10.30	61	10.29	10.26	58	11.87	12.30	3
2011	10.29	10.17	42	10.19	10.14	40	12.30	12.30	2
2012	10.17	10.08	58	10.02	10.00	51	11.57	11.40	6
2013	10.03	9.95	49	9.82	9.82	40	11.34	11.40	7
2014	9.91	9.78	38	9.76	9.75	32	10.96	11.00	5
2015	9.85	9.65	30	9.60	9.53	23	10.87	11.00	6
2016	9.77	9.75	42	9.60	9.60	32	10.31	10.55	10
2017	9.74	9.60	53	9.68	9.60	42	10.01	9.95	10

Vertically integrated cases versus delivery only cases

Year	All cases			Vertically integrated cases			Delivery only cases		
	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations
2006	10.32	10.23	26	10.63	10.54	15	9.91	10.03	10
2007	10.30	10.20	38	10.50	10.45	26	9.86	9.98	10
2008	10.41	10.30	37	10.48	10.47	26	10.04	10.25	9
2009	10.52	10.50	40	10.66	10.66	28	10.15	10.30	10
2010	10.37	10.30	61	10.42	10.40	41	9.98	10.00	17
2011	10.29	10.17	42	10.33	10.20	28	9.85	10.00	12
2012	10.17	10.08	58	10.10	10.20	39	9.73	9.73	12
2013	10.03	9.95	49	9.95	10.00	31	9.41	9.36	9
2014	9.91	9.78	38	9.94	9.90	19	9.50	9.55	13
2015	9.85	9.65	30	9.75	9.70	17	9.23	9.07	6
2016	9.77	9.75	42	9.77	9.78	20	9.31	9.33	12
2017	9.74	9.60	53	9.80	9.65	28	9.43	9.55	14

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

Gas average authorized ROEs: 2006 — 2017**Settled versus fully litigated cases**

Year	All cases			Settled cases			Fully litigated cases		
	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations
2006	10.40	10.50	15	10.26	10.20	7	10.53	10.80	8
2007	10.22	10.20	35	10.24	10.18	22	10.20	10.40	13
2008	10.39	10.45	32	10.34	10.28	20	10.47	10.68	12
2009	10.22	10.26	30	10.43	10.40	13	10.05	10.15	17
2010	10.15	10.10	39	10.30	10.15	12	10.08	10.10	27
2011	9.92	10.03	16	10.08	10.08	8	9.76	9.80	8
2012	9.94	10.00	35	9.99	10.00	14	9.92	9.90	21
2013	9.68	9.72	21	9.80	9.80	9	9.59	9.60	12
2014	9.78	9.78	26	9.51	9.50	11	9.98	10.10	15
2015	9.60	9.68	16	9.60	9.60	11	9.58	9.80	5
2016	9.54	9.50	26	9.50	9.50	16	9.61	9.58	10
2017	9.72	9.60	24	9.68	9.60	17	9.89	9.50	7

General rate cases versus limited issue riders

Year	All cases			General rate cases			Limited issue riders		
	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations
2006	10.40	10.50	15	10.40	10.50	15	—	—	0
2007	10.22	10.20	35	10.22	10.20	35	—	—	0
2008	10.39	10.45	32	10.39	10.45	32	—	—	0
2009	10.22	10.26	30	10.22	10.26	30	—	—	0
2010	10.15	10.10	39	10.15	10.10	39	—	—	0
2011	9.92	10.03	16	9.91	10.05	15	10.00	10.00	1
2012	9.94	10.00	35	9.93	10.00	34	10.40	10.40	1
2013	9.68	9.72	21	9.68	9.72	21	—	—	0
2014	9.78	9.78	26	9.78	9.78	26	—	—	0
2015	9.60	9.68	16	9.60	9.68	16	—	—	0
2016	9.54	9.50	26	9.53	9.50	25	9.70	9.70	1
2017	9.72	9.60	24	9.72	9.60	24	—	—	0

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

Electric utility decisions

Date	Company	State	ROR (%)	ROE (%)	Common equity as % of capital	Test year	Rate base	Amt. (\$M)	Footnotes
1/10/17	Empire District Electric Company	KS	—	—	—	—	—	—	(1)
1/12/17	Electric Transmission Texas	TX	6.39	9.60	40.00	12/16	Year-end	-46.2	(Tr,B)
1/17/17	Cross Texas Transmission	TX	—	—	—	—	—	-6.5	(Tr,B)
1/18/17	MDU Resources Group, Inc.	WY	7.25	9.45	50.99	12/15	Year-end	2.7	(B)
1/19/17	Metropolitan Edison Company	PA	—	—	—	12/17	—	90.5	(D,B)
1/19/17	Pennsylvania Electric Company	PA	—	—	—	12/17	—	94.6	(D,B)
1/19/17	Pennsylvania Power Company	PA	—	—	—	12/17	—	27.5	(D,B)
1/19/17	West Penn Power Company	PA	—	—	—	12/17	—	60.6	(D,B)
1/24/17	Consolidated Edison Co. of NY	NY	6.82	9.00	48.00	12/17	Average	194.5	(D,B)
1/25/17	Northern Indiana Public Service Co.	IN	—	—	—	4/16	Year-end	1.9	(LIR,B,2)
1/26/17	Southwestern Public Service Co.	TX	—	—	—	9/15	Year-end	35.2	(B)
1/31/17	DTE Electric Company	MI	5.55	10.10	37.49	7/17	Average	184.3	(I,*)
2/15/17	Delmarva Power & Light Company	MD	6.74	9.60	49.10	3/16	Average	38.3	(D)
2/22/17	Rockland Electric Company	NJ	7.47	9.60	49.70	12/16	Year-end	1.7	(D,B)
2/24/17	Indianapolis Power & Light Company	IN	—	—	—	—	—	—	(1)
2/24/17	Tucson Electric Power Company	AZ	7.04	9.75	50.03	6/15	Year-end	81.5	(B)
2/27/17	Virginia Electric and Power Company	VA	7.73	11.40	49.49	3/18	Average	-2.4	(LIR,3)
2/27/17	Virginia Electric and Power Company	VA	6.74	9.40	49.49	3/18	Average	41.4	(LIR,4)
2/27/17	Virginia Electric and Power Company	VA	7.24	10.40	49.49	3/18	Average	-2.2	(LIR,5)
2/27/17	Virginia Electric and Power Company	VA	7.24	10.40	49.49	3/18	Average	-8.5	(LIR,6)
2/27/17	Virginia Electric and Power Company	VA	7.24	10.40	49.49	3/18	Average	0.5	(LIR,7)
2/28/17	Consumers Energy Company	MI	5.94	10.10	40.75	8/17	Average	113.3	(I,*)
3/2/17	Otter Tail Power Company	MN	7.51	9.41	52.50	12/16	Average	12.3	(I)
3/8/17	Union Electric Company	MO	—	—	—	3/16	—	92.0	(B)
3/20/17	Oklahoma Gas and Electric Co.	OK	7.69	9.50	53.31	6/15	Year-end	8.8	(I)
2017	1st quarter: averages/total		6.97	9.87	47.95			1,015.8	
	Observations		15	15	15			25	
4/4/17	Gulf Power Company	FL	—	10.25	—	12/17	—	62.0	(B)
4/12/17	Liberty Utilities (Granite State Electric)	NH	7.64	9.40	50.00	12/15	—	3.8	(D,IB,Z)
4/19/17	Southwestern Public Service Company	NM	—	—	—	—	—	0.0	(8)
4/20/17	Unitil Energy Systems, Inc.	NH	8.34	9.50	50.97	12/15	—	4.1	(D,IB,Z)
5/3/17	Kansas City Power & Light Company	MO	7.43	9.50	49.20	12/15	Year-end	32.5	
5/11/17	Pacific Gas and Electric Company	CA	—	—	—	12/17	Average	91.0	(B,Z)
5/11/17	Appalachian Power Company	VA	—	—	—	6/18	Average	4.7	(B,LIR,9)
5/11/17	Northern States Power Company - MN	MN	7.08	9.20	52.50	12/19	Average	244.7	(B,I,Z)
5/18/17	Oklahoma Gas and Electric Company	AR	5.42	9.50	36.38	6/16	Year-end	7.1	(B,*)
5/23/17	Delmarva Power & Light Company	DE	—	9.70	—	12/15	—	31.5	(D,B,I)
5/31/17	Idaho Power Co.	ID	—	9.50	—	—	—	13.3	(B,LIR)

Electric utility decisions

Date	Company	State	ROR (%)	ROE (%)	Common equity as % of capital	Test year	Rate base	Amt. (\$M)	Footnotes
6/1/17	Virginia Electric and Power Company	VA	6.74	9.40	49.49	8/18	—	-12.8	(LIR,10)
6/6/17	Kansas City Power & Light Company	KS	—	—	—	6/14	—	-3.6	(B,11)
6/8/17	Westar Energy, Inc.	KS	—	—	—	9/14	—	16.4	(B,11)
6/16/17	MDU Resources Group, Inc.	ND	7.36	9.65	51.40	12/17	Average	7.5	(B,I)
6/22/17	Kentucky Utilities Company	KY	—	9.70	—	—	—	51.6	(B,R)
6/22/17	Louisville Gas and Electric Company	KY	—	9.70	—	—	—	57.1	(B,R)
6/30/17	Virginia Electric and Power Company	VA	6.74	9.40	49.49	8/18	Average	4.2	(LIR,12)
6/30/17	Virginia Electric and Power Company	VA	7.24	10.40	49.49	8/18	Average	-18.0	(LIR,13)
2017	2nd quarter: averages/total		7.11	9.63	48.77			597.0	
	Observations		9	14	9			19	
7/17/17	Appalachian Power Company	VA	—	—	—	—	—	0.0	(LIR,14)
7/24/17	Potomac Electric Power Company	DC	7.46	9.50	49.14	3/16	Average	36.9	(D)
8/4/17	Maui Electric Company, Limited	HI	—	—	—	—	—	0.0	
8/10/17	Wisconsin Electric Power Company	WI	—	—	—	12/19	—	0.0	(B,Z)
8/10/17	Wisconsin Public Service Corporation	WI	—	—	—	12/19	—	0.0	(B,Z)
8/15/17	Arizona Public Service Company	AZ	7.85	10.00	55.80	12/15	Year-end	362.6	(B)
9/1/17	Virginia Electric and Power Company	VA	6.81	9.40	50.23	8/18	Average	1.0	(LIR,15)
9/22/17	Atlantic City Electric Company	NJ	7.60	9.60	50.47	7/17	Year-end	43.0	(B,D)
9/28/17	Sharyland Utilities, L.P.	TX	—	—	—	—	—	-3.0	(B,D)
9/28/17	Oncor Electric Delivery Company LLC	TX	7.44	9.80	42.50	12/16	Year-end	118.1	(B,D)
2017	3rd quarter: averages/total		7.43	9.66	49.63			558.6	
	Observations		5	5	5			10	
10/20/17	Potomac Electric Power Company	MD	7.43	9.50	50.15	4/17	Average	32.4	(D,R)
10/25/17	Duke Energy Florida, LLC	FL	—	—	—	—	—	200.0	(B,Z)
10/26/17	San Diego Gas & Electric Co.	CA	7.55	10.20	52.00	12/18	—	-13.1	(B,16)
10/26/17	Southern California Edison Company	CA	7.61	10.30	48.00	12/18	—	-73.0	(B,16)
10/26/17	Pacific Gas and Electric Company	CA	7.69	10.25	52.00	12/18	—	-120.0	(B,16,17)
10/31/17	Northern Indiana Public Service Company	IN	—	—	—	4/17	—	14.6	(LIR,18)
11/6/17	Tampa Electric Company	FL	—	10.25	—	—	—	0.0	(B,Z,19)
11/15/17	Alaska Electric Light and Power Company	AK	8.91	11.95	58.18	12/15	Average	3.4	(B, I)
11/30/17	NSTAR Electric Company	MA	7.33	10.00	53.34	6/16	Year-end	12.2	(D,Z,20)
11/30/17	Western Massachusetts Electric Company	MA	7.26	10.00	54.51	6/16	Year-end	24.8	(D,Z,20)
12/5/17	Puget Sound Energy, Inc.	WA	7.60	9.50	48.50	9/16	Average	106.4	(B)
12/6/17	Ameren Illinois Company	IL	7.04	8.40	50.00	12/16	Year-end	-16.4	(D)
12/6/17	Commonwealth Edison Company	IL	6.47	8.40	45.89	12/16	Year-end	99.2	(D)
12/7/17	Northern States Power Company - WI	WI	7.56	9.80	51.45	12/18	Average	9.4	
12/13/17	Entergy Arkansas, Inc.	AR	4.64	—	31.62	12/18	Average	113.4	(B,*)
12/14/17	Southwestern Electric Power Company	TX	7.18	9.60	48.46	6/16	Year-end	86.9	(I)
12/14/17	El Paso Electric Company	TX	7.73	9.65	48.35	9/16	—	14.5	(B,I)
12/18/17	Portland General Electric Company	OR	7.35	9.50	50.00	12/18	Year-end	15.9	(B)
12/20/17	Public Service Company of New Mexico	NM	7.23	9.58	49.61	12/18	Average	62.3	(B,R,Z)

Electric utility decisions

Date	Company	State	ROR (%)	ROE (%)	Common equity as % of capital	Test year	Rate base	Amt. (\$M)	Footnotes
12/20/17	Southern Indiana Gas and Electric Company, Inc.	IN	—	—	—	4/17	Year-end	1.6	(LIR)
12/21/17	Green Mountain Power Corporation	VT	6.87	9.10	48.60	12/16	Average	31.9	(B)
12/28/17	Avista Corporation	ID	7.61	9.50	50.00	12/16	Year-end	17.4	(B,Z)
12/29/17	Nevada Power Company	NV	7.95	9.40	49.99	12/16	Year-end	-30.0	
2017	4th quarter: averages/total		7.32	9.73	49.51			593.84	
	Observations		19	19	19			23	
2017	Full year: averages/total		7.18	9.74	48.74			2,765.2	
	Observations		48.00	53.00	48.00			77	

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

Gas utility decisions

Date	Company	State	ROR (%)	ROE (%)	Common equity as % of capital	Test year	Rate base	Amt. (\$M)	Footnotes
1/18/17	Missouri Gas Energy	MO	—	—	—	8/16	—	3.2	(LIR,21)
1/18/17	Spire Missouri	MO	—	—	—	8/16	—	4.5	(LIR,21)
1/24/17	Consolidated Edison Co. of NY	NY	6.82	9.00	48.00	12/17	Average	-5.3	(B)
1/25/17	Southern Indiana Gas and Electric Company, Inc.	IN	—	—	—	6/16	Year-end	1.9	(LIR)
1/25/17	Indiana Gas Company, Inc.	IN	—	—	—	6/16	Year-end	8.5	(LIR)
2/9/17	Atmos Energy Corporation	KS	—	—	—	—	—	0.8	(LIR,22)
2/21/17	Atlanta Gas Light Company	GA	—	10.55	51.00	—	—	20.4	(B,23)
3/1/17	Washington Gas Light Company	DC	7.57	9.25	55.70	9/15	Average	8.5	
3/17/17	Columbia Gas of Virginia, Inc.	VA	—	—	—	12/15	—	28.5	(B,I)
2017	1st quarter: averages/total		7.20	9.60	51.57			71.0	
	Observations		2	3	3			9	
4/11/17	Southwest Gas Corporation	AZ	7.42	9.50	51.70	11/15	Year-end	16.0	(B)
4/20/17	National Fuel Gas Distribution Corp.	NY	6.92	8.70	42.90	3/18	Average	5.9	
4/26/17	Spire Missouri	MO	—	—	—	2/17	—	3.0	(B,LIR,21)
4/26/17	Missouri Gas Energy	MO	—	—	—	2/17	—	3.0	(B,LIR,21)
4/27/17	Delta Natural Gas Company, Inc.	KY	—	—	—	12/16	Year-end	1.8	(LIR,24)
4/28/17	Intermountain Gas Company	ID	7.30	9.50	50.00	12/16	Average	5.3	
5/11/17	Pacific Gas and Electric Company	CA	—	—	—	12/17	Average	-3.0	(B,Z)
5/23/17	Black Hills Kansas Gas Utility Company	KS	—	—	—	12/16	Year-end	0.6	(LIR)
5/23/17	CenterPoint Energy Resources Corp.	TX	8.02	9.60	55.15	6/16	Year-end	16.5	(B)
6/6/17	Delmarva Power & Light Company	DE	—	9.70	—	12/15	—	4.9	(B,I)
6/22/17	Louisville Gas and Electric Company	KY	—	9.70	—	—	—	6.8	(B,R)
6/28/17	Northern Indiana Public Service Company	IN	—	—	—	12/16	Year-end	11.1	(LIR)
6/30/17	Pivotal Utility Holdings, Inc.	NJ	6.71	9.60	46.00	3/17	Year-end	13.3	(B)
2017	2nd quarter: averages/total		7.27	9.47	49.15			85.2	
	Observations		5	7	5			13	

Gas utility decisions

Date	Company	State	ROR (%)	ROE (%)	Common equity as % of capital	Test year	Rate base	Amt. (\$M)	Footnotes
7/21/17	NorthWestern Corporation	MT	6.96	9.55	46.79	12/15	Average	5.1	(B,)
7/26/17	Southern Indiana Gas and Electric Company, Inc.	IN	—	—	—	12/16	Year-end	3.4	LIR
7/26/17	Indiana Gas Company, Inc.	IN	—	—	—	12/16	Year-end	9.2	LIR
7/31/17	Consumers Energy Company	MI	5.97	10.10	41.27	12/17	Average	29.2	(I,*)
8/9/17	Oklahoma Natural Gas Company	OK	—	—	—	12/16	—	0.0	(B,25)
8/10/17	Wisconsin Electric Power Company	WI	—	—	—	12/19	—	0.0	(B,Z)
8/10/17	Wisconsin Gas LLC	WI	—	—	—	12/19	—	0.0	(B,Z)
8/10/17	Wisconsin Public Service Corporation	WI	—	—	—	12/19	—	0.0	(B,Z)
8/21/17	Virginia Natural Gas, Inc.	VA	—	—	—	8/18	Average	2.9	(LIR,26)
8/31/17	UGI Penn Natural Gas, Inc.	PA	—	—	—	9/18	—	11.3	(B)
9/6/17	CenterPoint Energy Resources Corp.	AR	4.58	—	31.02	9/18	Year-end	7.6	(*,B)
9/8/17	Washington Gas Light Company	VA	—	—	—	11/17	—	34.0	(I,B)
9/13/17	Avista Corporation	OR	7.35	9.40	50.00	9/18	Average	3.5	(B,Z)
9/19/17	Columbia Gas of Maryland, Incorporated	MD	7.35	9.70	—	4/17	—	2.4	(B)
9/22/17	ENSTAR Natural Gas Company	AK	8.59	11.88	51.81	12/15	Average	5.8	(I)
9/27/17	South Carolina Electric & Gas Co.	SC	8.15	—	52.16	3/17	Year-end	8.6	(M)
9/27/17	Piedmont Natural Gas Company, Inc.	SC	7.60	10.20	53.00	3/17	Year-end	5.5	(B,27)
2017	3rd quarter: averages/total		7.07	10.14	46.58			128.6	
	Observations		8	6	7			17	
10/19/17	CenterPoint Energy Resources Corp.	OK	—	—	—	12/16	Year-end	2.2	
10/20/17	South Jersey Gas Company	NJ	6.80	9.60	52.50	8/17	Year-end	39.5	(B)
10/26/17	San Diego Gas & Electric Co.	CA	7.55	10.20	52.00	12/18	—	-2.0	(B,16)
10/27/17	Atmos Energy Corporation	KY	—	—	—	9/18	Year-end	10.6	(LIR)
10/30/17	Southern California Gas Company	CA	7.34	10.05	52.00	12/18	—	-35.1	(B,16)
11/16/17	Kansas Gas Service Company	KS	—	—	—	6/17	Year-end	2.9	(LIR)
11/21/17	Washington Gas Light Company	VA	7.35	9.50	59.63	12/18	Average	16.4	
12/5/17	Puget Sound Energy, Inc.	WA	7.60	9.50	48.50	9/17	Average	16.6	(B)
12/7/17	Northern States Power Company - WI	WI	7.56	9.80	51.45	12/18	Average	9.9	
12/13/17	Columbia Gas of Virginia, Incorporated	VA	—	—	—	12/18	—	3.2	(B,LIR)
12/13/17	Southern Connecticut Gas Company	CT	7.42	9.25	52.19	12/16	Average	11.2	(B,Z)
12/21/17	Virginia Natural Gas, Inc.	VA	—	—	—	9/16	—	34.1	(B,I)
12/22/17	Columbia Gas of Kentucky, Incorporated	KY	7.62	—	52.42	12/18	Year-end	4.5	(LIR)
12/28/17	Northern Indiana Public Service Company	IN	—	—	—	6/17	Year-end	14.6	(LIR)
12/28/17	Avista Corporation	ID	7.61	9.50	50.00	12/16	Year-end	2.3	(B,Z)
2017	4th quarter: averages/total		7.43	9.68	52.30			130.8	
	Observations		9	8	9			15	
2017	Averages/total		7.26	9.72	49.88			415.6	
	Observations		24	24	24			54	

Source: Regulatory Research Associates, an offering of S&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.
- 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) Case withdrawn by company.
- (2) Initial proceeding to establish the rates to be charged to customers under the company's transmission, distribution, and storage system improvement charge, or TDSIC, rate adjustment mechanism and reflects investments made between Jan. 1, 2016 and April 30, 2016.
- (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) Proceeding determines the revenue requirement for Rider GV, which is the mechanism through which the company recovers the costs associated with the new gas fired generation facility, the Greenville County project.
- (5) 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.
- (6) This proceeding determines the revenue requirement for Rider S, which recognizes in rates the company's investment in the Virginia City Hybrid Energy Center.
- (7) Increase authorized through a surcharge, Rider W, which reflects in rates investment in the Warren County Power Station.
- (8) The commission rejected the company's rate case filing.
- (9) Case represents the company's RAC-EE rider, under which it recovers the costs and lost revenues associated with its energy efficiency programs.
- (10) Case represents the company's Rider DSM, which involves a consolidation of two riders related to the company's costs and investments in demand-side management and energy conservation programs.
- (11) Represents an "abbreviated" rate case.
- (12) Case involves Rider US-2, which pertains to the company's investment in three new solar generation facilities with a total capacity of 56 MW.
- (13) Case involves Rider BW, which relates to the company's investment in the Brunswick generating plant, which achieved commercial operation on 4/25/16.
- (14) Commission rejected the company's request for an accelerated vegetation management program and an associated rate adjustment mechanism.
- (15) Case involves Rider U, which pertains to the company's investment in projects to underground certain "at risk" distribution facilities.
- (16) Represents a company compliance filing establishing cost of capital parameters for 2018.
- (17) Rate decrease amounts represent combined electric and gas, as presented by the company.
- (18) Second proceeding to establish the rates to be charged to customers under the company's transmission, distribution and storage system improvement charge, or TDSIC, rate adjustment mechanism, and reflects investments made between May 1, 2016, and April 30, 2017.
- (19) Subject to certain adjustment provisions, the company's authorized ROE is to remain within a range of 9.25% to 11.25%, with a midpoint of 10.25%.
- (20) A five-year performance-based regulation plan was also adopted.
- (21) Case involves the company's infrastructure system replacement surcharge, or ISRS, rider.
- (22) Case involves the company's gas system reliability surcharge, or GSRS, rider.
- (23) In this proceeding, the commission adopted an alternative rate plan and authorized the first rate change,
- (24) Case involves the company's pipe replacement program rider.
- (25) Case involves the company's performance based ratemaking plan.
- (26) Case involves the company's Steps to Advance Virginia Energy rider.
- (27) Modified "make whole" rate change authorized.



Rating Action: **Moody's revises Duke Ohio outlook to positive, ratings affirmed**

Global Credit Research - 10 Aug 2017

Approximately \$2 billion of debt affected

New York, August 10, 2017 -- Moody's Investors Service ("Moody's") revised the outlook for Duke Energy Ohio, Inc. (Duke Ohio, Baa1) to positive from stable and affirmed its existing ratings. The ratings of Duke Ohio's utility subsidiary, Duke Energy Kentucky, Inc. (Duke Kentucky, Baa1 stable) were also affirmed. The outlook for Duke Kentucky remains stable. Duke Ohio is a subsidiary of Duke Energy Corporation (Duke Energy, Baa1 stable).

RATINGS RATIONALE

The positive outlook for Duke Ohio recognizes financial credit metrics that are expected to remain strong for a high Baa rated transmission and distribution utility operating in a supportive regulatory environment. The outlook considers the lower risk nature of the company's business and operating profile as a company that no longer owns merchant generation assets and recognizes the supportive regulatory framework that has been demonstrated in recent years in Ohio. The positive outlook reflects our expectation of continued strong cash flow metrics, for example a ratio of cash flow from operations excluding changes in working capital (CFO pre-WC) to debt in the range of 20%. Our view also considers Duke Ohio's ownership of the smaller, vertically integrated, and neighboring, electric and gas operations of Duke Kentucky.

Duke Energy's 2015 transfer of its ownership interest in Ohio generating assets eliminated a more risky, volatile business from the company's predominantly regulated utility operations and completed the transition of Duke Ohio into a transmission and distribution company. Duke Ohio's generation ownership is currently limited to its 9% (approximately 200 MW) interest in Ohio Valley Electric Corp (OVEC, Ba1 negative) a generation cooperative that owns two coal-fired generating plants in Ohio and Indiana; and its ownership of Duke Kentucky, an electric and gas utility with about \$600 million of electric earnings base (approximately 20% of Duke Ohio) including around 1,062 MW of generating capacity. We view electric and gas transmission and distribution utilities as having a lower operating risk profile than vertically integrated electric utilities.

We see the Ohio regulatory environment under the Public Utilities Commission of Ohio (PUCO) as supportive to credit quality of transmission and distribution utilities. For the past several years, as the state has been restructuring its electric industry, utilities have been operating under individually tailored electric security plans (ESPs) for their standard service offers. Duke Ohio is currently operating under its third ESP, ESP III, which covers the three years beginning June 2015 and ending May 2018. Under its current ESP, the company utilizes a competitive procurement process to supply all of its customers' energy and capacity needs, and plans to continue to do so in the future. Duke Ohio also benefits from numerous riders and trackers including a distribution capital investment rider, riders for retail energy and capacity, energy efficiency and distribution decoupling. In its most recent filings, which include a request for ESP IV as well as an electric distribution rate case, Duke Ohio has requested continuation of existing riders, the implementation of additional riders, and authorization to adjust its price stabilization rider to pass through the net cost of its contractual commitments to OVEC. We view the use of numerous riders and trackers as supportive of credit quality as they result in more stable and predictable cash flow for the utility.

We expect Duke Ohio's financial metrics to remain at levels that are strong for a high Baa-rated transmission and distribution utility. Going forward, we anticipate the ratio of CFO Pre-WC to debt will remain in the high teens to 20% range. These metrics include the results of subsidiary Duke Kentucky, which are consolidated into the financial statements of Duke Ohio. When evaluated in light of the standard business risk grid factors (used for vertically integrated electric utilities such as Duke Kentucky), Duke Ohio's overall credit metrics are still strong for the rating.

Duke Kentucky - Utilities in Kentucky benefit from timely cost adjustment mechanisms for the recovery of fuel, purchased power and environmental compliance costs, and the company has historically been able generate strong cash flow credit metrics. However, Duke Kentucky has not filed for a general rate increase in many years. The company's last case was decided 11 years ago based on a settlement agreement, and its last ROE decision was in 1992 when an 11.5% return was established. Duke Kentucky recently announced that it intends to submit an electric base rate application around September 1st where it will seek to recover costs incurred for ash basin repurposing and for the installation of automated metering equipment. To the extent Duke Kentucky's upcoming rate case is decided in a reasonably timely and supportive fashion, such that credit metrics could be expected to remain near their current levels; for example CFO pre-WC to debt above 22%, there could be upward pressure on Duke Kentucky's rating or outlook.

Rating Outlook

The positive outlook for Duke Ohio's ratings reflects our view of a credit supportive regulatory environment and our expectation that the utility will continue to demonstrate strong financial metrics.

Factors that Could Lead to an Upgrade

Duke Ohio's rating could be upgraded if the company receives reasonably supportive treatment in its current rate proceedings, including the continuation of riders and other recovery mechanisms to maintain cash flow stability. If financial credit metrics are maintained at or above their current levels, for example, if the ratio of cash from operations excluding changes in working capital (CFO pre-WC) to debt remains near 20%, there could be upward pressure on the rating.

Factors that Could Lead to a Downgrade

The rating could be downgraded if the company's regulatory environments become less supportive or less consistent, or if there were to be a significant increase in leverage, or reduction in cash flow leading for example to a ratio of CFO pre-working to debt falling below the high teens on a sustained basis.

Outlook Actions:

...Issuer: Duke Energy Ohio, Inc.

....Outlook, Changed To Positive From Stable

...Issuer: Duke Energy Kentucky, Inc.

....Outlook, Remains Stable

Affirmations:

...Issuer: Duke Energy Ohio, Inc.

.... Issuer Rating, Affirmed Baa1

....Senior Secured Shelf, Affirmed (P)A2

....Senior Unsecured Shelf, Affirmed (P)Baa1

....Senior Secured First Mortgage Bonds, Affirmed A2

....Senior Unsecured Regular Bond/Debenture, Affirmed Baa1

...Issuer: Ohio Air Quality Development Authority

....Senior Unsecured Revenue Bonds, Affirmed Baa1

....Senior Unsecured Revenue Bonds, Affirmed VMIG 2

...Issuer: Ohio Water Development Authority

....Senior Unsecured Revenue Bonds, Affirmed Baa1

...Issuer: Duke Energy Kentucky, Inc.

....Senior Unsecured Regular Bond/Debenture, Affirmed Baa1

...Issuer: Boone (County of) KY

....Senior Unsecured Revenue Bonds, Affirmed Baa1

The principal methodology used in these ratings was Regulated Electric and Gas Utilities published in June 2017. Please see the Rating Methodologies page on www.moodys.com for a copy of this methodology.

Duke Ohio is an electric and gas utility providing electric service to approximately 850,000 customers and transmission and distribution of natural gas to about 529,000 customers covering a 3,000 square mile area in southwestern Ohio and part of Kentucky.

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OCC Calculation of Base Distribution Revenue Requirements (PUCO Case No. 17-32-EL-AIR *et al.*)

Schedule A-1

Line No.	Description	Per Stipulation	Per OCC (ROR= 6.75%)	Per OCC (ROR = 6.75% and GRCF = 1.2846741)
1	Rate Base	\$1,302,465,298	\$1,302,465,298	\$1,302,465,298
2	Current Operating Income	\$110,488,130	\$110,488,130	\$110,488,130
3	Earned Rate of Return (Line 2 / Line 1)	8.48%	8.48%	8.48%
4	Rate of Return Recommended	7.54%	6.75%	6.75%
5	Required Operating Income (Line 1 x Line 4)	\$98,205,883	\$87,916,408	\$87,916,408
6	Operating Income Deficiency (Line 5 - Line 2)	-\$12,282,247	-\$22,571,722	-\$22,571,722
7	Gross Revenue Conversion Factor	1.5613731	1.5613731	1.2846742
8	Revenue Deficiency (Line 6 x Line 7, or Line 14)	-\$19,177,171	-\$35,242,880	-\$59,569,253
9	Revenue Increase Requested	-\$19,177,171	-\$35,242,880	-\$59,569,253
10	Adjusted Operating Revenues	\$486,952,854	\$486,952,854	\$486,952,854
11	Revenue Requirements (Line 9 + Line 10)	\$467,775,683	\$451,709,974	\$427,383,601

Verification

12	Revenue supporting Currenting Operating Income (Line 2 x Line 7)	\$172,513,194	172,513,194	172,513,194
13	Revenue supporting Required Operating Income with Updated GRCF (Line 5 x Line 7)	\$153,336,025	137,270,314	112,943,941
14	Revenue Deficiency (Line 12 - Line 13)	-\$19,177,169	-35,242,880	-59,569,253
15	Additional Cost to Duke's Customers		\$16,065,711	\$40,392,084

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Summary: Testimony Direct Testimony of Daniel J. Duann, Ph.D. in Opposition to the Joint Stipulation and Recommendation on behalf of The Office of the Ohio Consumers' Counsel electronically filed by Ms. Jamie Williams on behalf of Michael, William Mr.