

BEFORE THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

IN THE MATTER OF THE APPLICATION OF)
OKLAHOMA GAS AND ELECTRIC COMPANY)
FOR AN ORDER OF THE COMMISSION)
AUTHORIZING APPLICANT TO MODIFY ITS)
RATES, CHARGES, AND TARIFFS FOR RETAIL)
ELECTRIC SERVICE IN OKLAHOMA)

CAUSE NO. PUD 201700496

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CORPORATION COMMISSION
OF OKLAHOMA

RESPONSIVE TESTIMONY

OF

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ON BEHALF OF

MIKE HUNTER,

OKLAHOMA ATTORNEY GENERAL

May 2, 2018

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, OCCUPATION, AND BUSINESS ADDRESS.

A. My name is Dr. Marlon F. Griffing. I am a Senior Consultant with the economic consulting firm of PCMG & Associates Inc. ("PCMG"). My business address is 22 Brookes Drive, Gaithersburg, MD 20785.

Q. PLEASE DESCRIBE PCMG.

A. PCMG was founded in 2015 to conduct research on a consulting basis into the rates, revenues, costs and economic performance of regulated firms and industries. The firm has a professional staff of four with expertise in economics, accounting, and cost analysis. Most of its work involves the development, preparation, and presentation of expert witness testimony before federal and state regulatory agencies.

Q. HAVE YOU PREPARED A SUMMARY OF YOUR QUALIFICATIONS AND EXPERIENCE, INCLUDING COST-OF-CAPITAL TESTIMONY IN REGULATORY PROCEEDINGS?

A. Yes. Exhibit MFG-1 is a summary of my qualifications, experience, and testimony given before state regulatory agencies regarding cost of capital.

Q. FOR WHOM ARE YOU APPEARING IN THIS PROCEEDING?

A. I am appearing on behalf of Mike Hunter, Oklahoma Attorney General.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE OKLAHOMA CORPORATION COMMISSION, AND WERE YOUR CREDENTIALS ACCEPTED?

A. Yes. I testified before the Oklahoma Corporation Commission ("Commission") on cost of capital issues in Cause No. PUD 201700151, and my credentials were accepted.

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

2 A. The purpose of my testimony is to determine a fair rate of return on common equity capital
3 and a fair overall rate of return for the electric utility company Oklahoma Gas and Electric
4 Company (“OGE” or the “Company”). OGE is a wholly-owned subsidiary of OGE Energy
5 Corp.

6 **Q. HOW DO YOU ADDRESS RECOMMENDED RATES FOR THE COMPANY?**

7 A. To arrive at recommended rates for common equity capital and overall rate of return, I
8 analyze the Company’s capital structure and the costs for each component of that structure.

9 **Q. HOW IS YOUR TESTIMONY ORGANIZED?**

10 A. My testimony is organized as follows:

- 11 • First, I discuss economic considerations and legal precedents underlying the cost of
12 equity in regulatory proceedings.
- 13 • Second, I explain how I selected the members of the Comparison Group of companies
14 used in my analysis.
- 15 • Third, I provide an overview of the Discounted Cash Flow (“DCF”) analysis.
- 16 • Fourth, I perform a DCF analysis for the Comparison Group, check it for
17 reasonableness, and recommend a return on equity (“ROE”) for the Company.
- 18 • Fifth, I recommend a capital structure and overall rate of return for the Company.
- 19 • Sixth, I review the Company’s rate of return analysis.
- 20 • Seventh, I summarize my testimony and recommendations.

1 **Q. PLEASE STATE YOUR CONCLUSIONS REGARDING THE COMPANY’S ROE**
2 **AND RATE OF RETURN.**

3 A. My recommended ROE for OGE is 9.18 percent. When this number is included in the
4 calculation of the calculation of the rate of return for the Company, the result is a weighted-
5 average cost of capital of 7.25 percent.

6 **II. THE COST OF EQUITY IN THE REGULATORY ENVIRONMENT**

7 **1. THE ROLE OF ECONOMIC THEORY**

8 **Q. WHAT IS THE BASIS IN ECONOMIC THEORY FOR REGULATING CERTAIN**
9 **INDUSTRIES?**

10 A. According to economic theory, the forces of supply and demand interacting in a competitive
11 environment produce an allocation of resources that yields an optimal mix of goods and
12 services. Firms and individuals maximize profits and satisfaction given the prices and incomes
13 that the interplay of market forces generates. This outcome is described as “economically
14 efficient.” Put simply, there is no better output of goods and services that can be produced
15 with the available resources.

16 **Q. DOES THE ECONOMICALLY EFFICIENT OUTCOME OCCUR IN ALL**
17 **INDUSTRIES?**

18 A. No, several conditions must be present, including many buyers and sellers, identical
19 products, perfect information about prices, and so forth. If these conditions exist, then price
20 is the only way for providers of goods and services to compete in markets. If the conditions
21 for competition do not exist, however, then letting supply and demand work unfettered will
22 not produce the socially desired efficient outcome.

1 **Q. WHAT CONDITION FOR COMPETITION IS MISSING IN THE RETAIL**
2 **ELECTRIC INDUSTRY IN OKLAHOMA?**

3 A. The retail electric industry in Oklahoma does not have several sellers. The large size of
4 electric distribution systems required to provide the product means that retail electric
5 companies have high fixed costs. Consequently, it is difficult for firms to enter the market,
6 resulting in less competition than would be the case if fixed costs were lower. High fixed
7 costs in this context are known as a “barrier to entry.”

8 **Q. ARE THERE LEGAL OBSTACLES TO COMPETITION IN PUBLIC UTILITY**
9 **MARKETS?**

10 A. Even if a firm is willing and able to raise the capital needed to be a viable electric
11 distribution company, state and local governments typically have permitting processes that
12 govern where and when utilities can build facilities. Thus, high start-up costs are not the
13 only barrier that must be overcome.

14 **Q. ARE THERE OTHER ASPECTS OF A VERTICALLY INTEGRATED UTILITY’S**
15 **COSTS THAT RESULT IN FEW SELLERS?**

16 A. Yes. The electric industry is typically what is known as a declining-cost industry.

17 **Q. WHAT IS A DECLINING-COST INDUSTRY?**

18 A. A declining-cost industry is one where the average cost of service declines over the range
19 of effective demand.

20 **Q. ARE PUBLIC UTILITIES DECLINING-COST INDUSTRIES?**

21 A. Yes. With their high fixed costs, public utilities have high initial average costs, but as their
22 sales increase, the average cost drops. This fact alone does not make public utilities
23 declining-cost industries. In most industries, average costs fall as sales increase. However,

1 in most industries, average costs start to rise at sales levels that are much less than the total
2 demand for the product produced in any given industry, consequently a few to many firms
3 can share the market. What sets public utilities apart is that their average costs continue to
4 decline over very high volumes of sales, up to and beyond total, or effective, market
5 demand. This condition creates market failure (when the market produces an outcome that
6 is inefficient). As a vertically integrated electric firm increases its sales and market share,
7 its average costs decline, and continue to do so. Thus, the firm with the largest market share
8 has an increasing advantage over competitors. In effect, there is not enough room in the
9 market for another company. The logical result is a market with one producer—often
10 referred to as a natural monopoly—not the many firms envisioned in the theory of
11 competition.

12 **Q. HOW HAS SOCIETY RESPONDED TO THE ABSENCE OF COMPETITION IN**
13 **PUBLIC UTILITY MARKETS?**

14 A. Since sufficient competition does not exist in the markets for public utilities to ensure low
15 prices and adequate service, society has typically turned to regulation to achieve these
16 goals. The government regulators generally are charged with pursuing an outcome that
17 approximates the efficient outcome of the competitive model. Regulation thus is viewed as
18 a way to decrease prices and increase services provided by a natural monopoly. A challenge
19 for regulators is to set policies which ensure that the regulated firm provides an appropriate
20 supply of services at reasonable rates. A reasonable rate enables a public utility not only to
21 recover its operating expenses, depreciation, and taxes, but also to compete for funds in
22 capital markets.

1 **2. STANDARDS FOR FINDING A FAIR RATE OF RETURN**

2 **Q. DO STANDARDS EXIST FOR DETERMINING A FAIR RATE OF RETURN?**

3 A. Yes. Two United States Supreme Court cases are the basis for rate of return regulation in
4 the United States. They are the *Bluefield Water Works* (“*Bluefield*”)¹ and the *Hope Natural*
5 *Gas* (“*Hope*”)² cases. In *Hope*, the Court established the following standards for the return
6 on equity that must be allowed a regulated public utility to provide for a “reasonable
7 return”:

8 [T]he return to the equity owner should be commensurate with the returns
9 on investments in other enterprises having corresponding risks. That return,
10 moreover, should be sufficient to assure confidence in the financial integrity
11 of the enterprise, so as to maintain its credit and to attract capital.³

12 It can be seen from this excerpt that there are essentially three standards for determining
13 an appropriate return on equity from the standpoint of the equity owners of a regulated
14 utility. The first is the “comparable earnings” standard; i.e., that the earnings must be
15 “commensurate with the returns on investments in other enterprises having corresponding
16 risks.” The second is that earnings must be sufficient to assure “confidence in the financial
17 integrity of the enterprise.” The third is that earnings must allow the utility to attract capital.

¹ *Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm’n of W. Va.*, 262 U.S. 679 (1923).

² *Fed. Power Comm’n v. Hope Nat. Gas Co.*, 320 U.S. 591 (1944).

³ *Id.* at 603.

1 **Q. HOW CAN THE COMPARABLE EARNINGS STANDARD BE APPLIED IN**
2 **ESTIMATING THE RATE OF RETURN ON EQUITY CAPITAL?**

3 A. There is circularity to the comparable earnings standard because the competitive nature of
4 the capital markets virtually ensures that the returns to all enterprises having corresponding
5 risks are comparable with each other. Investors establish the price of each traded stock
6 based on that stock's present and prospective earnings in comparison with the present and
7 prospective earnings of all other stocks and other investments available to them. If the
8 earnings of a firm are depressed, then investors will pay only a low price for that firm's
9 stock. As a result, the return on the market value of that stock will be comparable to the
10 return on the market value of the stock of other companies that are highly profitable but
11 which, as a consequence of their profitability, have been bid up to a very high price. Thus,
12 if "return" is defined as the earnings of an equity investment relative to its current market
13 price, then the comparable earnings test becomes a nullity: all returns, adjusted for risk, are
14 comparable with all other returns.

15 **Q. HOW IS THIS CIRCULARITY TYPICALLY RESOLVED IN PUBLIC UTILITY**
16 **REGULATION?**

17 A. In public utility regulation, the conventional procedure for resolving this circularity is to
18 identify the required equity return based on the market value of a utility's stock. That return
19 is combined with the cost of debt, and the blended return to total capital is then applied to
20 a rate base reflective of the book value of the utility's investment. The book value is the
21 accountant's quantification of the depreciated original cost of the utility's assets adjusted
22 for ratepayer contributions such as deposits and deferred taxes. Under this procedure, the
23 market price of a stock is used only to determine the return that investors expect from that

1 stock. That expectation is then applied to the book value of the utility's investment to
2 identify the level of earnings that regulation will allow the utility's common shareholders
3 to recover.

4 **Q. HOW CAN THE FINANCIAL INTEGRITY AND CAPITAL ATTRACTION**
5 **STANDARDS ENUNCIATED IN *HOPE* BE APPLIED IN ESTIMATING THE**
6 **RATE OF RETURN ON EQUITY CAPITAL?**

7 A. If a utility can earn a return on its investment comparable to that required by enterprises of
8 comparable risk, then it should have no difficulty in attracting capital and maintaining
9 credit. Investors would have no reason to pass on purchasing the common equity of such a
10 utility in favor of other investment opportunities. Thus, if the comparable earnings test is
11 met, then the financial integrity and capital attraction standards are met as well.

12 **Q. DOES RISK PLAY A ROLE IN THE HOPE AND BLUEFIELD CASES?**

13 A. Yes. The standards in these cases require that comparable companies have "corresponding
14 risks."⁴

15 **Q. WHAT IS RISK?**

16 A. Risk is the chance of a loss or less-than-expected return on an investment. A business, for
17 example, may introduce a new product with the expectation that it will sell well. There is,
18 of course, no guarantee that consumers will purchase the product. The risk investors attach
19 to the company varies inversely with their view as to the probability of the product doing
20 well. In general, the greater the risk of an investment, the greater the return required to
21 attract investors, and vice versa.

⁴ See *Hope*, 320 U.S. at 603.

1 **Q. DOES SETTING AN ALLOWED RATE OF RETURN MEAN THAT THE**
2 **UTILITY WILL EARN THAT RETURN?**

3 A. No. There is no guarantee that the utility will earn the allowed rate of return. The utility
4 has the reasonable *opportunity* to earn the allowed rate of return; in practice, the utility may
5 earn more or less than this return, depending on whether and how its management responds
6 to technological and market developments, among other matters.

7 **Q. WHAT SHOULD THE COMMISSION CONSIDER IN SETTING AN**
8 **APPROPRIATE RATE OF RETURN?**

9 A. The Commission should look to current market conditions as it balances investor and
10 consumer interests. The rate of return should reflect the condition of the capital markets in
11 which the OGE will have to compete with other firms for funding. Historically allowed
12 rates and historical performances are not appropriate inputs in this forward-looking
13 approach. This statement does not mean that historical rates and performance are irrelevant.
14 They are factors because they affect investors' views of a company's prospects and,
15 therefore, the investors' willingness to purchase its common-equity shares.

16 **Q. PLEASE EXPLAIN HOW THE METHODS YOU HAVE USED TO DETERMINE**
17 **THE COST OF COMMON EQUITY CAPITAL FOR THE COMPANY REFLECT**
18 **CURRENT MARKET CONDITIONS.**

19 A. I used a market-oriented approach to determine the common-equity cost for the Company.
20 I analyzed the equity return that investors currently expect to receive from investing in
21 companies with risks similar to the risk of OGE. Many factors influence these investor
22 expectations, among them: past performance of the companies, estimates of how the
23 companies will perform in the future, possible technological change, tax rates, and

1 predicted general economic conditions. As investors decide where to place their funds
2 among the investment options available to them, they weigh the information they have.
3 Then they decide how to pay to acquire common-equity shares, or to turn to the other side
4 of the question, what price will lead them to sell the shares. Either way, the factors are
5 reflected in current prices in capital markets. Thus, my analysis is forward-looking because
6 it relies on investors' current assessment of what is likely to happen with their investments.

7 **Q. WHAT IS THE ROLE OF OPPORTUNITY COSTS IN YOUR ANALYSIS?**

8 A. An opportunity cost is the value of the next best choice forgone as the result of making a
9 decision. Opportunity costs are central to my analysis. As investors decide where to place
10 their assets, they have many opportunities from which to choose in the financial markets.
11 Economic theory says they will choose the opportunity they think will provide them the best
12 return, taking into account the level of risk with which they are comfortable. Thus, for a
13 company to attract capital, its forward-looking fair rate of return must at least equal the
14 expected rate of return for the best alternative opportunity with similar risk.

15 **Q. HOW DO YOU KNOW WHAT EQUITY RATE OF RETURN THE COMPANY**
16 **MUST OFFER TO INVESTORS TO BE AN ATTRACTIVE OPPORTUNITY?**

17 A. No one knows with certainty what specific rate of return the Company must offer to
18 investors that is just sufficient to make the OGE an attractive opportunity. However, various
19 methods based on finance theory have been derived for reliably estimating what investors
20 currently think that rate is. I have used the Discounted Cash Flow ("DCF") method, which
21 is widely used in utility general rate cases for determining rate of return. I use other methods
22 and recently authorized returns for other electric utility companies as checks on the
23 reasonableness of the DCF outcome.

1 **Q. PLEASE SUMMARIZE THE DCF METHOD.**

2 A. The DCF method uses the current dividend yield and the expected growth rate of this yield
3 to determine a required rate of return on an investment opportunity. The required rate of
4 return from a DCF analysis is derived from a formula for determining the net present value,
5 or price, of a share of stock. There are several variations of DCF, but the constant-growth
6 form I have selected assumes that dividends (D) are received at the end of each year, the
7 annual growth rate of dividends (g) is constant to infinity, and the discount rate for
8 dividends (k) is constant to infinity. The equation form of this constant-growth DCF model
9 is:

10
$$k = \frac{D_1}{P_0} + g$$

11 Where:

12 D₁ is the annual dividend one year from the present,

13 P₀ is the current price of a stock share,

14 g is the expected growth rate of the dividend, and

15 k is the discount rate, which also is the fair rate of return for equity.

16 **Q. WHAT INFORMATION IS USED TO DEVELOP VALUES FOR THE VARIOUS**
17 **TERMS IN THE DCF EQUATION?**

18 A. The annual dividend one year from now is derived by applying the growth-rate estimate (g),
19 adjusted for an average interval of dividend increases, to the actual current annual dividend
20 (D₀), information that is publicly available.

1 **Q. DOES YOUR EQUITY RATE OF RETURN ANALYSIS USE INFORMATION**
2 **SPECIFIC TO THE COMPANY?**

3 A. No. As noted, OGE is an operating subsidiary of OGE Energy Corp. The Company is not
4 publicly traded and, therefore, no common-equity share price is available for performing a
5 direct DCF analysis on the Company.

6 **Q. DOES YOUR EQUITY RATE OF RETURN ANALYSIS USE INFORMATION FOR**
7 **OGE ENERGY CORP., THE HOLDING COMPANY?**

8 A. No. OGE Energy Corp. does trade publicly and has a positive record of making dividend
9 payments. However, I prefer to exclude the company or its parent company upon which
10 ROE analysis is being performed from the analysis to avoid circularity in the calculations.
11 If the pool of peer companies for forming a proxy group for the ROE examination is small,
12 I will consider keeping a company in its own ROE analysis. In this case, there is a large set
13 of electric utilities to draw upon, so I have excluded OGE Energy Corp. from the ROE
14 analysis.

15 **Q. HOW DO YOU USE THE DCF ANALYSIS TO ESTIMATE THE COMPANY'S**
16 **REQUIRED RATE OF RETURN?**

17 A. I perform a DCF analysis on a group of electric utilities comparable to OGE that are publicly
18 traded and have similar investment risk, as discussed below. The estimated rates of return
19 for members of this group form the basis for my estimate of a fair rate of return for the
20 Company.

III. SELECTING THE COMPARISON GROUP

Q. PLEASE DISCUSS YOUR PROCEDURE FOR SELECTING THE COMPARISON GROUP.

A. I set out to find a group of companies that are, from the perspective of investors, similar to OGE. Thus, I wanted firms that are electric utility companies that represent approximately the same investment risk as does the Company.

Q. PLEASE DESCRIBE HOW YOU FOUND SUITABLE CANDIDATE COMPANIES FOR THE COMPARISON GROUP.

A. I looked at Value Line, a widely used investor service, for companies that Value Line classifies as part of the Electric Utility Industry. The January 26, 2018 (West); February 16, 2018 (East); and March 16, 2018 (Central) editions of Value Line's Investment Survey include 42 companies in this category.⁵

Q. HOW DID YOU USE THIS INFORMATION IN YOUR SELECTION PROCESS?

A. I applied screens to the initial set of Value Line Electric Utility companies to ensure that the companies included in my Comparison Group were similar in risk to the risk of the Company.

Q. PLEASE LIST THE CRITERIA YOU APPLIED IN THE SELECTION OF THE COMPARISON GROUP.

A. I applied the following screens to the initial set of Electric Utility companies:

1. Have shares publicly traded on a stock exchange;
2. Be a U.S. firm based in the continental 48 states;

⁵ OGE Energy Corp. is one of the companies in the initial set of 42 companies. I excluded the company from my analysis, however.

3. Have a stable record of paying dividends;
4. Not be expected to sell, merge into or be acquired by another company, or face unusual operating conditions;
5. Be a vertically integrated electric utility;
6. Have 75 percent or more of the three-year average of net income, net operating income, or operating revenue be derived from regulated electricity operations;
7. Have a S&P investment-grade credit rating: BBB- and better; and
8. Have positive growth-rate projections from expert analysts.

Q. WHAT PURPOSE IS SERVED BY REQUIRING THAT THE COMPANIES BE PUBLICLY TRADED?

A. The primary analytical tool that I use for finding a company's ROE, the DCF model, requires information about common equity share prices, dividends, and growth-rate projections. The requirement that companies be publicly traded ensures that their common-equity share prices are available.

Q. WHAT IS THE PURPOSE OF APPLYING THE CRITERION THAT THE COMPANIES BE BASED IN THE CONTINENTAL UNITED STATES?

A. I sought companies that face a business environment similar to that in which OGE operates. The Company's operating utility in this case is in Oklahoma and subject to state regulation, statutes, and rules that are similar to those found in the rest of the United States. The states of Alaska and Hawaii, although having regulation schemes similar to those of the other states, have business environments—due to their geography—that are substantially

1 different from the business environment in the rest of the country. Therefore, I have limited
2 candidates for the Comparison Group to companies based in the 48 continental U.S. states.

3 **Q. DO YOU EXCLUDE ANY COMPANIES BECAUSE THEY ARE NOT BASED IN**
4 **THE CONTINENTAL UNITED STATES?**

5 A. Hawaiian Electric Industries (“HEI”) is excluded because it has several service areas that
6 are not connected to each other or to other power networks. Therefore, the service areas
7 cannot share power and must maintain above-average reserve margins, causing higher
8 operating costs for the company. HEI also generated 69 percent of its energy from fuel oil
9 imports in 2017. It is vulnerable to delays in fuel deliveries to a degree not seen in other
10 electric utilities. Fortis, Inc. is a Canadian company and excluded because of the scope of
11 its operations in Canada.⁶

12 **Q. WHAT PURPOSE IS SERVED BY REQUIRING THAT THE COMPANIES HAVE**
13 **A STABLE RECORD OF PAYING DIVIDENDS?**

14 A. The DCF model requires dividends as an input. If a company is not paying dividends or has
15 a record of cutting dividends, then its DCF analysis is not reliable. Avangrid, Inc. does not
16 have a long record of dividends paid in its current form of organization. Therefore, it is
17 excluded.⁷

18 **Q. WHY IS IT IMPORTANT THAT COMPANIES INVOLVED IN SALES,**
19 **MERGERS, OR ACQUISITIONS, BE EXCLUDED FROM YOUR ANALYSIS?**

20 A. The share prices of companies involved in sales, mergers or acquisitions can be volatile.
21 Extreme increases in the share prices of utility companies that are part of sales, mergers, or

⁶ See Ex. MFG-2.

⁷ See *id.*

1 acquisitions drive down the ROE results in DCF analysis, while extreme decreases in the
2 share prices drive up the ROE results. Neither outcome yields meaningful DCF results.
3 Therefore, it is appropriate to exclude such companies from the analysis.

4 **Q. ARE ANY COMPANIES IN THE INITIAL SET INVOLVED IN SALES,**
5 **MERGERS, OR ACQUISITIONS?**

6 A. Yes. Avista Corporation has agreed to be acquired by HydroOne (a Canadian company and
7 not part of the initial group); Great Plains Energy, Inc. is trying to merge with Westar
8 Energy, Inc.; while Dominion Resources has announced it intends to acquire SCANA
9 Corporation.⁸ Therefore, I have dropped Avista, Dominion, Great Plains, SCANA, and
10 Westar from further consideration.

11 **Q. DO ANY COMPANIES IN THE INITIAL SET FACE UNUSUAL OPERATING**
12 **CONDITIONS?**

13 A. Yes. Edison International and Pacific Gas & Electric (PG&E) experienced wildfires across
14 broad parts of their service territories in the fall of 2017. The two companies face liability
15 exposure due to the wildfires. There is risk that the two California utilities will have to
16 absorb the liabilities because the California Public Utilities Commission ruled that
17 SDG&E, the utility serving San Diego, had to absorb \$379 million related to 2007
18 wildfires.⁹ PG&E suspended its dividend payments on December 20, 2017 in response to
19 the exposure.¹⁰ Therefore, I have dropped these two firms from further consideration.

⁸ See Ex. MFG-2.

⁹ Ex. MFG-3.

¹⁰ Ex. MFG-4.

1 **Q. ARE THERE ANY COMPANIES IN THE INITIAL SET THAT ARE NOT**
2 **VERTICALLY INTEGRATED UTILITIES?**

3 A. Yes. According to the S&P Global Market Intelligence website CenterPoint Energy, Inc.
4 has only transmission facilities. The same website identifies Exelon as vertically integrated,
5 but with no regulated generation. Therefore, these two companies are eliminated from
6 further consideration. All the other companies are vertically integrated electric utilities.¹¹

7 **Q. YOU ALSO EMPLOY AS A SCREEN THAT MORE THAN 75 PERCENT OF A**
8 **COMPANY'S THREE-YEAR AVERAGE OF NET INCOME, NET OPERATING**
9 **INCOME, OR NET REVENUES BE DERIVED FROM REGULATED**
10 **ELECTRICITY OPERATIONS. PLEASE EXPLAIN THE PURPOSE OF THIS**
11 **CRITERION.**

12 A. This criterion identifies whether the companies also are engaged predominantly in
13 regulated electric operations. Setting 75 percent as the standard for inclusion in the
14 Comparison Group ensures that the firms are operating in a similar risk environment to
15 OGE.

16 **Q. WHAT IS THE OUTCOME OF YOUR APPLICATION OF THIS SCREEN?**

17 A. FirstEnergy Corp., Until Corporation, Vectren, Sempra, Exelon Corporation, NextEra,
18 MGE Energy, PPL Corporation, WEC Energy Group, DTE Energy, and PSEG Inc. do not
19 meet the 75 percent threshold. The highest three-year average among this group is the 69.6
20 percent of PSEG Inc. Allete, Inc., at 74.2 percent, also strictly does not meet the screen.
21 However, the three-year average percentage for Eversource Energy, the next highest

¹¹ See Ex. MFG-5.

1 company, is 75.5 percent. The 1.3 percent difference between these two electric utilities in
2 the three-year average percentage of net income derived from regulated electricity
3 operations is relatively small. Therefore, I elected to keep Allete in the group.¹²

4 **Q. DID YOU EXCLUDE OTHER COMPANIES FROM THE COMPARISON GROUP**
5 **BECAUSE OF THE RESULTS OF APPLYING THE EARNINGS SCREEN?**

6 A. Yes. I excluded Black Hills Energy and Entergy Corp. because their earnings were erratic,
7 negative, or both from 2015-2017.¹³

8 **Q. HOW MANY COMPANIES REMAIN UNDER CONSIDERATION FOR THE**
9 **COMPARISON GROUP?**

10 A. Seventeen companies have met all the screens to this point.

11 **Q. WHAT IS THE PURPOSE OF USING THE S&P CREDIT RATING AS A SCREEN?**

12 A. S&P's experts incorporate financial risk and business risk into a firm's credit rating. Within
13 these risk categories, S&P assesses such factors for public utilities as competitive advantage,
14 operating efficiency, and scale, scope, and diversity. This last set of factors includes the
15 effects of a utility's markets, service territories, and customer diversity on the company's cash-
16 flow stability, and in turn on its risk level. After considering all the factors, S&P assigns a credit
17 rating to a company. If companies have identical or similar credit ratings as determined by
18 expert analysts, then their relative risks are similar. As S&P states:

19 Creditworthiness is a multi-faceted phenomenon. Although there is no
20 "formula" for combining the various facets, our credit ratings attempt to
21 condense their combined effects into rating symbols along a simple, one-

¹² See Ex. MFG-6.

¹³ See *id.*

1 dimensional scale. Indeed, as discussed below, the relative importance of
2 the various factors may change in different situations.¹⁴

3 **Q. WHAT S&P CREDIT RATING DO YOU USE AS THE BASIS OF YOUR**
4 **SCREEN?**

5 A. Some operating companies for which an ROE is being calculated conduct their own
6 borrowing and, therefore, have S&P credit ratings separate from the credit ratings of their
7 parent companies. OGE has an S&P credit rating of A-.¹⁵ The OGE Energy Corp. S&P
8 credit rating also is A-. Therefore, I use that credit rating as the basis for my screen.

9 **Q. AS YOU APPLY YOUR CREDIT-RATING SCREEN, DO YOU REQUIRE THAT**
10 **ELECTRIC COMPANIES HAVE S&P RATINGS IDENTICAL TO THE RATING**
11 **THAT IS THE BASIS OF YOUR SCREEN?**

12 A. No. In my application of the screen I balance the goal of having companies with risk similar
13 to that of the operating company with the goal of having a reasonable number of companies
14 in the Comparison Group. In the current analysis, I consider for inclusion in the
15 Comparison Group companies that are within two notches of OGE's A- rating (from A+ to
16 BBB).¹⁶

17 **Q. WHAT IS THE RESULT OF APPLYING YOUR CREDIT-RATING SCREEN?**

18 A. The 17 remaining companies all have S&P credit ratings between BBB and A+. No more
19 companies are eliminated by the application of this screen.¹⁷

¹⁴ Standard & Poor's, *General Criteria: Understanding Standard & Poor's Rating Definitions*, attached as Ex. MFG-7.

¹⁵ See Ex. MFG-8, Schedule 1.

¹⁶ See Ex. MFG-8, Schedule 2.

¹⁷ See Ex. MFG-9.

1 **Q. WHY DO COMPANIES HAVE TO HAVE POSITIVE DIVIDEND GROWTH-**
2 **RATE PROJECTIONS?**

3 A. DCF analysis performed on them is not meaningful if the growth-rate projections are
4 missing or negative. All 17 remaining companies have positive growth-rate projections.
5 Otter Tail Corp. does not have a growth-rate estimate from Zacks, but it does positive have
6 growth-rate estimates from the other two sources.¹⁸ Therefore, Otter Tail is included in the
7 analysis, along with the other 16 companies.

8 **Q. PLEASE DESCRIBE THE COMPARISON GROUP AFTER YOUR SCREENING.**

9 A. The Comparison Group is composed of 17 Electric Utility firms.¹⁹ Using this Comparison
10 Group, I will develop estimates of OGE's required ROE.

11 **IV. DCF OVERVIEW**

12 **Q. WHAT IS THE PURPOSE OF A DCF ANALYSIS?**

13 A. The goal of this analysis is to estimate an appropriate, forward-looking rate of return on
14 equity. A DCF analysis requires a determination of expected growth rates and dividend
15 yields in order to estimate this return.

16 **Q. PLEASE DISCUSS EXPECTED GROWTH RATES.**

17 A. Because a DCF analysis is forward-looking, I want to estimate the expected growth rate of
18 dividends. Historical growth rates would be good indicators of the expected growth rate on
19 the following conditions:

- 20 • the dividend payout ratio and the realized rate of return on equity capital were constant
21 in the past and could be assumed to remain constant in the future; and

¹⁸ Ex. MFG-12, Schedule 1.

¹⁹ See Ex. MFG-9.

- 1 • any growth in book equity was attributable solely to retained earnings.

2 If, in practice, these conditions held, then earnings per share ("EPS"), dividends per share,
3 and book value per share would all grow at the same rate, and the past growth rates for
4 these factors would be the rate at which they would grow in the future.

5 **Q. DO YOU USE HISTORICAL GROWTH RATES IN YOUR ANALYSIS?**

6 A. No. The conditions necessary for historical growth rates to be good indicators of future
7 growth rates are rarely satisfied. Most utilities' returns on equity and payout ratios have not
8 remained constant over time. Further, growth in book value has occurred not only due to
9 retained earnings, but also due to the issuance of new shares of common stock.
10 Consequently, past growth rates of earnings, dividends, and book equity are frequently
11 unequal. Moreover, an industry may face a changed business environment, thereby making
12 the past a poor basis for projecting the future. Historical growth rates can differ significantly
13 from forward-looking projected growth rates due to such factors as inflation rates, tax rates,
14 the role of an industry in the economy, and the regulatory environment. In view of these
15 limitations of using historical growth rates, I base my estimated growth rates on projected
16 growth rates as publicly provided by "Zacks Investment Research," a respected investor
17 services company, Thomson Financial Network estimates provided on Yahoo! Finance, and
18 "The Value Line Investment Survey."

19 **Q. PLEASE DISCUSS THE DIVIDEND YIELDS USED IN YOUR DCF ANALYSIS.**

20 A. To estimate the required rate of return on equity capital today, I estimate the expected
21 dividend yield, D_1/P_0 where P_0 is the price of a share of common equity today and D_1 is the
22 dividend in the next period. The use of this dividend yield assumes that dividends are
23 distributed at the end of each period (year). This version is known as the constant-growth

1 DCF model. Since the current equity share price incorporates all market information
2 considered relevant by investors, generally speaking, non-recent historical prices should be
3 avoided in calculating the dividend yield. However, since share prices are volatile in the
4 short run, it is desirable to use a period of time long enough to avoid short-term aberrations
5 in the capital market.

6 **Q. WHAT PERIOD DO YOU USE TO ESTABLISH AVERAGE COMMON EQUITY**
7 **SHARE PRICES FOR THE COMPANIES IN THE COMPARISON GROUP?**

8 A. I use the trading period of March 12, 2018-April 6, 2018 to find average common equity
9 share prices. There were 19 trading days in this four-week period: the markets were closed
10 March 30, 2018 for Good Friday. This period is long enough to dampen any short-term
11 aberrations in the capital market. It is also close to the May 2, 2018, date of this Testimony,
12 thus making the results timely. I used closing prices for the Comparison Group member
13 companies obtained at Yahoo! Finance.²⁰

14 **V. DCF ANALYSIS FOR THE COMPARISON GROUP**

15 **Q. PLEASE DISCUSS THE REQUIRED RATE OF RETURN FOR THE**
16 **COMPARISON GROUP.**

17 A. To estimate the required rate of return for the group, I estimated the expected growth rate,
18 g, and the expected dividend yield, D_1/P_0 .

²⁰ See Ex. MFG-10, at 1–5.

1 **Q. PLEASE DISCUSS THE EXPECTED GROWTH RATE FOR THE COMPARISON**
2 **GROUP.**

3 A. As noted above, it is appropriate in this proceeding to use only the forecasted growth rates
4 to estimate the expected growth rate to be used in the DCF analysis. Zacks and Yahoo!
5 Finance provide five-year growth-rate projections for EPS and Value Line provides five-
6 year growth rate projections for EPS, dividends per share, and book value per share. To
7 maintain consistency across the sources, I used only the EPS estimates from Value Line.

8 **Q. WHAT INFORMATION DID YOU USE FROM ZACKS?**

9 A. I used the Zacks EPS five-year growth projections available April 6, 2018, for the individual
10 firms in the Comparison Group.²¹

11 **Q. WHAT INFORMATION DID YOU USE FROM YAHOO! FINANCE?**

12 A. I used the Yahoo! Finance EPS five-year growth projections available April 6, 2018, for the
13 individual firms in the Comparison Group.²²

14 **Q. WHAT INFORMATION DID YOU USE FROM VALUE LINE?**

15 A. I used the Value Line EPS five-year growth projections for the individual firms in the
16 Comparison Group as reported by Value Line in its January 26, 2018; February 16, 2018;
17 and March 16, 2018 issues.²³

²¹ See Ex. MFG-12, Schedule 1.

²² See *id.*

²³ See *id.*

1 **Q. HOW DO YOU COMBINE THE ZACKS, YAHOO! FINANCE, AND VALUE LINE**
2 **ESTIMATES?**

3 A. I weighted the Zacks, Yahoo! Finance, and Value Line EPS values equally to find my best
4 estimate of the expected growth rate for each company in the Comparison Group. The result
5 is a mean growth-rate component value of 5.15 percent.²⁴

6 **Q. PLEASE DISCUSS YOUR CALCULATION OF THE EXPECTED DIVIDEND**
7 **YIELD FOR THE COMPARISON GROUP.**

8 A. The appropriate dividend to use in the constant-growth DCF model is the annual dividend
9 rate at the beginning of the next period (year). I began my estimation of the expected
10 dividend yield by finding the dividends that each Comparison Group member company is
11 currently paying as reported by Value Line in its January 28, 2016; February 16, 2018; and
12 March 16, 2018, issues. I multiplied those amounts by four to calculate the annualized
13 dividend one year from now.

14 **Q. DID YOU SEARCH ELSEWHERE FOR DIVIDEND REPORTS FOR THE**
15 **COMPARISON GROUP COMPANIES?**

16 A. Yes. I compared these Value Line annual dividends as calculated for the member
17 companies with the dividends reported by Zacks on April 6, 2018. The dividends for Value
18 Line and Zacks were identical except for NorthWestern Corp., for which the Value Line
19 dividend was \$2.10, while the Zacks dividend was \$2.20; and for Xcel Energy, for which
20 the Value Line dividend was \$1.44, while the Zacks dividend was \$1.52.²⁵ I used the higher
21 Zacks values in my analysis.

²⁴ Ex. MFG-12, Schedule 1.

²⁵ Ex. MFG-11.

1 **Q. PLEASE EXPLAIN THE NEXT STEP IN CALCULATING THE EXPECTED**
2 **DIVIDEND YIELD.**

3 A. I adjusted the annualized dividends for expected growth. The D_1 value for dividends in the
4 DCF model is the dividend investors expect to receive one year from the present. Hence,
5 the dividend will increase a year's projected growth rate. The annualized dividend yield
6 for a firm is, therefore, transformed into the expected dividend yield by multiplying it by
7 $(1 + g)$, which yields D_1 . The mean expected dividend-yield component is 3.69 percent.²⁶

8 **VI. FLOTATION ADJUSTMENT TO ROE**

9 **Q. PLEASE DISCUSS FLOTATION ADJUSTMENTS.**

10 A. When companies issue equity, the price paid by investors for the new shares is higher than
11 the revenues per share received by the company. The difference is issuance, or flotation,
12 costs. These costs are the fees and expenses the company must pay as part of the issuance.
13 The return on equity must be adjusted to recognize this difference, or a company will be
14 denied the reasonable opportunity to earn its required rate of return.

15 **Q. HAVE YOU MADE A FLOTATION ADJUSTMENT FOR THE COMPANY?**

16 A. Yes. My recommended flotation cost adjustment factor is 5.00 percent.

17 **Q. PLEASE DESCRIBE YOUR PREFERRED APPROACH TO DETERMINING THE**
18 **FLOTATION-COST ADJUSTMENT FACTOR.**

19 A. I prefer to use actual fees and expenses from recent issuances for the company whose ROE
20 is being analyzed. Such fees and expenses capture the flotation costs for the company.

²⁶ Ex. MFG-12, Schedule 1.

1 Finding a representative average flotation cost percentage for a sample of similar
2 companies is a fallback position when company-specific information is not available.

3 **Q. WERE YOU ABLE TO USE YOUR PREFERRED APPROACH IN THIS**
4 **DOCKET?**

5 A. No. OGE Energy Corp. has not made any recent issuances. The data from its older
6 issuances may not reflect its costs if it were to issue common equity in the present.
7 Therefore, using an average of flotation cost percentages for similar companies is how I
8 determined the flotation-cost adjustment for OGE.

9 **Q. HOW DID YOU DETERMINE THIS FLOTATION-ADJUSTMENT COST**
10 **FACTOR?**

11 A. OGE cost of capital witness Dr. Roger Morin presents a flotation cost-adjustment of 5.00
12 percent. Dr. Morin's proposed adjustment is based on evidence that shows 5.00 percent is
13 a typical flotation cost percentage for utility companies. I accept his proposed flotation-
14 cost percentage.

15 **Q. HOW ARE FLOTATION COSTS INCORPORATED INTO AN ROE?**

16 A. The DCF return on equity is modified in the following way to incorporate the adjustment
17 for flotation cost:

18
$$k = \frac{D_1}{P_0} \left(\frac{1}{1-f} \right) + g$$

19 Where:

20 f is the flotation-cost percentage; and

21 all the other elements of the equation retain the meanings they had previously.²⁷

²⁷ See *supra* Part IV, at 15.

1 In this proceeding, the expected dividend yield is multiplied by $(1/(1-0.5))$ to make the
2 flotation-cost adjustment. The result is the flotation-adjusted expected dividend yield,
3 which is added to the growth-rate estimate to obtain the ROE.²⁸

4 **Q. DID YOU MAKE ADJUSTMENTS TO THE COMPARISON GROUP AT THIS**
5 **POINT OF YOUR ANALYSIS?**

6 A. Yes. After adding the growth-rate estimates and the dividend-yield estimates for each
7 company to obtain the individual ROEs, I examined the ROEs for reasonableness. OGE
8 issued bonds on April 1, 2017, paying interest of 4.15 percent.²⁹ Common equity returns
9 for companies in the Comparison Group must exceed the bond return plus compensation
10 for the added risk associated with equity in order to attract investors. When 250 basis points
11 are added to the OGE bond interest rate, the result is a return of 6.65 percent. This
12 percentage is my point for checking the reasonableness of Comparison Group member
13 companies' returns.

14 **Q. WHAT WAS THE PURPOSE OF APPLYING THE 6.65 PERCENT STANDARD**
15 **TO COMPARISON GROUP COMPANIES' INDIVIDUAL DCF ROES?**

16 A. Investors demand a higher return from common equity than from debt to compensate for
17 the greater risk of common equity. My reasoning was that investors would demand a
18 greater ROE return from the Comparison Group companies compared with the OGE debt
19 yield, or they would choose the OGE debt over common equity investments in the
20 companies. Thus, OGE would not be competing with these companies for capital.

²⁸ Ex. MFG-12, Schedule 1.

²⁹ OGE Application Package, Supplemental Package, Section F-Capital and Cost of Money W/P F-3 (Jan. 16, 2018).

1 **Q. DID ANY OF THE COMPARISON GROUP COMPANIES' ROES FAIL TO**
2 **EXCEED THE 6.65 PERCENT STANDARD?**

3 A. Yes. The ROE for IDACORP, Inc. is 6.55 percent. The next lowest return for a company
4 was the 7.41 percent of Consolidated Edison, well above the standard. Therefore, I chose
5 to exclude IDACORP from further analysis of OGE's ROE. This exclusion leaves 16
6 companies in the Comparison Group.³⁰

7 **Q. WHAT FINAL ROE DID YOU FIND FOR THE COMPARISON GROUP?**

8 A. The 16-member Comparison Group has a final mean ROE of 9.18 percent.³¹ The mean
9 growth-rate component is 5.24 percent and the mean flotation-adjusted expected dividend
10 yield is 3.94 percent.

11 **Q. DID YOU CALCULATE ANOTHER DCF ANALYSIS FOR THE COMPARISON**
12 **GROUP?**

13 A. Yes. I conducted a multi-stage DCF analysis. A multi-stage analysis assumes that the
14 growth rate for companies in a proxy group will not continue at the current growth rate. In
15 my analysis, I assumed that the long-term growth rate would be equal to the mean of the
16 long-term forecast for nominal gross domestic product ("GDP") growth of 4.00 percent
17 published by the Congressional Budget Office ("CBO")³² and the 4.3 percent Reference
18 Case forecast for 2018-2050 published by the U.S. Energy Information Administration
19 ("EIA").³³

³⁰ See Ex. MFG-12, Schedule 2.

³¹ Ex. MFG-12, Schedule 3.

³² Ex. MFG-12, Schedule 4.

³³ Ex. MFG-12, Schedule 5.

1 **Q. PLEASE EXPLAIN YOUR ANALYSIS.**

2 A. I calculated DCF ROEs for the Comparison Group of 16 companies with 4.00 percent and
3 4.30 percent substituted for the mean of the growth-rate forecasts from Zacks, Yahoo!
4 Finance, and Value Line. I then blended the two growth rates for each company, weighting
5 the analysts' growth projections two-thirds and the forecasts of the respective federal
6 agencies one-third. The result is a mean ROE of 8.82 percent.³⁴

7 **Q. HAVE YOU MADE ANY ADJUSTMENTS TO YOUR ROE TO ACCOMMODATE**
8 **OTHER FACTORS?**

9 A. No. The DCF model incorporates factors that affect investors' view of the world and does
10 not require ad hoc adjustments. The share price of common equity is the mechanism
11 through which most of these influences are translated. For example, if investors are
12 optimistic about the economy in general or about a specific company, the share price of
13 that company will be higher, all other things being equal. If investors have qualms about
14 the economy or the company, the share price will be lower. Either case affects the ROE of
15 the company, one making it lower and the other higher. Other factors that are incorporated
16 into share prices are interest-rate expectations, market volatility, and leverage of
17 companies. Investors will ask for common equity prices that compensate them for the
18 degree of risk that they believe these factors create.

19 **Q. HAS ANALYSIS APPEARED SINCE THE ADJUSTMENTS MADE TO THE**
20 **FEDERAL INCOME TAX RATE AND DEPRECIATION TREATMENT BY**

³⁴ Ex. MFG-12, Schedule 6.

1 CONGRESS IN DECEMBER 2017 THAT ARGUES THE LEGISLATION HAS
2 MADE UTILITIES RISKIER?

3 A. Yes. Moody's Investor Service Sector Comment of January 24, 2018, about the tax
4 legislation that Congress passed December 20, 2017, is typical. According to Moody's, the
5 reduction in the corporate income-tax rate from 35 percent to 21 percent and the loss of
6 bonus depreciation will hurt the cash flow of utilities.³⁵ According to this analysis, the cash-
7 flow reductions will cause utilities to issue more equity to compensate for the reduction in
8 their ability to finance capital expenditures internally.³⁶ The reduced tax rate will, therefore,
9 raise the risk profiles of the utilities.

10 **Q. DO ANY ADJUSTMENTS NEED TO BE MADE TO YOUR ROE RESULT TO**
11 **TAKE INTO ACCOUNT THE ADJUSTMENTS MADE TO THE FEDERAL**
12 **INCOME TAX RATE AND DEPRECIATION TREATMENT BY CONGRESS IN**
13 **DECEMBER 2017?**

14 A. No. As noted above, the DCF model incorporates such changes. If the tax and depreciation
15 changes have made utilities riskier than they were previously, the response in the equity
16 markets would be a reduction in the share prices of utilities, all other things equal. Exhibit
17 MFG-12, Schedule 8 shows that share prices for the 15 electric utilities in my Comparison
18 Group that were also part of my Comparison Group in Cause No. PUD 201700151 have
19 fallen since July-August of 2017. The reduction is an average of 7.09 percent. There are
20 other factors that could be contributing to the price reduction, but the movement in prices
21 is consistent with what would be expected in conjunction with the tax and depreciation

³⁵ Ex. MFG-12, Schedule 7.

³⁶ See *id.*

1 modifications. Since equity prices affect the dividend-yield component of the DCF model
2 ROE, investors beliefs regarding the effect of the federal tax legislation on risk are
3 incorporated in my DCF model ROE result.

4 **Q. PLEASE SUMMARIZE THE RESULTS OF YOUR DCF ANALYSIS.**

5 A. My constant-growth DCF analysis ROE is 9.18 percent and my multi-stage DCF analysis
6 ROE is 8.82 percent.

7 **VII. REASONABLENESS CHECK AND RECOMMENDED ROE**

8 **Q. HAVE YOU CHECKED THE REASONABLENESS OF YOUR DCF ROE**
9 **ESTIMATE?**

10 A. Yes. I checked the reasonableness of my DCF analyses' outcomes by performing CAPM
11 analyses. I also compared the DCF ROEs with recent ROEs authorized in fully litigated
12 electric rate cases across the 48 contiguous states.

13 **1. CAPM ANALYSIS**

14 **Q. WHAT CAPM ANALYSIS DID YOU PERFORM?**

15 A. I performed a Capital Asset Pricing Model ("CAPM") analysis for the 16 companies in the
16 Comparison Group. I also conducted empirical CAPM ("ECAPM") analyses on the same
17 companies. The ECAPM is a version of the CAPM modified to adjust for identified
18 shortcomings in the CAPM.

19 **Q. PLEASE DISCUSS THE CAPM METHOD.**

20 A. The basic premise of the CAPM method is that any risk which is company-specific can be
21 diversified away by investors. Therefore, the only risk that matters is the systematic risk of
22 the stock. This systematic risk is measured by beta (β). A beta higher than 1 indicates that

1 a stock will be more volatile than the market, and a beta lower than 1 indicates that a stock
2 will be less volatile than the market. In its simplest form, the expression for the CAPM is:

3
$$k = r + \beta (k_m - r)$$

4 Where:

5 k is the required rate of return for the stock in question;

6 β is beta, the measure of systematic risk

7 r is the rate of return on a riskless asset; and

8 k_m is the required rate of return on the market portfolio.

9 **Q. WHAT ARE THE STRENGTHS AND WEAKNESSES OF THE CAPM METHOD?**

10 A. The CAPM is theoretically sound, but its application raises some issues. The analyst using
11 CAPM selects a riskless asset, beta, and market risk premium. The ROE analysis can vary
12 considerably depending on the analyst's choices for these variables. Thus, what at first may
13 seem like a straightforward model actually depends heavily on the particular input values
14 used by an analyst.

15 **Q. ARE YOU RECOMMENDING REJECTING CAPM?**

16 A. No. I used the CAPM, but only to check the reasonableness of my DCF analysis, which is
17 a more reliable method of measuring equity return. Because of the CAPM's extensive
18 requirement for judgment in selecting each of the inputs I question its value in directly
19 estimating a return on equity.

20 **Q. PLEASE EXPLAIN THE CALCULATION OF A CAPM ROE.**

21 A. First, the analyst must select the rate of return for a riskless asset. Short-term assets such as
22 90-day Treasury Bills are considered to be virtually riskless; the default risk is next to
23 nothing and the inflation risk is negligible. Equity investors, however, typically have a

1 longer planning horizon than the 90-day maturity of these instruments, so the return on these
2 bills is not suitable for this CAPM process. Long-term Treasury bonds, on the other hand,
3 match the planning horizon and have yields that are closer to common equity returns. But
4 these instruments are subject to substantial inflation risk and, therefore, are not riskless.
5 Intermediate Treasury securities, those with maturities of three to five years, are a
6 compromise solution. The inflation risk is smaller than that for long-term bonds and the
7 maturity period corresponds to the time span for the EPS growth-rate estimates made by
8 expert analysts that are relied upon in DCF analysis. Typically, I would use the Intermediate
9 Treasury securities in my analysis for these reasons. However, as I explain below, I do not
10 use Intermediate Treasury securities in my CAPM analysis in the current docket.

11 **Q. ARE THERE REASONS NOT TO USE THE INTERMEDIATE TREASURY**
12 **SECURITIES IN THIS DOCKET?**

13 A. Yes. Intermediate Treasury bonds' yields since the Federal Reserve took unusual measures
14 to combat the Great Recession from December 2007 to June 2009 have been very low.
15 Therefore, I choose not to use them in the current CAPM analysis.

16 **Q. WHICH SECURITY DID YOU USE AS THE RISKLESS ASSET IN YOUR CAPM**
17 **ANALYSIS?**

18 A. I used the average yield on a 30-year Treasury bond from March 12, 2018, to April 6, 2018,
19 as my riskless asset rate. This value is 3.06 percent.³⁷ However, the 30-year Treasury bond
20 is not a free-risk asset. The yield on 30-year Treasury bonds incorporates a risk-premium
21 associated with interest rate risk, which is the premium investors must be paid to induce

³⁷ See Ex. MFG-13, Schedule 1.

1 them to forego the opportunity of possibly earning higher interest rates later. Therefore,
2 using 30-year Treasury bonds in a CAPM analysis results in an upward bias of the ROE.

3 **Q. WHAT VALUE DID YOU USE FOR BETA?**

4 A. I used the betas for each of the companies in the Comparison Group provided in their
5 respective issues of the Value Line Investment Survey. The average beta for the 16
6 companies in the Comparison Group is 0.68.³⁸

7 **Q. WHAT ELSE IS INVOLVED IN YOUR CALCULATION?**

8 A. I need to calculate a market rate of return. The term within parentheses in the CAPM
9 equation, k_m , is called the “market risk premium.” It frequently is calculated as a unit using
10 historical data. I do not, however, use historical data.

11 **Q. PLEASE EXPLAIN YOUR CALCULATION OF THE MARKET RISK**
12 **PREMIUM.**

13 A. To make my CAPM analysis forward looking, I employed forecast data from Value Line
14 regarding the dividend yield and growth rates for the broad economy. Value Line follows
15 1,700 stocks in the “Value Line Universe,” incorporating more market information than
16 the S&P 500. Value Line forecasts the dividend yield and the 3- to 5-year appreciation
17 potential (45 percent) for these companies in the *Value Line Summary and Index*, which is
18 published weekly.³⁹ The values for these two inputs are 2.0 percent and 45 percent,
19 respectively, in the April 13, 2018, issue.

³⁸ Ex. MFG-13, Schedule 2.

³⁹ See Ex. MFG-13, Schedule 3.

1 **Q. WHAT METHOD DO YOU USE TO FIND THE MRP?**

2 A. The appreciation potential number is used to find the estimated broad market return per
3 year. It is calculated by finding the annual growth rate over four years (the midpoint of the
4 3- to 5-year period) that produces the forecast appreciation potential. This growth rate is
5 9.73 percent. The forward-looking ROE for the companies is calculated by adding the 2.0
6 percent dividend yield to this annual growth rate, which produces a market rate of return
7 of 11.83 percent.

8 **Q. WHAT IS THE NEXT STEP IN FINDING THE CAPM RETURN ON EQUITY?**

9 A. The market risk premium is calculated by subtracting the yield on the 30-year Treasury
10 from the market rate of return. The result of this operation is 8.77 percent. This value is
11 multiplied by the average beta for the Comparison Group, then added to the risk-free rate,
12 to find the CAPM ROE.⁴⁰

13 **Q. WHAT IS THE RESULT OF YOUR CAPM ANALYSIS?**

14 A. The ROE result of my CAPM analysis is 9.01 percent.

15 **Q. HAVE YOU PERFORMED AN ADDITIONAL CAPM ANALYSIS?**

16 A. Yes. There is evidence that the simple CAPM underestimates the ROE for companies with
17 betas less than 1 and overestimates the ROE for companies with betas greater than 1. The
18 ECAPM has been developed to address this issue.

⁴⁰ See Ex. MFG-13, Schedule 4.

1 **Q. HOW DOES THE ECAPM DEAL WITH THE UNDER/OVER-ESTIMATION OF**
2 **ROE?**

3 A. There are different versions of the ECAPM, but what they have in common is that by
4 adding an adjustment factor to the elements of the CAPM equation, they increase its
5 intercept and reduce its slope. In other words, the ECAPM adjustment produces an estimate
6 of the return on equity that has a higher floor and varies less with the measurement of beta.
7 This operation has the effect of increasing the ROE for companies with betas less than 1.0,
8 with the increase size diminishing as beta approaches 1.0.

9 **Q. PLEASE EXPLAIN THE ECAPM THAT YOU USE IN YOUR ANALYSIS?**

10 A. The ECAPM that I use includes an adjustment factor “x,” as shown in the following
11 modified CAPM equation below.

$$k = r + x (k_m - r) + (1 - x) \beta (k_m - r)$$

13 Where

14 x is the ECAPM adjustment factor; and

15 all other terms have the same meaning as in the general CAPM.⁴¹

16 For the equation above, the x-term multiplied by the market risk premium increases the
17 intercept, while the term (1 – x) decreases the slope, relative to the CAPM.

18 **Q. HOW IS THE VALUE OF X DETERMINED?**

19 A. The value of x is determined empirically. The suggested value for x is 0.25.⁴² Note that x
20 is not a percentage.

⁴¹ See *supra* Part VII, at 36.

⁴² See Ex. MFG-13, Schedule 5.

1 **Q. WHAT RESULT DO YOU GET FOR YOUR ECAPM ANALYSIS?**

2 A. Using the same inputs for the risk-free rate, the MRP, and beta as I did in my CAPM
3 analysis, I obtained an ECAPM ROE of 9.72 percent.⁴³

4 **2. AUTHORIZED ROES COMPARISON**

5 **Q. PLEASE EXPLAIN WHAT AUTHORIZED ROES YOU USED TO CHECK THE**
6 **REASONABLENESS OF YOUR DCF ROES.**

7 A. I collected a set of authorized ROEs from other jurisdictions in fully litigated electric rate
8 cases from editions of SNL's Regulatory Research Associates *Regulatory Focus*. SNL
9 publishes summaries quarterly of completed electric and natural gas rate cases from the
10 United States in *Regulatory Focus*. SNL also makes available the results of very recent rate
11 cases on its website. I updated my list from that source.

12 **Q. HOW DO YOU USE THIS SET OF AUTHORIZED ROES?**

13 A. I use the recent authorized ROEs as a basis for evaluating the reasonableness of my DCF
14 ROE results. I do not use it as a substitute for that analysis.

15 **Q. WHY ARE AUTHORIZED ROES NOT A GOOD SUBSTITUTE FOR CURRENT,**
16 **FORWARD-LOOKING DCF ANALYSIS?**

17 A. Recent authorized ROEs reflect the results of electric rate cases conducted in a variety of
18 environments and at different times. Test years, conditions in capital markets, general
19 economic indicators such as inflation rates, and so forth for previous rate cases can be
20 different and become outdated when compared with these factors for a current rate case.
21 Therefore, recent authorized ROEs should serve only to establish whether a current ROE

⁴³ Ex. MFG-13, Schedule 4.

1 result is reasonably close to what has happened, not be a substitute for forward-looking
2 analysis based on current conditions.

3 **Q. PLEASE DESCRIBE THE SET OF AUTHORIZED ROES YOU COLLECTED.**

4 A. From January to March of 2018, there have been three fully litigated electric rate cases in
5 which authorized ROEs have been reported.⁴⁴ In 2017, there were 18 such cases, while in
6 2016 there were 17 such cases.⁴⁵ I rejected outcomes of settled cases because settlements
7 can reflect tradeoffs parties make to reach agreement. Thus, an authorized ROE in a settled
8 case may reflect compromise rather than strictly analysis.

9 **Q. PLEASE SUMMARIZE THE AUTHORIZED ROES YOU FOUND FOR 2018, 2017,**
10 **AND 2016.**

11 A. The following table summarizes the authorized ROE results for all fully litigated cases in
12 2018, 2017, and 2016.

Year	No. of Cases	Mean ROE	Median ROE	ROE Range
2018	3	9.52	9.30	9.25-10.00
2017	18	9.49	9.50	8.40-10.10
2016	17	9.43	9.50	8.64-10.00

13
14 The following table summarizes the authorized ROE results for all vertically integrated
15 fully litigated cases in 2018, 2017, and 2016.

⁴⁴ See Ex. MFG-14, Schedule 1.

⁴⁵ See *id.*

Year	No. of Cases	Mean ROE	Median ROE	ROE Range
2018	3	9.52	9.30	9.25-10.00
2017	10	9.62	9.50	9.20-10.10
2016	5	9.55	9.50	9.37-9.80

The mean, median and range ROE results for the fully litigated, vertically integrated cases are based on much smaller sets of companies, so the results should be interpreted with caution. However, they are similar to the ROE results for all fully litigated electric utility cases. For 2018 (3 cases), the results are identical. The median ROEs also stay the same for 2016 and 2017. The means and the low end of the ranges increase for these years.

3. RECOMMENDED ROE

Q. PLEASE SUMMARIZE THE RESULTS OF YOUR ROE ANALYSES.

A. My constant-growth DCF analysis ROE result is 9.18 percent. My other methods, multi-stage DCF, CAPM, and ECAPM analyses, produced ROE outcomes ranging from 8.82 percent to 9.72 percent.⁴⁶

Q. WHAT RANGE DO YOU RECOMMEND FOR THE OGE ROE?

A. My recommended range is 9.01 percent to 9.35 percent. The bottom of the range is my CAPM result of 9.01 percent. I added the difference between the CAPM and the DCF results to the DCF value of 9.18 percent to create the top of my range. This symmetrical range is within the range of RRA ROEs authorized over the last two years.

⁴⁶ Ex. MFG-14, Schedule 2.

1 **Q. WHAT IS YOUR RECOMMENDED ROE FOR THE COMPANY?**

2 A. Of the models, the constant-growth DCF model relies the least on analyst judgment, which
3 makes it my preferred method. I recommend that the Company be authorized an ROE of
4 9.18 percent.

5 **Q. PLEASE COMMENT ON YOUR RECOMMENDED ROE OF 9.18 PERCENT.**

6 A. My recommended value would put OGE among the low end of ROEs for U.S. electric
7 operating companies, but not out of step with authorized awards elsewhere. It is important
8 to remember that, by definition, some authorized ROE, somewhere, will be the lowest
9 authorized ROE, and some ROEs will be below the mean and the median. When market-
10 based, forward-looking analysis supports an ROE award in the lower half of a range, as my
11 analysis does, it should be given due consideration. The mean or median of ROE awards
12 to electric utilities with similar risk should not serve as the floor for current ROE awards.
13 DCF analysis and a reading of recent authorized ROEs indicate that 9.18 percent is an
14 appropriate ROE for OGE.

15 **VIII. APPROPRIATE CAPITAL STRUCTURE FOR RATEMAKING**

16 **Q. WHAT CAPITAL STRUCTURES HAS THE COMPANY PROPOSED TO USE IN**
17 **THIS GENERAL RATE CASE?**

18 A. The Company has submitted a proposed capital structure in the exhibits of Dr. Morin.

1 **Q. WHAT IS OGE’S PROPOSED CAPITAL STRUCTURE?**

2 A. OGE’s proposed capital structure is 47.0 percent long-term debt and 53 percent common
3 equity. Dr. Morin states that this is the actual capital structure of OGE. OGE’s filings
4 support this assertion.⁴⁷

5 **Q. DO YOU AND DR. MORIN HAVE CONFLICTING EVIDENCE REGARDING**
6 **THE CAPITAL STRUCTURES OF THE COPANIES IN YOUR PROXY GROUPS?**

7 A. Yes. I found the 2017 capital structures for the 16 companies in the Comparison Group at
8 S&P Global Market Intelligence.⁴⁸ The results are 53.5 percent long-term debt and 46.5
9 percent common equity.⁴⁹ These results are not consistent with the finding of Dr. Morin in
10 Direct Exhibit RAM-9. In this exhibit, Dr. Morin reports the 2017 third-quarter equity
11 percentages for the operating companies in his peer group. The mean is about 53 percent
12 common equity, consistent with his recommended capital structure.

13 **Q. DO YOU ACCEPT THE COMPANY’S PROPOSED CAPITAL-STRUCTURE**
14 **RATIOS?**

15 A. No. The capital structures for the companies in the Comparison Group are quite different
16 from the proposed capital structure for OGE. However, OGE does show that its actual
17 capital structure is about 47 percent long-term debt and 53 percent common equity.
18 Therefore, my proposed capital structure is a hypothetical structure of 50 percent long-term

⁴⁷ OGE Application Package, Supplemental Package, Section F-Capital and Cost of Money W/P F-1 (Jan. 16, 2018). The actual capital structure in the workpaper is 46.66 percent long-term debt and 53.34 percent common equity for the test year ending September 30, 2017.

⁴⁸ See Ex. MFG-14, Schedule 3.

⁴⁹ CMS Energy and Southern Co. have unusually high long-term debt ratios. When they are removed from the analysis, the mean long-term debt ratio is 51.5% and mean common-equity ratio is 48.5%.

1 debt and 50 percent common equity. This hypothetical capital structure is reasonable given
2 the ratios for my Comparison Group companies and the Company's actual capital structure.

3 **IX. RECOMMENDED COST OF CAPITAL AND OVERALL RATE OF RETURN**

4 **Q. WHAT COSTS OF CAPITAL DID YOU USE IN YOUR CALCULATION OF THE**
5 **COMPANY'S OVERALL RATE OF RETURN?**

6 A. I reviewed the Company's calculations for cost of long-term debt as part of my analysis of
7 the Company's capital structure. I concluded that the cost of 5.32 percent is reasonable.⁵⁰
8 Therefore, I have used the Company's proposed cost for long-term debt and my
9 recommended ROE 9.18 percent, in place of Dr. Morin's recommended value.⁵¹

10 **Q. WHAT IS YOUR RECOMMENDATION REGARDING THE OVERALL RATE**
11 **OF RETURN (ROR) FOR THE COMPANY?**

12 A. I multiply my proposed hypothetical long-term debt and common-equity ratios by their
13 appropriate cost rates. The sum of these weighted costs is the overall rate of return on
14 capital.

15 **Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.**

16 A. When I include my recommended ROE of 9.18 percent and my capital structure, I obtain
17 an overall rate of return of 7.25 percent for OGE. I recommend that the Commission
18 approve this ROR as the representative forward-looking cost of capital for the Company's
19 test year.

⁵⁰ OGE Application Package, Supplemental Package, Section F-Capital and Cost of Money W/P F-3 (Jan. 16, 2018).

⁵¹ See Ex. MFG-14, Schedule 4.

X. RESPONSE TO DR. ROGER MORIN

Q. PLEASE DESCRIBE DR. MORIN'S PROXY GROUP OF COMPANIES THAT HE USES IN HIS ROE ANALYSIS.

A. Dr. Morin has 17 vertically integrated electric utilities in the Proxy Group that he uses in his analysis.

Q. PLEASE COMPARE THE ELECTRIC SAMPLE WITH YOUR COMPARISON GROUP.

A. The Proxy Group and the Comparison Group have nine companies in common. Dr. Morin includes eight companies that I do not, while I include eight companies that he excludes.⁵²

Q. WHY DID YOU EXCLUDE THE EIGHT COMPANIES THAT DR. MORIN INCLUDES?

A. The eight companies are Edison International, Emera, Fortis, Hawaiian Electric, NextEra, OGE, PPL Corp., and Westar. I excluded Edison International because its exposure to uncompensated wildfire liability creates the chance its returns will be low; Emera because it is not one of the companies in Value Line's Electric Utility Industry; Fortis because it is a Canadian company; Hawaiian Electric because its geography creates operating risks not faced by other operating companies; NextEra and PPL Corp. because they did not meet the standard of 75 percent of net income/net operating income/net revenues from regulated electric utility operations; OGE because I prefer not to include the company or its parent being analyzed in the analysis; and Westar because its proposed merger with Great Plains

⁵² See Ex. MFG-15.

1 has not been approved. Though Dr. Morin did exclude Great Plains because of its ongoing
2 merger negotiations, he did not exclude Westar, which seems inconsistent.

3 **Q. WHAT ARE THE EIGHT COMPANIES THAT YOU INCLUDED THAT DR.**
4 **MORIN DID NOT?**

5 A. The eight companies are Alliant Energy, Ameren Corp., CMS Energy, Consolidated
6 Edison, Duke Energy Corp., Eversource Energy, NorthWestern Corp., and Xcel Energy.
7 Consolidated Edison evidently does not appear in the “Moody's Investor Service, ‘2017
8 Outlook - Timely Cost-Recovery Drives Stable Outlook,’ 11/16” that Dr. Morin used as
9 the starting point for his pool of companies eligible for the Proxy Group. Dr. Morin
10 excludes the other seven companies because they have gas operations.

11 **Q. WHAT IS YOUR RESPONSE TO DR. MORIN’S REASONS FOR EXCLUDING**
12 **EIGHT OF THE COMPANIES THAT YOU INCLUDE IN THE COMAPRISON**
13 **GROUP?**

14 A. Consolidated Edison is included in the Value Line Electric Utilities Industry reports that I
15 used as my starting pool of companies. As for the seven companies excluded for having
16 gas operations, the screens of being vertically integrated and having 75 percent of net
17 income/net operating income/net revenues from regulated electric utility operations ensure
18 that the companies are similar in their risk profiles to OGE. If I were to exclude these
19 companies, the Comparison Group would be unreasonably small.

20 **Q. WHAT IS THE ROE RECOMMENDED BY DR. MORIN?**

21 A. Dr. Morin recommended for OGE is 9.90 percent.

1 **Q. WHAT METHODS DOES DR. MORIN USE TO ARRIVE AT HIS**
2 **RECOMMENDATION?**

3 A. Dr. Morin uses a constant-growth DCF model, the CAPM, the ECAPM, a historical risk-
4 premium model, and an allowed risk-premium model in his analysis. He also includes a
5 flotation-cost adjustment.

6 **Q. PLEASE DESCRIBE DR. MORIN'S DCF ROE ANALYSIS.**

7 A. Dr. Morin performs a traditional DCF analysis that is almost the same as my DCF analysis,
8 aside from the large differences in the memberships of our proxy groups. The assumptions
9 and many of the sources of data are the same.

10 **Q. ARE THERE OTHER DIFFERENCES BETWEEN YOUR DCF ROE ANALYSIS**
11 **AND DR. MORIN'S DCF ROE ANALYSIS?**

12 A. Yes. Dr. Morin relies on dividend yields from Value Line rather than constructing his own
13 using dividend information and a current measure of common equity price. Since Value
14 Line reports the members of the Electric Utilities industry by region, rotating the regions
15 by month, the dividend yields for the regions are not based on prices of the same age. Thus,
16 the dividend yields for two of the regions are one month and two months older than the
17 dividend yields of the region reported most recently. In contrast, the average price for my
18 dividend yields are drawn from the same recent four-week period, meaning the dividend
19 yields reflect prices of the same age. Dr. Morin also does not combine his Value line and
20 Zacks growth projections within his analysis. Instead of deriving a weighted average for
21 the growth projections as I do, he performs separate Value Line and Zacks analyses (which
22 include flotation adjustments) and reports both. An observer can take an average of these
23 two reported results and arrive at much the same place as I do.

1 **Q. PLEASE DISCUSS DR. MORIN'S DCF ROE OUTCOMES.**

2 A. The two results are 9.34 percent for the Value Line analysis and 9.27 percent for the Zacks
3 analysis (Dr. Morin does use Value Line growth projections for Emera and Otter Tail
4 because Zacks does not report projections for these two companies). Dr. Morin rounds both
5 outcomes to 9.3 percent in his DCF summary. These results are close to my DCF ROE of
6 9.18 percent.

7 **Q. PLEASE DESCRIBE DR. MORIN'S CAPM AND ECAPM ANALYSES.**

8 A. Dr. Morin also presents a CAPM analysis and an ECAPM analysis. For his CAPM
9 analyses, he uses historical values to develop his market risk premium and checks that
10 result with two other sources, one of them the same Value Line appreciation potential that
11 I use in my CAPM and ECAPM analyses. Dr. Morin's beta values come from Value Line,
12 as do my betas. Dr. Morin uses yield forecasts for 30-year Treasury bonds for his risk-free
13 rate, while I use current yields for the same instrument. The forecast value he uses is 4.4
14 percent, an average from several sources. This value is significantly higher than the actual
15 30-year Treasury bond rate observed in the market when I conducted my analysis.

16 **Q. DOES DR. MORIN ALSO PERFORM A RISK-PREMIUM ANALYSIS?**

17 A. Yes. Dr. Morin uses time series analysis for his historical risk-premium analysis. He
18 computes the actual realized return on equity capital for the S&P Utility Index for each
19 year, using the actual stock prices and dividends of the index, and then subtracts the long-
20 term Treasury bond return for that year to arrive at the risk premium. Bloomberg and the
21 2015 Ibbotson SBBI Yearbook are the sources of the data for these calculations. The risk-
22 free rate is added to the risk premium to arrive at the ROE.

1 **Q. PLEASE DISCUSS DR. MORIN'S ALLOWED A RISK-PREMIUM ANALYSIS.**

2 A. Dr. Morin examines the relationship between authorized ROEs for electric utilities and 30-
3 year Treasury bonds between 1986 and 2016 in his allowed risk-premium analysis. He
4 develops an equation with the 30-year Treasury yield as the independent variable.

5 **Q. WHAT ARE THE RESULTS OF DR. MORIN'S APPLICATIONS OF CAPM,**
6 **ECAPM, HISTORICAL RISK PREMIUM, AND ALLOWED RISK PREMIUM**
7 **PROCEDURES?**

8 A. Dr. Morin's results for these four applications after flotation costs are incorporated are 9.6
9 percent, 10.1 percent, 10.7 percent, and 10.5 percent, respectively.

10 **Q. HOW DOES DR. MORIN ARRIVE AT HIS RECOMMENDED ROE OF 9.90**
11 **PERCENT?**

12 A. Dr. Morin states that his recommended ROE of 9.90 percent is the average of the ROE
13 outcomes for his various analytical models.

14 **Q. DO YOU HAVE ANY COMMENTS ABOUT THE COMPANY'S ROE ANALYSIS?**

15 A. Yes. Our proxy groups were slightly more than 50 percent alike, an unusually low
16 percentage in my experience as an analyst. Dr. Morin's analysis is three-four months older
17 than mine. Prices, dividend yields, and analysts growth-rate projections have changed in
18 that span. Thus, the group composition and the timing difference can explain some of the
19 differences between our DCF outcomes. The beta values also have changed, contributing
20 to differences between the CAPM/ECAPM outcomes. The difference between our DCF
21 evaluations is the smallest among our analyses.

1 **Q. WHAT ARE THE SOURCES OF DIFFERENCES THAT ACCOUNT FOR HIS**
2 **RECOMMENDED ROE BEING 9.90 PERCENT, 72 BASIS POINTS HIGHER**
3 **THAN YOUR RECOMMENDATION OF 9.18 PERCENT?**

4 **A.** The sources of the difference are two-fold. Dr. Morin uses an average of forecast interest
5 rates for his CAPM/ECAPM risk-free interest rate. I use the current yield, which is lower
6 than the forecast rates by about 1.3 percent. This large difference in the risk-free rates
7 accounts for some part for Dr. Morin's CAPM/ECAPM results being higher than mine.
8 More important in explaining the difference is that Dr. Morin's recommended ROE gives
9 equal weight to two risk-premium analyses, which have the highest outcomes for his six
10 approaches to ROE. The reliability of risk-premium analysis depends upon the relationship
11 between interest rates and equity returns being constant over time, even allowing for
12 variation in the magnitude of the risk premium at different interest-rate levels. Dr. Morin's
13 risk-premium models are flawed because these relationships vary, meaning the models are
14 not truly forward-looking.

15 **Q. DO YOU HAVE ANY ADDITIONAL COMMENTS ABOUT THE COMPANY'S**
16 **CAPM/ECAPM ROE ANALYSIS?**

17 **A.** Yes. Dr. Morin's inputs to the model for the risk-free rate inflated the ROE produced.

18 **Q. PLEASE EXPLAIN HOW THESE INPUTS ARE INFLATED.**

19 **A.** Dr. Morin states that the CAPM is forward looking and is based on expectations. Therefore,
20 the model must be applied using data that reflects investors' expectations. Hence, he

1 justifies using forecasts of the yields on the 30-year Treasury bond, which are higher than
2 current yields, as his risk-free rate on those grounds.⁵³

3 **Q. PLEASE COMMENT ON DR. MORIN'S RISK-FREE RATE.**

4 A. When proponents of applying yields forecasts as the risk-free rate state that the CAPM
5 must reflect investor expectations, it is implicit that current yields do not reflect those
6 expectations. This position is not correct. The current yields of the 30-year Treasury bond
7 do incorporate investors' expectations about future yields, making them a good predictor
8 of where future rates will be. Investors do have expectations about the effect of interest
9 rates on bond yields. Importantly, those beliefs affect their current decisions to buy and sell
10 bonds, meaning current yields of the bonds do reflect their expectations. Therefore, current
11 yields are a good indicator of where the market believes yields are headed.

12 **Q. IS THERE EVIDENCE THAT FORECASTS OF 30-YEAR TREASURY YIELDS**
13 **ARE POOR PREDICTORS OF INTEREST-RATE CHANGES?**

14 A. Yes. *Blue Chip Economic Indicators* ("Blue Chip") is a well-known source of forecasts,
15 including forecasts for 30-year Treasury bond yields. The *Blue Chip* forecasts are often
16 cited as a basis for the risk-free rate. However, the *Blue Chip* forecasts since at least 2009
17 have always been greater than the rates that actually ensued, often by 100 basis points or
18 more.⁵⁴ Analysts who have relied on the *Blue Chip* forecasts to set the risk-free rate have
19 made a mistake that has led to inflating their CAPM/ECAPM outcomes.

⁵³ Dr. Morin's Table 2 on page 31 of 57 of his Direct Testimony shows "US 30-Yr Treas. L/T Yield Forecast" values for six forecasting bodies. He does not provide the period over which these forecasts are expected to occur, such as within the next year or within five years.

⁵⁴ See Ex. MFG-16.

1 **Q. HAS DR. MORIN RELIED ON THE *BLUE CHIP* FORECASTS AS A BASIS FOR**
2 **HIS RISK-FREE RATE?**

3 A. No. Dr. Morin does not use the *Blue Chip* forecasts to set his risk-free rate. He relies on six
4 other sources. Dr. Morin, however, has not provided any evidence of the performance in
5 predicting actual yields of any of his six sources. I do not have a record available of the
6 prediction performance of any of these sources. Therefore, it is impossible to evaluate his
7 sources as yield predictors. Since these sources are unsupported when it comes to
8 prediction accuracy, the Commission should not accept them as bases for the risk-free rate
9 in CAPM analysis. The poor record of the *Blue Chip* forecasts in predicting actual ensuing
10 yields demonstrates that such forecasts can significantly overstate what yields will be, and,
11 as a consequence, overstate the ROE outcome in a CAPM analysis.

12 **Q. IS THERE EVIDENCE THAT INCREASES IN THE FEDERAL FUNDS TARGET**
13 **RATE BY THE FEDERAL RESERVE OPEN MARKET COMMITTEE (FOMC)**
14 **DO NOT RESULT IN INCREASES IN CAPITAL COSTS?**

15 A. Forecasting bodies often state that expected increases in the federal funds target rate is the
16 factor that will lead to higher yields on the 30-year Treasury bond. Recent evidence that
17 this assertion is true is scant. The 30-year Treasury yield was 3.06 percent on March 1,
18 2017.⁵⁵ Since that date, the FOMC has increased the federal funds target rate range by 25
19 basis points four times, on March 16, 2017; on June 15, 2017; on December 14, 2017; and
20 on March 22, 2018. The 30-year Treasury yield was 2.97 percent on March 29, 2018.
21 Therefore, despite four federal funds target rate increases totaling 100 basis points since

⁵⁵ Ex. MFG-17.

1 March 1, 2017, the 30-year Treasury's yield was 9 basis points lower on March 29, 2018,
2 than it was 13 months before.⁵⁶ Thus, the prospect of additional increases by the FOMC
3 does not mean that the increases will translate into increases in the 30-year Treasury bond
4 yield and to the risk-free rate.

XI. RESPONSE TO DR. RUSSELL EVANS

6 **Q. PLEASE IDENTIFY THE POINTS OF DR. RUSSELL EVANS' TESTIMONY.**

7 A. Dr. Evans covers more than one topic in his testimony. He addresses the following three
8 subjects:

- 9 • the pace of the Federal Reserve's unwinding of its balance sheet and the effect of that
10 unwinding on long-term interest rates, such as that for the 30-year Treasury bond that
11 is proposed as the risk-free rate component in CAPM analysis;
- 12 • the implications for OGE, and the Oklahoma economy, of the Company's authorized
13 ROE not enabling it to attain the optimal level of capital for its operations; and
- 14 • the role of a headquarters in an economy.

15 **Q. PLEASE SUMMARIZE DR. EVANS' POSITION REGARDING THE**
16 **UNWINDING BY THE FEDERAL RESERVE OF ITS BALANCE SHEET.**

17 A. Dr. Evans notes correctly that the Federal Reserve ("Fed") expanded its balance sheet from
18 \$800 billion before the Great Recession of 2008-2009 to the nearly \$4.5 trillion it was at
19 when the Fed announced its unwinding program in September 2017. Dr. Evans expresses

⁵⁶ To be clear, I am not advocating that the spot yield of 2.97 percent on March 29, 2018, should be adopted as the risk-free rate. My proposed risk-free rate is the 3.06 average yield on the 30-year Treasury bond over the period from March 12, 2018, to April 6, 2018. I cite the March 29, 2018, yield for the purpose of illustrating that the federal funds rate and the 30-year Treasury yield level do not move in lockstep.

1 skepticism about the Fed's intent to gradually unwind the balance sheet, putting
2 "gradually" in quotation marks and stating that the policy as announced will unwind the
3 balance sheet at the fastest pace possible given the maturity schedule of assets. Dr. Evans
4 asserts this is true because effectively all maturing principal payments will be retired as of
5 the fall of 2018. He further asserts that the unwinding will cause long-term interest rates to
6 rise and that the risk of the rates rising faster than forecasted is unbalanced, with actual
7 rates much more likely to be higher than baseline forecasts than not. If the actual rates are
8 higher, he states, the appropriate risk-free rate for the CAPM may be understated by current
9 forecasts.

10 **Q. PLEASE DESCRIBE THE FED'S UNWINDING PLAN.**

11 A. The Fed is unwinding its balance sheet by not reinvesting principal payments on maturing
12 bonds. The amounts not reinvested began at \$10 billion a month in the fall of 2017 and will
13 reach a maximum of \$50 billion a month in the fall of 2018. Thus, the reduction in the
14 balance sheet will peak at \$600 billion a year. There are scenarios where the maximum
15 pace will not be reached because the volume of maturing bonds will not reach the monthly
16 limits set by the Fed.

17 **Q. HOW LONG WILL IT TAKE TO UNWIND THE FED BALANCE SHEET AT THE**
18 **MAXIMUM MONTHLY VOLUME?**

19 A. Dr. Evans does not mention an important factor in giving an answer to how long it will
20 take the Fed to unwind the balance sheet, namely the target size at which the unwinding
21 will stop. The Fed will not return to an \$800 billion balance sheet; a balance sheet in the

1 range of \$2.3 trillion to \$2.8 trillion may be the Fed's target.⁵⁷ At the maximum rate of
2 \$600 billion a year, it would take about three more years to reach that amount.

3 **Q. WHAT DOES DR. EVANS SAY IS UNREALISTIC ABOUT MOST FORECASTS**
4 **OF LONG-TERM INTEREST RATES?**

5 A. Dr. Evans states that most long-term interest rate forecasts assume that the unwinding will
6 have only modest and gradual effects on the long-term rates. He asserts that these
7 assumptions are difficult to justify because the Fed has never faced the task of unwinding
8 so much of its balance sheet, so its ability to carry out the policy is unknown.

9 **Q. IS THERE EVIDENCE THAT THE EFFECTS OF THE FED'S UWINDING OF**
10 **ITS BALACE SHEET ON LONG-TERM INTEREST RATES WILL NOT BE**
11 **GRADUAL?**

12 A. No. Actual 30-year Treasury yields continue to be well short of six-quarter average yield
13 forecasts made by *Blue Chip* in February 1, 2017 and April 1, 2017, with one quarter and
14 two quarters to go before the forecast periods close. The respective forecasts were for
15 averages of 3.65 percent and 3.52 percent. The realized average yields so far are 2.92
16 percent and 2.89 percent.⁵⁸

17 **Q. PLEASE DESCRIBE DR. EVANS' POSITION REGARDING THE**
18 **IMPLICATIONS OF OGE'S AUTHORIZED ROE NOT ENABLING AN**
19 **OPTIMAL ALLOCATION OF RESOURCES FLOWING TO THE COMPANY.**

20 A. Dr. Evans states that a misallocation of resources to a company like OGE that is large
21 relative to a local economy can have broad economic consequences for the local economy.

⁵⁷ See Ex. MFG-18.

⁵⁸ Ex. MFG-16.

1 Dr. Evans identifies lost opportunities for spillover economic benefits as a consequence of
2 the misallocation, causing resources to fall short of the optimal amount. He cites multiplier
3 effects that show OGE's impact goes beyond the direct effect of its expenditures in the
4 economy. He states that improved local supplier and support networks for OGE can
5 improve prospects for firms other than OGE and that the quality of the labor pool can
6 improve as a result of OGE capital investment.

7 **Q. HOW DO YOU RESPOND TO DR. EVANS' STATEMENTS ABOUT THE**
8 **EFFECTS OF AN OPTIMAL ALLOCATION OF RESOURCES?**

9 A. The effects that Dr. Evans discusses are all possible outcomes of OGE obtaining an optimal
10 allocation of resources. However, his emphasis is all on the benefits that will flow through
11 the economy if OGE receives an authorized ROE that enables it to gain its optimal
12 allocation of resources. Unmentioned are the lost opportunities for other firms if OGE's
13 ROE is too high, causing an overallocation of resources to the Company and higher than
14 necessary rates for the firms, which prevent them from obtaining the optimal allocation of
15 resources for their enterprises. They also have multiplier effects associated with their
16 economic activities and can create spillover benefits through their capital expenditures.

17 **Q. WHAT ARE SOME EXAMPLES OF ECONOMIC ENTITIES THAT COULD**
18 **LOSE OPPORTUNITIES IF OGE IS OVERALLOCATED RESOURCES?**

19 A. Firms large and small, commercial and industrial enterprises, for-profits and not-for-
20 profits, all could be harmed if they pay electricity rates that are above the optimal level
21 because OGE's ROE is higher than the ROE that would result in an optimal allocation of
22 resources to OGE. Manufacturers, for example, might not undertake expansions if their
23 profits are reduced by high rates. There would also be foregone purchases of capital

1 equipment, harming the producers of that equipment. Some employees would not be hired
2 because the expansions do not occur, meaning they would not spend their additional
3 incomes on cars, groceries, clothing, or contributions to charities and their churches. In
4 other words, the multiplier effect stemming from the activities of these firms and
5 institutions would never occur.

6 **Q. WHAT IS THE EFFECT ON AN ECONOMY IF OGE'S ROE ENABLES IT TO**
7 **ACQUIRE AN ABOVE-OPTIMAL ALLOCATION OF RESOURCES?**

8 A. It is possible that the lost opportunities for firms other than OGE, taken in aggregate if each
9 firm is small, can outweigh the effects of OGE's spillover benefits if OGE's resource
10 allocation exceeds the optimal mix. It is not enough to conclude that OGE activity is all
11 positive for an economy because its expenditures "touch" a lot of other companies through
12 multipliers. Other firms and individuals can also touch a lot of activity in an economy if
13 they are allowed to retain dollars that otherwise flow to OGE. These competing
14 opportunities must be weighed against one another to determine which path is best for an
15 economy.

16 **Q. PLEASE DISCUSS DR. EVANS' POSITION REGARDING SPILLOVERS AND**
17 **CORPORATE HEADQUARTERS.**

18 A. Dr. Evans states that corporate headquarters in an urban area are associated with greater
19 development of social capital and faster rates of economic growth. He argues that the
20 source of the faster economic growth is greater employee attachment to their communities,
21 expressed as greater trust, inclusion, sharing, and partnerships. The boost to an economy
22 from this social capital is in addition to the philanthropy coming from a company's
23 headquarters and enhanced philanthropy by headquarters employees in their communities.

1 Thus, Evans says, an underallocation of resources to a company is worse if the company
2 has a headquarters presence in a community than for other firms.

3 **Q. PLEASE DESCRIBE EXHIBIT RRE-2.**

4 A. Exhibit RRE-2 purports to show that changes in headquarters counts and economic growth
5 are related. Evans presents columns showing the share of growth in the southwest region
6 of the Bureau of Economic Analysis accounted for by metropolitan southwest cities from
7 2001 to 2007 and from 2007 to 2014, as well as change in Headquarters count in the cities
8 from 2000 to 2007 and from 2007 to 2014. Evans' claim is that the higher the change in
9 Headquarters count, the greater the share of economic growth claimed by a city.

10 **Q. DOES EXHIBIT RRE-2 SUPPORT EVANS' ASSERTION THAT**
11 **HEADQUARTERS COUNTS IN A CITY ARE RELATED TO A REGION'S**
12 **SHARE OF ECONOMIC GROWTH?**

13 A. The data in the exhibit do not support this relationship. For one thing, change in
14 Headquarters count is never defined. Evans' table shows numbers such as "4" for
15 Oklahoma City as the change in Headquarters count from 2000 to 2007. There is no
16 explanation as to what "4" refers to. It might be an increase in the number of headquarters
17 located in Oklahoma City over those years, but there is no way to tell from the table. If it
18 is an increase in headquarters numbers, no allowance is made for the size of a given
19 headquarters. Further, there is no indication what the base Headquarters count was in the
20 first years of the time spans for which numbers are reported. Thus, the "4" for Oklahoma
21 City might be a large—or small—percentage increase in total headquarters employment
22 depending on what "4" means. Since the share of growth is reported as a percentage, the
23 Change in Headquarters count should also be reported as a percentage for the relationship

1 to have meaning. For example, take Oklahoma City's "4." If this number were converted
2 to a percentage change, either in terms of total headquarters or total headquarters
3 employment, and the percentage was less than the 2.7 percent of Oklahoma City's share of
4 regional growth from 2001 to 2007, then Oklahoma City has performed well in regional
5 growth share captured in relation to change in Headquarters count. However, Exhibit RRE-
6 2 does not allow that conclusion, or any other conclusion, to be reached because the data
7 are not defined.

8 **Q. ARE THERE OTHER FLAWS IN EVANS' STATEMENTS ABOUT WHAT**
9 **EXHIBIT RRE-2 SHOWS ABOUT HEADQUARTERS COUNT AND ECONOMIC**
10 **GROWTH SHARE?**

11 A. Yes. Phoenix-Mesa-Scottsdale shows a share of southwest region growth of -5.1 percent
12 for 2007 to 2014 despite showing a change in Headquarters count of "74" for those years.
13 The value of "74" is the third largest change in Headquarters count for the period, trailing
14 only the counts of Dallas-Fort Worth-Arlington and Houston-The Woodlands-Sugarland.
15 Albuquerque shows a change of -0.3 percent for the same span, despite having its
16 Headquarters count change from "2" from 2000 to 2007, when its share of regional growth
17 was 2.6 percent, to "4" from 2007 to 2014. Other changes in counts for cities are related to
18 positive regional growth share percentages, but the changes for these two metropolitan
19 areas do not support a conclusion that Headquarters count change and regional growth
20 share percentage are directly related.

XII. RESPONSE TO STEPHEN MERRILL

Q. PLEASE SUMMARIZE THE POINTS THAT STEPHEN MERRILL MAKES REGARDING OGE'S ROE.

A. Mr. Merrill states that OGE has difficulty earning its authorized ROE because of regulatory lag and factors beyond its control, such as weather. He states that, due to this uncertainty in earned ROE, OGE faces the prospect of paying higher prices for capital and loss of confidence among credit ratings agencies. According to Mr. Merrill, inadequate authorized ROE exacerbates these problems for OGE.

Q. IS INCREASING OGE'S ROE AN APPROPRIATE RESPONSE TO EARNINGS PROBLEMS DUE TO REGULATORY LAG OR VOLATILE WEATHER?

A. No. If OGE has earnings problems due to regulatory lag or other factors, the appropriate response is to seek adjustments to aspects of the regulatory regime that directly address those issues, not attempt to compensate for them with a higher ROE.

Q. DOES MR. MERRILL'S CHART 3 DEMONSTRATE THAT DR. MORIN'S RECOMMENDED ROE OF 9.90 PERCENT ALIGNS INVESTOR AND CUSTOMER INTERESTS?

A. Chart 3 appears to include authorized ROEs made to U.S. vertically integrated electric utilities since December 2015 through November 2017 in settled and fully litigated cases. It does not show that Dr. Morin's recommended ROE aligns investor and customer interests. It does show that Dr. Morin's recommendation is lower than some authorized ROEs and higher than other authorized ROEs. These facts by themselves do not address the alignment of investor and customer interests.

1 **Q. HAVE YOU UPDATED CHART 3?**

2 A. Yes. I have updated Mr. Merrill's Chart 3, adding the authorized ROEs from six fully
3 litigated cases involving vertically integrated utilities.⁵⁹ I have drawn these results from my
4 Exhibit MFG-14, Schedule 1. The decisions in these cases were issued between December
5 7, 2017, and March 29, 2018. I do not track all cases involving vertically integrated electric
6 utilities, as Mr. Merrill has done. As stated above, I exclude settled cases because an
7 authorized ROE in a settled case may reflect a compromise between parties, with other
8 issues affecting the outcome of the ROE award.

9 Q. WHAT DO YOUR UPDATES TO CHART 3 SHOW?

10 A. My updates show that five of the six authorized ROEs I have added to Mr. Merrill's original
11 database fall below the ROE of 9.90 percent recommended by Dr. Morin. In other words,
12 the most recent decisions have generally been lower than OGE's requested ROE.
13 Therefore, Chart 3 does not show an upward trend in authorized ROEs and does not support
14 Dr. Morin's recommended ROE.

XIII. SUMMARY

16 Q. WHAT ARE THE CRITERIA THE COMMISSION SHOULD CONSIDER IN
17 SETTING THE COMPANY'S ROE AND ROR?

18 A. The Commission should only consider whether the ROE and ROR meet the *Bluefield* and
19 *Hope* criteria for a fair return. Recounting, these criteria include returns commensurate with
20 returns being earned on other investments with equivalent risks, rate of return sufficient to
21 enable the utility to attract capital, and returns sufficient to enable the regulated company

⁵⁹ See Ex. MFG-19.

1 to maintain its credit rating and financial integrity. The interpretation of the *Hope* and
2 *Bluefield* criteria is that a company should be given the opportunity to earn an ROE and
3 ROR sufficient to meet these standards.

4 **Q. WHAT IS YOUR RECOMMENDED RETURN ON EQUITY AND OVERALL**
5 **COST OF CAPITAL?**

6 A. I recommend an OGE ROE of 9.18 percent and an OGE ROR of 7.25 percent.

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

8 A. Yes. However, I reserve the right to update this testimony as may be necessary.

STATE OF MINNESOTA)
) ss
COUNTY OF Ramsey)

I, Marlon F. Griffing, do hereby swear/affirm under penalty of perjury that the foregoing testimony is true and correct to the best of my knowledge and belief.

Marlon F. Griffing
Marlon F. Griffing

Subscribed and sworn to/affirmed before me this 2nd day of May, 2018.

Hora Carol
Notary Public



My Commission expires on 1/31/23

CERTIFICATE OF SERVICE

On this 2nd day of May, 2018, a true and correct copy of the above and foregoing *Responsive Testimony of Marlon F. Griffing, Ph.D. on Behalf of Mike Hunter, Oklahoma Attorney General*, along with attached exhibits, was sent via electronic mail to the following interested parties:

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PCMG and Associates

Marlon Griffing, Ph.D

Education

Ph.D., M.A., B.A., Economics, University of Nebraska-Lincoln

Position

Senior Consultant – PCMG and Associates	2015 – present
Senior Consultant – Snavelly King Majoros and Associates	2013 – 2014
Utilities Financial Analyst – Minnesota Department of Commerce	2003 – 2013
Independent Consultant	2003
Senior Consultant – QSI Consulting	2000 – 2002
Economic Analyst – Nebraska Public Service Commission	1998 – 2000

Professional Experience

Dr. Griffing holds bachelors, masters, and doctoral degrees in economics. Dr. Griffing is well versed in microeconomics, cost/benefit analysis and econometric analysis. He has over 18 years' experience as an expert witness and consultant, addressing the cost of capital, capital structure, and rate design of natural-gas and electric utilities in general rate cases; reliability and supply adequacy for natural-gas, electricity and oil-pipeline companies in certificate of need cases; and competitive-environment issues for telecommunications utilities. Dr. Griffing testified on cost-of-capital issues for the Minnesota Department of Commerce (DOC) from 2004-2013. He also managed the DOC's testimony in two oil-pipeline certificate-of-need cases and arbitrated a telecommunications dispute for the Nebraska Public Service Commission. Dr. Griffing has appeared over 30 times before the regulatory agencies of Maine, Minnesota, Nebraska, New Jersey, New Mexico, Pennsylvania, and South Dakota.

Cost of Capital Appearances

1. In Re: The Matter of the Columbia Gas of Pennsylvania for a General Rate Increase in Distribution Gas Service (Appearance: Cost of Capital on behalf of the Pennsylvania Office of Consumer Advocate)
Pennsylvania Public Utility Commission – Docket No. R-2018-2647577
2. In the Matter of the Application of Black Hills Energy Arkansas, Inc. for Approval of a General Tariff Change in Rates and Tariffs (2018) - (Appearance: return on equity, cost of capital on behalf of the Office of the Arkansas Attorney General)
Arkansas Public Service Commission Docket 17-071-U

3. In the Matter of the Application of Oklahoma Gas and Electric Company for an Order of the Commission Authorizing Applicant to Modify Its Rates, Charges, and Tariffs for Retail Electric Service in Oklahoma (2017) - (Appearance: return on equity, cost of capital on behalf of the Office of the Oklahoma Attorney General)
Oklahoma Commerce Commission Cause No. PUD 201700496
4. Application of Fayson Lake Water Company for the Approval of an Increase in Rates and Other Appropriate Relief (2017) – (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the New Jersey Division of Rate Counsel)
New Jersey Board of Public Utilities Docket No. WR17101041
5. Petition of Middlesex Water Company for Approval of an Increase in its Rates for Water Service and Other Tariff Changes, and an Order Authorizing Special Accounting Treatment of Income Tax Refund Proceeds and Future Income Tax Deductions (2017) – (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the New Jersey Division of Rate Counsel)
New Jersey Board of Public Utilities Docket No. WR17101049
6. In the Matter of the Petition of New Jersey-American Water Company, Inc. for Approval of an Increased Tariff Rates and Charges for Water and Sewer Service, Change in Depreciation Rates, and Other Tariff Modifications (2017) – (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the New Jersey Division of Rate Counsel)
New Jersey Board of Public Utilities Docket No. WR17090985
7. In re: Montana-Dakota Utilities Co., Application to Increase Natural Gas Rates (2017) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the North Dakota Public Service Commission Staff)
ND Public Service Commission Case No. PU-17-295
8. In the Matter of the Petition of Andover Utility Company, Inc. for Approval of an Increase in Rates for Wastewater Service (2017) – (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the New Jersey Division of Rate Counsel)
New Jersey Board of Public Utilities Docket No. WR17070726
9. In the Matter of the Application of Application of Public Service Company of Oklahoma, An Oklahoma Corporation, for An Adjustment in Its Rates and Charges and the Electric Service Rules, Regulations and Conditions for Service in the State of Oklahoma (2017) - (Appearance: return on equity, cost of capital on behalf of the Office of the Oklahoma Attorney General)
Oklahoma Commerce Commission Cause No. PUD 201700151
10. In the Matter of Petition of SUEZ Water Arlington Hills Inc. for Approval of an Increase in Rates for Wastewater Services and other Tariff Changes (2016-2017) - (Appearance: return on equity, cost of capital on behalf of the New Jersey Division of Rate Counsel)
New Jersey Board of Public Utilities Docket No. WR16050510

11. In the Matter of Request by Emera Maine for Approval of a Rate Change (2016) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Maine Office of the Public Advocate)
Maine Public Utilities Commission Docket No. 15-00360
12. ENMAX Energy Corporation (EEC) Regulated Rate Option Non-Energy Tariff Application (2015-2016) - (Analysis: cost of capital, risk element identification on behalf of the Alberta Utilities Consumer Advocate)
Alberta Utilities Commission Proceeding 20480
13. Pennsylvania Public Utilities Commission vs. West Penn Power Co., Pennsylvania Electric Co., Pennsylvania Power Co., and Metropolitan Edison Co. (2014-2015) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return behalf of the Office of the Pennsylvania Consumer Advocate)
PA Docket Nos. R-2014-2428742-R-2014-2428745
14. In the Matter of the Application of Minnesota Energy Resources Corporation for Authority to Increase Rates for Natural Gas Service in Minnesota (2010-2012) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. G007,011/GR-10-977
15. In the Matter of the Application of Otter Tail Power Company for Authority to Increase Rates for Electric Utility Service in Minnesota (2010-2011) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. E017/GR-10-239
16. In the Matter of the Petition of Northern States Power Company, a Minnesota Corporation, for Authority to Increase Rates for Natural Gas Service in Minnesota (2009-2010) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. G002/GR-09-1153
17. In the Matter of an Application by CenterPoint Energy Resources Corp., D/B/A CenterPoint Minnesota Gas to Increase Natural Gas Rates in Minnesota (2008-2009) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. G008/GR-08-1075
18. In the Matter of Minnesota Energy Resources Corporation's Application for Authority to Increase Natural Gas Rates in Minnesota (2008-2009) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. G007,011/GR-08-835

19. In the Matter of the Petition of Northern States Power Company, a Minnesota Corporation and Wholly Owned Subsidiary of Xcel Energy Inc., for Authority to Increase Rates for Natural Gas Service in Minnesota (2006-2007) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. G002/GR-06-1429
20. In the Matter of the Application of CenterPoint Energy Resources Corp., D/B/A CenterPoint Energy Minnesota Gas, for Authority to Increase Natural Gas Rates in Minnesota (2005-2006) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. G008/GR-05-1380
21. In the Matter of a Petition by Interstate Power and Light Company for Authority to Increase Electric Rates in Minnesota (2005) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. E001/GR-05-748
22. In the Matter of the Petition of Northern States Power Company dba Xcel Energy Request for General Rate Increase (2004-2005) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. G002/GR-04-1511
23. In the Matter of the Petition of Great Plains Natural Gas Company's Request for General Rate Increase (2004-2005) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. G004/GR-04-1487
24. In the Matter of the Petition of CenterPoint Energy Minnegasco, A Division of CenterPoint Resources Corp. for Authority to Increase Natural Gas Rates in Minnesota (2004-2005) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
Docket No. G008/GR-04-901

Company	Ticker	Exchange	Paying Dividend Three Years	Merger or Acquisition, Other	Foreign company or operating outside 48 contiguous states
ALLETE, Inc.	ALE	NYSE	Yes		
Alliant Energy Corporation	LNT	NYSE	Yes		
Ameren Corporation	AEE	NYSE	Yes		
American Electric Power Co., Inc.	AEP	NYSE	Yes		
Avangrid, Inc.	AGR	NYSE	No**		
Avidia Corporation	AVA	NYSE	Yes	Target of Hydro One ****	
Black Hills Corporation	BKH	NYSE	Yes		
CenterPoint Energy, Inc.	CNP	NYSE	Yes		
CMS Energy Corporation	CMS	NYSE	Yes		
Consolidated Edison, Inc.	ED	NYSE	Yes		
Dominion Resources, Inc.	D	NYSE	Yes	Acquiring SCANA*****	
DTE Energy Company	DTE	NYSE	Yes		
Duke Energy Corporation	DUK	NYSE	Yes		
Edison International	EXX	NYSE	Yes	Company faces liability exposure for 2017 wildfires	
El Paso Electric Company	EE	NYSE	Yes		
Entergy Corporation	ETR	NYSE	Yes		
Eversource Energy	ES	NYSE	Yes		
Exelon Corporation	EXC	NYSE	Yes		
FirstEnergy Corp.	FE	NYSE	Yes		
Fortis Inc.	FTS	TSX	Yes		Canadian company with U.S. assets*
Great Plains Energy, Inc.	GXP	NYSE	Yes	Merger**	
Hawaiian Electric Industries, Inc.	HE	NYSE	Yes		Operates in Hawaii*
IDACORP, Inc.	IDA	NYSE	Yes		
MGE Energy, Inc.	MGEE	NASDAQ	Yes		
NextEra Energy, Inc.	NEE	NYSE	Yes		
NorthWestern Corporation	NWE	NYSE	Yes		
OGE Energy Corp.	OGE	NYSE	Yes		
Otter Tail Corporation	OTTR	NASDAQ	Yes		
PG&E Corporation	PCG	NYSE	Suspended December 20, 2017	Company faces liability exposure for 2017 wildfires. Dividend suspension related to liability exposure.	
Pinnacle West Capital Corporation	PNW	NYSE	Yes		
PNM Resources, Inc.	PNM	NYSE	Yes		
Portland General Electric Company	POR	NYSE	Yes		
PPL Corporation	PPL	NYSE	Yes		
Public Service Enterprise Group Inc.	PEG	NYSE	Yes		
SCANA Corporation	SCG	NYSE	Yes*****	Dominion/acquiring SCANA*****	
Sempra Energy	SRE	NYSE	Yes	Acquiring ONCOR***	
Southern Company	SO	NYSE	Yes		
Unitil Corporation	UTL	Amex	Yes		
Vectren Corporation	VVC	NYSE	Yes		
WEC Energy Group, Inc.	WEC	NYSE	Yes		
Westar Energy, Inc.	WR	NYSE	Yes	Great Plains Energy, Inc. Merger**	
Xcel Energy Inc.	XEL	NYSE	Yes		

OGE is eliminated because it is the parent company of OG&E.

Company eliminated because it has not paid dividends for three years.

Companies eliminated because of proposed merger/acquisition.

Companies eliminated because of not having main operations in contiguous 48 states.

Companies eliminated because of unusual liability exposure due to wildfires.

*See Workpapers 48 States for Exhibit MFG-2

**See Workpapers Mergers, Dividends for Exhibit MFG-2

***-Merger completed March 9, 2018

****-Washington UTC agreement in principle

*****-Dominion acquiring SCANA. Value line warns that SCANA dividend may be suspended.

News > Environment & Science

3

Wildfires: Utility blocked from charging customers for wildfire costs



(Kent Porter/The Press Democrat via AP)

Gordon Easter and fiancée Gail Hale embrace as they return to their home on Hopper Lane in Coffey Park, Friday Oct. 20, 2017 in Santa Rosa, Calif.

By **PAUL ROGERS** | progers@bayareanewsgroup.com | Bay Area News Group

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In a closely watched decision that could impact whether PG&E customers are on the hook for billions in costs related to the Napa-Sonoma fires if the utility is found at fault, the California Public Utilities Commission on Thursday denied a request from San Diego Gas & Electric to charge its ratepayers \$379 million after investigators found its power lines sparked three huge fires in 2007. Cause No. PUD 201700496 Exhibit MFG-3

By a 5-0 vote, the commissioners said that the San Diego utility had not operated its electrical system in a “reasonable and prudent” manner when the fires began, as state law requires.

As a result, the commissioners ruled, San Diego Gas & Electric’s shareholders, not its customers, must absorb the costs.

“There’s no dispute that each of the fires was caused by SDG&E facilities,” said Commissioner Liane Randolph. “And in each instance we find that SDG&E did not meet its burden to show that it acted as a prudent manager.”

Over the past three months, California’s three largest utilities — PG&E, San Diego Gas & Electric and Southern California Edison — have lobbied the commission furiously to allow the San Diego utility to pass along the costs to its customers. With climate change and more people moving into fire-prone areas, the utilities say, it’s becoming more difficult for them to find enough insurance to cover the risk.

They have also noted that courts have found that utilities can be held liable if their power lines, transformers or other equipment cause wildfires that can burn thousands of homes and kill dozens of people, even if they were not negligent, a legal concept known as “inverse condemnation.”

On Thursday, San Diego Gas & Electric said the fires weren’t its fault.

“SDG&E strongly disagrees with today’s decision. The CPUC got it wrong,” said Lee Schavrien, the utility’s senior vice president and chief regulatory officer. “The 2007 wildfires were a natural disaster fueled by extreme conditions, including the worst Santa Ana wind event this region has ever seen.”

But consumer groups and some elected officials have argued that letting utilities pass along the costs of wildfires caused by power lines to their customers increases the likelihood of wildfires because the monopolies would be less likely to spend money to improve safety, to properly maintain their lines and to shut off electricity during extreme conditions.

“I am relieved that the CPUC made the right decision to shield ratepayers from being burdened with the costs of the 2007 San Diego wildfires that were caused because San Diego Gas & Electric didn’t reasonably manage its power lines,” said state Sen. Jerry Hill, D-San Mateo.

Hill, chairman of a key state Senate subcommittee on gas, electricity and transportation safety, said Thursday's decision is important in the wake of October's devastating Napa and Sonoma County wildfires. Cause No. PUD 201700496 Exhibit MFG-3

"If the commission had sided with the utility companies, it could have set a dangerous precedent for the future of disaster cost recovery," Hill said.

In this Oct. 9 file photo, a firefighter sprays a hose into a Keysight Technologies building in Santa Rosa. (AP Photo/Jeff Chiu)

In one of the worst disasters in modern California history, a series of fires that began Oct. 8 in Napa, Sonoma, Mendocino and other Northern California counties burned more than 245,000 acres, destroyed 8,900 homes and killed 44 people.

Cal Fire has not yet determined how the blazes started, but agency investigators are looking at whether power lines owned by PG&E were at fault for some of the fires, which were spread by windy conditions. The utility has told investors it faces massive liabilities if it is found to have caused the fires.

According to a review of emergency radio traffic by the Bay Area News Group, dispatchers sent fire crews to at least 10 different locations across Sonoma County over a 90-minute period starting at 9:22 pm on Oct. 8 — the time the first fires were reported — to respond to 911 calls and other reports of sparking wires, exploding transformers and problems with the county's electrical system amid high winds.

"Extreme weather and catastrophic wildfires pose real risks to our entire state," PG&E said in a statement Thursday after the PUC's decision. "To address these growing risks and those posed by the impacts of climate change, we must work together to find the right solutions. Wildfires and the way they are treated currently have real-world and potentially long-term impacts on the operations, risk management and financial standing of every energy company in the state."

PG&E's share price has fallen 22 percent since the October fires. It has \$800 million in liability insurance to cover the fires, but on Monday in a regulatory filing it noted that state Insurance Commissioner Dave Jones estimated four weeks ago that the insured losses from the California wildfires so far total \$3 billion.

"The estimate does not account for uninsured losses, interest, attorneys' fees, fire suppression costs, evacuation costs, medical expenses, personal injury and wrongful death damages or other costs," PG&E said in the documents filed with the Securities and Exchange Commission.

An aerial view from Oct. 14, 2017 shows the devastation of the Coffey Park neighborhood after a wildfire swept through it in Santa Rosa, Calif. (AP Photo/Marcio Jose Sanchez,) (AP Photo/Marcio Jose Sanchez)

The Witch and Guejito fires in October 2007 combined to burn 197,000 acres. They killed two people, injured 40 firefighters and destroyed 1,141 homes and 239 vehicles. The Rice fire that same month burned 9,472 acres and destroyed 206 homes. It was caused by a dead tree limb falling on power lines.

The PUC ruled that San Diego Gas & Electric did not trim back trees as required by state law in the Rice fire — and that the utility was at fault in the other two. In the Witch fire, the power line that caused the fire shorted three times in three hours, investigators found, creating sparks, and it took the utility more than six hours to turn off its electricity.

After the fires, the utility faced \$5.6 billion in legal claims. It settled approximately 2,500 lawsuits from people who suffered damages, bringing its costs down to \$2.4 billion. The \$379 million it sought to charge ratepayers are costs not covered by its insurance.

In August, two PUC administrative law judges disagreed with the utility's claim that the fires were beyond its control. The judges, S. Pat Tsen and Sasha Goldberg, concluded that the utility "did not reasonably manage and operate its facilities" and thus could not pass along costs to ratepayers.

PUC commissioners agreed Thursday, upholding their ruling, although PUC President Michael Picker called it "a close call" and said the state Legislature should pass a law to allow the commission to divide up liability when there are multiple causes in fires sparked by power lines.

"The result here is quite clear. We can't apply a standard that provides an incentive for a utility to act imprudently or unreasonably," said Commissioner Cliff Rechtschaffen. "That would send precisely the wrong signals to the utilities."



Dividend Payments

On December 20, 2017, the Board of Directors of PG&E Corporation determined to suspend the quarterly cash dividend on the Corporation's common stock, beginning with the fourth quarter of 2017, citing uncertainty related to causes and potential liabilities associated with the extraordinary October 2017 Northern California wildfires.

In addition, the Board of Directors of the Corporation's utility subsidiary, Pacific Gas and Electric Company, determined to suspend the dividend on the utility's preferred stock, beginning with the three-month period ending Jan. 31, 2018, citing the same uncertainty.

No causes have yet been identified for any of the unprecedented wildfires, which continue to be the subject of ongoing investigations.

However, California is one of the only states in the country in which courts have applied inverse condemnation to events caused by utility equipment. This means that if a utility's equipment is found to have been a substantial cause of the damage in an event such as a wildfire – even if the utility has followed established inspection and safety rules – the utility may still be liable for property damages and attorneys' fees associated with that event.

"After extensive consideration and in light of the uncertainty associated with the causes and potential liabilities associated with these wildfires as well as state policy uncertainties, the PG&E boards determined that suspending the common and preferred stock dividends is prudent with respect to cash conservation and is in the best long-term interests of the companies, our customers and our shareholders," said PG&E Corporation Chair of the Board Richard C. Kelly.

"We fully recognize the importance of dividends and intend to revisit the issue as we get more clarity. In the meantime, PG&E is committed to working with state policymakers to address the negative investment environment that strict liability under inverse condemnation is creating for California's utilities. This ultimately hurts our customers and the state. The company also remains committed to supporting recovery and rebuilding efforts by those communities that were impacted by these devastating fires," he said.

Dividend and Stock Split History

PAYMENT DATE

Year	January	April	July	October
2018	-			
Dividends were suspended on December 20, 2017.				
2017	\$.490	\$.490	\$.530	\$.530
2016	\$.455	\$.455	\$.490	\$.490
2015	\$.455	\$.455	\$.455	\$.455
2014	\$.455	\$.455	\$.455	\$.455
2013	\$.455	\$.455	\$.455	\$.455
2012	\$.455	\$.455	\$.455	\$.455
2011	\$.455	\$.455	\$.455	\$.455
2010	\$.420	\$.455	\$.455	\$.455

Vertically Integrated Electric Companies

Institution Name	Electric Activity Description	Electric Generation?	Electric Transmission?	Electric Distribution?	Regulated Generation?
ALLETE, Inc.	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Alliant Energy Corporation	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Ameren Corporation	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
American Electric Power Co., Inc.	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Avangrid, Inc.	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Avista Corporation	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Black Hills Corporation	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
CenterPoint Energy, Inc.	Transmission	No	Yes	No	No
CMS Energy Corporation	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Consolidated Edison, Inc.	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Dominion Energy, Inc.	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
DTE Energy Company	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Duke Energy Corporation	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Edison International	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
El Paso Electric	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Entergy Corporation	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Eversource Energy	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Exelon	Distribution, Generation, Transmission	Yes	Yes	Yes	No
FirstEnergy Corp.	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Fortis Inc. (CH Energy and UNS Energy)	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Great Plains Energy Inc.	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Hawaiian Electric Industries	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
IDACORP, Inc.	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
MGE Energy, Inc.	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
NextEra Energy, Inc.	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
North Western Corporation	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Otter Tail Corp.	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes

PG&E Corporation	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Pinnacle West Capital Corporation	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
PNM Resources, Inc.	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
PPL Corporation	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Portland General Electric	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Public Service Enterprise Group, Inc.	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
SCANA Corporation	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Sempra Energy	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Southern Company	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Unitil Corporation	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Vectren Corporation	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
WEC Energy Group, Inc.	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Westar Energy, Inc.	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes
Xcel Energy Inc.	Distribution, Generation, Transmission	Yes	Yes	Yes	Yes

Shading indicates companies eliminated from Comparison Group consideration because they are not vertically integrated

Shading indicates companies already eliminated from Comparison Group consideration for other reasons.

ROE and ROR Analysis for Oklahoma Gas and Electric
Comparison Group Selection
From Company 2016 10Ks

Cause No. PUD 201700496
Exhibit MFG-6
Amounts in thousands of dollars (000)

Name	SIC Code	Regulated Electricity Income ^{*,**,*}				Company Income ^{*,**,*}				Electricity as % of Company ^{*,**,*}				Average % Electricity	Source: 2017 10K Pages
		2017	2016	2015	2017	2016	2015	2017	2016	2015	2016	2015	2017		
Energy Corporation*	4911	773,148	1,151,133	1,114,516	425,353	(564,503)	(156,734)	181.8%	-203.9%	-71.1%	-244.4%	P. 2, 8	-244.4%	P. 2, 8	
Black Hills Energy**	4911	110,082	85,827	77,579	191,270	82,631	(32,110)	57.6%	103.9%	-241.6%	-26.7%	P. 119-121	-26.7%	P. 119-121	
FirstEnergy Corp.*	4911	1,252,000	976,100	916,000	(1,724,000)	(6,177,000)	578,000	-72.6%	-15.8%	158.5%	23.4%	P. 57	23.4%	P. 57	
Unitil Corporation*	4931	11,900	11,100	8,700	29,000	27,100	26,300	41.0%	41.0%	33.1%	38.4%	P. 61	38.4%	P. 61	
Vectren	4932	75,200	84,700	82,600	216,000	211,600	197,300	34.8%	40.0%	41.9%	38.9%	P. 106	38.9%	P. 106	
Sempra***	4932	4,476,000	4,253,000	4,219,000	11,207,000	10,183,000	10,231,000	39.9%	41.8%	41.2%	41.0%	P. F-146	41.0%	P. F-146	
NEXTERA Energy*	4911	1,880,000	1,727,000	1,648,000	5,320,000	3,005,000	2,762,000	35.3%	57.5%	59.7%	50.8%	P. 112	50.8%	P. 112	
MGE Energy, Inc.*	4900	47,272	46,129	41,000	97,606	75,650	71,343	48.4%	61.0%	57.5%	55.6%	P. 101	55.6%	P. 101	
PPL Corporation*#	4911	645,000	736,000	578,000	1,128,000	1,902,000	682,000	57.2%	38.7%	84.8%	60.2%	P. 46	60.2%	P. 46	
WEC Energy Group, Inc.***	4931	1,065,900	1,027,000	884,200	1,783,200	1,682,100	1,250,500	59.7%	61.1%	70.7%	63.8%	P. 117, P. 118, P. 119	63.8%	P. 117, P. 118, P. 119	
DTE Energy Company*	4911	606,000	622,000	542,000	1,134,000	868,000	727,000	53.4%	71.7%	74.6%	66.6%	P. 136-137	66.6%	P. 136-137	
PSEG Inc.*	4931	973,000	889,000	787,000	1,574,000	887,000	1,679,000	61.8%	100.2%	46.9%	69.6%	P. 54	69.6%	P. 54	
ALLIANT Energy***	4931	128,400	135,500	131,600	172,200	155,800	141,500	74.6%	87.0%	93.0%	74.2%	P. 35, 37, 38, 42, 76, 139	74.2%	P. 35, 37, 38, 42, 76, 139	
Eversource Energy*	4911	751,002	685,031	700,408	995,515	949,821	886,004	75.4%	72.1%	79.1%	75.5%	P. 71, P. 75, P. 81	75.5%	P. 71, P. 75, P. 81	
Consolidated Edison, Inc.**	4931	1,962,000	1,942,000	1,901,000	2,610,000	2,575,000	2,427,000	75.2%	75.4%	78.3%	76.3%	P. 146-147	76.3%	P. 146-147	
Other Tail Corp.*	4911	49,446	49,829	48,370	72,439	62,321	59,345	68.3%	80.0%	81.5%	76.6%	P. 78	76.6%	P. 78	
Ameren Corporation*	4931	454,000	483,000	475,000	523,000	653,000	579,000	86.8%	74.0%	82.0%	80.9%	P. F-44	81.0%	P. F-44	
NorthWestern Corporation*	4931	129,709	140,823	117,102	162,703	164,172	151,209	79.7%	85.8%	77.4%	88.5%	P. 60	88.5%	P. 60	
CMS Energy Corporation*	4931	455,000	458,000	437,000	460,000	551,000	523,000	98.9%	93.1%	83.1%	90.1%	P. 262-264	90.1%	P. 262-264	
American Electric Power Co.***	4911	1,795,300	1,735,400	1,445,300	1,928,900	1,818,500	1,768,600	93.1%	95.4%	95.8%	93.8%	P. 155	93.8%	P. 155	
Duke Energy**	4931	3,210,000	3,040,000	2,819,000	3,970,000	3,215,000	2,944,000	80.9%	92.9%	95.0%	95.1%	P. 111-112	95.1%	P. 111-112	
Xcel Energy Inc.*	4931	1,066,000	1,066,758	921,403	1,148,000	1,123,379	984,485	92.9%	106.5%	89.1%	97.0%	P. 76, 82	97.0%	P. 76, 82	
Alliant Energy Corporation**	4931	586,500	571,900	514,100	653,400	537,000	577,000	89.8%	100.0%	100.0%	100.0%	P. 27	100.0%	P. 27	
IDACORP, Inc., Utility Ops*	4911	206,347	189,242	190,983	212,419	198,088	194,475	97.1%	95.5%	98.2%	97.0%	P. 66	97.0%	P. 66	
El Paso Electric*	4911	98,261	96,768	81,918	98,261	96,768	81,918	100.0%	100.0%	100.0%	100.0%	P. 47, P. 61, P. 64	100.0%	P. 47, P. 61, P. 64	
Portland General Electric Company*	4911	187,000	193,000	172,000	187,000	193,000	172,000	100.0%	100.2%	100.4%	104.9%	P. 11-150	104.9%	P. 11-150	
Pinnacle West Capital Corporation*	4911	491,000	443,000	439,000	488,456	442,034	437,257	100.5%	109.1%	101.4%	121.1%	P. B-38/B39	121.1%	P. B-38/B39	
Southern Co.**	4911	878,000	2,671,000	2,401,000	842,000	2,448,000	2,367,000	104.3%	101.3%	133.1%					
PNM Resources, Inc.*	4911	122,972	133,610	41,370	95,419	131,896	31,078	128.9%							
OGE Energy Corp.*	4911	305,500	284,100	268,900	619,000	338,200	271,300	49.4%	84.0%	99.1%	77.5%	P. 122-123	77.5%	P. 122-123	

*-Indicates percentage of Net Income

**Indicates percentage of Operating Income

***Indicates percentage of Operating Revenues

#-Overstated, Kentucky Regulated includes LG&E gas income and earnings from operations in the United Kingdom.

##-Overstated, includes Gas Operations in Wisconsin

###-Reflects adjustment for gas and water customers, 12.5% of total customers

####-Excludes \$1,198 million generating loss in 2016, excludes \$283.7 million income from discontinued operations in 2015

See Exhibit MFG-6 Regulated % Workpapers

Companies eliminated due to percentage of regulated electricity operating revenue, operating income, or net income falling below designated threshold.



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General Criteria: Understanding S&P Global Ratings' Rating Definitions

03-Jun-2009 14:39 EDT

[View Analyst Contact Information](#)[Table of Contents](#)[Key Attributes Of S&P Global Ratings' Credit Ratings](#)[Measuring Ratings Performance](#)[Conclusion](#)[Notes](#)[Appendix I](#)[Appendix II](#)[Appendix III](#)[Appendix IV](#)[Appendix V](#)[Revisions And Updates](#)[Related Criteria And Research](#)

(Editor's Note: We're republishing this article following our periodic review completed on Feb. 23, 2018. See the "Revisions And Updates" section for details.)

Executive Summary

S&P Global Ratings' credit ratings are designed primarily to provide relative rankings among issuers and obligations of overall creditworthiness; the ratings are not measures of absolute default probability. Creditworthiness encompasses likelihood of default, and also includes (i) payment priority, (ii) recovery, and (iii) credit stability.

In addition, our rating symbols are intended to connote the same general level of creditworthiness for issuers and bonds in different sectors and at different times. In order to promote the comparability of ratings across sectors, geographies, and over time, we are introducing stress scenarios associated with each rating category. These stress scenarios will be an important tool for calibrating our criteria to help maintain comparability. The scenarios will not become part of the rating definitions. Nor will they be the sole or primary drivers of our criteria.

S&P Global Ratings is committed to taking action to help restore confidence in ratings. As one example, over the past year, we have launched a number of initiatives designed to foster greater transparency in our analytics and processes. These initiatives have included publishing "what-if" scenario analyses discussing factors that could cause ratings to change, more explicit discussions of the assumptions we used in forming our opinions, and changes we have made to our rating criteria for several asset classes resulting from macroeconomic developments and ongoing performance data.

By providing more information and data about ratings, we can help market participants better understand how we develop our ratings and — whether they agree or disagree with our assessment — act accordingly.

This article is designed to help market participants better understand what our credit ratings mean. Although the official definitions appear outwardly to be very simple, they embody multiple factors that compose the overall assessment of creditworthiness.

S&P Global Ratings has striven to maintain comparability of ratings across sectors. This has been done by relating all ratings to common default behavior and measurement and by common approaches to risk analysis. In the spirit of promoting greater transparency, S&P Global Ratings is now articulating a set of economic stress scenarios enumerated in Appendix IV, which we intend to use as benchmarks for enhancing the consistency and comparability of ratings across sectors and over time. Each scenario describes particular conditions of economic stress, which we associate with a particular rating level, as described in the appendix. Credits rated in each category are intended to be able to withstand particular conditions of economic stress without defaulting (though they might be downgraded significantly as economic stresses increase).

This publication intends to promote greater understanding of ratings and help investors attribute clearer meanings to different rating categories.

Key Attributes Of S&P Global Ratings' Credit Ratings

Rank ordering of creditworthiness

Our credit ratings express forward-looking opinions about the creditworthiness of issuers and obligations (see Appendix I for a description of "issuer" and "issue" ratings). More specifically, our credit ratings express a relative ranking of creditworthiness. Issuers and obligations with higher ratings are judged by us to be more creditworthy than issuers and obligations with lower credit ratings. (See Appendix III for a relevant excerpt from the rating definitions.)

Creditworthiness is a multi-faceted phenomenon. Although there is no "formula" for combining the various facets, our credit ratings attempt to condense their combined effects into rating symbols along a simple, one-dimensional scale. Indeed, as discussed below, the relative importance of the various factors may change in different situations.

The term creditworthiness refers to the question of whether a bond or other financial instrument will be paid according to its contractual terms. At first blush, the idea of creditworthiness seems entirely straightforward. However, delving beneath the outward simplicity reveals the true multi-dimensional nature.

Primary factor -- likelihood of default

In our view, likelihood of default is the centerpiece of creditworthiness. That means likelihood of default--encompassing both capacity and willingness to pay--is the single most important factor in our assessment of the creditworthiness of an issuer or an obligation. Therefore, consistent with our goal of achieving a rank ordering of creditworthiness, higher ratings on issuers and obligations reflect our expectation that the rated issuer or obligation should default less frequently than issuers and obligations with lower ratings, all other things being equal.

Although we emphasize the rank ordering of default likelihood, we do not view the rating categories solely in relative terms. We associate each successively higher rating category with the ability to withstand successively more stressful economic environments, which we view as less likely to occur. We associate issuers and obligations rated in the highest categories with the ability to withstand extreme or severe stress in absolute terms without defaulting. Conversely, we associate issuers and obligations rated in lower categories with vulnerability to mild or modest stress. (See Appendix IV for stress scenarios by rating level that we intend to use in promoting ratings comparability. Appendix V contains a listing of historical examples of stress conditions, including the magnitude of stress that we associate with each.)

Looking to absolute stress levels is part of how we try to achieve comparability of ratings across different types of securities, different times, different currencies, and different regions. That is, we strive to make our rating symbols correspond to the same approximate level of creditworthiness wherever they appear. Thus, when we use a given rating symbol, we intend to connote roughly the same level of creditworthiness to the widely disparate issuers on a global basis, such as a Canadian mining company, a Japanese financial institution, a Wisconsin school district, a British mortgage-backed security, or a sovereign nation.

We intend to use the hypothetical stress scenarios described in Appendix IV as benchmarks for calibrating our criteria across different sectors and over time. The scenarios will not become part of the rating definitions. Nor will they be the sole or primary drivers of our criteria. However, they will be an important tool for calibrating our criteria to help maintain comparability across sectors and over time. That is, we will consider the stress scenarios in the process of associating both qualitative and quantitative factors with different rating categories. For example, for corporate credits we will consider the stress scenarios (along with everything else that we now consider) in assessing the levels of leverage and profitability that we associate with credits in different rating categories. Likewise, for structured finance issues, we will consider the stress scenarios in assessing the levels of credit support that we associate with the different rating categories.

The scenarios represent hypothetical stress conditions corresponding to each rating category. The scenario for a particular category would reflect a level of stress that credits rated in that category should, in our view, be able to withstand without defaulting (though they might be downgraded to levels near default). Significantly, the scenarios do not supplant consideration of sector-specific and company-specific risk factors in our criteria or in assigning individual ratings. Rather, they apply in addition to such factors. We do not expect that adopting the stress scenarios, in itself, will cause a significant number of rating changes in the near term. That is, although rating changes are occurring as we update our criteria over time, we do not expect that adopting the stress scenarios, in and of itself, will cause additional changes or changes of greater magnitude.

Still, we do not attach specific probabilities to particular types of potential economic environments. Therefore, we do not ascribe a specific "default probability" to each rating category. On the contrary, we recognize that the observed default rates for all rating categories rise and fall as the economic environment progresses through periods of expansion and contraction (see note 1). Moreover, any given economic cycle generally does not produce the same degree of stress in all sectors and regions. Accordingly, only over the very long term (e.g., covering multiple economic cycles), would we expect to be able to observe whether similarly rated issuers from different market segments actually experience similar long-term default frequencies. These observations inform future changes to our criteria and analytics.

Secondary credit factors

Beyond likelihood of default, there are other factors that may be relevant. For example, one such factor is the payment priority of an obligation following default. Our ratings reflect the impact of payment priority in a very visible way: When a corporation issues both senior and subordinated debt, we usually assign a lower rating to the subordinate debt. For most issuers, the likelihood of default is exactly the same for both senior and subordinated debt because both default at the same time when an issuer goes into bankruptcy. A further example is the "structural subordination" of a holding company's debt to the debt of its operating subsidiaries. (See "Reflecting Subordination Risk In Corporate Issue Ratings (/en_US/web/guest/article/-/view/sourceId/10486915)," published March 28, 2018.)

Another secondary factor is the projected recovery that an investor would expect to receive if an obligation defaults. For example, our ratings on speculative-grade corporate obligations reflect adjustments for the expected recovery following default. (See "Recovery Rating Criteria For Speculative-Grade Corporate Issuers (/en_US/web/guest/article/-/view/sourceId/9831306)," published Dec. 7, 2016.) (See note 2.)

A third secondary factor is credit stability. Some types of issuers and obligations are prone to displaying a period of gradual decay before they default. Others may be more vulnerable to sudden deterioration or default. In essence, some types of credits tend to give a warning before they default, while others do not. In addition, the likelihood of default for some types of credits may suddenly change because of changes in key aspects of the economic or business environment. For other credits, the likelihood of default may be less sensitive to changing conditions. Both kinds of differences are described by the term "credit stability." Differing degrees of stability constitute differences in creditworthiness (see "Standard & Poor's To Explicitly Recognize Credit Stability As An Important Rating Factor (/en_US/web/guest/article/-/view/sourceId/5024324)," published Oct. 15, 2008).

Creditworthiness is complex and while there is no formula for combining the different factors into an overall assessment, the criteria does provide a guide in considering these factors. Payment priority and recovery apply more often in the context of rating specific obligations than in rating issuers. Also, payment priority and recovery have increasing significance as likelihood of default increases (i.e., at lower rating levels). In contrast, credit stability has increasing significance as likelihood of default decreases (i.e., at higher rating levels). In addition, the relative importance of the several factors may wax or wane with changes in market conditions and the economic environment. The rating criteria for different types of credits details the specifics of how payment priority, recovery, and stability factor into our analysis.

S&P Global Ratings

(/en_US/web/guest/home) Oklahoma Gas & Electric Co. Regulatory Disclosure

Rating Type: Local Currency LT
Publication Date: 05-Mar-2018 12:00 EST

Symbol, Number, or Score in the Rating Scale Used to Denote Credit

Rating Categories and Notches as Required by Paragraph (a)(1)(ii)

(A)of Rule 17g-7

Rating Information				
Rating	Rating Date	Regulatory Identifiers	CreditWatch/ Outlook	CreditWatch/ Outlook Date
A-	02-May-2013	EE	Negative	05-Mar-2018

**Procedure or Methodology Used to Determine the Credit Rating as
required by Paragraph (a)(1)(ii)(B)of Rule 17g-7**

The following criteria were used in determining this credit rating:
Criteria | Corporates | General: Reflecting Subordination Risk In Corporate
Issue Ratings (/en_US/web/guest/article/-/view/sourceId/10212700)
Criteria | Corporates | Industrials: Key Credit Factors For The Midstream
Energy Industry (/en_US/web/guest/article/-/view/sourceId/8362492)
Criteria | Corporates | General: Methodology And Assumptions: Liquidity
Descriptors For Global Corporate Issuers (/en_US/web/guest/article/-
/view/sourceId/8956570)
Criteria | Corporates | Utilities: Key Credit Factors For The Regulated Utilities

**ROE and ROR Analysis for OGE Energy
Comparison Group Selection
SNL Global Market Intelligence Database, March 18, 2018**

**Cause No. PUD 201700496
Exhibit MFG-8, Schedule 2**

Company	Ticker	S&P Credit Rating
ALLETE, Inc.	ALE	BBB+
Alliant Energy Corporation	LNT	A-
Ameren Corporation	AEE	BBB+
American Electric Power	AEP	A-
CMS Energy Corporation	CMS	BBB+
Consolidated Edison, Inc.	ED	A-
Duke Energy	DUK	A-
El Paso Electric	EE	BBB
Eversource Energy	ES	A+
IDACORP, Inc.	IDA	BBB
NorthWestern Corporation	NWE	BBB
Otter Tail Corp.	OTTR	BBB
Pinnacle West Capital Corporatic	PNW	A-
PNM Resources, Inc.	PNM	BBB+
Portland General Electric Compa	POR	BBB
Southern Co.	SO	A-
Xcel Energy Inc.	XEL	A-
 OGE Energy Corp.	 OGE	 A-
OG&E*		A-

*-See Exhibit MFG-8, Schedule 1

**ROE and ROR Analysis for Oklahoma Gas and Electric
Comparison Group**

**Cause No. PUD 201700496
Exhibit MFG-9**

Company	Ticker
ALLETE, Inc.	ALE
Alliant Energy Corporation	LNT
Ameren Corporation	AEE
American Electric Power	AEP
CMS Energy Corporation	CMS
Consolidated Edison, Inc.	ED
Duke Energy	DUK
El Paso Electric	EE
Eversource Energy	ES
IDACORP, Inc.	IDA
North Western Corporation	NWE
Otter Tail Corp.	OTTR
Pinnacle West Capital Corporation	PNW
PNM Resources, Inc.	PNM
Portland General Electric Company	POR
Southern Co.	SO
Xcel Energy Inc.	XEL
OGE Energy Corp.	OGE

ROE and ROR Analysis for Oklahoma Gas and Electric
Comparison Group
Common Equity Share Prices
Yahoo Finance, April 6, 2018

Cause No. PUD 201700496
Exhibit MFG-10, page 1 of 5

Allite (ALE)			Alliant Energy (LNT)			Ameren (AEE)			American Electric Power (AEP)		
Date	Close		Date	Close		Date	Close		Date	Close	
3/12/2018	\$ 68.71		3/12/2018	\$ 39.21		3/12/2018	\$ 54.41		3/12/2018	\$ 65.87	
3/13/2018	\$ 68.68		3/13/2018	\$ 39.30		3/13/2018	\$ 54.09		3/13/2018	\$ 66.04	
3/14/2018	\$ 69.19		3/14/2018	\$ 39.54		3/14/2018	\$ 54.63		3/14/2018	\$ 66.59	
3/15/2018	\$ 69.48		3/15/2018	\$ 39.66		3/15/2018	\$ 54.77		3/15/2018	\$ 66.99	
3/16/2018	\$ 71.07		3/16/2018	\$ 40.13		3/16/2018	\$ 55.49		3/16/2018	\$ 67.81	
3/19/2018	\$ 71.22		3/19/2018	\$ 39.83		3/19/2018	\$ 55.20		3/19/2018	\$ 67.45	
3/20/2018	\$ 71.14		3/20/2018	\$ 39.68		3/20/2018	\$ 55.13		3/20/2018	\$ 67.45	
3/21/2018	\$ 71.26		3/21/2018	\$ 39.66		3/21/2018	\$ 54.90		3/21/2018	\$ 66.91	
3/22/2018	\$ 71.01		3/22/2018	\$ 39.83		3/22/2018	\$ 54.92		3/22/2018	\$ 67.36	
3/23/2018	\$ 70.12		3/23/2018	\$ 39.45		3/23/2018	\$ 54.01		3/23/2018	\$ 66.39	
3/26/2018	\$ 70.94		3/26/2018	\$ 39.84		3/26/2018	\$ 54.85		3/26/2018	\$ 67.31	
3/27/2018	\$ 71.72		3/27/2018	\$ 40.53		3/27/2018	\$ 55.88		3/27/2018	\$ 68.43	
3/28/2018	\$ 71.83		3/28/2018	\$ 40.62		3/28/2018	\$ 55.94		3/28/2018	\$ 68.66	
3/29/2018	\$ 72.25		3/29/2018	\$ 40.86		3/29/2018	\$ 56.63		3/29/2018	\$ 68.59	
4/2/2018	\$ 70.90		4/2/2018	\$ 40.79		4/2/2018	\$ 56.69		4/2/2018	\$ 68.28	
4/3/2018	\$ 71.32		4/3/2018	\$ 40.82		4/3/2018	\$ 57.14		4/3/2018	\$ 68.45	
4/4/2018	\$ 71.43		4/4/2018	\$ 40.92		4/4/2018	\$ 56.81		4/4/2018	\$ 68.67	
4/5/2018	\$ 71.71		4/5/2018	\$ 41.33		4/5/2018	\$ 57.44		4/5/2018	\$ 68.94	
4/6/2018	\$ 71.72		4/6/2018	\$ 41.02		4/6/2018	\$ 57.13		4/6/2018	\$ 68.53	
Mean	\$ 70.83			\$ 40.16			\$ 55.58			\$ 67.62	

ROE and ROR Analysis for Oklahoma Gas and Electric

Comparison Group

Common Equity Share Prices

Yahoo Finance, April 6, 2018

Cause No. PUD 201700496

Exhibit MFG-10, page 2 of 5

CMS Energy (CMS)			Consolidated Edison, Inc. (ED)			Duke Energy (DUK)			El Paso Electric Company (EE)		
Date	Close		Date	Close		Date	Close		Date	Close	
3/12/2018	\$ 43.09		3/12/2018	\$ 75.69		3/12/2018	\$ 76.55		3/12/2018	\$ 48.65	
3/13/2018	\$ 42.96		3/13/2018	\$ 75.49		3/13/2018	\$ 76.47		3/13/2018	\$ 48.35	
3/14/2018	\$ 43.32		3/14/2018	\$ 75.97		3/14/2018	\$ 77.00		3/14/2018	\$ 48.90	
3/15/2018	\$ 43.71		3/15/2018	\$ 76.58		3/15/2018	\$ 76.74		3/15/2018	\$ 48.70	
3/16/2018	\$ 44.28		3/16/2018	\$ 77.45		3/16/2018	\$ 77.59		3/16/2018	\$ 49.60	
3/19/2018	\$ 43.98		3/19/2018	\$ 77.05		3/19/2018	\$ 77.04		3/19/2018	\$ 49.45	
3/20/2018	\$ 43.99		3/20/2018	\$ 76.89		3/20/2018	\$ 76.43		3/20/2018	\$ 49.35	
3/21/2018	\$ 43.81		3/21/2018	\$ 76.67		3/21/2018	\$ 76.18		3/21/2018	\$ 49.40	
3/22/2018	\$ 43.95		3/22/2018	\$ 76.76		3/22/2018	\$ 76.19		3/22/2018	\$ 49.75	
3/23/2018	\$ 43.25		3/23/2018	\$ 75.58		3/23/2018	\$ 75.17		3/23/2018	\$ 48.85	
3/26/2018	\$ 43.82		3/26/2018	\$ 76.42		3/26/2018	\$ 75.92		3/26/2018	\$ 49.75	
3/27/2018	\$ 44.75		3/27/2018	\$ 77.62		3/27/2018	\$ 77.10		3/27/2018	\$ 50.15	
3/28/2018	\$ 45.07		3/28/2018	\$ 77.56		3/28/2018	\$ 77.42		3/28/2018	\$ 50.60	
3/29/2018	\$ 45.29		3/29/2018	\$ 77.94		3/29/2018	\$ 77.47		3/29/2018	\$ 51.00	
4/2/2018	\$ 45.01		4/2/2018	\$ 77.07		4/2/2018	\$ 77.10		4/2/2018	\$ 50.00	
4/3/2018	\$ 45.28		4/3/2018	\$ 77.66		4/3/2018	\$ 77.26		4/3/2018	\$ 50.20	
4/4/2018	\$ 45.31		4/4/2018	\$ 78.27		4/4/2018	\$ 77.71		4/4/2018	\$ 50.20	
4/5/2018	\$ 45.56		4/5/2018	\$ 78.89		4/5/2018	\$ 78.60		4/5/2018	\$ 50.60	
4/6/2018	\$ 45.32		4/6/2018	\$ 78.56		4/6/2018	\$ 78.16		4/6/2018	\$ 50.35	
Mean	\$ 44.30		\$ 77.06			\$ 76.95			\$ 49.68		

ROE and ROR Analysis for Oklahoma Gas and Electric
Comparison Group
Common Equity Share Prices
Yahoo Finance, April 6, 2018

Cause No. PUD 201700496
Exhibit MFG-10, page 3 of 5

Eversource Energy (ES)			IDACORP, Inc. (IDA)			NorthWestern Corp. (NWE)			Otter Tail Corporation (OTTR)		
Date	Close		Date	Close		Date	Close		Date	Close	
3/12/2018	\$ 57.06		3/12/2018	\$ 83.32		3/12/2018	\$ 51.67		3/12/2018	\$ 42.40	
3/13/2018	\$ 56.68		3/13/2018	\$ 82.98		3/13/2018	\$ 51.42		3/13/2018	\$ 42.25	
3/14/2018	\$ 57.19		3/14/2018	\$ 83.61		3/14/2018	\$ 51.12		3/14/2018	\$ 42.50	
3/15/2018	\$ 57.58		3/15/2018	\$ 84.03		3/15/2018	\$ 51.16		3/15/2018	\$ 42.80	
3/16/2018	\$ 58.26		3/16/2018	\$ 86.10		3/16/2018	\$ 51.90		3/16/2018	\$ 43.35	
3/19/2018	\$ 58.04		3/19/2018	\$ 86.23		3/19/2018	\$ 52.34		3/19/2018	\$ 43.20	
3/20/2018	\$ 57.67		3/20/2018	\$ 85.85		3/20/2018	\$ 51.87		3/20/2018	\$ 43.15	
3/21/2018	\$ 57.46		3/21/2018	\$ 85.74		3/21/2018	\$ 51.92		3/21/2018	\$ 43.50	
3/22/2018	\$ 57.51		3/22/2018	\$ 85.88		3/22/2018	\$ 52.20		3/22/2018	\$ 43.50	
3/23/2018	\$ 56.79		3/23/2018	\$ 84.34		3/23/2018	\$ 51.52		3/23/2018	\$ 42.50	
3/26/2018	\$ 57.53		3/26/2018	\$ 85.68		3/26/2018	\$ 52.35		3/26/2018	\$ 43.00	
3/27/2018	\$ 58.59		3/27/2018	\$ 87.01		3/27/2018	\$ 52.91		3/27/2018	\$ 43.50	
3/28/2018	\$ 58.47		3/28/2018	\$ 87.61		3/28/2018	\$ 53.16		3/28/2018	\$ 43.40	
3/29/2018	\$ 58.92		3/29/2018	\$ 88.27		3/29/2018	\$ 53.80		3/29/2018	\$ 43.35	
4/2/2018	\$ 58.67		4/2/2018	\$ 86.22		4/2/2018	\$ 52.83		4/2/2018	\$ 42.75	
4/3/2018	\$ 59.30		4/3/2018	\$ 86.94		4/3/2018	\$ 53.40		4/3/2018	\$ 43.20	
4/4/2018	\$ 59.53		4/4/2018	\$ 86.94		4/4/2018	\$ 53.53		4/4/2018	\$ 43.35	
4/5/2018	\$ 60.01		4/5/2018	\$ 87.66		4/5/2018	\$ 54.22		4/5/2018	\$ 44.05	
4/6/2018	\$ 59.65		4/6/2018	\$ 87.25		4/6/2018	\$ 53.89		4/6/2018	\$ 43.55	
\$ 58.15			\$ 85.88			Mean \$ 52.48			\$ 43.12		

ROE and ROR Analysis for Oklahoma Gas and Electric
Comparison Group
Common Equity Share Prices
Yahoo Finance, April 6, 2018

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Exhibit MFG-10, page 4 of 5

Pinnacle West Capital Corp. (PNW)				PNM Resources, Inc. (PNM)				Portland General Electric Co. (POR)				Southern Co. (SO)			
Date	Close	Date	Close	Date	Close	Date	Close	Date	Close	Date	Close	Date	Close	Date	Close
3/12/2018	\$ 76.32	3/12/2018	\$ 36.20	3/12/2018	\$ 39.41	3/12/2018	\$ 43.82	3/12/2018	\$ 39.41	3/12/2018	\$ 43.82	3/12/2018	\$ 43.82	3/12/2018	\$ 43.82
3/13/2018	\$ 76.42	3/13/2018	\$ 36.15	3/13/2018	\$ 36.15	3/13/2018	\$ 43.59	3/13/2018	\$ 39.33	3/13/2018	\$ 43.59	3/13/2018	\$ 43.59	3/13/2018	\$ 43.59
3/14/2018	\$ 76.78	3/14/2018	\$ 36.55	3/14/2018	\$ 36.55	3/14/2018	\$ 44.05	3/14/2018	\$ 39.52	3/14/2018	\$ 44.05	3/14/2018	\$ 44.05	3/14/2018	\$ 44.05
3/15/2018	\$ 77.05	3/15/2018	\$ 36.65	3/15/2018	\$ 36.65	3/15/2018	\$ 43.93	3/15/2018	\$ 39.46	3/15/2018	\$ 43.93	3/15/2018	\$ 43.93	3/15/2018	\$ 43.93
3/16/2018	\$ 77.97	3/16/2018	\$ 37.00	3/16/2018	\$ 37.00	3/16/2018	\$ 44.19	3/16/2018	\$ 40.05	3/16/2018	\$ 44.19	3/16/2018	\$ 44.19	3/16/2018	\$ 44.19
3/19/2018	\$ 77.73	3/19/2018	\$ 37.10	3/19/2018	\$ 37.10	3/19/2018	\$ 44.17	3/19/2018	\$ 40.34	3/19/2018	\$ 44.17	3/19/2018	\$ 44.17	3/19/2018	\$ 44.17
3/20/2018	\$ 77.99	3/20/2018	\$ 37.00	3/20/2018	\$ 37.00	3/20/2018	\$ 43.85	3/20/2018	\$ 40.22	3/20/2018	\$ 43.85	3/20/2018	\$ 43.85	3/20/2018	\$ 43.85
3/21/2018	\$ 77.95	3/21/2018	\$ 37.00	3/21/2018	\$ 37.00	3/21/2018	\$ 43.90	3/21/2018	\$ 40.15	3/21/2018	\$ 43.90	3/21/2018	\$ 43.90	3/21/2018	\$ 43.90
3/22/2018	\$ 77.99	3/22/2018	\$ 37.20	3/22/2018	\$ 37.20	3/22/2018	\$ 43.81	3/22/2018	\$ 40.00	3/22/2018	\$ 43.81	3/22/2018	\$ 43.81	3/22/2018	\$ 43.81
3/23/2018	\$ 77.76	3/23/2018	\$ 36.45	3/23/2018	\$ 36.45	3/23/2018	\$ 43.11	3/23/2018	\$ 39.11	3/23/2018	\$ 43.11	3/23/2018	\$ 43.11	3/23/2018	\$ 43.11
3/26/2018	\$ 78.16	3/26/2018	\$ 37.35	3/26/2018	\$ 37.35	3/26/2018	\$ 43.82	3/26/2018	\$ 39.84	3/26/2018	\$ 43.82	3/26/2018	\$ 43.82	3/26/2018	\$ 43.82
3/27/2018	\$ 79.37	3/27/2018	\$ 37.90	3/27/2018	\$ 37.90	3/27/2018	\$ 44.53	3/27/2018	\$ 40.08	3/27/2018	\$ 44.53	3/27/2018	\$ 44.53	3/27/2018	\$ 44.53
3/28/2018	\$ 79.47	3/28/2018	\$ 38.30	3/28/2018	\$ 38.30	3/28/2018	\$ 44.64	3/28/2018	\$ 40.28	3/28/2018	\$ 44.64	3/28/2018	\$ 44.64	3/28/2018	\$ 44.64
3/29/2018	\$ 79.80	3/29/2018	\$ 38.25	3/29/2018	\$ 38.25	3/29/2018	\$ 44.66	3/29/2018	\$ 40.51	3/29/2018	\$ 44.66	3/29/2018	\$ 44.66	3/29/2018	\$ 44.66
4/2/2018	\$ 78.94	4/2/2018	\$ 37.55	4/2/2018	\$ 37.55	4/2/2018	\$ 44.21	4/2/2018	\$ 39.88	4/2/2018	\$ 44.21	4/2/2018	\$ 44.21	4/2/2018	\$ 44.21
4/3/2018	\$ 79.90	4/3/2018	\$ 37.85	4/3/2018	\$ 37.85	4/3/2018	\$ 44.17	4/3/2018	\$ 40.28	4/3/2018	\$ 44.17	4/3/2018	\$ 44.17	4/3/2018	\$ 44.17
4/4/2018	\$ 80.06	4/4/2018	\$ 37.90	4/4/2018	\$ 37.90	4/4/2018	\$ 44.79	4/4/2018	\$ 40.14	4/4/2018	\$ 44.79	4/4/2018	\$ 44.79	4/4/2018	\$ 44.79
4/5/2018	\$ 80.30	4/5/2018	\$ 38.10	4/5/2018	\$ 38.10	4/5/2018	\$ 45.01	4/5/2018	\$ 40.43	4/5/2018	\$ 45.01	4/5/2018	\$ 45.01	4/5/2018	\$ 45.01
4/6/2018	\$ 79.75	4/6/2018	\$ 37.95	4/6/2018	\$ 37.95	4/6/2018	\$ 44.79	4/6/2018	\$ 40.21	4/6/2018	\$ 44.79	4/6/2018	\$ 44.79	4/6/2018	\$ 44.79
				Mean											
\$ 78.41				\$ 37.29				\$ 39.96				\$ 44.16			

ROE and ROR Analysis for Oklahoma Gas and Electric

Comparison Group

Common Equity Share Prices

Yahoo Finance, April 6, 2018

Cause No. PUD 201700496

Exhibit MFG-10, page 5 of 5

Xcel Energy Inc. (XEL)

Date	Close
3/12/2018	\$ 43.66
3/13/2018	\$ 43.51
3/14/2018	\$ 43.54
3/15/2018	\$ 43.65
3/16/2018	\$ 44.13
3/19/2018	\$ 44.17
3/20/2018	\$ 44.26
3/21/2018	\$ 44.46
3/22/2018	\$ 44.57
3/23/2018	\$ 43.74
3/26/2018	\$ 44.14
3/27/2018	\$ 45.11
3/28/2018	\$ 45.34
3/29/2018	\$ 45.48
4/2/2018	\$ 44.95
4/3/2018	\$ 45.20
4/4/2018	\$ 45.21
4/5/2018	\$ 45.69
4/6/2018	\$ 45.47

Mean \$ 44.54

**ROE and ROR Analysis for Oklahoma Gas and Electric
Comparison Group
Annual Dividends
Value Line Reports: West January 26, 2018;
East February 16, 2018; Central March 16, 2018**

**Cause No. PUD 201700496
Exhibit MFG-11**

Zacks Reports April 6, 2018

Name	Value Line	Zacks	Highest Dividend
ALLETE, Inc.	\$ 2.24	\$ 2.24	\$ 2.24
Alliant Energy Corporation	\$ 1.34	\$ 1.34	\$ 1.34
Ameren Corporation	\$ 1.83	\$ 1.83	\$ 1.83
American Electric Power, PSO	\$ 2.48	\$ 2.48	\$ 2.48
CMS Energy Corporation	\$ 1.43	\$ 1.43	\$ 1.43
Consolidated Edison, Inc.	\$ 2.86	\$ 2.86	\$ 2.86
Duke Energy	\$ 3.56	\$ 3.56	\$ 3.56
El Paso Electric	\$ 1.34	\$ 1.34	\$ 1.34
Eversource Energy	\$ 2.02	\$ 2.02	\$ 2.02
IDACORP, Inc.	\$ 2.36	\$ 2.36	\$ 2.36
NorthWestern Corporation	\$ 2.10	\$ 2.20	\$ 2.20
Otter Tail Corp.	\$ 1.34	\$ 1.34	\$ 1.34
Pinnacle West Capital Corporation	\$ 2.78	\$ 2.78	\$ 2.78
PNM Resources, Inc.	\$ 1.06	\$ 1.06	\$ 1.06
Portland General Electric Company	\$ 1.36	\$ 1.36	\$ 1.36
Southern Co.	\$ 2.32	\$ 2.32	\$ 2.32
Xcel Energy Inc.	\$ 1.44	\$ 1.52	\$ 1.52

*-PG&E suspended its dividend fourth quarter 2017 due to uncertainty related to extraordinary October 2017 wildfires.

ROE and ROR Analysis for Oklahoma Gas and Electric
Comparison Group
Common Equity Share Prices: March 5-29, 2018
DCF with Zacks, Yahoo! Finance, and Value Line EPS
Growth-Rate Estimates: June 2017-August 2017

Cause No. PUD 201700496
Exhibit MFG-12, Schedule 1

	A	B	C	D Zacks-Yahoo! Finance- Value Line Mean	E	F
Company Name	Zacks EPS Growth Rate (%)	Yahoo! EPS Growth Rates (%)	Value Line EPS Growth Rates (%)	Growth Rate (%)	Average of Closing Prices	Annualized Dividend
ALLETE, Inc.*	6.60%	6.00%	4.50%	5.70%	\$ 70.83	\$ 2.24
Alliant Energy Corporation*	5.30%	5.45%	6.50%	5.75%	\$ 40.16	\$ 1.34
Ameren Corporation*	6.92%	6.37%	7.50%	6.93%	\$ 55.58	\$ 1.83
American Electric Power *	5.39%	5.63%	4.50%	5.17%	\$ 67.62	\$ 2.48
CMS Energy Corporation*	6.43%	7.04%	8.50%	7.32%	\$ 44.30	\$ 1.43
Consolidated Edison, Inc.***	4.00%	3.11%	3.00%	3.37%	\$ 77.06	\$ 2.86
Duke Energy***	3.69%	4.24%	4.50%	4.14%	\$ 76.95	\$ 3.56
El Paso Electric**	5.10%	5.20%	5.00%	5.10%	\$ 49.68	\$ 1.34
Eversource Energy***	5.75%	5.65%	6.50%	5.97%	\$ 58.15	\$ 2.02
IDACORP, Inc.**	4.07%	3.10%	3.50%	3.56%	\$ 85.88	\$ 2.36
NorthWestern Corporation**	2.37%	3.12%	4.50%	3.33%	\$ 52.48	\$ 2.20
Otter Tail Corp.*	NA	9.00%	7.00%	8.00%	\$ 43.12	\$ 1.34
Pinnacle West Capital Corp.**	2.97%	3.63%	5.50%	4.03%	\$ 78.41	\$ 2.78
PNM Resources, Inc.**	5.36%	4.30%	7.50%	5.72%	\$ 37.29	\$ 1.06
Portland General Electric**	2.92%	3.50%	6.00%	4.14%	\$ 39.96	\$ 1.36
Southern Co.***	4.50%	2.70%	4.00%	3.73%	\$ 44.16	\$ 2.32
Xcel Energy Inc.**	5.84%	6.15%	4.50%	5.50%	\$ 44.54	\$ 1.52
			Mean	5.15%		
	G	H	I	J		
Company Name	Dividend Yield (Rate/Price)	Expected Dividend Yield	Flotation- Adjusted Expected Dividend Yield	Mean Required Rate of Return on Equity		
ALLETE, Inc.*	3.16%	3.34%	3.52%	9.22%		
Alliant Energy Corporation*	3.34%	3.53%	3.71%	9.46%		
Ameren Corporation*	3.29%	3.52%	3.71%	10.64%		
American Electric Power *	3.67%	3.86%	4.06%	9.23%		
CMS Energy Corporation*	3.23%	3.46%	3.65%	10.97%		
Consolidated Edison, Inc.***	3.71%	3.84%	4.04%	7.41%		
Duke Energy***	4.63%	4.82%	5.07%	9.21%		
El Paso Electric**	2.70%	2.84%	2.98%	8.08%		
Eversource Energy***	3.47%	3.68%	3.87%	9.84%		
IDACORP, Inc.**	2.75%	2.85%	3.00%	6.55%		
NorthWestern Corporation**	4.19%	4.33%	4.56%	7.89%		
Otter Tail Corp.*	3.11%	3.36%	3.53%	11.53%		
Pinnacle West Capital Corp.**	3.55%	3.69%	3.88%	7.92%		
PNM Resources, Inc.**	2.84%	3.01%	3.16%	8.88%		
Portland General Electric**	3.40%	3.54%	3.73%	7.87%		
Southern Co.***	5.25%	5.45%	5.74%	9.47%		
Xcel Energy Inc.**	3.41%	3.60%	3.79%	9.29%		
Mean	3.51%	3.69%	3.88%	9.03%		

A: Zacks website, April 6, 2018. See Exhibit MFG-12, Sch 1 Workpapers.

B: Yahoo! Finance website, April 6. See Exhibit MFG-12, Sch 1 Workpapers.

C: Electric Utilities (West), January 26, 2018**; Electric Utilities (East), February 16, 2018***, and Electric Utilities (Central), March 16, 2018*, and Zacks Report, April 6, 2018. See Exhibit MFG-12, Sch 1 Workpapers.

E: Yahoo! Finance website; March 12-April 6, 2018 (19 trading days). See MFG-10, Sch 1, Pages 1-5.

F: Higher of Value Line Investment Survey: Electric Utilities (West), January 26, 2018**, Electric Utilities (East), February 16, 2018***, and Electric Utilities (Central), March 16, 2018*, and Zacks Report, April 6, 2018. See Exhibit MFG-11.

D: $(A + B + C)/3$

G: F/E

H: $G*(1+D)$

I: $H/(1-.05)$

J: $D + I$

ROE and ROR Analysis for Oklahoma Gas and Electric
Final Comparison Group
Comparison Group ROEs versus PSO Bond Yield plus 250 basis points

Cause No. PUD 201700496
Exhibit MFG-12, Schedule 2

Analysis Method

Comparison Group Company ROEs were compared with the interest rates of recent OG&E bonds. OG&E issued 30-year bonds on April 1, 2017 and August 15, 2017. The April 1, 2017 bond had an interest rate of 4.15 percent. The August 14, 2017 bond has an interest rate of 3.85 percent. See OG&E filing Section F - Capital and cost of money W/P F-3. Taking the higher of these two interest rates, and adding 250 basis points produces an interest rate of 6.65 percent. The DCF ROE results for the companies in the Comparison Group are compared to this standard.

Company Name	Mean Required Rate of Return on Equity	Is ROE > 6.65%	Final Group-- Company Name	Mean Required Rate of Return on Equity
ALLETE, Inc.	9.22%	Yes	ALLETE, Inc.	9.22%
Alliant Energy Corporation	9.46%	Yes	Alliant Energy Corporation	9.46%
Ameren Corporation	10.64%	Yes	Ameren Corporation	10.64%
American Electric Power, PSO	9.23%	Yes	American Electric Power, PSO	9.23%
CMS Energy Corporation	10.97%	Yes	CMS Energy Corporation	10.97%
Consolidated Edison, Inc.	7.41%	Yes	Consolidated Edison, Inc.	7.41%
Duke Energy	9.21%	Yes	Duke Energy	9.21%
El Paso Electric	8.08%	Yes	El Paso Electric	8.08%
Eversource Energy	9.84%	Yes	Eversource Energy	9.84%
IDACORP, Inc.	6.55%	No	IDACORP, Inc.	Excluded
NorthWestern Corporation	7.89%	Yes	NorthWestern Corporation	7.89%
Otter Tail Corp.	11.53%	Yes	Otter Tail Corp.	11.53%
Pinnacle West Capital Corporation	7.92%	Yes	Pinnacle West Capital Corporation	7.92%
PNM Resources, Inc.	8.88%	Yes	PNM Resources, Inc.	8.88%
Portland General Electric Company	7.87%	Yes	Portland General Electric Company	7.87%
Southern Co.	9.47%	Yes	Southern Co.	9.47%
Xcel Energy Inc.	9.29%	Yes	Xcel Energy Inc.	9.29%

IDACORP is eliminated from the analysis because its ROEs is less than 6.65%.

**ROE and ROR Analysis for Oklahoma Gas and Electric
Comparison Group
Common Equity Share Prices: March 12, 2018-April 6, 2018
DCF with Value Line Dividends and Zacks, Yahoo! Finance, and Value Line
EPS Growth-Rate Estimates: January-April 2018**

**Cause No. PUD 201700496
Exhibit MFG-12, Schedule 3**

	A	B	C	D	E	F
		Yahoo! Finance		Zacks-Yahoo! Finance-		
	Zacks EPS Growth Rate (%)	EPS Growth Rates (%)	Value Line EPS Growth Rates (%)	Value Line Mean Growth Rate (%)	Average of Closing Prices	Annualized Dividend
Company Name						
ALLETE, Inc.*	6.60%	6.00%	4.50%	5.70%	\$ 70.83	\$ 2.24
Alliant Energy Corporation*	5.30%	5.45%	6.50%	5.75%	\$ 40.16	\$ 1.34
Ameren Corporation*	6.92%	6.37%	7.50%	6.93%	\$ 55.58	\$ 1.83
American Electric Power *	5.39%	5.63%	4.50%	5.17%	\$ 67.62	\$ 2.48
CMS Energy Corporation*	6.43%	7.04%	8.50%	7.32%	\$ 44.30	\$ 1.43
Consolidated Edison, Inc.***	4.00%	3.11%	3.00%	3.37%	\$ 77.06	\$ 2.86
Duke Energy***	3.69%	4.24%	4.50%	4.14%	\$ 76.95	\$ 3.56
El Paso Electric**	5.10%	5.20%	5.00%	5.10%	\$ 49.68	\$ 1.34
Eversource Energy***	5.75%	5.65%	6.50%	5.97%	\$ 58.15	\$ 2.02
NorthWestern Corporation**	2.37%	3.12%	4.50%	3.33%	\$ 52.48	\$ 2.20
Otter Tail Corp.*	NA	9.00%	7.00%	8.00%	\$ 43.12	\$ 1.34
Pinnacle West Capital Corp.**	2.97%	3.63%	5.50%	4.03%	\$ 78.41	\$ 2.78
PNM Resources, Inc.**	5.36%	4.30%	7.50%	5.72%	\$ 37.29	\$ 1.06
Portland General Electric**	2.92%	3.50%	6.00%	4.14%	\$ 39.96	\$ 1.36
Southern Co.***	4.50%	2.70%	4.00%	3.73%	\$ 44.16	\$ 2.32
Xcel Energy Inc.**	5.84%	6.15%	4.50%	5.50%	\$ 44.54	\$ 1.52
			Mean	5.24%		
	G	H	I	J		
	Dividend Yield (Rate/Price)	Expected Dividend Yield	Flotation- Adjusted Expected Dividend Yield	Mean Required Rate of Return on Equity		
Company Name						
ALLETE, Inc.*	3.16%	3.34%	3.52%	9.22%		
Alliant Energy Corporation*	3.34%	3.53%	3.71%	9.46%		
Ameren Corporation*	3.29%	3.52%	3.71%	10.64%		
American Electric Power *	3.67%	3.86%	4.06%	9.23%		
CMS Energy Corporation*	3.23%	3.46%	3.65%	10.97%		
Consolidated Edison, Inc.***	3.71%	3.84%	4.04%	7.41%		
Duke Energy***	4.63%	4.82%	5.07%	9.21%		
El Paso Electric**	2.70%	2.84%	2.98%	8.08%		
Eversource Energy***	3.47%	3.68%	3.87%	9.84%		
NorthWestern Corporation**	4.19%	4.33%	4.56%	7.89%		
Otter Tail Corp.*	3.11%	3.36%	3.53%	11.53%		
Pinnacle West Capital Corp.**	3.55%	3.69%	3.88%	7.92%		
PNM Resources, Inc.**	2.84%	3.01%	3.16%	8.88%		
Portland General Electric**	3.40%	3.54%	3.73%	7.87%		
Southern Co.***	5.25%	5.45%	5.74%	9.47%		
Xcel Energy Inc.**	3.41%	3.60%	3.79%	9.29%		
Mean	3.56%	3.74%	3.94%	9.18%		

A: Zacks website, April 6, 2018. See Exhibit MFG-12, Sch 1 Workpapers.

B: Yahoo! Finance website; April 6. See Exhibit MFG-12, Sch 1 Workpapers.

C: C: Electric Utilities (West), January 26, 2018**; Electric Utilities (East), February 16, 2018***; and Electric Utilities (Central), March 16, 2018*; and Zacks Report, April 6, 2018. See Exhibit MFG-12, Sch 1 Workpapers.

E: Yahoo! Finance website; March 12-April 6, 2018 (19 trading days). See MFG-10, Sch 1, Pages 1-5.

F: Higher of Value Line Investment Survey: Electric Utilities (West), January 26, 2018**; Electric Utilities (East), February 16, 2018***; and Electric Utilities (Central), March 16, 2018*; and Zacks Report, April 6, 2018. See Exhibit MFG-11.

D: $(A + B + C)/3$

G: F/E

H: $G \cdot (1 + D)$

I: $H / (1 - 0.05)$

J: $D + I$

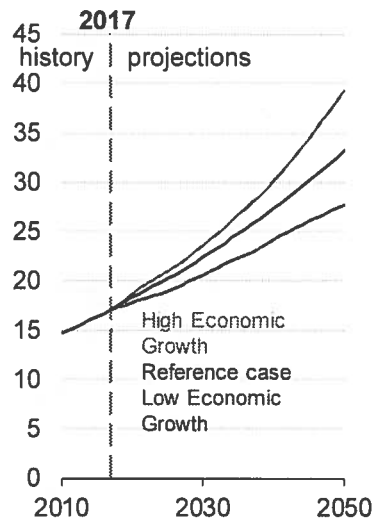
2. June 2017 Baseline Forecast—Data Release (Calendar Year), Updated October 2017

Units		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Output														
Gross Domestic Product (GDP)	Billions of dollars	18,037	18,569	19,310	20,118	20,847	21,566	22,378	23,262	24,186	25,150	26,150	27,191	28,273
	Percentage change, annual rate	3.7	3.0	4.0	4.2	3.6	3.4	3.8	4.0	4.0	4.0	4.0	4.0	4.0
Gross National Product (GNP)	Billions of dollars	18,242	18,776	19,529	20,316	21,036	21,753	22,566	23,442	24,367	25,333	26,332	27,372	28,456
	Percentage change, annual rate	3.4	2.9	4.0	4.0	3.5	3.4	3.7	3.9	3.9	4.0	3.9	4.0	4.0
Potential GDP	Billions of dollars	18,231	18,761	19,394	20,104	20,849	21,645	22,490	23,379	24,307	25,276	26,281	27,328	28,415
	Percentage change, annual rate	2.7	2.9	3.4	3.7	3.7	3.8	3.9	4.0	4.0	4.0	4.0	4.0	4.0
Real GDP	Billions of 2009 dollars	16,397	16,662	17,019	17,389	17,681	17,936	18,241	18,584	18,935	19,295	19,658	20,026	20,400
	Percentage change, annual rate	2.6	1.6	2.1	2.2	1.7	1.4	1.7	1.9	1.9	1.9	1.9	1.9	1.9
Real GNP	Billions of 2009 dollars	16,570	16,835	17,198	17,544	17,824	18,071	18,373	18,703	19,050	19,406	19,763	20,124	20,495
	Percentage change, annual rate	2.3	1.6	2.2	2.0	1.6	1.4	1.7	1.8	1.9	1.9	1.8	1.8	1.8
Real Potential GDP	Billions of 2009 dollars	16,573	16,833	17,093	17,376	17,682	18,001	18,333	18,677	19,031	19,392	19,757	20,127	20,503
	Percentage change, annual rate	1.6	1.6	1.5	1.7	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9

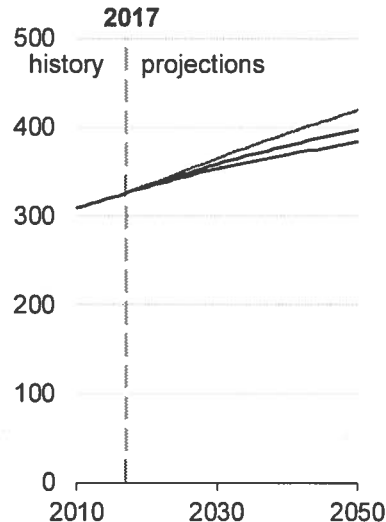
Source: Congressional Budget Office.

Different macroeconomic assumptions address the energy implications of the uncertainty—

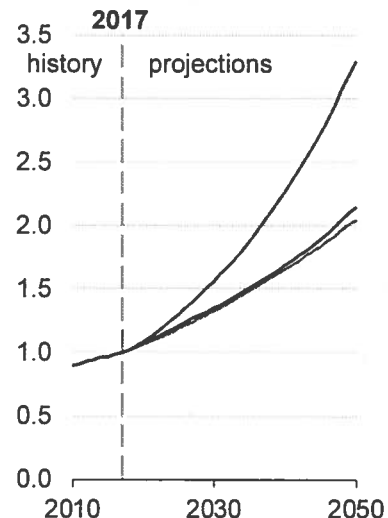
Gross domestic product
trillion 2009 dollars



Population
millions



Price index (2017 = 1.0)
GDP chain-type price index



U.S. Energy Information Administration

#AEO2018

www.eia.gov/aeo

27

—inherent in future economic growth trends

- The Reference, High Economic Growth, and Low Economic Growth cases illustrate three possible paths for U.S. economic growth. The High Economic Growth case assumes higher annual growth and lower annual inflation rates (2.6% and 2.2%, respectively) than in the Reference case (2.0% and 2.3%, respectively), while the Low Economic Growth case assumes lower annual growth and higher annual inflation rates (1.5% and 3.7%, respectively) than in the Reference case.
- In general, higher economic growth (as measured by gross domestic product) leads to greater investment, increased consumption of goods and services, more trade, and greater energy consumption.
- Differences among the cases reflect different expectations for growth in population, labor force, capital stock, and productivity. These changes affect growth rates in household formation, industrial activity, and amounts of travel, as well as investment decisions about energy production.
- All three economic growth cases assume smooth economic growth and do not anticipate business cycles or large economic shocks.

ROE and ROR Analysis for Oklahoma Gas and Electric

Cause No. PUD 201700496

Comparison Group

Exhibit MFG-12, Schedule 6

Common Equity Share Prices: March 12, 2018-April 6, 2018

DCF with Value Line Dividends and Zacks, Yahoo! Finance, and Value Line

EPS Growth-Rate Estimates: January-April 2018

	A	B	C	D	E	F	G	H
		Yahoo!		Zacks-Value				
		Finance		Finance-				
		Value Line		Value Line				
		Mean		Mean				
Company Name	Zacks EPS Growth Rate (%)	EPS Growth Rates (%)	Value Line EPS Growth Rates (%)	Growth Rate (%)	Average of Closing Prices	Annualized Dividend	Dividend Yield (Rate/Price)	Expected Dividend Yield
ALLETE, Inc.*	6.60%	6.00%	4.50%	5.70%	\$ 70.83	\$ 2.24	3.16%	3.34%
Alliant Energy Corporation*	5.30%	5.45%	6.50%	5.75%	\$ 40.16	\$ 1.34	3.34%	3.53%
Ameren Corporation*	6.92%	6.37%	7.50%	6.93%	\$ 55.58	\$ 1.83	3.29%	3.52%
American Electric Power *	5.39%	5.63%	4.50%	5.17%	\$ 67.62	\$ 2.48	3.67%	3.86%
CMS Energy Corporation*	6.43%	7.04%	8.50%	7.32%	\$ 44.30	\$ 1.43	3.23%	3.46%
Consolidated Edison, Inc.***	4.00%	3.11%	3.00%	3.37%	\$ 77.06	\$ 2.86	3.71%	3.84%
Duke Energy***	3.69%	4.24%	4.50%	4.14%	\$ 76.95	\$ 3.56	4.63%	4.82%
El Paso Electric**	5.10%	5.20%	5.00%	5.10%	\$ 49.68	\$ 1.34	2.70%	2.84%
Eversource Energy***	5.75%	5.65%	6.50%	5.97%	\$ 58.15	\$ 2.02	3.47%	3.68%
NorthWestern Corporation**	2.37%	3.12%	4.50%	3.33%	\$ 52.48	\$ 2.20	4.19%	4.33%
Otter Tail Corp.*	NA	9.00%	7.00%	8.00%	\$ 43.12	\$ 1.34	3.11%	3.36%
Pinnacle West Capital Corp.**	2.97%	3.63%	5.50%	4.03%	\$ 78.41	\$ 2.78	3.55%	3.69%
PNM Resources, Inc.**	5.36%	4.30%	7.50%	5.72%	\$ 37.29	\$ 1.06	2.84%	3.01%
Portland General Electric**	2.92%	3.50%	6.00%	4.14%	\$ 39.96	\$ 1.36	3.40%	3.54%
Southern Co.***	4.50%	2.70%	4.00%	3.73%	\$ 44.16	\$ 2.32	5.25%	5.45%
Xcel Energy Inc.**	5.84%	6.15%	4.50%	5.50%	\$ 44.54	\$ 1.52	3.41%	3.60%
			Mean	5.24%			3.56%	3.74%

	I	J	K	L	M	N	O
	Flotation-Adjusted Expected Dividend Yield	Long-Run Projected EPS Growth Rate = 4.0%	Weighted Projected Growth Rate, 4.0%	Weighted Cost of Equity, Long-Run Rate = 4.0%	Long-Run Projected EPS Growth Rate = 4.3%	Weighted Projected Growth Rate, 4.3%	Weighted Cost of Equity, Long-Run Rate = 4.3%
Company Name	Yield	4.0%	Rate, 4.0%	4.0%	= 4.3%	4.3%	4.3%
ALLETE, Inc.*	3.52%	4.00%	5.13%	8.65%	4.30%	5.23%	8.75%
Alliant Energy Corporation*	3.71%	4.00%	5.17%	8.88%	4.30%	5.27%	8.98%
Ameren Corporation*	3.71%	4.00%	5.95%	9.66%	4.30%	6.05%	9.76%
American Electric Power *	4.06%	4.00%	4.78%	8.84%	4.30%	4.88%	8.94%
CMS Energy Corporation*	3.65%	4.00%	6.22%	9.86%	4.30%	6.32%	9.96%
Consolidated Edison, Inc.***	4.04%	4.00%	3.58%	7.62%	4.30%	3.68%	7.72%
Duke Energy***	5.07%	4.00%	4.10%	9.17%	4.30%	4.20%	9.27%
El Paso Electric**	2.98%	4.00%	4.73%	7.72%	4.30%	4.83%	7.82%
Eversource Energy***	3.87%	4.00%	5.31%	9.19%	4.30%	5.41%	9.29%
NorthWestern Corporation**	4.56%	4.00%	3.55%	8.11%	4.30%	3.65%	8.21%
Otter Tail Corp.*	3.53%	4.00%	6.67%	10.20%	4.30%	6.77%	10.30%
Pinnacle West Capital Corp.**	3.88%	4.00%	4.02%	7.91%	4.30%	4.12%	8.01%
PNM Resources, Inc.**	3.16%	4.00%	5.15%	8.31%	4.30%	5.25%	8.41%
Portland General Electric**	3.73%	4.00%	4.09%	7.82%	4.30%	4.19%	7.92%
Southern Co.***	5.74%	4.00%	3.82%	9.56%	4.30%	3.92%	9.66%
Xcel Energy Inc.**	3.79%	4.00%	5.00%	8.79%	4.30%	5.10%	8.89%
Mean	3.94%			8.77%		Mean	8.87%
							8.82%

A: Zacks website, April 6, 2018. See Exhibit MFG-12, Sch 1 Workpapers.

B: Yahoo! Finance website, April 6. See Exhibit MFG-12, Sch 1 Workpapers.

C: Electric Utilities (West), January 26, 2018**; Electric Utilities (East), February 16, 2018***; and Electric Utilities (Central), March 16, 2018*; and Zacks Report, April 6, 2018. See Exhibit MFG-12, Sch 1 Workpapers.

E: Yahoo! Finance website; March 12-April 6, 2018 (19 trading days). See MFG-10, Sch 1, Pages 1-5.

F: Higher of Value Line Investment Survey: Electric Utilities (West), January 26, 2018**; Electric Utilities (East), February 16, 2018***; and Electric Utilities (Central), March 16, 2018*; and Zacks Report, April 6, 2018. See Exhibit MFG-11.

J: Congressional Budget Office, *An Update to the Budget and Economic Outlook: 2017 to 2027*, June 2017, www.cbo.gov/publication/52801M: Energy Information Administration, *Annual Energy Outlook 2018, Macroeconomic Indicators* (Real GDP Growth + GDP Chain-Type Index Increase 2018-2050), https://www.eia.gov/analysis/projection-data.php#annualproj

D: = (A + B + C)/3

H: = G*(1+(0.5*J))

K: = 2/3*D + 1/3*J

N: = 2/3*D + 1/3*M

G: = F/E

I: H/(1 - 0.05)

L: = I + K

O: = I + N

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INVESTORS SERVICE

SECTOR COMMENT

24 January 2018

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Regulated Utilities - US

Tax reform is credit negative for sector, but impact varies by company

The wide-ranging tax legislation passed by the US Congress on December 20, 2017 cut the statutory corporate tax rate to 21% from 35%. The legislation was broadly credit positive for corporate cash flows but for regulated investor-owned utilities, which include electric, gas and water utilities, the effect was the opposite.

- » **The legislation is credit negative for investor-owned utilities.** A lower tax rate will reduce the difference between the amount that utilities collect from rate payers to cover taxes and their payments to tax authorities, reducing cash flow.
- » **Tax reform is neutral for earnings but negative for cash flow.** Utilities collect revenue based on book tax but cash tax is much lower. A lower tax rate lowers revenue, while loss of bonus depreciation increases cash tax.
- » **Cash flow to debt ratio could decline by 150-250 basis points.** We estimate that regulated utilities could experience a decline in the ratio of cash flow from operations pre-working capital to debt (CFO pre-WC/debt) of 150 bps to 250 bps, assuming no corrective action is taken.
- » **Utilities with weaker than expected financials are most affected.** The potential for lower cash flows hurts the credit profile of numerous regulated utilities that already have weakening financial projections. Major holding companies affected include American Electric Power Company (AEP, Baa1 stable), Consolidated Edison, Inc. (ConEd A3 negative), Dominion Energy (Dominion, Baa2 negative), Duke Energy Corporation (Duke, Baa1 negative), Entergy Corporation (Entergy, Baa2 negative) and The Southern Company (Southern, Baa2 negative).
- » **Most utilities are still well positioned within their credit profiles.** The vast majority of utilities and their holding companies are well positioned within their credit profiles thanks to supportive regulatory relationships and a capital structure balanced between both debt and equity.

Cause No. PUD 201700496
Exhibit MFG-12, Schedule 7

Tax reform negatively affects utility cash flows

For the investor-owned utilities sector, the 2017 tax reform legislation will have an overall negative credit impact on regulated operating companies and their holding companies. Moody's calculates that the recent changes in tax laws will dilute a utility's ratio of cash flow before changes in working capital to debt by approximately 150-250 basis points on average, depending to some degree on the size of the company's capital expenditure program.

Although the regulated utility sector is carved out in terms of the treatment of interest deductibility and expensing of capital expenditures, from an earnings perspective the effect on regulated entities is neutral because savings on the lower tax expense are passed on to their customers, as required by regulation. However, from a cash flow perspective, the legislation is credit negative.

Investor-owned utilities' rates, revenue and profits are heavily regulated. The rate regulators allow utilities to charge customers based on a cost-plus model, with tax expense being one of the pass-through items. In practice, regulated utilities collect revenues from customers based on book tax expense but typically pay much less tax in cash. Under the new tax regime, utilities will collect less revenue associated with tax expenses and pay out more cash tax, squeezing its cash flows.

With the lower tax rate and the loss of bonus depreciation treatment, utility cash flows will be negatively affected by three tax dynamics:

1. A fall in the tax rate means that regulated entities will collect less revenue from customers for the purpose of tax expense compensation. Going to a tax rate of 21% from 35% represents about a 40% fall in revenue collection related to tax expense. Although this revenue is ultimately paid out as an expense, under the new law utilities will lose the timing benefit, thereby reducing cash that may have been carried over many years.
2. The loss of bonus depreciation treatment means that most utilities will start paying cash tax in 2019 or 2020, earlier than under the current tax law. The loss of bonus depreciation treatment means that utilities can claim less in depreciation expenses and will therefore have higher taxable income. We still expect utilities to pay little or no cash tax in 2018 because most have significant accumulated net operating losses driven by past claims of bonus depreciation.
3. Lowering the tax rate also means that utilities will have over-collected for tax expense in the past because they charged for future tax expense, assuming a 35% tax rate. As utilities refund the excess collection to customers, it will reduce cash flows, likely spread out over the remaining life of the assets associated with the depreciation.

Significant credit deterioration for many utilities

Since the tax reform was passed at the end of last year, numerous utilities will experience a weakening in their credit profiles because of declining financial metrics (see Exhibit 1). Major holding companies affected include AEP, ConEd, Dominion, Duke, Entergy and Southern.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on www.moody's.com for the most updated credit rating action information and rating history.

Cause No. PUD 201700496
Exhibit MFG-12, Schedule 7

Exhibit 1

Utilities with weakened, or weakening, financial profiles due to tax reform

Company	Senior Unsecured Rating	CFO pre-WC / Debt 3-yr Avg as of 3Q17	CFO Pre-WC / Debt 2018-2019 ^[1]	Downgrade Guidance
Holding Companies				
Consolidated Edison, Inc.	A3 / Negative	21.2%	15-18%	18%
American Electric Power Company, Inc.	Baa1 / Stable	20.8%	15-17%	15%
Duke Energy Corporation	Baa1 / Negative	14.7%	13-15%	15%
Dominion Energy, Inc.	Baa2 / Negative	12.9%	12-15%	15%
Entergy Corporation	Baa2 / Negative	18.0%	13-15%	15%
Southern Company (The)	Baa2 / Negative	13.8%	13-15%	15%
Vertically Integrated				
Alabama Power Company	A1 / Negative	25.7%	20-22%	22%
Public Service Company of Oklahoma	A3 / Negative	18.2%	15-18%	19%
Avista Corp.	Baa1 / Negative	20.6%	15-17%	17%
Southwestern Public Service Company	Baa1 / Negative	22.2%	16-18%	18%
Local Distribution Companies				
New Jersey Natural Gas Company	Aa2 / Negative ^[2]	25.3%	17-20%	20%
Brooklyn Union Gas Company, The	A2 / Negative	12.2%	14-17%	17%
KeySpan Gas East Corporation	A2 / Negative	15.8%	15-18%	17%
Piedmont Natural Gas Company, Inc.	A2 / Negative	20.9%	14-17%	17%
ONE Gas, Inc	A2 / Negative	22.0%	16-19%	20%
South Jersey Gas Company	A2 / Negative	18.1%	15-17%	20%
Wisconsin Gas LLC	A2 / Negative	25.5%	16-19%	19%
Questar Gas Company	A2 / Negative	22.2%	17-20%	20%
Northwest Natural Gas Company	A3 / Negative	18.3%	14-17%	16%
Transmission & Distribution				
Consolidated Edison Company of New York, Inc.	A2 / Negative	21.7%	19-21%	20%
Orange and Rockland Utilities, Inc.	A3 / Negative	19.8%	15-17%	17%
Water				
American Water Works Company, Inc. ^[3]	A3 / Negative	17.2%	14-16%	15%

[1] 2018-2019 Moody's estimates are pro forma for tax reform and do not incorporate current rate plan collection at 35%.

[2] Senior Secured Rating.

[3] The Regulated Water Utilities Methodology uses FFO to net debt as a key cash flow metric.

Source: Moody's Investors Service

Tax reform mainly affects companies that already had limited cushion in their credit profile. The tax reform usually resulted in a further 150-250 bps drop in CFO pre-WC/debt.

Moody's expects that most utilities will attempt to manage any negative financial implications of tax reform through regulatory channels. Corporate financial policies could also change. The actions taken by utilities will be incorporated into our credit analysis on a prospective basis. It is conceivable that some companies will sufficiently defend their credit profiles.

In practice, we believe that most companies will actively manage their cash flow to debt ratios by issuing more equity or obtaining relief by working through regulatory channels. For example, to offset a decline in cash flow, utilities could propose to regulators additional investments that benefit customers or accelerate recovery of regulatory assets. Some of the corporate measures could have

Cause No. PUD 201700496
Exhibit MFG-12, Schedule 7

a more immediate boost to projected metrics than certain regulatory provisions, which may take time to approve and implement. They could also propose to increase the equity layer in rates or the level of the authorized return on equity. In these cases, a cooperative regulatory relationship matters most for a given utility.

The majority of US regulated utilities and utility holding companies continue to maintain stable credit profiles despite weakening financials. Some of the larger holding companies in this category include PPL Corp. (Baa2 stable), Fortis Inc. (Baa3 stable) and Xcel Energy, Inc. (A3 stable) and Alliant Energy Corporation (Baa1 stable). We did not take action on NiSource, Inc. (Baa2 stable), despite the fact that they are weakly positioned even before the tax reform, because we believe that the management will address their financial ratios sufficiently in a timely manner to strengthen their credit profile.

Several companies were already on negative outlook or on review for downgrade before the effects of tax reform occurred, including Emera Inc. (Baa3 negative), Georgia Power Company (A3 negative), NorthWestern Corporation (Baa1 negative), OGE Energy Corp (A3 negative), SCANA Corporation (SCANA, Baa3 RUR-down), Sempra Energy (Baa1 negative), WEC Energy Group, Inc. (A3 negative), and WGL Holdings, Inc. (A3 negative).

ROE and ROR Analysis for Oklahoma Gas and Electric
Comparison Group
Common Equity Share Prices
Changes in Common-Equity Share Prices among Selected Electric Utilities

Cause No. PUD 201700496
Exhibit MFG-12, Schedule 8

Companies in both the Cause No. PUD 101700151 and Cause No. PUD 201700496 Comparison Groups	Average of Closing Prices, Cause No. 17-151: July 24, 2017-August 18, 2018	Average of Closing Prices, Cause No. 17-496: March 12, 2018-April 6, 2018	Difference in Average of Closing Prices	Percentage Change from Cause No. 17-151 to Cause No. 17-496
ALLETE, Inc.	\$ 73.71	\$ 70.83	\$ (2.88)	-3.91%
Alliant Energy Corporation	\$ 41.25	\$ 40.16	\$ (1.09)	-2.64%
Ameren Corporation	\$ 57.49	\$ 55.58	\$ (1.91)	-3.32%
CMS Energy Corporation	\$ 47.10	\$ 44.30	\$ (2.79)	-5.93%
Consolidated Edison, Inc.	\$ 82.88	\$ 77.06	\$ (5.82)	-7.02%
Duke Energy	\$ 85.73	\$ 76.95	\$ (8.77)	-10.23%
El Paso Electric Company	\$ 53.05	\$ 49.68	\$ (3.37)	-6.36%
Eversource Energy	\$ 61.64	\$ 58.15	\$ (3.49)	-5.66%
IDACORP, Inc.	\$ 86.98	\$ 85.88	\$ (1.10)	-1.27%
NorthWestern Corporation	\$ 59.86	\$ 52.48	\$ (7.37)	-12.32%
Pinnacle West Capital Corporation	\$ 87.97	\$ 78.41	\$ (9.57)	-10.87%
PNM Resources, Inc.	\$ 40.70	\$ 37.29	\$ (3.41)	-8.38%
Portland General Electric Company	\$ 45.66	\$ 39.96	\$ (5.70)	-12.48%
Southern Co.	\$ 48.41	\$ 44.16	\$ (4.25)	-8.78%
Xcel Energy Inc.	\$ 47.99	\$ 44.54	\$ (3.45)	-7.19%
			Mean	-7.09%

ROE and ROR Analysis for Oklahoma Gas and Electric
CAPM Analysis
Risk-Free Rate

Daily Treasury Yield Curve Rates

March 12, 2018-April 6, 2018

Date	1 mo	3 mo	6 mo	1 yr	2 yr	3 yr	5 yr	7 yr	10 yr	20 yr	30 yr
3/12/2018	1.60	1.71	1.89	2.05	2.27	2.43	2.64	2.79	2.87	3.00	3.13
3/13/2018	1.64	1.73	1.90	2.03	2.26	2.41	2.62	2.77	2.84	2.98	3.10
3/14/2018	1.71	1.76	1.94	2.05	2.26	2.41	2.61	2.75	2.81	2.94	3.05
3/15/2018	1.70	1.77	1.95	2.07	2.29	2.42	2.62	2.76	2.82	2.94	3.05
3/16/2018	1.71	1.78	1.96	2.08	2.31	2.44	2.65	2.78	2.85	2.96	3.08
3/19/2018	1.70	1.80	1.99	2.08	2.31	2.45	2.65	2.78	2.85	2.97	3.09
3/20/2018	1.76	1.81	1.97	2.08	2.34	2.49	2.69	2.82	2.89	3.01	3.12
3/21/2018	1.71	1.74	1.95	2.06	2.31	2.46	2.69	2.82	2.89	3.01	3.12
3/22/2018	1.67	1.72	1.95	2.05	2.29	2.43	2.63	2.76	2.83	2.94	3.06
3/23/2018	1.69	1.74	1.92	2.04	2.28	2.41	2.61	2.74	2.82	2.94	3.06
3/26/2018	1.71	1.79	1.94	2.06	2.33	2.44	2.64	2.78	2.85	2.96	3.08
3/27/2018	1.69	1.77	1.93	2.10	2.26	2.39	2.58	2.70	2.78	2.90	3.03
3/28/2018	1.65	1.73	1.95	2.12	2.28	2.41	2.59	2.72	2.77	2.89	3.01
3/29/2018	1.63	1.73	1.93	2.09	2.27	2.39	2.56	2.68	2.74	2.85	2.97
4/2/2018	1.68	1.77	1.92	2.08	2.25	2.37	2.55	2.67	2.73	2.85	2.97
4/3/2018	1.70	1.75	1.92	2.09	2.28	2.41	2.60	2.73	2.79	2.90	3.02
4/4/2018	1.67	1.71	1.90	2.07	2.28	2.42	2.61	2.73	2.79	2.91	3.03
4/5/2018	1.67	1.72	1.93	2.07	2.30	2.45	2.64	2.76	2.83	2.95	3.07
4/6/2018	1.68	1.73	1.91	2.06	2.27	2.40	2.58	2.70	2.77	2.89	3.01

Mean 3.06

Source: <http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yieldYear&year=2014>

**ROE and ROR Analysis for Oklahoma Gas and Electric
CAPM Analysis for OGE Energy
Beta calculation for Comparison Group**

**Cause No. PUD 201700496
Exhibit MFG-13, Schedule 2**

Value Line Betas -Comparison	
Company Name	Group
ALLETE, Inc.	0.75
Alliant Energy Corporation	0.70
Ameren Corporation	0.65
American Electric Power, PSO	0.65
CMS Energy Corporation	0.65
Consolidated Edison, Inc.	0.50
Duke Energy	0.60
El Paso Electric	0.80
Eversource Energy	0.70
NorthWestern Corporation	0.70
Otter Tail Corp.	0.85
Pinnacle West Capital Corporation	0.70
PNM Resources, Inc.	0.75
Portland General Electric Company	0.70
Southern Co.	0.55
Xcel Energy Inc.	0.60
Mean	0.68

April 6, 2018

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SCREENS

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The Median of Estimated
PRICE-EARNINGS RATIOS
of all stocks with earnings

18.4

26 Weeks Ago	Market Low	Market High
19.6	3-9-09 10.3	1-26-18 21.1

The Median of Estimated
DIVIDEND YIELDS
(next 12 months) of all dividend
paying stocks under review

2.0%

26 Weeks Ago	Market Low	Market High
2.0%	3-9-09 4.0%	1-26-18 1.8%

The Estimated Median Price
APPRECIATION POTENTIAL
of all 1700 stocks in the Value Line
universe in the hypothesized
economic environment 3 to 5 years hence

45%

26 Weeks Ago	Market Low	Market High
30%	3-9-09 185%	1-26-18 20%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

Numerals in parenthesis after the industry is rank for probable performance (next 12 months).

PAGE	PAGE	PAGE	PAGE
Advertising (33) 2392	Electric Utility (West) (78) 2223	Investment Co.(Foreign) (-) 419	Railroad (48) 339
Aerospace/Defense (65) 701	Electronics (45) 1317	Machinery (18) 1701	*R.E.I.T. (90) 1510
Air Transport (42) 301	Engineering & Const (87) 1231	Maritime (96) 330	Recreation (32) 2301
Apparel (69) 2101	Entertainment (51) 2327	Medical Services (40) 795	Reinsurance (97) 2023
Automotive (27) 101	Entertainment Tech (89) 2009	Med Supp Invasive (38) 168	Restaurant (44) 351
Auto Parts (4) 973	Environmental (61) 409	Med Supp Non-Invasive (26) 194	Retail Automotive (11) 2118
Bank (21) 2501	Financial Svcs. (Div.) (22) 2534	Metal Fabricating (79) 730	Retail Building Supply (60) 1137
Bank (Midwest) (17) 777	Food Processing (72) 1901	*Metals & Mining (Div.) (71) 1579	Retail (Hardlines) (56) 2164
Beverage (54) 1966	Foreign Electronics (9) 1985	Natural Gas Utility (6) 547	Retail (Softlines) (37) 2199
Biotechnology (84) 830	Funeral Services (24) 1837	Natural Gas (Div.) (50) 525	Retail Store (19) 2134
Brokers & Exchanges (31) 1793	Furn/Home Furnishings (41) 1147	Newspaper (81) 2385	Retail/Wholesale Food (47) 1946
Building Materials (5) 1101	Healthcare Information (62) 822	Office Equip/Supplies (73) 1410	Semiconductor (7) 1347
Cable TV (74) 1019	Heavy Truck & Equip (30) 150	Oil/Gas Distribution (58) 609	Semiconductor Equip (1) 1380
*Chemical (Basic) (77) 1595	Homebuilding (10) 1123	Oilfield Svcs/Equip. (94) 2422	Shoe (59) 2155
Chemical (Diversified) (2) 2446	Hotel/Gaming (35) 2351	Packaging & Container (23) 1173	Steel (13) 741
Chemical (Specialty) (14) 559	Household Products (88) 1188	Paper/Forest Products (16) 1163	Telecom. Equipment (86) 939
Computers/Peripherals (25) 1394	*Human Resources (15) 1634	Petroleum (Integrated) (67) 501	Telecom. Services (57) 918
Computer Software (28) 2586	Industrial Services (46) 378	Petroleum (Producing) (43) 2402	Telecom. Utility (91) 1027
Diversified Co. (55) 1738	Information Services (29) 433	Pharmacy Services (3) 965	*Thrift (93) 1501
*Drug (82) 1605	IT Services (12) 2609	Pipeline MLPs (80) 1247, 619	Tobacco (68) 1993
E-Commerce (34) 1814	*Insurance (Life) (75) 1551	Power (92) 1214	Toiletries/Cosmetics (70) 1008
Educational Services (63) 2000	Insurance (Prop/Cas.) (83) 756	*Precious Metals (53) 1563	Trucking (39) 318
Electrical Equipment (52) 1301	Internet (76) 2633	Precision Instrument (36) 112	Water Utility (49) 1783
Electric Util. (Central) (8) 901	Investment Banking (20) 1806	Public/Private Equity (64) 2658	Wireless Networking (85) 593
Electric Utility (East) (66) 137	Investment Co. (-) 1203	Publishing (95) 2377	

*Reviewed in this week's issue.

In three parts: This is Part 1, the Summary & Index. Part 2 is Selection & Opinion. Part 3 is Ratings & Reports. Volume LXXIII, No. 34.

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**ROE and ROR Analysis for Oklahoma Gas and Electric
CAPM Analysis
Calculation of ROE**

**Cause No. PUD 201700496
Exhibit MFG-13, Schedule 4**

Capital Asset Pricing Model (CAPM) calculation

$$k = r + \beta (k_m - r)$$

Where: k = required rate of return for the specific stock

β = beta, the systematic or stock-specific risk

r = rate of return on a riskless asset

k_m = required rate of return in the market portfolio

4-Year Annualized Growth Rate for Value Line Data

Value Line Summary & Index April 13, 2018 forecast data*

2.0% dividend yields

45% market appreciation potential, 3-5 years

*-Exhibit MFG-13, Schedule 3

4-year growth rate $(1.45^{0.25} - 1.00)$

Value Line forecast result $(2.0\% + 9.73\%)$

Market risk premium $(11.83\% - 3.06\%)$

9.73%

11.83%

8.77%

$r =$ 3.06% 30-Year Treasury Bill March 12-April 6, 2018 average, Exhibit MFG-13, Schedule 1

$(k_m - r) =$ 8.77% Market risk premium

$\beta =$ 0.68 Value Line mean beta for Revised Comparison Group, Exhibit MFG-13, Schedule 2

CAPM ROE $k =$ 9.01%

Empirical CAPM (ECAPM) calculations

$$k = r + x (k_m - r) + (1 - x) \beta (k_m - r)$$

Where: $x =$ 0.25

ECAPM ROE $k =$ 9.72%

TABLE 6-2 EMPIRICAL EVIDENCE ON THE ALPHA FACTOR		
Author	Range of alpha	
Fischer (1983)	-3.6% to 3.8%	
Fischer, Jensen and Scholes (1972)	-9.61% to 12.24%	
Fama and McBeth (1972)	4.08% to 9.38%	
Fama and French (1992)	10.08% to 13.56%	
Litzenberger and Ramaswamy (1979)	5.32% to 8.17%	
Litzenberger, Ramaswamy and Sozin (1980)	1.63% to 5.04%	
Pettengill, Sundaram and Mathur (1985)	4.6%	
Morin (1989)	2.0%	

For an alpha in the range of 1%-2% and for reasonable values of the market risk premium and the risk-free rate, Equation 6-5 reduces to the following more pragmatic form:

$$K = R_f + 0.25 (R_M - R_f) + 0.75 \beta (R_M - R_f) \quad (6-6)$$

Over reasonable values of the risk-free rate and the market risk premium, Equation 6-6 produces results that are indistinguishable from the ECAPM of Equation 6-5.¹²

An alpha range of 1%-2% is somewhat lower than that estimated empirically. The use of a lower value for alpha leads to a lower estimate of the cost of capital for low-beta stocks such as regulated utilities. This is because the use of a long-term risk-free rate rather than a short-term risk-free rate already incorporates some of the desired effect of using the ECAPM. That is, the

¹² Typical of the empirical evidence on the validity of the CAPM is a study by Morin (1989) who found that the relationship between the expected return on a security and beta over the period 1926-1984 was given by:

$$\text{Return} = 0.0829 + 0.0520 \beta$$

Given that the risk-free rate over the estimation period was approximately 6% and that the market risk premium was 8% during the period of study, the intercept of the observed relationship between return and beta exceeds the risk-free rate by about 2%, or 1/4 of 8%, and that the slope of the relationship is close to 3/4 of 8%. Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:

$$K = R_f + x(R_M - R_f) + (1 - x)\beta(R_M - R_f)$$

where x is a fraction to be determined empirically. The value of x that best explains the observed relationship $\text{Return} = 0.0829 + 0.0520 \beta$ is between 0.25 and 0.50. If $x = 0.25$, the equation becomes:

$$K = R_f + 0.25(R_M - R_f) + 0.75\beta(R_M - R_f)$$

long-term risk-free rate version of the CAPM has a higher intercept and a flatter slope than the short-term risk-free version which has been tested. Thus, it is reasonable to apply a conservative alpha adjustment. Moreover, the lowering of the tax burden on capital gains and dividend income enacted in 2002 may have decreased the required return for taxable investors, steepening the slope of the ECAPM risk-return trade-off and bring it closer to the CAPM predicted returns.¹³

To illustrate the application of the ECAPM, assume a risk-free rate of 5%, a market risk premium of 7%, and a beta of 0.80. The Empirical CAPM equation (6-6) above yields a cost of equity estimate of 11.0% as follows:

$$\begin{aligned} K &= 5\% + 0.25 (12\% - 5\%) + 0.75 \times 0.80 (12\% - 5\%) \\ &= 5.0\% + 1.8\% + 4.2\% \\ &= 11.0\% \end{aligned}$$

As an alternative to specifying alpha, see Example 6-1.

Some have argued that the use of the ECAPM is inconsistent with the use of adjusted betas, such as those supplied by Value Line and Bloomberg. This is because the reason for using the ECAPM is to allow for the tendency of betas to regress toward the mean value of 1.00 over time, and, since Value Line betas are already adjusted for such trend, an ECAPM analysis results in double-counting. This argument is erroneous. Fundamentally, the ECAPM is not an adjustment, increase or decrease, in beta. This is obvious from the fact that the expected return on high beta securities is actually lower than that produced by the CAPM estimate. The ECAPM is a formal recognition that the observed risk-return tradeoff is flatter than predicted by the CAPM based on myriad empirical evidence. The ECAPM and the use of adjusted betas comprised two separate features of asset pricing. Even if a company's beta is estimated accurately, the CAPM still understates the return for low-beta stocks. Even if the ECAPM is used, the return for low-beta securities is understated if the betas are understated. Referring back to Figure 6-1, the ECAPM is a return (vertical axis) adjustment and not a beta (horizontal axis) adjustment. Both adjustments are necessary. Moreover, recall from Chapter 3 that the use of adjusted betas compensates for interest rate sensitivity of utility stocks not captured by unadjusted betas.

¹³ The lowering of the tax burden on capital gains and dividend income has no impact as far as non-taxable institutional investors (pension funds, 401K, and mutual funds) are concerned, and such investors engage in very large amounts of trading on security markets. It is quite plausible that taxable retail investors are relatively inactive traders and that large non-taxable investors have a substantial influence on capital markets.

ROE and ROR Analysis for Oklahoma Gas and Electric
Summary of Authorized ROEs in Fully Litigated Electric Rate Cases, 1/1/2016-3/29/2018

Cause No. PUD 201700496
Exhibit MFG-14, Schedule 1

Source: SNL Regulatory Research Associates *Regulatory Focus*

State	Company	Docket	Rate Case Service Type	Case Type	Date Filed	Date of Decision	Decision Type	Return on Original Cost Rate (%)	Return on Equity (%)	Rate Case Test Year End Date
2018										
Michigan	Consumers Energy Co.	C-U-18322	Electric	Vertically Integrated	3/31/2017	3/29/2018	Fully Litigated	5.89	10.00	09/2018
Minnesota	ALLETE (Minnesota Power)	D-E-015/GR-16-66	Electric	Vertically Integrated	11/2/2016	3/12/2018	Fully Litigated	7.06	9.25	12/2017
Oklahoma	Public Service Co. of OK	Ca-PUD20170015	Electric	Vertically Integrated	6/30/2017	1/31/2018	Fully Litigated	6.88	9.30	12/2016
									Mean	9.52
									Median	9.30
									Range	9.25-10.00
									All	Vertically Integrated
2017										
Nevada	Nevada Power Co.	D-17-06003	Electric	Vertically Integrated	6/5/2017	12/29/2017	Fully Litigated	7.95	9.40	12/2016
Texas	Southwestern Electric Power Co	D-46449	Electric	Vertically Integrated	12/16/2016	12/14/2017	Fully Litigated	7.18	9.60	06/2016
Wisconsin	Northern States Power Co - WI	D-4220-UR-123 (Elec)	Electric	Vertically Integrated	5/4/2017	12/7/2017	Fully Litigated	7.56	9.80	12/2018
Illinois	Ameren Illinois	D-17-0197	Electric	Distribution	4/13/2017	12/6/2017	Fully Litigated	7.04	8.40	12/2016
Illinois	Commonwealth Edison Co.	D-17-0196	Electric	Distribution	4/13/2017	12/6/2017	Fully Litigated	6.47	8.40	12/2016
Massachusetts	NSTAR Electric Co.	DPU 17-05 (NSTAR)	Electric	Distribution	1/17/2017	11/30/2017	Fully Litigated	7.33	10.00	06/2016
Massachusetts	Western Massachusetts Electric	DPU 17-05 (WMECO)	Electric	Distribution	1/17/2017	11/30/2017	Fully Litigated	7.26	10.00	06/2016
Maryland	Potomac Electric Power Co.	C-9443	Electric	Distribution	3/24/2017	10/20/2017	Fully Litigated	7.43	9.50	04/2017
Hawaii	Maui Electric Company Ltd	D-2014-0318	Electric	Vertically Integrated	12/30/2014	8/4/2017	Fully Litigated	NA	NA	NA
District of Columbia	Potomac Electric Power Co.	FC-1139	Electric	Distribution	6/30/2016	7/24/2017	Fully Litigated	7.46	9.50	03/2016
Missouri	Kansas City Power & Light	C-ER-2016-0285	Electric	Vertically Integrated	7/1/2016	5/3/2017	Fully Litigated	7.43	9.50	12/2015
Missouri	Kansas City Power & Light	C-ER-2016-0073	Electric	Vertically Integrated	7/1/2016	5/3/2017	Fully Litigated	8.46	9.20	12/2015
Oklahoma	OGE	PUD201500273	Electric	Vertically Integrated	12/18/2015	3/20/2017	Fully Litigated	7.69	9.50	06/01/15
Minnesota	Otter Tail	GR-15-1033	Electric	Vertically Integrated	2/16/2016	3/2/2017	Fully Litigated	7.51	9.41	12/2016
Michigan	Consumers Energy Co.	C-U-17990	Electric	Vertically Integrated	3/1/2016	2/28/2017	Fully Litigated	5.94	10.10	08/2017
Maryland	Delmarva Power & Light Co.	C-9424	Electric	Distribution	7/20/2016	2/15/2017	Fully Litigated	6.74	9.60	03/2016
Maryland	Delmarva Power & Light Co.	C-9425	Electric	Distribution	7/20/2016	2/15/2017	Fully Litigated	7.77	9.30	03/2017

ROE and ROR Analysis for Oklahoma Gas and Electric
Summary of Authorized ROEs in Fully Litigated Electric Rate Cases, 1/1/2016-3/29/2018

Cause No. PUD 201700496
Exhibit MFG-14, Schedule 1

2017										
(continued)										
Michigan	DTE Electric Co.	C-U-18014	Electric	Vertically Integrated	2/1/2016	1/31/2017	Fully Litigated	5.55	10.10	07/2017
									Mean	9.49
									Median	9.50
									Range	8.40-10.10
									All	Vertically Integrated
2016										
Colorado	Black Hills Colorado Electric	D-16AL-0326E	Electric	Vertically Integrated	5/3/2016	12/19/2016	Fully Litigated	7.43	9.37	12/2015
Maine	Emera Maine	2015-00360	Electric			12/19/2016	Fully Litigated	7.45	9.00	12/14/17
Connecticut	United Illuminating Co.	D-16-06-04	Electric	Distribution	7/1/2016	12/14/2016	Fully Litigated	7.08	9.10	12/2015
Connecticut	United Illuminating Co.	D-16-06-05	Electric	Distribution	7/1/2016	12/14/2016	Fully Litigated	8.12	9.25	12/2015
Illinois	Ameren Illinois	D-16-0262	Electric	Distribution	4/15/2016	12/6/2016	Fully Litigated	7.28	8.64	12/2015
Illinois	Commonwealth Edison Co.	D-16-0259	Electric	Distribution	4/13/2016	12/6/2016	Fully Litigated	6.71	8.64	12/2015
Maryland	Potomac Electric Power Co.	C-9418	Electric	Distribution	4/19/2016	11/15/2016	Fully Litigated	7.49	9.55	12/2015
Oklahoma	Public Service Co. of OK	Ca-PUD201500208	Electric	Vertically Integrated	7/1/2015	11/10/2016	Fully Litigated	6.94	9.50	01/2015
Wisconsin	Madison Gas and Electric Co.	D-3270-UR-121 (Elec)	Electric	Vertically Integrated	4/8/2016	11/9/2016	Fully Litigated	7.89	9.80	12/2017
Massachusetts	Electric Company					9/1/3016		7.58	9.90	06/15/17
New Mexico	Public Service Co. of NM	C-15-00261-UT	Electric	Vertically Integrated	8/27/2015	9/28/2016	Fully Litigated	7.71	9.58	09/2016
Michigan	Upper Peninsula Power Company					9/8/2016	Fully Litigated	7.47	10.00	12/16/17
Washington	PacifiCorp					9/1/2016	Fully Litigated	7.30	9.50	06/15/17
Arizona	UNS Electric					8/18/2016	Fully Litigated	7.22	9.50	12/14/17
New Mexico	El Paso Electric Co.	C-15-00127-UT	Electric	Vertically Integrated	5/11/2015	6/8/2016	Fully Litigated	7.67	9.48	12/2014
Maryland	Baltimore Gas and Electric Co.	C-9406 (elec)	Electric	Distribution	11/6/2015	6/3/2016	Fully Litigated	7.28	9.75	11/2015
Massachusetts	Fitchburg Gas & Electric Light	DPU 15-80	Electric	Distribution	6/16/2015	4/29/2016	Fully Litigated	8.46	9.80	12/2014
									Mean	9.43
									Median	9.50
									Range	8.64-10.00
									All	Vertically Integrated

**ROE and ROR Analysis for Oklahoma Gas and Electric
Summary of ROE Analyses and Recommended ROE**

**Cause No. PUD 201700496
Exhibit MFG-14, Schedule 2**

Analysis	No. of Companies	ROE	Exhibit
Constant-Growth DCF	16	9.18	MFG-12, Sch 3
Multi-stage DCF Mean	16	8.82	MFG-12, Sch 6
CAPM	16	9.01	MFG-13, Sch 4
ECAPM	16	9.72	MFG-13, Sch 4

**ROE and ROR Analysis for Oklahoma Gas and Electric
ROR with Recommended ROE
2017 Capital Structure, S&P Global Market Intelligence**

**Cause No. PUD 201700496
Exhibit MFG-14, Schedule 3**

	Long-Term Debt	LT Debt Ratio	Common Equity	Common Equity Ratio	Total Capital
ALLETE, Inc.	1,513,300	42.3%	2,068,200	57.7%	3,581,500
Alliant Energy Corporation	4,984,500	54.4%	4,182,200	45.6%	9,166,700
Ameren Corporation	7,995,000	52.7%	7,184,000	47.3%	15,179,000
American Electric Power Company, Inc	21,512,800	54.1%	18,287,000	45.9%	39,799,800
CMS Energy Corporation	10,378,000	70.0%	4,441,000	30.0%	14,819,000
Consolidated Edison, Inc.	16,171,000	51.2%	15,418,000	48.8%	31,589,000
Duke Energy Corporation	50,962,000	55.0%	41,739,000	45.0%	92,701,000
El Paso Electric Company	1,202,676	51.3%	1,142,165	48.7%	2,344,841
Eversource Energy	12,377,998	52.8%	11,086,242	47.2%	23,464,240
NorthWestern Corporation	1,830,983	50.4%	1,798,915	49.6%	3,629,898
Otter Tail Corporation	492,711	41.4%	696,892	58.6%	1,189,603
Pinnacle West Capital Corporation	4,908,125	49.5%	5,006,690	50.5%	9,914,815
PNM Resources, Inc.	2,431,507	58.9%	1,695,253	41.1%	4,126,760
Portland General Electric Company	2,436,000	50.2%	2,416,000	49.8%	4,852,000
Southern Company	44,441,000	64.8%	24,167,000	35.2%	68,608,000
Xcel Energy Inc.	15,138,000	56.9%	11,455,000	43.1%	26,593,000
	Mean	53.5%	Mean	46.5%	
	w/o CMS, Southern	51.5%		48.5%	
OGE	3,030,100	44.0%	3,851,100	56.0%	6,881,200

Recommended			
	Ratio	Cost	WACC
Long-Term Debt	50.00%	5.32%	2.66%
Common Equity	50.00%	9.18%	4.59%
	100%		
Overall Rate of Return			7.25%

The recommended common equity cost of 9.18 percent is based on the ROE analysis performed in Exhibits MFG-12, Schedules 1-8 and MFG-13, Schedules 1-5, the results of which are summarized in Exhibit MFG 14, Schedule 2. This analysis is augmented by the summary of authorized ROEs in recent fully litigated electric rate cases reported in SNL Regulatory Research Associates *Regulatory Focus* and presented in Exhibit MFG-14, Schedule 1.

The long-term debt cost is that proposed by Oklahoma Gas and Electric. The capital structure is a hypothetical structure that takes into account the actual capital structure presented by the Company in the testimony of Dr. Roger A. Morin and Donald Rowlett, and the analysis performed in Exhibit MFG-14, Schedule 3.

Top of Range				Bottom of Range		
	Ratio	Cost	WACC	Ratio	Cost	WACC
Long-Term Debt	50.00%	5.32%	2.66%	50.00%	5.32%	2.66%
Common Equity	50.00%	9.35%	4.68%	50.00%	9.01%	4.51%
	100%			100%		
Overall Rate of Return			7.34%			7.17%

**ROE and ROR Analysis for Oklahoma Gas and Electric
Comparison Group vs. Morin Proxy Group**

**Cause No. PUD 201700496
Exhibit MFG-15**

Electric Utilities in Griffing Comparison Group and Morin Proxy Group (9)	Electric Utilities in Only Griffing Comparison Group (8)	Reason for exclusion from Proxy Group*	Electric Utilities in Only Morin Proxy Group (8)	Reason for exclusion from Comparison Group**
American Electric Power	Alliant Energy	Gas operations	Edison International	Wildfire liability
Allete	Ameren Corporation	Gas operations	Emera	Not listed among Value
El Paso Electric	CMS Energy	Gas operations	Fortis	Line Electric Industry utilities
IDACORP	Consolidated Edison	Not included in Moody's list	Hawaiian Electric	Canada-based
Otter Tail	Duke Energy	Gas operations		Not comparable in risk due to effect of geography on operations
Pinnacle West	Eversource Energy	Gas operations	NextEra Energy	Does not meet 75% regulated earnings threshold
PNM Resources	NorthWestern	Gas operations		Does not meet 75% regulated earnings threshold
Portland General	Xcel Energy Inc.	Gas operations	PPL Corp	Ongoing merger negotiations with Great Plains
Southern Company			Westar OGE	Parent company of OG&E

*-See Direct Exhibit RAM-2, Page 1 of 1. The eight companies are part of the Value Line Electric Industry companies and do meet the standard of 75 percent of net income or another earnings indicator derived from regulated electric operations.

**--See Exhibits MFG-2, MFG-3, MFG-4, MFG-6

ROE and ROR Analysis for Oklahoma Gas and Electric
Blue Chip Financial Forecasts
Forecasted Interest Rates vs. Actual Interest Rates
Available Ahern Cases

Cause No. PUD 201700496
Exhibit MFG-16

ROR with Recommended ROE

Ahern Forecasts Sources	Blue Chip 30- Year Treasury	30-Year Treasury Actual	30-Year Treasury Actual Averages					
	Forecast	Actual	2009Q3	2009Q4	2010Q1	2010Q2	2010Q3	2010Q4
Blue Chip September 1, 2009	4.67%	4.28%	4.32%	4.34%	4.62%	4.37%	3.86%	4.17%
South Carolina PSC, Docket No. 2009-479-W/S, United Utility Companies, Direct Testimony, Pages 41-42, February 2010	Difference	-0.39%						
Blue Chip June 1, 2011	4.78%	3.32%	4.34%	3.69%	3.04%	3.14%	2.94%	2.74%
Missouri PSC, Case Nos. WR-2011-0337, SR-2011-0338, Direct Testimony, Page 52 and Schedule PMA-10, Page 7 of 8, June 30, 2011	Difference	-1.46%						
Blue Chip January 1, 2013	3.60%	3.51%	3.14%	3.71%	3.79%	3.68%	3.44%	3.27%
New Hampshire PUC, DOCKET NO. DW 12-085, Rebuttal Testimony, Page 23, March 6, 2013	Difference	-0.09%						
Blue Chip June 1, 2014	4.33%	2.93%	3.44%	3.27%	2.97%	2.55%	2.88%	2.96%
Delaware PSC, PSC Docket No. 13-466, Rebuttal Testimony, Page 9, Pages 19-20, Exhibit No. T-6R, Schedule 9, Pages 20, 21, and 24 of 37, June 25, 2014.	Difference	-1.40%	2016 2.60%	2017 2.90%	2018Q1 3.03%			
Blue Chip January 1, 2015	3.94%	2.81%	2.55%	2.88%	2.96%	2.96%	2.72%	2.57%
New Jersey Board of Public Utilities, Docket No. WR15020269, Prepared Testimony, Page 27, February 27,	Difference	-1.13%	2016 2.60%	2017 2.90%	2018Q1 3.03%			
Blue Chip December 1, 2015	3.70%	2.85%	2.96%	2.72%	2.57%	2.28%	2.83%	3.05%
Delaware PSC, PSC Docket No. 16-0163, Prepared Testimony, Page 28, February 5, 2016.	Difference	-0.85%	2017 2.90%	2018Q1 3.03%				
Blue Chip February 1, 2016	3.75%	2.84%	2.72%	2.57%	2.28%	2.83%	3.05%	2.90%
New York PSC, Case No. 16-W-0130, Testimony, Page 7, Page 34, February 26, 2016.	Difference	-0.91%	2017 2.90%	2018Q1 3.03%				
Blue Chip February 1, 2017	3.65%	2.92%	3.05%	2.90%	2.82%	2.82%	3.03%	
New Jersey Board of Public Utilities, Case No. 16W16060510, Rebuttal Testimony, PRT-2, Page 32, February 26, 2016.	Difference	-0.73%						
Blue Chip April 1, 2017**	3.52%	2.89%	2.90%	2.82%	2.82%	3.03%	-	-
North Dakota PSC, Docket No. PU-17-295, Direct Testimony, Schedule 8, page 1 of 2, July 21, 2017	Difference	-0.63%						
Blue Chip June 1, 2017**	4.30%	NA	2019	2020	2021	2022	2023	
North Dakota PSC, Docket No. PU-17-295, Direct Testimony, Page 11, July 21, 2017	Difference	NA	-	-	-	-	-	

** J. Stephen Gaske Testimony

Sources: 30-year Treasuries: <http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yieldYear&year=2014>
Federal funds rate: <https://www.federalreserve.gov/monetarypolicy/openmarket.htm>

Bold type indicates days the Federal Reserve's Open Market Committee met or the federal funds target rate changed.

Date	30-year Treasury rate	Federal Funds rate	Date	30-year Treasury rate	Federal Funds rate
1/3/2017	3.04	0.50-0.75	4/3/2017	2.98	0.75-1.00
1/4/2017	3.05	0.50-0.75	4/4/2017	2.99	0.75-1.00
1/5/2017	2.96	0.50-0.75	4/5/2017	2.98	0.75-1.00
1/6/2017	3.00	0.50-0.75	4/6/2017	2.99	0.75-1.00
1/9/2017	2.97	0.50-0.75	4/7/2017	3.00	0.75-1.00
1/10/2017	2.97	0.50-0.75	4/10/2017	2.99	0.75-1.00
1/11/2017	2.96	0.50-0.75	4/11/2017	2.93	0.75-1.00
1/12/2017	3.01	0.50-0.75	4/12/2017	2.92	0.75-1.00
1/13/2017	2.99	0.50-0.75	4/13/2017	2.89	0.75-1.00
1/17/2017	2.93	0.50-0.75	4/17/2017	2.92	0.75-1.00
1/18/2017	3.00	0.50-0.75	4/18/2017	2.84	0.75-1.00
1/19/2017	3.04	0.50-0.75	4/19/2017	2.87	0.75-1.00
1/20/2017	3.05	0.50-0.75	4/20/2017	2.89	0.75-1.00
1/23/2017	2.99	0.50-0.75	4/21/2017	2.89	0.75-1.00
1/24/2017	3.05	0.50-0.75	4/24/2017	2.93	0.75-1.00
1/25/2017	3.10	0.50-0.75	4/25/2017	2.99	0.75-1.00
1/26/2017	3.08	0.50-0.75	4/26/2017	2.97	0.75-1.00
1/27/2017	3.06	0.50-0.75	4/27/2017	2.96	0.75-1.00
1/30/2017	3.08	0.50-0.75	4/28/2017	2.96	0.75-1.00
1/31/2017	3.05	FOMC	5/1/2017	3.00	0.75-1.00
2/1/2017	3.08	Hold	5/2/2017	2.97	FOMC
2/2/2017	3.09	0.50-0.75	5/3/2017	2.97	Hold
2/3/2017	3.11	0.50-0.75	5/4/2017	3.00	0.75-1.00
2/6/2017	3.05	0.50-0.75	5/5/2017	2.99	0.75-1.00
2/7/2017	3.02	0.50-0.75	5/8/2017	3.02	0.75-1.00
2/8/2017	2.96	0.50-0.75	5/9/2017	3.04	0.75-1.00
2/9/2017	3.02	0.50-0.75	5/10/2017	3.03	0.75-1.00
2/10/2017	3.01	0.50-0.75	5/11/2017	3.03	0.75-1.00
2/13/2017	3.03	0.50-0.75	5/12/2017	2.98	0.75-1.00
2/14/2017	3.07	0.50-0.75	5/15/2017	3.00	0.75-1.00
2/15/2017	3.09	0.50-0.75	5/16/2017	2.99	0.75-1.00
2/16/2017	3.05	0.50-0.75	5/17/2017	2.91	0.75-1.00
2/17/2017	3.03	0.50-0.75	5/18/2017	2.90	0.75-1.00
2/21/2017	3.04	0.50-0.75	5/19/2017	2.90	0.75-1.00
2/22/2017	3.04	0.50-0.75	5/22/2017	2.91	0.75-1.00
2/23/2017	3.02	0.50-0.75	5/23/2017	2.95	0.75-1.00
2/24/2017	2.95	0.50-0.75	5/24/2017	2.92	0.75-1.00
2/27/2017	2.98	0.50-0.75	5/25/2017	2.92	0.75-1.00
2/28/2017	2.97	0.50-0.75	5/26/2017	2.92	0.75-1.00
3/1/2017	3.06	0.50-0.75	5/30/2017	2.88	0.75-1.00
3/2/2017	3.09	0.50-0.75	5/31/2017	2.87	0.75-1.00
3/3/2017	3.08	0.50-0.75	6/1/2017	2.87	0.75-1.00
3/6/2017	3.10	0.50-0.75	6/2/2017	2.80	0.75-1.00
3/7/2017	3.11	0.50-0.75	6/5/2017	2.84	0.75-1.00
3/8/2017	3.15	0.50-0.75	6/6/2017	2.81	0.75-1.00
3/9/2017	3.19	0.50-0.75	6/7/2017	2.84	0.75-1.00
3/10/2017	3.16	0.50-0.75	6/8/2017	2.85	0.75-1.00
3/13/2017	3.20	0.50-0.75	6/9/2017	2.86	0.75-1.00

ROE and ROR Analysis for Oklahoma Gas and Electric
30-Year Treasury Interest Rates, March 1, 2017-March 29, 2018

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3/14/2017	3.17	FOMC	0.50-0.75	6/12/2017	2.86		0.75-1.00
3/15/2017	3.11	Raise	0.50-0.75	6/13/2017	2.87	FOMC	0.75-1.00
3/16/2017	3.14		0.75-1.00	6/14/2017	2.79	Raise	0.75-1.00
3/17/2017	3.11		0.75-1.00	6/15/2017	2.78		1.00-1.25
3/20/2017	3.08		0.75-1.00	6/16/2017	2.78		1.00-1.25
3/21/2017	3.04		0.75-1.00	6/19/2017	2.79		1.00-1.25
3/22/2017	3.02		0.75-1.00	6/20/2017	2.74		1.00-1.25
3/23/2017	3.02		0.75-1.00	6/21/2017	2.73		1.00-1.25
3/24/2017	3.00		0.75-1.00	6/22/2017	2.72		1.00-1.25
3/27/2017	2.98		0.75-1.00	6/23/2017	2.71		1.00-1.25
3/28/2017	3.02		0.75-1.00	6/26/2017	2.70		1.00-1.25
3/29/2017	2.99		0.75-1.00	6/27/2017	2.75		1.00-1.25
3/30/2017	3.03		0.75-1.00	6/28/2017	2.77		1.00-1.25
3/31/2017	3.02		0.75-1.00	6/29/2017	2.82		1.00-1.25
				6/30/2017	2.84		1.00-1.25

2017Q1 Mean 3.05

2017Q2 Mean 2.90

Date	Treasury	Funds rate	Date	Treasury	Funds rate
7/3/2017	2.86	1.00-1.25	10/2/2017	2.87	1.00-1.25
7/5/2017	2.85	1.00-1.25	10/3/2017	2.87	1.00-1.25
7/6/2017	2.90	1.00-1.25	10/4/2017	2.87	1.00-1.25
7/7/2017	2.93	1.00-1.25	10/5/2017	2.89	1.00-1.25
7/10/2017	2.93	1.00-1.25	10/6/2017	2.91	1.00-1.25
7/11/2017	2.92	1.00-1.25	10/10/2017	2.88	1.00-1.25
7/12/2017	2.89	1.00-1.25	10/11/2017	2.88	1.00-1.25
7/13/2017	2.92	1.00-1.25	10/12/2017	2.86	1.00-1.25
7/14/2017	2.91	1.00-1.25	10/13/2017	2.81	1.00-1.25
7/17/2017	2.89	1.00-1.25	10/16/2017	2.82	1.00-1.25
7/18/2017	2.85	1.00-1.25	10/17/2017	2.80	1.00-1.25
7/19/2017	2.85	1.00-1.25	10/18/2017	2.85	1.00-1.25
7/20/2017	2.83	1.00-1.25	10/19/2017	2.83	1.00-1.25
7/21/2017	2.81	1.00-1.25	10/20/2017	2.89	1.00-1.25
7/24/2017	2.83	1.00-1.25	10/23/2017	2.89	1.00-1.25
7/25/2017	2.91	FOMC	10/24/2017	2.92	1.00-1.25
7/26/2017	2.89	Hold	10/25/2017	2.95	1.00-1.25
7/27/2017	2.93		10/26/2017	2.96	1.00-1.25
7/28/2017	2.89		10/27/2017	2.93	1.00-1.25
7/31/2017	2.89		10/30/2017	2.88	1.00-1.25
8/1/2017	2.86		10/31/2017	2.88	FOMC
8/2/2017	2.85		11/1/2017	2.85	Hold
8/3/2017	2.81		11/2/2017	2.83	
8/4/2017	2.84		11/3/2017	2.82	
8/7/2017	2.84		11/6/2017	2.80	
8/8/2017	2.86		11/7/2017	2.77	
8/9/2017	2.82		11/8/2017	2.79	
8/10/2017	2.79		11/9/2017	2.81	
8/11/2017	2.79		11/10/2017	2.88	
8/14/2017	2.81		11/13/2017	2.87	
8/15/2017	2.84		11/14/2017	2.84	
8/16/2017	2.81		11/15/2017	2.77	
8/17/2017	2.78		11/16/2017	2.81	
8/18/2017	2.78		11/17/2017	2.78	
8/21/2017	2.77		11/20/2017	2.78	
8/22/2017	2.79		11/21/2017	2.76	
8/23/2017	2.75		11/22/2017	2.75	

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8/24/2017	2.77	1.00-1.25	11/24/2017	2.76	1.00-1.25
8/25/2017	2.75	1.00-1.25	11/27/2017	2.76	1.00-1.25
8/28/2017	2.76	1.00-1.25	11/28/2017	2.77	1.00-1.25
8/29/2017	2.74	1.00-1.25	11/29/2017	2.81	1.00-1.25
8/30/2017	2.75	1.00-1.25	11/30/2017	2.83	1.00-1.25
8/31/2017	2.73	1.00-1.25	12/1/2017	2.76	1.00-1.25
9/1/2017	2.77	1.00-1.25	12/4/2017	2.77	1.00-1.25
9/5/2017	2.69	1.00-1.25	12/5/2017	2.73	1.00-1.25
9/6/2017	2.72	1.00-1.25	12/6/2017	2.71	1.00-1.25
9/7/2017	2.66	1.00-1.25	12/7/2017	2.76	1.00-1.25
9/8/2017	2.67	1.00-1.25	12/8/2017	2.77	1.00-1.25
9/11/2017	2.75	1.00-1.25	12/11/2017	2.77	1.00-1.25
9/12/2017	2.78	1.00-1.25	12/12/2017	2.79	FOMC 1.00-1.25
9/13/2017	2.79	1.00-1.25	12/13/2017	2.74	Raise 1.00-1.25
9/14/2017	2.77	1.00-1.25	12/14/2017	2.71	1.25-1.50
9/15/2017	2.77	1.00-1.25	12/15/2017	2.68	1.25-1.50
9/18/2017	2.80	1.00-1.25	12/18/2017	2.74	1.25-1.50
9/19/2017	2.81	FOMC 1.00-1.25	12/19/2017	2.82	1.25-1.50
9/20/2017	2.82	Hold 1.00-1.25	12/20/2017	2.88	1.25-1.50
9/21/2017	2.80	1.00-1.25	12/21/2017	2.84	1.25-1.50
9/22/2017	2.80	1.00-1.25	12/22/2017	2.83	1.25-1.50
9/25/2017	2.76	1.00-1.25	12/24/2017	2.83	1.25-1.50
9/26/2017	2.78	1.00-1.25	12/25/2017	2.83	1.25-1.50
9/27/2017	2.86	1.00-1.25	12/26/2017	2.82	1.25-1.50
9/28/2017	2.87	1.00-1.25	12/27/2017	2.75	1.25-1.50
9/29/2017	2.86	1.00-1.25	12/28/2017	2.76	1.25-1.50
			12/29/2017	2.74	1.25-1.50
			12/31/2017	2.74	1.25-1.50

2017Q3 Mean 2.82

2017Q4 Mean 2.82

2017 Mean 2.89

1/2/2018	2.81	1.25-1.50
1/3/2018	2.78	1.25-1.50
1/4/2018	2.79	1.25-1.50
1/5/2018	2.81	1.25-1.50
1/8/2018	2.81	1.25-1.50
1/9/2018	2.88	1.25-1.50
1/10/2018	2.88	1.25-1.50
1/11/2018	2.91	1.25-1.50
1/12/2018	2.85	1.25-1.50
1/16/2018	2.83	1.25-1.50
1/17/2018	2.84	1.25-1.50
1/18/2018	2.90	1.25-1.50
1/19/2018	2.91	1.25-1.50
1/22/2018	2.93	1.25-1.50
1/23/2018	2.90	1.25-1.50
1/24/2018	2.93	1.25-1.50
1/25/2018	2.89	1.25-1.50
1/26/2018	2.91	1.25-1.50
1/29/2018	2.94	1.25-1.50
1/30/2018	2.98	FOMC 1.25-1.50
1/31/2018	2.95	Hold 1.25-1.50
2/1/2018	3.01	1.25-1.50
2/2/2018	3.08	1.25-1.50

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2/5/2018	3.04	1.25-1.50
2/6/2018	3.06	1.25-1.50
2/7/2018	3.12	1.25-1.50
2/8/2018	3.14	1.25-1.50
2/9/2018	3.14	1.25-1.50
2/12/2018	3.14	1.25-1.50
2/13/2018	3.11	1.25-1.50
2/14/2018	3.18	1.25-1.50
2/15/2018	3.15	1.25-1.50
2/16/2018	3.13	1.25-1.50
2/20/2018	3.15	1.25-1.50
2/21/2018	3.22	1.25-1.50
2/22/2018	3.21	1.25-1.50
2/23/2018	3.16	1.25-1.50
2/26/2018	3.15	1.25-1.50
2/27/2018	3.17	1.25-1.50
2/28/2018	3.13	1.25-1.50
3/1/2018	3.09	1.25-1.50
3/2/2018	3.14	1.25-1.50
3/5/2018	3.16	1.25-1.50
3/6/2018	3.14	1.25-1.50
3/7/2018	3.15	1.25-1.50
3/8/2018	3.13	1.25-1.50
3/9/2018	3.16	1.25-1.50
3/12/2018	3.13	1.25-1.50
3/13/2018	3.10	1.25-1.50
3/14/2018	3.05	1.25-1.50
3/15/2018	3.05	1.25-1.50
3/16/2018	3.08	1.25-1.50
3/19/2018	3.09	1.25-1.50
3/20/2018	3.12 FOMC	1.25-1.50
3/21/2018	3.12 Raise	1.25-1.50
3/22/2018	3.06	1.50-1.75
3/23/2018	3.06	1.50-1.75
3/26/2018	3.08	1.50-1.75
3/27/2018	3.03	1.50-1.75
3/28/2018	3.01	1.50-1.75
3/29/2018	2.97	1.50-1.75

2018Q1 Mean 3.03

WHERE CAN INVESTORS SEEK PREDICTABLE INCOME?



THE FED

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Fed could cut its balance sheet in half, Bernanke says



- The Fed is scheduled to conclude its two-day meeting this Wednesday, but is not expected to raise interest rates until at least June.
- "I think they're aiming for something in the vicinity of \$2.3 to \$2.8 trillion, something like that," former Fed Chair Ben Bernanke said Monday on CNBC's "Squawk Box."
- March meeting minutes showed the Fed intends to cut the size of the balance sheet this year.

Evelyn Cheng | @chengevelyn

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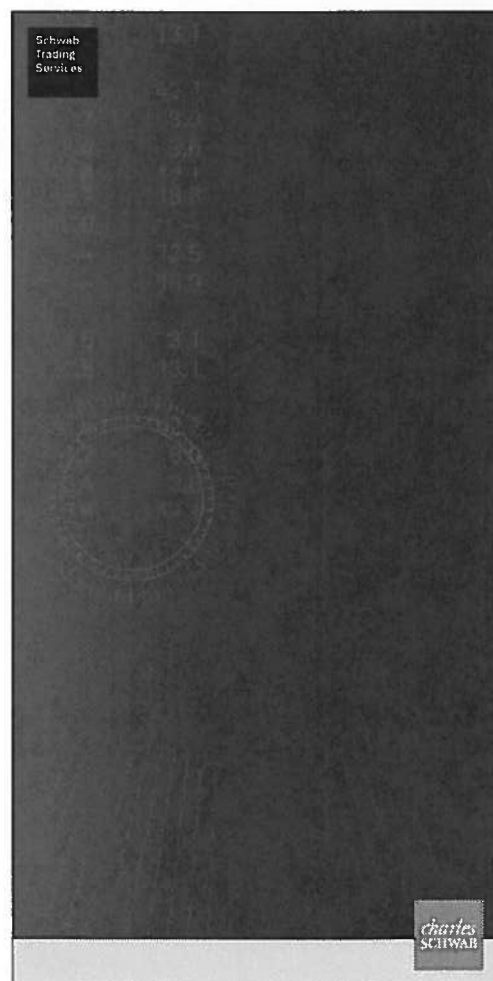


Former Federal Reserve Chairman Ben Bernanke says the central bank could reduce its \$4.5 trillion balance sheet by as much as half.

"I think they're aiming for something in the vicinity of \$2.3 to \$2.8 trillion, something like that," he said Monday on CNBC's "Squawk Box."

Bernanke did not expect the Fed would return its balance sheet to precrisis levels of less than \$1 trillion.

During the financial crisis, the monetary-policy setting Federal Open Market Committee bought a massive amount of assets and cut short-term interest rates to near zero in an effort to stimulate the economy.



ROE and ROR Analysis for Oklahoma Gas and Electric
Summary of ROE Analyses and Recommended ROE, Merrill Updated

Cause No. PUD 201700496
Exhibit MFG-19

Company Name	Docket #	Type	Date	Awarded ROEs Average		OG&E Requested
Wisconsin Public Service Corp.	D-4220-UR-121 (Elec)	Vertically Integrated	12/3/2015	10.00%	9.76%	9.9%
DTE Electric Co.	C-U-17767	Vertically Integrated	12/11/2015	10.30%	9.76%	9.9%
Portland General Electric Co.	D-UE-294	Vertically Integrated	12/15/2015	9.60%	9.76%	9.9%
Southwestern Public Service Co	D-43695	Vertically Integrated	12/17/2015	9.70%	9.76%	9.9%
Avista Corp.	C-AVU-E-15-05	Vertically Integrated	12/18/2015	9.50%	9.76%	9.9%
PacifiCorp	D-20000-469-ER-15	Vertically Integrated	12/30/2015	9.50%	9.76%	9.9%
Avista Corp.	D-UE-150204	Vertically Integrated	1/6/2016	9.50%	9.76%	9.9%
Entergy Arkansas Inc.	D-15-015-U	Vertically Integrated	2/23/2016	9.75%	9.76%	9.9%
Indianapolis Power & Light Co.	Ca-44576	Vertically Integrated	3/16/2016	9.85%	9.76%	9.9%
El Paso Electric Co.	C-15-00127-UT	Vertically Integrated	6/8/2016	9.48%	9.76%	9.9%
Northern IN Public Svc Co.	Ca-44688	Vertically Integrated	7/18/2016	9.98%	9.76%	9.9%
Kingsport Power Company	D-16-00001	Vertically Integrated	8/9/2016	9.85%	9.76%	9.9%
UNS Electric Inc.	D-E-04204A-15-0142	Vertically Integrated	8/18/2016	9.50%	9.76%	9.9%
PacifiCorp	D-UE-152253	Vertically Integrated	9/1/2016	9.50%	9.76%	9.9%
Upper Peninsula Power Co.	C-U-17895	Vertically Integrated	9/8/2016	10.00%	9.76%	9.9%
Public Service Co. of NM	C-15-00261-UT	Vertically Integrated	9/28/2016	9.58%	9.76%	9.9%
Madison Gas and Electric Co.	D-3270-UR-121 (Elec)	Vertically Integrated	11/9/2016	9.80%	9.76%	9.9%
Public Service Co. of OK	Ca-PUD201500208	Vertically Integrated	11/10/2016	9.50%	9.76%	9.9%
Wisconsin Power and Light Co	D-6680-UR-120 (Elec)	Vertically Integrated	11/18/2016	10.00%	9.76%	9.9%
Florida Power & Light Co.	D-160021-EI	Vertically Integrated	11/29/2016	10.55%	9.76%	9.9%
Liberty Utilities CalPeco Ele	A-15-05-008	Vertically Integrated	12/1/2016	10.00%	9.76%	9.9%
Duke Energy Progress LLC	D-2016-227-E	Vertically Integrated	12/7/2016	10.10%	9.76%	9.9%
Black Hills Colorado Electric	D-16AL-0326E	Vertically Integrated	12/19/2016	9.37%	9.76%	9.9%
Virginia Electric & Power Co.	D-E-22, Sub 532	Vertically Integrated	12/22/2016	9.90%	9.76%	9.9%
Sierra Pacific Power Co.	D-16-06006	Vertically Integrated	12/22/2016	9.60%	9.76%	9.9%
Avista Corp.	C-AVU-E-16-03	Vertically Integrated	12/28/2016	9.50%	9.76%	9.9%
MDU Resources Group Inc.	D-20004-117-ER-16	Vertically Integrated	1/18/2017	9.45%	9.76%	9.9%
DTE Electric Co.	C-U-18014	Vertically Integrated	1/31/2017	10.10%	9.76%	9.9%
Tucson Electric Power Co.	D-E-01933A-15-0322	Vertically Integrated	2/24/2017	9.75%	9.76%	9.9%
Consumers Energy Co.	C-U-17990	Vertically Integrated	2/28/2017	10.10%	9.76%	9.9%
Otter Tail Power Co.	D-E-017/GR-15-1033	Vertically Integrated	3/2/2017	9.41%	9.76%	9.9%
Oklahoma Gas and Electric Co.	Ca-PUD201500273	Vertically Integrated	3/20/2017	9.50%	9.76%	9.9%
Gulf Power Co.	D-160186-EI	Vertically Integrated	4/4/2017	10.25%	9.76%	9.9%
Kansas City Power & Light	C-ER-2016-0285	Vertically Integrated	5/3/2017	9.50%	9.76%	9.9%
Northern States Power Co. - MN	D-E-002/GR-15-826	Vertically Integrated	5/11/2017	9.20%	9.76%	9.9%
Oklahoma Gas and Electric Co.	D-16-052-U	Vertically Integrated	5/18/2017	9.50%	9.76%	9.9%
MDU Resources Group Inc.	C-PU-16-666	Vertically Integrated	6/16/2017	9.65%	9.76%	9.9%
Kentucky Utilities Co.	C-2016-00370	Vertically Integrated	6/22/2017	9.70%	9.76%	9.9%
Louisville Gas & Electric Co.	C-2016-00371 (elec.)	Vertically Integrated	6/22/2017	9.70%	9.76%	9.9%
Arizona Public Service Co.	D-E-01345A-16-0036	Vertically Integrated	8/15/2017	10.00%	9.76%	9.9%
Pacific Gas & Electric Co	Advise No. 3887-G/5148-E	Vertically Integrated	10/26/2017	10.25%	9.76%	9.9%
San Diego Gas & Electric Co.	Advice No. 3120-E	Vertically Integrated	10/26/2017	10.20%	9.76%	9.9%
Southern California Edison Co.	Advice No. 3665-E	Vertically Integrated	10/26/2017	10.30%	9.76%	9.9%
Tampa Electric Co.	D-20170210	Vertically Integrated	11/6/2017	10.25%	9.76%	9.9%
Northern States Power Co - WI*	D-4220-UR-123 (Elec)	Vertically Integrated	12/7/2017	9.80%	9.76%	9.9%
Southwestern Electric Power Co*	D-46449	Vertically Integrated	12/14/2017	9.60%	9.76%	9.9%
Nevada Power Co.*	D-17-06003	Vertically Integrated	12/29/2017	9.40%	9.76%	9.9%
Public Service Co. of OK*	Ca-PUD201700151	Vertically Integrated	1/31/2018	9.30%	9.76%	9.9%
ALLETE (Minnesota Power)*	D-E-015/GR-16-664	Vertically Integrated	3/12/2018	9.25%	9.76%	9.9%
Consumers Energy Co.*	C-U-18322	Vertically Integrated	3/29/2018	10.00%	9.76%	9.9%

*-Fully Litigated.

Average	9.76%
Median	9.70%

