

BEFORE THE NORTH DAKOTA PUBLIC SERVICE COMMISSION

IN THE MATTER OF THE APPLICATION OF
MONTANA-DAKOTA UTILITIES CO., A
DIVISION OF MDU RESOURCES GROUP,
INC. FOR AUTHORITY TO ESTABLISH
INCREASED RATES FOR NATURAL GAS
SERVICE

DOCKET NO. PU-17-295

DIRECT TESTIMONY OF

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ON BEHALF OF

NORTH DAKOTA PUBLIC SERVICE COMMISSION STAFF

DECEMBER 18, 2017

TABLE OF CONTENTS

	<u>PAGE</u>
I. Introduction.....	1
II. The Cost of Equity in the Regulatory Environment.....	3
1. The Role of Economic Theory	3
2. Standards for Finding a Fair Rate of Return.....	6
III. Selecting the Comparison Group.....	12
IV. DCF Overview.....	18
V. DCF Analysis for the Comparison Group	20
VI. Flotation Cost.....	22
VII. Reasonableness Check and Recommended ROE.....	27
1. CAPM Analysis.....	27
2. Authorized ROEs Comparison	33
3. Recommended ROE	35
VIII. Appropriate Capital Structure for Ratemaking.....	36
IX. Recommended ROE and Overall Rate of Return.....	36
X. Review of the Company’s ROE Analysis	37
1. Membership of the Proxy Groups Used in the Analysis	38
2. Dr. Gaske’s DCF Approach.....	39
3. Dr. Gaske’s Risk Premium Approach	42
4. Dr. Gaske’s CAPM Analysis.....	42
5. Montana-Dakota’s Size	44
6. Dr. Gaske’s Recommended ROE	48
XI. Summary.....	48

EXHIBITS:

- MFG-1 Qualifications and Prior Testimony
- MFG-2 Value Line Natural Gas Utilities and Screens
- MFG-3 Natural Gas Regulated Percentage Screen
- MFG-4 Standard & Poor's (S&P) Understanding Credit Ratings
- MFG-5 Comparison Group Common Equity Share Prices
- MFG-6 Comparison Group Dividends
- MFG-7 Flotation Costs
- MFG-8, Schedule 1 Constant-Growth Discounted Cash Flow (DCF) Analysis
- MFG-8, Schedule 2 Congressional Budget Office Long-Term GDP Growth Rate
- MFG-8, Schedule 3 Multi-Stage DCF Analysis
- MFG-8, Schedule 4 Constant-Growth DCF with Gaske Flotation Cost Adjustment Analysis
- MFG-9 Data Request 8.1 Nygard Response
- MFG-10 Gas Natural, Inc. Flotation Costs
- MFG-11 Gas Natural, Inc. Financial Data
- MFG-12 MDU Resources Financial Data
- MFG-13 Flotation Cost Equation
- MFG-14, Schedule 1 Daily Treasury Yield Curve
- MFG-14, Schedule 2 Value Line Betas
- MFG-14, Schedule 3 Value Line Summary & Index, December 15, 2017
- MFG-14, Schedule 4 CAPM/ECAPM Analyses
- MFG-14, Schedule 5 *New Regulatory Finance*, ECAPM excerpt
- MFG-15 Regulatory Research Associates Authorized ROEs
- MFG-16 Rate of Return (ROR) Analysis
- MFG-17 *Blue Chip* Forecasted Interest Rates versus Actual Interest Rates
- MFG-18 30-Year Treasury Rates, March 1, 2017-September 15, 2017
- MFG-19 Data Request 3.15 Kivisto Response
- MFG-20 Data Request 3.16 Nygard Response

1 **I. INTRODUCTION**

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

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

6 **Q. PLEASE DESCRIBE PCMG.**

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

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

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

17 **Q. FOR WHOM ARE YOU APPEARING IN THIS PROCEEDING?**

18 A. I am appearing on behalf of the North Dakota Public Service Commission Advocacy Staff.

19 **Q. WHAT ARE YOUR RESPONSIBILITIES IN THIS COMMISSION**
20 **PROCEEDING?**

21 A. My responsibility is to determine a fair rate of return on common equity capital and a fair
22 overall rate of return for the natural-gas distribution company Montana-Dakota Utilities

1 (“Montana-Dakota” or the “Company”). Montana-Dakota is a wholly-owned division of
2 MDU Resources Group, Inc. (“MDU Resources”).

3 **Q. ARE THERE OTHER NATURAL GAS UTILITIES THAT ARE PART OF MDU**
4 **RESOURCES?**

5 A. Yes. Other natural gas distribution companies that are part of MDU Resources are Great
6 Plains Natural Gas Co. (“Great Plains”), Cascade Natural Gas Corporation (“Cascade”),
7 and Intermountain Gas Company (“Intermountain”). Great Plains is also a division of
8 MDU Resources, while Cascade and Intermountain are subsidiaries.¹

9 **Q. ARE MDU RESOURCES’ NATURAL GAS DIVISIONS AND SUBSIDIARIES**
10 **CONNECTED?**

11 A. Yes. Nicole A. Kivisto is President and Chief Executive Officer of all four companies.²

12 **Q. HOW DO YOU DEVELOP A RECOMMENDED RATE OF RETURN FOR THE**
13 **COMPANY?**

14 A. To arrive at a recommended overall rate of return (ROR), I analyze the Company’s requested
15 capital structure and costs for each component of that structure.

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

17 A. My testimony is organized as follows:

- 18 • First, I discuss economic considerations and legal precedents underlying the cost of
19 equity in regulatory proceedings.
- 20 • Second, I explain how I selected the members of the Comparison Group of
21 companies used in my analysis.
- 22 • Third, I provide an overview of the Discounted Cash Flow (DCF) analysis.

¹ Nicole A. Kivisto, Direct Testimony at 1.

² Kivisto, Direct at 1.

- 1 • Fourth, I perform a DCF analysis for the Comparison Group, check it for
- 2 reasonableness, and recommend a return on equity (ROE) for the Company.
- 3 • Fifth, I recommend a capital structure and ROR for the Company.
- 4 • Sixth, I review the Company's rate of return analysis.
- 5 • Seventh, I summarize my testimony and recommendations

6 **Q. PLEASE STATE YOUR CONCLUSIONS REGARDING THE COMPANY'S ROE**
7 **AND ROR.**

8 A. I recommend an ROE of 8.91 percent for Montana-Dakota. When this number is included
9 in the calculation of the weighted-average ROR for the Company, adopting the Company's
10 requested capital structure and costs of debt,³ the result is a cost of capital of 6.99 percent.

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

12 **1. The Role of Economic Theory**

13 **Q. WHAT IS THE BASIS IN ECONOMIC THEORY FOR REGULATING CERTAIN**
14 **INDUSTRIES?**

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

³ Montana-Dakota Utilities Co., Statement D, page 1.

1 **Q. DOES THE ECONOMICALLY EFFICIENT OUTCOME OCCUR IN ALL**
2 **INDUSTRIES?**

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

8 **Q. WHAT CONDITION FOR COMPETITION IS MISSING IN THE ELECTRIC**
9 **DISTRIBUTION INDUSTRY?**

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

15 **Q. ARE THERE LEGAL OBSTACLES TO COMPETITION IN PUBLIC UTILITY**
16 **MARKETS?**

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

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

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

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

2 A. Yes. With their high fixed costs, public utilities have high initial average costs, but as their
3 sales increase, the average cost drops. This fact alone does not make public utilities
4 declining-cost industries. In most industries, average costs fall as sales increase. However,
5 in most industries, average costs start to rise at sales levels that are much less than the total
6 demand for the product produced in any given industry; consequently, a few to many firms
7 can share the market. What sets public utilities apart is that their average costs continue to
8 decline over very high volumes of sales, up to and beyond total, or effective, market
9 demand. This condition creates market failure (when the market produces an outcome that
10 is inefficient). As a natural gas distribution firm increases its sales and market share, its
11 average costs decline, and continue to do so. Thus, the firm with the largest market share
12 has an increasing advantage over competitors. In effect, there is not enough room in the
13 market for another distributor. The logical result is a market with one distributor—often
14 referred to as a natural monopoly—not the many firms envisioned in the theory of
15 competition.

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

18 A. Since sufficient competition does not exist in the markets for public utilities to ensure low
19 prices and adequate service, society has typically turned to regulation to achieve these
20 goals. Firms are granted exclusive franchises to serve areas in return for accepting
21 government regulation of their prices. The government regulators generally are charged
22 with pursuing an outcome that approximates the efficient outcome of the competitive
23 model. Regulation is viewed as a way to decrease prices and increase services provided by

1 a natural monopoly. A challenge for regulators is to set policies that ensure that the
2 regulated firm provides an appropriate supply of services at reasonable rates. A reasonable
3 rate enables a public utility not only to recover its operating expenses, depreciation, and
4 taxes, but also to compete for funds in capital markets.

5 **2. Standards for Finding a Fair Rate of Return**

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

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

11 [T]he return to the equity owner should be commensurate with the
12 returns on investments in other enterprises having corresponding
13 risks. That return, moreover, should be sufficient to assure
14 confidence in the financial integrity of the enterprise, so as to
15 maintain its credit and to attract capital.⁶

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

⁴ *Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923).

⁵ *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944).

⁶ *Hope Natural Gas*, 320 U.S. at 603.

1 **Q. 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 are comparable with
5 each other. Investors establish the price of each traded stock in capital markets based on
6 prospective earnings and perceived risk. The prices for common equity for companies with
7 high earnings are bid up, while the prices for companies with low earnings are bid down.
8 If earnings were the only concern, the ratio of earnings to share prices, the return for
9 investors, would become equal for all companies. However, investors recognize relative
10 risk as they buy and sell common equity shares. For companies with high risk, share prices
11 will be lower; for companies with low risk, share prices will be higher. Thus, the
12 comparable earnings test becomes a nullity: All returns, because they are adjusted for risk,
13 are comparable with all other returns.

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

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

1 investment to identify the level of earnings that regulation will allow the utility's common
2 shareholders to recover.

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

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

11 **Q. WHAT IS RISK?**

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

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

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

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

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

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

13 A. I used a market-oriented approach to determine the common equity cost for the Company.
14 I analyzed the equity return that investors currently expect to receive from investing in
15 companies with risks similar to risk of the Company. Many factors influence these investor
16 expectations, among them: past performance of the companies, estimates of how the
17 companies will perform in the future, possible technological change, tax rates, and
18 predicted general economic conditions. As investors decide where to place their funds
19 among the investment options available to them, they weigh the information they have.
20 Then they decide how much to pay to acquire common equity shares, or to turn to the other
21 side of the question, what price will lead them to sell the shares. Either way, the factors are
22 reflected in current prices in capital markets. Thus, my analysis is forward-looking because
23 it relies on investors' current assessment of what is likely to happen with their investments.

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

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

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

11 A. No one knows with certainty what specific rate of return the Company must offer to
12 investors that is just sufficient to make the Company an attractive opportunity. However,
13 various methods have been derived for reliably estimating what investors currently think
14 that rate is. I have used the Discounted Cash Flow (DCF) method, which is widely used in
15 utility general rate cases, and has been presented in past rate cases before the North Dakota
16 Public Service Commission (“Commission”) in the past. I use other methods and recently
17 authorized returns for other distribution companies as checks on the reasonableness of the
18 DCF outcome.

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

20 A. The DCF method uses the current dividend yield and the expected growth rate of this yield
21 to determine a required rate of return on an investment opportunity. The required rate of
22 return from a DCF analysis is derived from a formula for determining the net present value,
23 or price, of a share of stock. There are several variations of DCF, but the constant-growth

1 form I have selected assumes that dividends (D) are received at the end of each year, the
2 annual growth rate of dividends (g) is constant forever, and the discount rate for dividends
3 (k) is constant forever. The equation form of this constant-growth DCF model is the
4 following:

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

7 Where:

8 k is the discount rate, which also is the fair rate of return for equity;

9 D₁ is the annual dividend one year from the present;

10 P₀ is the current price of a stock share; and

11 g is the expected growth rate of the dividend.

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

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

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

19 A. No. As noted, Montana-Dakota is an operating division of MDU Resources. The Company
20 is not publicly traded and, therefore, no common equity share price is available for
21 performing a direct DCF analysis on the Company.

1 **Q. DOES YOUR EQUITY RATE OF RETURN ANALYSIS USE INFORMATION FOR**
2 **MDU RESOURCES?**

3 A. No. MDU Resources does trade publicly and has a positive record of making dividend
4 payments. However, I exclude MDU Resources from my DCF analysis. It is not primarily
5 a regulated natural gas utility. Therefore, its risk profile is not similar to Montana-
6 Dakota's.

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

9 A. I perform a DCF analysis on a group of natural gas distribution utilities comparable to
10 Montana-Dakota that are publicly traded and have similar investment risk, as discussed
11 below. The estimated rates of return for members of this group form the basis for my
12 estimate of a fair rate of return for the Company.

13 **III. SELECTING THE COMPARISON GROUP**

14 **Q. PLEASE DISCUSS YOUR PROCEDURE FOR SELECTING THE COMPARISON**
15 **GROUP.**

16 A. I set out to find a group of companies that are, from the perspective of investors, similar to
17 Montana-Dakota. Thus, I wanted firms that are natural gas distribution companies that
18 represent approximately the same investment risk as does the Company.

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

21 A. I looked at Value Line, a widely used investor service, for companies that Value Line
22 classifies as members of the Natural Gas Utility Industry. The December 1, 2017 edition
23 of the *Value Line Investment Survey* includes eleven companies in this category. These

1 companies are: Atmos Energy Corp., Chesapeake Utilities, New Jersey Resources Corp.,
2 NiSource Inc., Northwest Natural Gas Co., One Gas, Inc., RGC Resources, Inc., South
3 Jersey Industries, Inc., Southwest Gas Holdings, Inc. Spire Inc., and WGL Holdings, Inc.

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

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

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

10 A. I applied the following screens⁷ to the initial set of Natural Gas Utility companies:

- 11 1. shares publicly traded on a stock exchange;
- 12 2. U.S. firm based in the continental 48 states;
- 13 3. a stable record of paying dividends;
- 14 4. not be expected to sell, merge into or be acquired by another company, or
15 be engaged in an unusual regulatory proceeding;
- 16 5. have an investment-grade S&P credit rating;
- 17 6. have 65 percent or more of the three-year average of net income, net
18 operating income, or operating revenue be derived from regulated natural-
19 gas distribution operations; and
- 20 7. have positive growth-rate projections from expert analysts.

⁷ Exhibit MFG-2, Exhibit MFG-3, Exhibit MFG-7

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

3 A. The primary analytical tool that I use for finding a company's ROE, the DCF model,
4 requires information about common equity share prices, dividends, and growth-rate
5 projections. The requirement that companies be publicly traded ensures that their common
6 equity share prices are available. The eleven Value Line Natural Gas Utility companies are
7 publicly traded.

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

10 A. I sought companies that face a business environment similar to that in which Montana-
11 Dakota operates. The Company's operating utility in this case is in North Dakota and subject
12 to state regulation, statutes, and rules that are similar to those found in the rest of the United
13 States. The states of Alaska and Hawaii, although having regulation systems similar to those
14 of the other states, have business environments—due to their geography—that are
15 substantially different from the business environment in the rest of the country. Therefore,
16 I have limited candidates for the Comparison Group to companies based in the 48
17 continental U.S. states.

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

20 A. None of Value Line companies is located outside the continental United States.

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

3 A. The DCF model requires dividends as an input. If a company is not paying dividends or has
4 a record of cutting dividends, then its DCF analysis is not reliable. All eleven Value Line
5 companies have paid dividends regularly.⁸

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

8 A. The share prices of companies involved in sales, mergers or acquisitions can be volatile.
9 Extreme increases in the share prices of companies that are part of sales, mergers, or
10 acquisitions drive down the ROE results in DCF analysis, while extreme decreases in the
11 share prices drive up the ROE results. Neither outcome yields meaningful DCF results.
12 Therefore, it is appropriate to exclude such companies from the analysis.

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

15 A. Yes. Washington Gas Light Holdings, Inc. is being acquired by AltaGas Ltd.⁹ Therefore,
16 I have dropped the company from further consideration.

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

18 A. S&P's experts incorporate financial risk and business risk into a firm's credit rating. Within
19 these risk categories, S&P assesses such factors for public utilities as competitive advantage,
20 operating efficiency, and scale, scope, and diversity. This last set of factors includes the
21 effects of a utility's markets, service territories, and customer diversity on the company's cash-
22 flow stability, and in turn on its risk level. After considering all the factors, S&P assigns a credit

⁸ Exhibit MFG-2.

⁹ Exhibit MFG-2.

1 rating to a company. If companies have identical or similar credit ratings as determined by
2 expert analysts, then their relative risks are similar. As S&P states:

3 Creditworthiness is a multi-faceted phenomenon. Although there is
4 no “formula” for combining the various facets, our credit ratings
5 attempt to condense their combined effects into rating symbols
6 along a simple, one-dimensional scale. Indeed, as discussed below,
7 the relative importance of the various factors may change in
8 different situations.¹⁰

9 **Q. WHAT S&P CREDIT RATING DO YOU USE AS THE BASIS OF YOUR SCREEN**
10 **IN THE SELECTION OF THE COMPARISON GROUP FOR MONTANA-**
11 **DAKOTA?**

12 A. I require that the companies have an investment-grade credit rating from S&P, which is
13 BBB- or better. Many large institutional investors require that a company have an S&P
14 investment-grade credit rating to be considered for inclusion in their portfolios. Therefore,
15 companies with non-investment grade ratings are excluded by a large share of buyers and
16 are not comparable.

17 **Q. DOES MONTANA-DAKOTA HAVE AN INVESTMENT-GRADE CREDIT**
18 **RATING?**

19 A. Montana-Dakota does not have an independent S&P credit rating, but the credit rating for
20 MDU Resources, its parent company, is BBB+, an investment-grade rating.¹¹

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

22 A. Chesapeake Utilities and RGC Resources, Inc. do not have S&P credit ratings. Therefore,
23 I eliminated them from inclusion in the Comparison Group.¹²

¹⁰ Exhibit MFG-4.

¹¹ MFG-Workpaper 4

¹² Exhibit MFG-2.

1 **Q. YOU ALSO EMPLOY AS A SCREEN THAT MORE THAN 65 PERCENT OF A**
2 **COMPANY'S THREE-YEAR AVERAGE OF OPERATING INCOME, BE**
3 **DERIVED FROM REGULATED NATURAL GAS OPERATIONS. PLEASE**
4 **EXPLAIN THE PURPOSE OF THIS CRITERION.**

5 A. This criterion identifies whether the companies are engaged primarily in regulated natural
6 gas distribution operations. Setting 65 percent of operating income as the standard for
7 inclusion in the Comparison Group ensures that the firms are regulated natural gas
8 companies and, therefore, operating in the same risk environment as Montana-Dakota. By
9 using a three-year average of the regulated percentage of operating income I avoid the
10 chance of one year of extreme weather, either hot or cold, or some other one-time event,
11 causing a company to either be inappropriately excluded or included.

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

13 A. All eight of the remaining companies under consideration for the Comparison Group meet
14 the 65 percent regulated natural gas distribution operating revenues screen. The three-year
15 averages of operating income derived from regulated natural gas operations range from
16 68.1 percent for New Jersey Resources to 100 percent for One Gas, Inc.¹³

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

18 A. The Comparison Group is composed of eight Natural Gas Utility firms. They are: Atmos
19 Energy Corp., New Jersey Resources Corp., NiSource Inc., Northwest Natural Gas Co.,
20 One Gas, Inc., South Jersey Industries, Inc., Southwest Gas Holdings, Inc., and Spire Inc.

21 ¹⁴ As will be seen in the next section, all of these companies also have earnings per share

¹³ Exhibit MFG-3.

¹⁴ Exhibit MFG-3.

1 growth-rate estimates from Zacks, Yahoo! Finance, and Value Line, the final screen for
2 the group.

3 **IV. DCF OVERVIEW**

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

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

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

9 A. Because a DCF analysis is forward-looking, I want to estimate the expected growth rate of
10 dividends. Historical growth rates would be good indicators of the expected growth rate if
11 both of the following are true:

- 12 • the dividend payout ratio and the realized rate of return on equity capital
13 were constant in the past and could be assumed to remain constant in the
14 future; and
- 15 • any growth in book equity was attributable solely to retained earnings.

16 If, in practice, these conditions held, then earnings per share (EPS), dividends per share
17 (DPS), and book value per share (BPS) would all grow at the same rate, and the past growth
18 rates for these factors would be the rate at which they would grow in the future.

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

20 A. No. The conditions necessary for historical growth rates to be good indicators of future
21 growth rates are rarely satisfied. Most utilities' returns on equity and payout ratios have not
22 remained constant over time. Further, growth in book value has occurred not only due to
23 retained earnings, but also due to the issuance of new shares of common stock.
24 Consequently, past growth rates of earnings, dividends, and book equity are frequently
25 unequal. Moreover, an industry may face a changed business environment, thereby making

1 the past a poor basis for projecting the future. Historical growth rates can differ significantly
2 from forward-looking projected growth rates due to such factors as inflation rates, tax rates,
3 the role of an industry in the economy, and the regulatory environment. In view of these
4 limitations of using historical growth rates, I base my estimated growth rates on projected
5 growth rates as publicly provided by “Zacks Investment Research,” a respected investor
6 services company, Thomson Financial Network estimates provided on Yahoo! Finance, and
7 “The Value Line Investment Survey.”

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

9 A. To estimate the required rate of return on equity capital today, I estimate the expected
10 dividend yield, D_1/P_0 where P_0 is the price of a share of common equity today and D_1 is the
11 dividend in the next period. The use of this dividend yield assumes that dividends are distributed
12 at the end of each period (year). This version is known as the constant-growth DCF model.
13 Since the current equity share price incorporates all market information considered relevant
14 by investors, generally speaking, non-recent historical prices should be avoided in
15 calculating the dividend yield. However, since share prices are volatile in the short run, it
16 is desirable to use a period long enough to avoid short-term aberrations in the capital market.

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

19 A. I use the trading period of November 6, 2017-December 1, 2017 to find average common
20 equity share prices. This four-week period is long enough to dampen any short-term
21 aberrations in the capital market. It is also close to the December 18, 2017, date of this

1 Testimony, thus making the results timely. I used closing prices for the Comparison Group
2 member companies obtained at Yahoo! Finance.¹⁵

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

4 **Q. PLEASE DISCUSS THE REQUIRED RATE OF RETURN FOR THE**
5 **COMPARISON GROUP.**

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

8 **Q. PLEASE DISCUSS THE EXPECTED GROWTH RATE FOR THE COMPARISON**
9 **GROUP.**

10 A. As noted above, it is appropriate in this proceeding to use only the forecasted growth rates
11 to estimate the expected growth rate to be used in the DCF analysis. Zacks and Yahoo!
12 Finance provide five-year growth-rate projections for EPS and Value Line provides five-
13 year growth rate projections for EPS, DPS, and BPS. To maintain consistency across the
14 sources, I used only the EPS estimates from Value Line.

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

16 A. I used the Zacks EPS five-year growth projections available November 26-27, 2017 for the
17 individual firms in the Comparison Group.¹⁶

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

19 A. I used the Yahoo! Finance EPS five-year growth projections available November 28, 2017
20 for the individual firms in the Comparison Group.¹⁷

¹⁵ Exhibit MFG-5, Pages 1–2.

¹⁶ Exhibit MFG-8, Schedule 1.

¹⁷ Exhibit MFG-8, Schedule 1.

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

2 A. I used the Value Line EPS five-year growth projections for the individual firms in the
3 Comparison Group as reported by Value Line in its December 1, 2017 issue.¹⁸

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

6 A. I weighted the Zacks, Yahoo! Finance, and Value Line EPS values equally to find my best
7 estimate of the expected growth rate for each company in the Comparison Group.

8 **Q. PLEASE DISCUSS YOUR CALCULATION OF THE EXPECTED DIVIDEND**
9 **YIELD FOR THE COMPARISON GROUP.**

10 A. The appropriate dividend to use in the constant-growth DCF model is the annual dividend
11 rate at the beginning of the next period (year). I began my estimation of the expected
12 dividend yield by finding the quarterly dividends that each Comparison Group member
13 company last paid as reported by Value Line in its December 1, 2017 issue. I multiplied
14 those amounts by four to calculate the annualized dividend one year from now.

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

17 A. Yes. I compared these Value Line annual dividends as calculated for the member
18 companies with the dividends reported by Zacks on November 26, 2017. The dividends for
19 Value Line and Zacks were identical except for Atmos Energy and Spire, Inc. The Value
20 Line annual dividend was higher than the Zacks annual dividend for both these companies.
21 Therefore, I used the higher Value Line values in my analysis.¹⁹

¹⁸ Exhibit MFG-8, Schedule 1.

¹⁹ Exhibit MFG-6.

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 dividends of all the
4 companies in the Comparison Group are expected to increase, but the increases can come
5 after one quarter, two quarters, and so forth. The method I use assumes that the dividend
6 increases are evenly distributed over time. Hence, the average dividend will increase by
7 one-half a year's projected growth rate. The annualized dividend yield for a firm is,
8 therefore, transformed into the expected dividend yield by multiplying it by one-half the
9 growth-rate estimate derived for the firm and adding the product to the annualized dividend
10 yield. The equation for carrying out this transformation follows:

11

$$12 \quad D_1 = \frac{D_0}{P} (1 + 0.5)$$

13 Applying this equation to the dividend yield for each company yields the D_1 values that I
14 use in my estimates.²⁰

15 **VII. FLOTATION ADJUSTMENT TO ROE**

16 **Q. PLEASE DISCUSS FLOTATION ADJUSTMENTS.**

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

²⁰ Exhibit MFG-8, Schedule 1.

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

2 A. Yes. My recommended flotation cost adjustment is 3.60 percent.²¹

3 **Q. HOW DID YOU DETERMINE THIS FLOTATION COST ADJUSTMENT?**

4 A. I requested the stock issuance costs for Montana-Dakota's three most recent common
5 equity issuances in a data request. The response to this data request was that the three most
6 recent common-equity issuances for the Company were made as part of its 401(k) Plan and
7 Dividend Reinvestment Program and did not cause the Company to incur any issuance
8 costs.²² I then gathered issuance data from S&P Global Market Intelligence²³ about other
9 natural gas distribution companies. The average flotation cost for the eight common-equity
10 issuances made by companies that are identified by Value Line as Natural Gas Industry
11 firms from 2013-2017 is 3.60 percent.²⁴

12 **Q. WHY DID YOU SELECT THE PERIOD 2013-2017 FOR YOUR FLOTATION-**
13 **COST ANALYSIS?**

14 A. I chose 2013-2017 because I wanted my flotation-cost adjustment to reflect recent issuance
15 costs.

16 **Q. DID OTHER NATURAL GAS COMPANIES ISSUE COMMON EQUITY FROM**
17 **2013-2017?**

18 A. Yes. S&P Global Market Intelligence identified two issuances for Gas Natural, Inc. ("Gas
19 Natural"), which closed on July 11, 2013 and October 31, 2013.²⁵ The flotation-cost
20 percentages for both of those issuances were 5.80 percent.

²¹ Exhibit MFG-7.

²² Exhibit MFG-9.

²³ The unit within S&P Global that is the source of this issuance data has previously been known as SNL Financial.

²⁴ Exhibit MFG-7.

²⁵ Exhibit MFG-10, pages 1-5.

1 **Q. PLEASE DESCRIBE GAS NATURAL.**

2 A. Gas Natural is natural gas company with regulated operations in Maine, Montana, North
3 Carolina, and Ohio.²⁶ It had total assets of \$197.4 million and total revenues of \$99.4
4 million in 2016, of which natural gas operations accounted for \$87.4 million. In contrast,
5 MDU Resources had total natural gas distribution assets of \$2.1 billion and total natural
6 gas distribution operating revenues of \$766.1 million in 2016.²⁷ Thus, Gas Natural has
7 assets that are 9.4 percent of MDU Resources' natural gas distribution assets and natural-
8 gas revenues that are 11.4 percent of MDU Resources' natural gas distribution revenues.

9 **Q. DID YOU INCLUDE GAS NATURAL IN THE CALCULATION OF YOUR**
10 **AVERAGE FLOTATION-COST PERCENTAGE?**

11 A. No. I excluded Gas Natural from the calculation of the flotation-cost percentage for two
12 reasons. First, Value Line does not include the company in its Natural Gas Utilities,
13 meaning it is not recognized as a peer of the companies in the Comparison Group. Second,
14 Gas Natural's two issuances in 2013 were for \$11.3 million and \$17.3 million. The
15 smallest issuance among the eight transactions that I included in my flotation-cost analysis
16 was \$55.3 million, while the largest was \$478.7 million,²⁸ meaning Gas Natural's issues
17 were quite small relative to the issuances included in my analysis. There are fees and costs
18 for equity issuances, such as complying with government regulations, that are fixed, or at
19 least do not grow proportionally with size of the issuance. Consequently, small issuances
20 such as Gas Natural's typically will have higher flotation cost percentages than larger
21 issuances. Summarizing, I have excluded Gas Natural's issuance costs from the flotation-

²⁶ Exhibit MFG-11, pages 1-4.

²⁷ Exhibit MFG-12, pages 1-3

²⁸ Exhibit MFG-7.

1 cost analysis because Gas Natural is not recognized as a match for the Comparison Group
2 companies by Value Line and its issuance costs are systematically higher than the issuance
3 costs for Comparison Group companies.

4 **Q. HOW IS THE FLOTATION-COST ADJUSTMENT INCORPORATED INTO**
5 **YOUR DCF ANALYSIS?**

6 A. The DCF return on equity is modified in the following way to incorporate the adjustment
7 for flotation cost.²⁹

8

9
$$k = \frac{D_1}{P_0} \left(\frac{1}{1-f} \right) + g$$

10 Where:

11 f is the flotation-cost percentage;

12 and all the other elements of the equation retain the meanings they had previously.

13

14 With the flotation cost of 3.60 incorporated, the expected dividend yield becomes the
15 flotation-adjusted dividend yield. The adjustment increases the yield by about 10 basis
16 points.³⁰

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

18 A. The Comparison Group has a final mean ROE of 8.91 percent. The mean growth-rate is
19 6.13 percent and the mean flotation-adjusted, expected dividend yield is 2.78 percent.³¹

²⁹ Exhibit MFG-13, Morin, Roger, *New Regulatory Finance (2006)*, Public Utilities Reports, Inc., Vienna, Virginia, page 328.

³⁰ Exhibit MFG-8, Schedule 1.

³¹ Exhibit MFG-8, Schedule 1.

1 **Q. DID YOU CALCULATE ANOTHER DCF ANALYSIS FOR THE COMPARISON**
2 **GROUP?**

3 A. Yes. I conducted a multistage DCF analysis. A multi-stage analysis assumes that the
4 growth rate for companies in a proxy group will not continue at the current growth rate. In
5 my analysis, I assumed that the long-term growth rate would be equal to the long-term
6 forecast for nominal gross domestic product (GDP) growth of 4.00 percent published by
7 the Congressional Budget Office (CBO).³²

8 **Q. PLEASE EXPLAIN YOUR ANALYSIS.**

9 A. I calculated DCF ROEs for the Comparison Group of eight companies with 4.00 percent
10 substituted for the mean of the growth-rate forecasts from Zacks, Yahoo! Finance, and
11 Value Line. I then blended the two growth rates for each company, weighting the analysts'
12 growth projections two-thirds and the CBO GDP growth-rate forecast one-third.³³ The
13 result is a mean ROE of 8.10 percent.³⁴

14 **Q. HAVE YOU ADJUSTED YOUR ROE TO ACCOMMODATE OTHER FACTORS?**

15 A. No. The DCF model incorporates factors that affect investors' view of the world and does
16 not require ad hoc adjustments. The share price of common equity is the mechanism
17 through which most of these influences are translated. For example, if investors are
18 optimistic about the economy in general or about a specific company, the share price of
19 that company will be higher, all other things being equal. If investors have qualms about
20 the economy or the company, the share price will be lower. Either case affects the ROE of
21 the company, one making it lower and the other higher. Other factors that are incorporated

³² Exhibit MFG-8 Schedule 2.

³³ Morin, *New Regulatory Finance*, page 309.

³⁴ Exhibit MFG-8, Schedule 3.

1 into share prices are interest-rate expectations, market volatility, and leverage of
2 companies. Investors will ask for common equity prices that compensate them for the
3 degree of risk that they believe these factors create.

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

5 A. My constant-growth DCF analysis ROE is 8.91 percent and my multi-stage DCF analysis
6 ROE is 8.10 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 natural gas 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 eight 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. The simplest form of the CAPM is:

3
$$k = r + \beta (k_m - r), \text{ where:}$$

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

5 r is the rate of return on a riskless asset;

6 β is beta, the measure of systematic risk; and

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

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

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

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

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

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

20 A. First, the analyst must select the rate of return for a riskless asset. Short-term assets such as
21 90-day Treasury Bills are considered virtually riskless: the default risk is next to nothing
22 and the inflation risk is negligible. Equity investors, however, typically have a longer
23 planning horizon than the 90-day maturity of these instruments, so the return on these bills

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

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

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

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

17 A. I used the average yield on a 30-year Treasury Bond for November 6-December 1, 2017 as
18 my riskless asset rate. This average yield is 2.79 percent.³⁵ However, the 30-year Treasury
19 Bond is not a free-risk asset. The yield on 30-year Treasury Bonds incorporates a risk-
20 premium associated with interest risk, which is the premium investors must be paid to
21 induce them to forego the opportunity of possibly earning higher interest rates later.

³⁵ Exhibit MFG-14, Schedule 1.

1 Therefore, using 30-year Treasury Bonds in a CAPM analysis results in an upward bias of
2 the ROE.

3 **Q. HOW DID DERIVE YOUR BETA (β)?**

4 A. Beta serves to capture the difference in volatility between individual companies and the
5 market. I used the betas for each of the companies in the Comparison Group provided in
6 December 1, 2017 issues of the Value Line Investment survey. The average beta for the
7 eight companies in the Comparison Group is 0.73.³⁶

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

9 A. I need to calculate a market rate of return. The term within parentheses in the CAPM
10 equation is called the “market risk premium (MRP).” The MRP reflects the additional
11 return over the return of a risk-free asset sufficient to induce investors to take on the
12 additional risk of common equity. A specific number is frequently calculated using
13 historical data. I do not, however, use historical data.

14 **Q. PLEASE EXPLAIN YOUR CALCULATION OF THE MRP.**

15 A. Because rates are set to ensure the utility has an opportunity to earn its authorized rate of
16 return in the immediate future, it is important to ensure MRP reflects current market
17 conditions rather than past conditions. Historical data reflects the conditions present in past
18 market environments that no longer apply, including different demographic and inflation
19 assumptions. To make my CAPM analysis reflect current market conditions, I employed
20 forecast data from Value Line regarding the dividend yield and growth rates for the broad
21 economy (1,700 stocks in the “Value Line Universe,” incorporating more market
22 information than the S&P 500). Value Line forecasts the dividend yield and the 3- to 5-

³⁶ Exhibit MFG-14, Schedule 2.

1 year appreciation potential for these companies in the *Value Line Summary and Index*,
2 which is published weekly.³⁷ The values for these two inputs are 2.0 percent and 30 percent,
3 respectively, in the December 15, 2017 issue.

4 **Q. WHAT METHOD DID YOU USE TO FIND THE MRP?**

5 A. The appreciation potential number is used to find the estimated broad market return per
6 year. It is calculated by finding the annual growth rate over four years (the midpoint of the
7 3- to 5-year period) that produces the forecast appreciation potential. This growth rate is
8 6.78 percent. The forward-looking ROE for the companies is calculated by adding the 2.0
9 percent dividend yield to this annual growth rate, which produces a market rate of return
10 of 8.78 percent.

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

12 A. The MRP is calculated by subtracting the yield on the 30-year Treasury Bond from the
13 market rate of return. The result of this operation is 5.99 percent. This value is multiplied
14 by the average beta for the Comparison Group. That product is added to the risk-free rate
15 to find the CAPM ROE.³⁸

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

17 A. My CAPM analysis yields an ROE value of 7.17 percent.

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

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

³⁷ See Exhibit MFG-14, Schedule 3.

³⁸ See Exhibit MFG-14, Schedule 4.

1 **Q. HOW DOES THE ECAPM DEAL WITH THE UNDER OR OVER-ESTIMATION**
2 **OF 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. This operation has the effect of increasing the ROE produced
6 by decreasing amounts as beta approaches 1.

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

8 A. The ECAPM that I use includes an adjustment factor "x," as shown in the following
9 modified CAPM equation.³⁹

10
$$k = r + x (k_m - r) + (1-x) \beta (k_m - r)$$

11 The x-term multiplied by the market risk premium increases the intercept (the risk-free
12 rate), while the term (1 -x) decreases the slope of the equation.

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

14 A. The value of x is determined empirically. The suggested value for x is 0.25. The analysis I
15 conducted confirms that x = 0.25 returns values that are reasonable. I focused on scenarios
16 where the intercept value of the equation is more in line with current risk-free rates than is
17 the approximately 8 percent intercept presented in Exhibit MFG-14, Schedule 5. This
18 analysis confirmed that a value for x of 0.25 is appropriate. Please note that x itself is not
19 a percentage.⁴⁰

³⁹ See Exhibit MFG-14, Schedule 5.

⁴⁰ Exhibit MFG-14, Schedule 4.

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 7.57 percent.⁴¹

4 **Q. PLEASE SUMMARIZE THE RESULTS OF THE VARIOUS CAPM AND ECAPM**
5 **ANALYSES.**

6 A. The results of the CAPM and ECAPM analyses range from 7.17 percent to 7.57 percent,
7 both less than my DCF result of 8.91 percent.

8 **2. Authorized ROEs Comparison**

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

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

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

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

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

21 A. Recently authorized ROEs reflect the results of rate cases conducted in a variety of
22 environments and at different times. Test years, conditions in capital markets, general

⁴¹ Exhibit MFG-14, Schedule 4.

1 economic indicators such as inflation rates, and so forth for previous rate cases can be
2 different and become outdated when compared with these factors for a current rate case.
3 Therefore, recently authorized ROEs should serve only to establish whether a current ROE
4 result is reasonably close to what has happened, not be a substitute for forward-looking
5 analysis based on current conditions.

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

7 A. I found seven cases for 2017 in which ROEs were authorized in fully litigated rate cases. I
8 found nine authorized ROEs for the same type of cases for 2016. I rejected outcomes of
9 settled cases because settlements can reflect tradeoffs parties make to reach agreement.
10 Thus, an authorized ROE in a settled case may reflect compromise rather than strict
11 application of ratemaking principles.

12 **Q. WHAT WERE THE ROE VALUES YOU FOUND IN YOUR SET?**

13 A. The mean ROE for the 2017 cases was 9.82 percent, with a range from 8.70 to 11.88
14 percent. The mean ROE for the 2016 cases was 9.59 percent, with a range of 9.11 to 10.10
15 percent. The median ROE for both years was 9.50 percent.⁴²

16 **Q. PLEASE DISCUSS THE ROE AWARDS MADE IN 2016 AND 2017.**

17 A. The awarded ROE of 11.88 percent was made in Alaska, serving to illustrate why I exclude
18 awards made in that state and Hawaii from my ROE analysis. This Alaska ROE is 1.78
19 percent higher than any other award in 2016-2017. If this outlier is removed from the 2017
20 set of awards, the average award drops to 9.63 percent. The three lowest awards over the
21 two years are 8.70 percent, 9.11 percent, and 9.25 percent. My DCF analysis ROE of 8.91
22 percent fits with those values.

⁴² Exhibit MFG-15.

1 **3. Recommended ROE**

2 **Q. PLEASE SUMMARIZE THE RESULTS OF YOUR ROE ANALYSES.**

3 A. My constant-growth DCF analysis produced an ROE of 8.91 percent. My other methods,
4 multi-stage DCF, CAPM, and ECAPM analyses, produced ROE outcomes ranging from
5 7.17 percent to 8.10 percent.⁴³

6 **Q. WHAT CONCLUSION ABOUT THE RECOMMENDED ROE FOR MONTANA-
7 DAKOTA DO YOU DRAW FROM YOUR ROE ANALYSES?**

8 A. Of all these models, the constant-growth DCF model relies the least on analyst judgment,
9 which makes it my preferred method. Further, the outcomes of the other models all point
10 toward a lower ROE recommendation. On the other hand, the survey of recent ROE awards
11 shows that my DCF ROE outcome is at the low end of those awards.

12 **Q. WHAT IS YOUR RECOMMENDED RANGE FOR THE MONTANA-DAKOTA
13 ROE?**

14 A. When taken together, the DCF analysis and the RRA set of authorized ROEs support an
15 ROE range of 8.85 percent to 9.00 percent. The results of my multistage DCF and
16 CAPM/ECAPM analyses do not support an ROE recommendation higher than this range.
17 My recommended value would not put Montana-Dakota out of step with authorized awards
18 elsewhere. It is important to remember that among ROE awards, some ROEs will be in the
19 low range. When market-based, forward-looking analysis supports an award at the low end
20 of the range of awards, as my analysis does, it should be given due consideration.

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

22 A. I recommend that the Company be authorized an ROE of 8.91 percent.

⁴³ Exhibit MFG-16.

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

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

4 A. The Company has submitted a proposed capital structure in the Direct Testimony of Ms.
5 Tammy J. Nygard and Statement D, page 1, based on projected values for 2018.

6 **Q. WHAT IS MONTANA-DAKOTA'S PROPOSED CAPITAL STRUCTURE?**

7 A. Montana-Dakota's proposed capital structure is 43.036 percent long-term debt, 5.968
8 percent short-term debt, and 50.996 percent common equity.

9 **Q. DO YOU ACCEPT THE COMPANY'S PROPOSED CAPITAL-STRUCTURE**
10 **RATIOS?**

11 A. Yes. These capital-structure ratios are reasonable for the industry.

12 **IX. RECOMMENDED ROE AND OVERALL RATE OF RETURN**

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

15 A. I reviewed the Company's calculations for cost of long-term debt and cost of short-term debt
16 as part of my analysis of the Company's capital structure as proposed by Ms. Nygard. I
17 concluded that the cost is reasonable. Therefore, I used the Company's proposed costs,
18 except for the cost of equity, where I used my recommended value 8.91 percent in place of
19 the ROE recommended by Montana-Dakota witness Dr. J. Stephen Gaske.⁴⁴

⁴⁴ Exhibit MFG-16.

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

3 A. I multiply the long-term debt and common equity ratios by their appropriate cost rates. The
4 sum of these weighted costs is the overall rate of return on capital.

5 **Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.**

6 A. When I include my recommended ROE of 8.91 percent, I obtain an overall rate of return
7 (ROR) of 6.99 percent for Montana-Dakota. I recommend that the Commission approve
8 this ROR as the representative forward-looking cost of capital for the Company.

9 **X. REVIEW OF THE COMPANY'S ROE ANALYSIS**

10 **Q. WHAT IS DR. GASKE'S RECOMMENDED ROE FOR MONTANA-DAKOTA?**

11 A. Dr. Gaske recommends an ROE of 10.0 percent for Montana-Dakota.

12 **Q. HOW DOES DR. GASKE DETERMINE HIS 10.0 PERCENT ROE?**

13 A. Dr. Gaske performs a Basic DCF analysis, which is similar to the constant-growth DCF
14 analysis that I perform, and a Blended Growth Rate DCF analysis. The Blended Growth
15 Rate Analysis uses the EPS growth-rate projections from Zacks and Yahoo! Finance used
16 in the Basic DCF analysis, weighting the averages of those growth rates twice as much as
17 the sustainable earnings growth rates developed by Dr. Gaske. (I do much the same thing
18 when I include growth rates from my constant-growth DCF analysis in my multistage DCF
19 analysis.) Dr. Gaske then compares these results against the results of several benchmark
20 ROE analyses—risk premium, Market DCF, and forward-looking CAPM. He also
21 introduces relative risk analysis, examining Montana-Dakota's business, regulatory,
22 financial, and market risks. The median results of the two DCF models are 9.22 percent
23 for the Basic version and 9.13 percent for the Blended Growth Rate version. Dr. Gaske

1 then asserts that the benchmark results and the relative risk factors justify increasing the
2 ROE for Montana-Dakota to 10.0 percent.

3 **Q. DO YOU HAVE CRITICISMS OF DR. GASKE'S RECOMMENDED ROE?**

4 A. Yes. I will address differences between our approaches and methods in applying the DCF
5 model. I also will discuss Dr. Gaske's various benchmark approaches, and then close with
6 a critique of his adjustments for relative risk. However, before moving to those tasks, I
7 will discuss the one difference in the proxy groups we use in our various analyses.

8 **1. Membership of the Proxy Groups Used in the Analysis**

9 **Q. PLEASE COMPARE THE MEMBERSHIP OF THE DR. GASKE'S SELECTED**
10 **NATURAL GAS DISTRIBUTION COMPANIES PROXY GROUP WITH THE**
11 **MEMBERSHIP OF YOUR COMPARISON GROUP.**

12 A. Dr. Gaske's proxy group and the Comparison Group are almost identical. Of the eight
13 companies in the Comparison Group, Dr. Gaske's proxy group includes seven of them.
14 The sole difference between the two is that the proxy group does not include ONE Gas,
15 Inc. (ONE Gas).

16 **Q. WHY DID DR. GASKE NOT INCLUDE ONE GAS, INC.?**

17 A. Dr. Gaske stated in a reply to Data Request 9.1.b.⁴⁵ that ONE Gas had only recently been
18 added to Value Line's coverage. He further stated that business segment data was not
19 available for ONE Gas to see if it met his operating income or asset screens.

⁴⁵ Exhibit MFG-xx.

1 **Q. DO YOU HAVE A RESPONSE TO DR. GASKE'S DECISION TO EXCLUDE ONE**
2 **GAS?**

3 A. Yes. I cannot speak to the matter of Value Line's coverage of ONE Gas at the time that
4 Dr. Gaske prepared his testimony. I can say that Value Line covered the company when I
5 initiated my analysis for this Direct Testimony in late November 2017. In addition, ONE
6 Gas does not have segments.⁴⁶ It is a 100 percent regulated natural gas distribution utility.
7 Therefore, it meets the 65 percent of operating revenues coming from regulated natural gas
8 distribution activity that Dr. Gaske and I both use.

9 **Q. WHAT EFFECT DOES INCLUDING ONE GAS IN THE COMPARISON GROUP**
10 **HAVE ON YOUR ROE?**

11 A. The DCF ROE for ONE Gas is higher than the mean ROE of 8.91 percent for the
12 Comparison Group, so its inclusion raises the average.

13 **2. Dr. Gaske's DCF Approach**

14 **Q. PLEASE IDENTIFY DIFFERENCES BETWEEN DR. GASKE'S APPLICATION**
15 **OF THE DCF MODEL AND YOUR APPLICATION.**

16 A. There are three differences in our applications of the DCF model:

17 1. In addition to the Zacks and Yahoo! Finance EPS growth-rate projections used
18 by Dr. Gaske, I also include EPS projections from Value Line in my calculation
19 of the dividend-growth component of the model, weighting the three sources
20 equally;

21 2. Dr. Gaske's uses a different equation in creating the expected dividend yield
22 than I do. His version assumes a higher growth rate for dividends; and

⁴⁶ MFG-Workpaper 3, page 41-62 (ONE Gas, Inc. 2016 10K, page 5).

1 3. Dr. Gaske misapplies the flotation-cost adjustment. In doing so, he inflates his
2 DCF model outcomes.

3
4 **Q. PLEASE DISCUSS THE EFFECT OF INCLUDING THE VALUE LINE EPS**
5 **GROWTH RATES IN YOUR DCF MODELS.**

6 A. I include the Value Line EPS growth rates because the company is a widely known and
7 trusted source. At the time I conducted my analysis, the average Value Line EPS growth
8 rate for the Comparison Group companies was greater than the average EPS growth rates
9 for Zacks and Yahoo! Finance. Therefore, the inclusion caused my DCF ROE outcomes
10 to be greater than they would be otherwise.

11 **Q. PLEASE DISCUSS THE EFFECT OF DR. GASKE'S EQUATION ON THE**
12 **EXPECTED DIVIDEND YIELD.**

13 A. Please recall that the equation I use to transform the annual dividend yield (D_0) into the
14 expected dividend yield (D_1) assumes that dividend increases are evenly distributed over
15 time. Therefore, the average dividend will increase by one-half a year's projected growth
16 rate. The equation is shown again for illustrative purposes.

17
18
$$D_1 = \frac{D_0}{P} (1 + 0.5)$$

19 Dr. Gaske's equation assumes that dividend growth occurs on average halfway through a
20 quarter. His equation follows.

21
22
$$D_1 = \frac{D_0}{P} (1 + 0.625)$$

1 The difference in the effects of the two equations is small, only a few basis points in the
2 current conditions where dividend yields have relatively low values. I prefer the form of
3 the equation that I apply because it reflects the probability of when dividend increases
4 occur.

5 **Q. PLEASE EXPLAIN HOW DR. GASKE'S MISAPPLICATION OF THE**
6 **FLOTATION-COST ADJUSTMENT INFLATES HIS DCF ROE OUTCOMES.**

7 A. The correct way to apply the flotation-cost adjustment is to multiply the expected dividend
8 yield by the term $(1/(1-f))$.⁴⁷ The complete equation that I used in my flotation-cost
9 adjustment follows:

$$11 \quad k = \frac{D_1}{P_0} \left(\frac{1}{1-f} \right) + g$$

12 Dr. Gaske multiplies the flotation-cost percentage by the entire DCF ROE equation,
13 including the growth-rate term. His form of the equation follows:

$$15 \quad k = \left(\frac{D_1}{P_0} + g \right) (1 + f)$$

16 While Dr. Gaske's incorrect adjustment modestly increases the dividend-yield term of the
17 equation, the effect with the much greater magnitude on the ROE is the multiplication of
18 the EPS growth-rate term by the flotation adjustment. By way of illustration, I have applied
19 Dr. Gaske's incorrect equation to my constant-growth DCF analysis. The effect on the
20 ROE is to increase it by 22 basis points, from 8.91 percent to 9.13 percent.⁴⁸ Dr. Gaske's

⁴⁷ Exhibit MFG-13.

⁴⁸ Exhibit MFG-8, Schedule 4.

1 Basic DCF and Blended Growth-Rate ROEs have similar inappropriate increases built into
2 them.

3 **3. Dr. Gaske's Risk Premium Approach**

4 **Q. PLEASE DISCUSS DR. GASKE'S RISK-PREMIUM ANALYSIS.**

5 A. Dr. Gaske's risk-premium analysis depends on historical data and relationships among
6 variables. Therefore, it is not forward-looking. The goal in this docket is to determine an
7 ROE that incorporates investors' views as to the future, not the past. The risk-premium
8 analysis should be rejected.

9 **4. Dr. Gaske's CAPM Analysis**

10 **Q. PLEASE IDENTIFY FLAWS IN DR. GASKE'S CAPM ANALYSIS.**

11 A. There are two flaws in Dr. Gaske's CAPM analysis. First, he uses a *Blue Chip Economic*
12 *Indicators* forecast of 30-year Treasury bond yields as his risk-free rate. The record since
13 2009 shows that the *Blue Chip* forecast for this instrument consistently has been high.
14 Using it as the risk-free rate means Dr. Gaske's CAPM outcome is overstated. Second, Dr.
15 Gaske makes a size adjustment to his CAPM ROE. This sized adjustment is inappropriate
16 and overstates the ROE value.

17 **Q. PLEASE DISCUSS THE RECORD OF THE *BLUE CHIP ECONOMIC***
18 ***INDICATORS* FORECAST AS AN INDICATOR OF LONG-TERM INTEREST**
19 **RATES.**

20 A. *Blue Chip Economic Indicators* consistently has been high with its bond-yield forecasts.
21 The forecasts since 2009 have always been greater than the rates that actually ensued, often

1 by margins of more than 1 percent.⁴⁹ Relying on the *Blue Chip* forecasts as the appropriate
2 input for the risk-free rate would be a mistake that leads to inflating the CAPM outcome.

3 **Q. WHAT IS A BETTER RISK-FREE RATE THAN THE *BLUE CHIP* FORECAST?**

4 A. Current yields on the 30-year Treasury bond are the best indicator of where risk-free rates
5 are headed. That is why I use it as my risk-free rate in my CAPM analysis.

6 **Q. HOW ARE INVESTORS' BELIEFS ABOUT THE FUTURE INCORPORATED
7 INTO CURRENT 30-YEAR TREASURY YIELDS AND THE MRP?**

8 A. Dr. Gaske references expected Federal Reserve (“the Fed”) policy moves such as expected
9 increases in the federal funds target rate and reductions in the Fed’s balance sheet as
10 reasons to expect Treasury bond yields to increase. What interest rates might do are taken
11 into account by investors as they make decisions as to which instruments to buy and sell.
12 What investors think now about the effect that possible future interest-rate increases and
13 other economic factors will have on bond yields influences prices and yields today.
14 Therefore, current yields are the best indicator of where the market believes yields are
15 headed. As for the MRP, returns on common equity shares are affected by the current
16 beliefs of investors about interest-rate directions and any other possible economic changes.
17 Consequently, the current return to the broad market is affected by these present beliefs
18 about the future. Therefore, CAPM ROE results already reflect investor beliefs.

19 **Q. ARE DR. GASKE’S ADJUSTMENTS FOR DIFFERENCES IN FIRM SIZE TO
20 THE CAPM ROE APPROPRIATE?**

21 A. No. Size adjustments are not appropriate. Size is a factor in risk assessment. However,
22 the effect on size of the risk for companies in the Comparison Group (and by extension to

⁴⁹ See Exhibit MFG-17.

1 Dr. Gaske's proxy group) is reflected in the S&P credit ratings of the companies. The
2 credit ratings of the eight companies are not identical, but they do not have to be for the
3 companies to be similar in risk. Further, investors and the experts who make the EPS
4 growth-rate projections are aware of the different sizes of the firms. Thus, their beliefs
5 about the firms as investment vehicles are reflected in common-equity share prices, the
6 movement of which affects the value of beta. Size is already captured in the CAPM
7 analysis.

8 **Q. DO YOU HAVE AN ADDITIONAL COMMENT ABOUT ADJUSTMENTS FOR**
9 **SIZE?**

10 A. Yes. Montana-Dakota and the natural gas distribution utilities in the Comparison Group
11 are regulated monopolies. As monopolies, they have market power in their service
12 territories. Therefore, one of the benefits that size can bestow on non-regulated firms—
13 market power—is already an aspect of the operations of regulated natural gas utilities.
14 Moreover, the studies such as the Ibbotson adjustments that Dr. Gaske relies on, are
15 developed using the performances of non-regulated firms. Their application to regulated
16 utilities is problematic.

17 **5. Montana-Dakota's Size**

18 **Q. HOW DOES DR. GASKE MEASURE MONTANA-DAKOTA'S SIZE?**

19 A. Dr. Gaske states that Montana-Dakota's North Dakota 2018 test year projected operating
20 revenues and operating income are 6.3 percent and 5.1 percent of the year-end levels of
21 these indicators for the median company in his proxy group. Dr. Gaske also compares
22 Montana-Dakota's adjusted North Dakota rate base to the total assets of the proxy group
23 median firm and finds that it is 2.4 percent of that indicator. Dr. Gaske concludes from

1 these comparisons that the typical proxy group company is 16 to 41 times larger than
2 Montana-Dakota.

3 **Q. ARE MONTANA-DAKOTA'S NORTH DAKOTA OPERATIONS APPROPRIATE**
4 **FOR EVALUATING THE COMPANY'S SIZE?**

5 A. No. There is no disputing that the amounts for Montana-Dakota's North Dakota
6 operational indicators are what Dr. Gaske says they are. However, Montana-Dakota's
7 North Dakota operations are not best viewed as a standalone organization, or, if that is the
8 preferred view of those operations, they are the operations of a standalone organization
9 with access to the benefits of a much larger organization. The better indicator of Montana-
10 Dakota's size is the sum of MDU Resources regulated natural gas utilities—Great Plains
11 Natural Gas Co., Cascade Natural Gas Corp., and Intermountain Gas Co., in addition to all
12 of Montana-Dakota's operations, not just those in North Dakota.

13 **Q. PLEASE EXPLAIN WHY MDU RESOURCES' NATURAL GAS DISTRIBUTION**
14 **OPERATIONS ARE BETTER VIEWED AS A WHOLE WHEN EVALUATING**
15 **MONTANA-DAKOTA'S EFFECTIVE SIZE.**

16 A. Montana-Dakota costs are greatly influenced by the fact that it shares many functions with
17 the other units that make up MDU Resources natural gas distribution operations. By
18 sharing these functions, Montana-Dakota gains efficiencies and reduces costs. It also
19 benefits from sharing access to capital markets with the other natural gas distribution units
20 under the MDU Resources umbrella, if not by being backed by MDU Resources itself.

1 **Q. WHAT SUPPORT DO YOU HAVE FOR THE POSITION THAT MONTANA-**
2 **DAKOTA IS INTEGRATED WITH THE OTHER NATURAL GAS OPERATIONS**
3 **OF MDU RESOURCES?**

4 A. MDU Resources reports its Natural Gas Distribution operations as one part of the
5 Regulated Operations sections of its 10K.⁵⁰ According to the 2016 10K, the Natural Gas
6 Distribution operations have operating revenues of \$766 million, operating income of \$65
7 million, and assets of \$2.1 billion.

8 **Q. HOW DO MDU RESOURCES' NATURAL GAS OPERATIONS COMPARE**
9 **WITH THE PROXY GROUP?**

10 A. When compared with the proxy group medians for the indicators, these numbers are 40.7
11 percent, 23 percent, and 37.5 percent. In the case of operating revenues, MDU Resources
12 combined natural gas distribution operations are larger than the operating revenues for the
13 smallest member of the proxy group. For operating income and total assets, the MDU
14 Resources operations' amounts are less than the lowest numbers of the proxy group, at \$65
15 million versus \$139 million and \$2.1 billion versus \$3.1 billion. Nevertheless, the
16 combined operations amounts demonstrate that the Montana-Dakota that is integrated with
17 the rest of MDU Resources is much more like the proxy group members than Dr. Gaske's
18 analysis shows.

⁵⁰ Exhibit MFG-12, pages 1-3.

1 **Q. ARE THERE FORMAL RELATIONSHIPS THAT SHOW THE FOUR MDU**
2 **RESOURCES NATURAL GAS COMPANIES ARE INTEGRATED?**

3 A. Yes. Montana-Dakota President and Chief Executive Officer Nicole A. Kivisto holds the
4 same position with each of the other units. Montana-Dakota Controller Tammy J. Nygard
5 also serves in that same role for those units.

6 **Q. ARE THERE OTHER FACTORS THAT SUPPORT THE VIEW THAT**
7 **MONTANA-DAKOTA IS INTEGRATED WITH THE OTHER PARTS OF MDU**
8 **RESOURCES' NATURAL GAS DISTRIBUTION OPERATIONS?**

9 A. Yes. In response to NDPSC Staff Data Request 3.15,⁵¹ Ms. Kivisto stated that MDU
10 Resources' Natural Gas Distribution companies operate as one utility with four brands
11 sharing the same strategy of providing safe, reliable, and cost-effective services. She
12 further stated that policies of the four brands are integrated to provide efficiencies and cost
13 savings for customers. She identifies safety policies, human resources policies, customer
14 care, billing, and working together to increase purchasing power as just a few examples of
15 the coordination among the integrated utility.

16 **Q. PLEASE CONTINUE.**

17 A. In response to NDPSC Staff Data Request 3.16,⁵² Ms. Nygard identified directing general
18 accounting functions, evaluating and planning optimal capital type, directing financial
19 forecasting and planning, and participating as a member of the executive team for the
20 Utility Group as among the responsibilities she has. She also stated that she directs the
21 financial reporting function activities for the four natural gas distribution units and serves
22 as their representative on select corporate committees including Employee Benefit and

⁵¹ Exhibit MFG-19.

⁵² Exhibit MFG-20, pages 1-2.

1 Risk Management Advisory. These statements show that Montana-Dakota is part of a
2 larger Natural Gas Distribution unit within MDU Resources that integrates the operations
3 of the four natural gas distribution companies in such a way that Montana-Dakota gains
4 the benefits of a firm much larger than the amounts in its individual financial reports
5 indicate.

6 **6. Dr. Gaske's Recommended ROE**

7 **Q. HOW DOES DR. GASKE ARRIVE AT HIS RECOMMENDED ROE?**

8 A. Dr. Gaske begins with his two DCF analyses, then adjusts upwards for Montana-Dakota's
9 asserted risks, relying in part on his benchmark ROE values to support he increases. I have
10 demonstrated that his reliance on size to adjust his CAPM results upward and as a reason
11 Montana-Dakota has increased risk are not justified. I have shown in my criticisms that
12 Dr. Gaske's DCF analyses are flawed, with the misapplication of the flotation-cost
13 adjustment in particular causing the results to be high. It is noteworthy that if the 22-basis
14 point increase in my DCF ROE value that is the result of using Dr. Gaske's incorrect
15 flotation-cost adjustment on my Comparison Group companies is subtracted from his DCF
16 results, the outcomes are 8.91 percent and 9.00. Both of these values are within my
17 suggested range for Montana-Dakota's ROE.

18 **XI. SUMMARY**

19 **Q. WHAT ARE THE CRITERIA THE COMMISSION SHOULD CONSIDER IN**
20 **SETTING THE COMPANY'S ROE AND ROR?**

21 A. The Commission should only consider whether the ROE and ROR meet the *Bluefield* and
22 *Hope* criteria for a fair return. Recounting, these criteria include returns commensurate with
23 returns being earned on other investments with equivalent risks, rate of return sufficient to

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

5 **Q. WHAT DOES YOUR ROE ANALYSIS REFLECT?**

6 A. My ROE analysis reflects the latest views of investors regarding the prospects of the
7 Comparison Group companies. I have shown that the outcome of my forward-looking
8 DCF analysis is compatible with recent ROE awards to natural gas utilities and that the
9 CAPM results do not indicate my recommendations should be higher.

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

12 A. I recommend a return on equity of 8.91 percent and an overall rate of return of 6.99
13 percent.

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

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

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 – Snavely 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 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
2. 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

3. 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
4. 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
5. 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
6. 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
7. 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
8. 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
9. 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
10. 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

11. 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
12. 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
13. 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
14. 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
15. 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
16. 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
17. 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

18. 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
19. 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
20. 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
21. 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
22. 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

ROE and ROR Analysis for Montana-Dakota Utilities

Docket No. Docket No. PU-17-295

Comparison Group

Exhibit MFG-2

Value Line Natural Gas Utilities

Value Line Investment Survey December 1, 2017

Company	Ticker	Exchange	U.S. Based	Paying Dividend	Merger or Acquisition	S&P Credit Rating
Atmos Energy Corporation	ATO	NYSE	Yes	Yes	No	A
Chesapeake Utilities	CPK	NYSE	Yes	Yes	No	NA
New Jersey Resources Corporation	NJR	NYSE	Yes	Yes	No	A*
NiSource, Inc	NI	NYSE	Yes	Yes	No	BBB+
Northwest Natural Gas Company	NWN	NYSE	Yes	Yes	No	A+
ONE Gas, Inc.	OGS	NYSE	Yes	Yes	No	A
RGC Resources, Inc.	RGCO	NASDAQ	Yes	Yes	No	NA
South Jersey Industries, Inc.	SJI	NYSE	Yes	Yes	No	BBB+
Southwest Gas Holdings, Inc.	SWX	NYSE	Yes	Yes	No	BBB+
Spire Inc.	SR	NYSE	Yes	Yes	No	A-
WGL Holdings, Inc.	WGL	NYSE	Yes	Yes	Yes	A
MDU Resources Group, Inc.	MDU	NYSE	Yes	Yes	No	BBB+

See Workpaper 1

*-Rating for New Jersey Natural Gas (NJNG), New Jersey Resources (NJR) subsidiary.

NJNG issues its own bonds. NJR does not issue bonds. See MFG-Workpaper 1

Indicates not passing a screen

ROE and ROR Analysis for Montana-Dakota Utilities
 Comparison Group, Regulated Percentage Screen
 Company 10Ks

Docket No. Docket No. PU-17-295
 Exhibit MFG-3

Name	Operating Income for Natural Gas Utilities (In thousands of dollars)**				Regulated Natural Gas as % of Company			3-Year Average
	2016*	2015	2014	2016*	2016*	2015	2014	
Atmos Energy Corporation	505,642	441,884	422,962	727,546	69.5%	67.2%	69.1%	68.6%
New Jersey Resources Corporation	151,641	126,233	130,047	167,044	90.8%	75.3%	52.3%	72.8%
NiSource	574,000	555,800	537,000	858,200	66.9%	69.5%	68.1%	68.1%
Northwest Natural Gas Company**	54,567	53,391	58,587	58,895	92.7%	99.4%	99.8%	97.3%
ONE Gas, Inc.	269,120	239,129	225,294	269,120	100.0%	100.0%	100.0%	100.0%
South Jersey Industries, Inc.	122,455	119,585	113,690	189,276	64.7%	76.2%	89.1%	76.7%
Southwest Gas Holdings, Inc.	236,728	234,783	241,603	295,714	80.1%	81.4%	84.9%	82.1%
Spire Inc.	321,600	278,300	274,600	321,700	100.0%	98.6%	100.8%	99.8%

*-Atmos Energy, New Jersey Resources, and Spire, Inc. have fiscal years running from October 1 to September 30. The data for these companies is taken from their 10Ks from fiscal years ending in 2015, 2016, and 2017. The remaining five companies have fiscal years running from January 1 to December 31. Data from these companies is taken from their 10Ks for fiscal years ending in 2014, 2015, and 2016.

**-Net income. Utility operating income not available.

***-See MFG-Workpaper 2

From: *General Criteria: Understanding Standard & Poor's Rating Definitions*, second paragraph of "Key Attributes of Standard & Poor's Credit Ratings." Available at the Standard & Poor's website: https://www.standardandpoors.com/en_US/web/guest/article/-/view/sourceId/5435305 Accessing the publication may require free registration.

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 Standard & Poor's credit ratings mean. Although the official definitions appear outwardly to be very simple, they embody multiple factors that compose the overall assessment of creditworthiness.

Standard & Poor's 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, Standard & Poor's 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 Standard & Poor's Credit Ratings

Rank ordering of creditworthiness

Standard & Poor's 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, Standard & Poor's 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

ROE and ROR Analysis for SUEZ Water Arlington Hills
 Comparison Group
 Common Equity Share Prices
 Yahoo Finance, December 4, 2017

Atmos Energy (ATO)		New Jersey Resources (NJR)		NiSource (NI)		Northwest Natural Gas (NWN)	
Date	Close	Date	Close	Date	Close	Date	Close
11/6/2017	\$ 87.84	11/6/2017	\$ 44.00	11/6/2017	\$ 27.21	11/6/2017	\$ 66.05
11/7/2017	\$ 88.57	11/7/2017	\$ 44.30	11/7/2017	\$ 27.47	11/7/2017	\$ 66.55
11/8/2017	\$ 89.24	11/8/2017	\$ 44.05	11/8/2017	\$ 27.52	11/8/2017	\$ 67.00
11/9/2017	\$ 89.79	11/9/2017	\$ 43.95	11/9/2017	\$ 27.52	11/9/2017	\$ 66.75
11/10/2017	\$ 89.16	11/10/2017	\$ 43.80	11/10/2017	\$ 27.20	11/10/2017	\$ 66.55
11/13/2017	\$ 89.54	11/13/2017	\$ 44.30	11/13/2017	\$ 27.32	11/13/2017	\$ 66.65
11/14/2017	\$ 90.54	11/14/2017	\$ 45.00	11/14/2017	\$ 27.58	11/14/2017	\$ 68.00
11/15/2017	\$ 89.57	11/15/2017	\$ 44.95	11/15/2017	\$ 27.24	11/15/2017	\$ 67.25
11/16/2017	\$ 89.95	11/16/2017	\$ 45.00	11/16/2017	\$ 27.32	11/16/2017	\$ 67.25
11/17/2017	\$ 89.33	11/17/2017	\$ 44.75	11/17/2017	\$ 27.08	11/17/2017	\$ 66.70
11/20/2017	\$ 89.11	11/20/2017	\$ 44.30	11/20/2017	\$ 27.09	11/20/2017	\$ 66.15
11/21/2017	\$ 89.42	11/21/2017	\$ 43.80	11/21/2017	\$ 27.22	11/21/2017	\$ 67.05
11/22/2017	\$ 89.10	11/22/2017	\$ 43.60	11/22/2017	\$ 27.04	11/22/2017	\$ 66.75
11/24/2017	\$ 88.72	11/22/2017	\$ 43.60	11/24/2017	\$ 27.04	11/24/2017	\$ 66.65
11/27/2017	\$ 89.50	11/24/2017	\$ 42.55	11/27/2017	\$ 27.10	11/27/2017	\$ 66.95
11/28/2017	\$ 90.27	11/27/2017	\$ 43.20	11/28/2017	\$ 27.20	11/28/2017	\$ 67.80
11/29/2017	\$ 90.51	11/28/2017	\$ 43.85	11/29/2017	\$ 27.17	11/29/2017	\$ 68.55
11/30/2017	\$ 92.29	11/29/2017	\$ 44.30	11/30/2017	\$ 27.53	11/30/2017	\$ 69.15
12/1/2017	\$ 92.24	11/30/2017	\$ 44.60	12/1/2017	\$ 27.33	12/1/2017	\$ 68.40
		12/1/2017	\$ 44.35				
	\$ 89.72		\$ 44.14		\$ 27.27		\$ 67.17

ROE and ROR Analysis for Montana-Dakota Utilities
 Comparison Group
 Common Equity Share Prices
 Yahoo Finance, December 4, 2017

ONE Gas, Inc. (OGS)	South Jersey Industries	Southwest Gas (SWX)	Spire, Inc. (SR)
Date	Date	Date	Date
Close	Close	Close	Close
11/6/2017 \$ 76.29	11/6/2017 \$ 32.62	11/6/2017 \$ 79.93	11/6/2017 \$ 78.30
11/7/2017 \$ 76.85	11/7/2017 \$ 32.20	11/7/2017 \$ 81.86	11/7/2017 \$ 78.50
11/8/2017 \$ 77.09	11/8/2017 \$ 32.05	11/8/2017 \$ 83.20	11/8/2017 \$ 78.55
11/9/2017 \$ 76.75	11/9/2017 \$ 31.86	11/9/2017 \$ 81.80	11/9/2017 \$ 78.30
11/10/2017 \$ 75.90	11/10/2017 \$ 31.54	11/10/2017 \$ 80.08	11/10/2017 \$ 77.85
11/13/2017 \$ 76.56	11/13/2017 \$ 32.24	11/13/2017 \$ 79.68	11/13/2017 \$ 77.40
11/14/2017 \$ 77.75	11/14/2017 \$ 32.57	11/14/2017 \$ 82.70	11/14/2017 \$ 78.60
11/15/2017 \$ 76.85	11/15/2017 \$ 32.43	11/15/2017 \$ 82.45	11/15/2017 \$ 78.20
11/16/2017 \$ 77.53	11/16/2017 \$ 32.76	11/16/2017 \$ 82.85	11/16/2017 \$ 78.75
11/17/2017 \$ 77.12	11/17/2017 \$ 32.65	11/17/2017 \$ 82.69	11/17/2017 \$ 78.55
11/20/2017 \$ 76.95	11/20/2017 \$ 32.39	11/20/2017 \$ 82.13	11/20/2017 \$ 78.20
11/21/2017 \$ 77.24	11/21/2017 \$ 32.63	11/21/2017 \$ 82.29	11/21/2017 \$ 78.90
11/22/2017 \$ 76.74	11/22/2017 \$ 32.78	11/22/2017 \$ 82.26	11/22/2017 \$ 78.15
11/24/2017 \$ 76.79	11/24/2017 \$ 32.82	11/24/2017 \$ 81.70	11/24/2017 \$ 78.30
11/27/2017 \$ 77.30	11/27/2017 \$ 32.81	11/27/2017 \$ 82.96	11/27/2017 \$ 78.75
11/28/2017 \$ 78.11	11/28/2017 \$ 33.44	11/28/2017 \$ 84.12	11/28/2017 \$ 80.05
11/29/2017 \$ 78.17	11/29/2017 \$ 33.60	11/29/2017 \$ 84.96	11/29/2017 \$ 81.00
11/30/2017 \$ 79.25	11/30/2017 \$ 33.86	11/30/2017 \$ 85.94	11/30/2017 \$ 82.25
12/1/2017 \$ 78.78	12/1/2017 \$ 33.82	12/1/2017 \$ 86.23	12/1/2017 \$ 81.75
\$ 77.26	\$ 32.69	\$ 82.62	\$ 78.97

**ROE and ROR Analysis for Montana-Dakota Utilities
Comparison Group
Dividends**

**Docket No. Docket No. PU-17-295
Exhibit MFG-6**

Name	Value Line	Zacks	Highest Dividend
Atmos Energy	\$ 1.98 \$	1.80	\$ 1.98
New Jersey Resources	\$ 1.09 \$	1.09	\$ 1.09
NiSource, Inc.	\$ 0.70 \$	0.70	\$ 0.70
Northwestern Natural Gas	\$ 1.89 \$	1.89	\$ 1.89
ONE Gas, Inc.	\$ 1.68 \$	1.68	\$ 1.68
South Jersey Industries	\$ 1.09 \$	1.09	\$ 1.09
Southwest Gas	\$ 1.98 \$	1.98	\$ 1.98
Spire, Inc.	\$ 2.25 \$	2.10	\$ 2.25

Value Line dividends taken from December 1, 2017 survey reports.

Zacks dividends taken from website on November 26, 2017.

ROE and ROR Analysis for Montana-Dakota Utilities
Comparison Group
Flotation Costs

Flotation Costs for Comparison Group Companies, 2013-2017

Name	Date	Offer Price	Gross Spread (Issuance costs)	Gross Spread Percentage	Amount (millions)
Piedmont Natural Gas Co., Inc.	1/29/2013	\$ 32.00	\$ 1.12	3.50%	\$ 147.2
Spire, Inc.	5/22/2013	\$ 44.50	\$ 1.72	3.87%	\$ 445.2
Atmos Energy	2/11/2014	\$ 44.00	\$ 1.54	3.50%	\$ 404.8
Laclede Group (Spire, Inc. predecessor)	6/5/2014	\$ 46.25	\$ 1.71	3.70%	\$ 478.7
South Jersey Industries, Inc.	5/12/2016	\$ 26.25	\$ 0.92	3.50%	\$ 211.3
Spire, Inc.	5/12/2016	\$ 63.05	\$ 2.05	3.25%	\$ 137.8
Chesapeake Utilities	9/22/2016	\$ 62.26	\$ 2.33	3.74%	\$ 59.8
Northwest Natural Gas, Co.	11/1/2016	\$ 54.63	\$ 2.05	3.75%	\$ 55.3
		Mean		3.60%	

Name	Date	Offer Price	Gross Spread (\$)	Gross Spread Percentage	Amount (millions)
Gas Natural	10/31/2013	\$ 10.00	\$ 0.58	5.80%	\$ 11.3
Gas Natural	7/11/2013	\$ 10.00	\$ 0.58	5.80%	\$ 17.3

Source: S&P Global, Market Intelligence, Transactions Statistics

ROE and ROR Analysis for Montana-Dakota Utilities
 Comparison Group
 Discounted Cash Flow Constant-Growth Model Analysis
 Common Equity Share Prices—November 6, 2017–December 1, 2017
 Zacks, Yahoo! Finance, and Value Line EPS Growth-Rate
 Estimates—November/December 2017

Docket No. PU-17-295
 Exhibit MFG-8, Schedule I

	A	B	C	D	E	F
	Zacks Growth Rate (%)	Yahoo! Finance EPS Growth Rates (%)	Value Line EPS Growth Rates (%)	Zacks- Yahoo! Finance- Value Line Mean Growth Rate (%)	Average of Closing Prices \$	Annualized Dividend \$
Atmos Energy	6.50%	6.50%	6.00%	6.33%	\$ 89.72	\$ 1.98
New Jersey Resources	6.00%	6.00%	2.00%	4.67%	\$ 44.14	\$ 1.09
NiSource, Inc.	5.70%	7.65%	5.50%	6.28%	\$ 27.27	\$ 0.70
Northwest Natural Gas	4.50%	4.00%	7.00%	5.17%	\$ 67.17	\$ 1.89
ONE Gas, Inc.	6.30%	6.00%	9.50%	7.27%	\$ 77.26	\$ 1.68
South Jersey Industries	7.50%	6.00%	8.50%	7.33%	\$ 32.69	\$ 1.09
Southwest Gas	6.50%	4.00%	8.00%	6.17%	\$ 82.62	\$ 1.98
Spire, Inc.	5.00%	4.52%	8.00%	5.84%	\$ 78.97	\$ 2.25
Mean	6.00%	5.58%	6.81%	6.13%		

	G	H	I	J
	Dividend Yield (Rate/Price)	Expected Dividend Yield	Flotation- Adjusted Expected Dividend Yield	Required Rate of Return on Equity
Atmos Energy	2.21%	2.28%	2.36%	8.70%
New Jersey Resources	2.47%	2.53%	2.62%	7.29%
NiSource, Inc.	2.57%	2.65%	2.75%	9.03%
Northwest Natural Gas	2.81%	2.89%	2.99%	8.16%
ONE Gas, Inc.	2.17%	2.25%	2.34%	9.60%
South Jersey Industries	3.33%	3.46%	3.59%	10.92%
Southwest Gas	2.40%	2.47%	2.56%	8.73%
Spire, Inc.	2.85%	2.93%	3.04%	8.88%
Mean	2.60%	2.68%	2.78%	8.91%

A: Zacks website, November 26, 2017. MFG-Workpaper 5.

B: Yahoo! Finance website; November 28, 2017. MFG-Workpaper 6.

C: Value Line Investment Survey; December 1, 2017. MFG-Workpaper 7.

E: Yahoo! Finance website; November 6, 2017–December 1, 2017 (19 trading days).

F: Higher of Value Line Investment Survey; December 1, 2017 and Zacks report, November 26, 2017. See Exhibit MFG-6.

D: (A + B + C)/3

H: $G \times (1 + (0.5 \times D))$

I: $H / (1.00 - 0.0360)$
 Flotation adjustment
 See Exhibit MFG-7

J: D + I

Congressional Budget Office, *An Update to the Budget and Economic Outlook: 2017 to 2027* (June 2017), available at www.cbo.gov/publication/52801.

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

	Units	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Output	Gross Domestic Product (GDP)	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
	Billions of Percentage	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)	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
	Billions of Percentage	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	18,231	18,781	19,394	20,104	20,849	21,645	22,490	23,379	24,307	25,276	26,281	27,328	28,415
	Billions of Percentage	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	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
	Billions of Percentage	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	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
	Billions of Percentage	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	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
	Billions of Percentage	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

The long-term growth rate is the Gross Domestic Product 4.0 percent growth rate per year from 2023-2027.

ROE and ROR Analysis for Montana-Dakota Utilities
 Comparison Group
 Discounted Cash Flow Multistage Model Analysis
 Common Equity Share Prices--November 6, 2017-December 1, 2017
 Zacks, Yahoo! Finance, and Value Line EPS Growth-Rate
 Estimates--November/December 2017

Docket No. PU-17-295
 Exhibit MFG-8, Schedule 3

	A	B	C	D	E	F
	Zacks EPS Growth Rate (%)	Yahoo! Finance EPS Growth Rates (%)	Value Line EPS Growth Rates (%)	Zacks-Yahoo! Finance-Value Line Mean Growth Rate (%)	Average of Closing Prices	Annualized Dividend
Company Name						
Atmos Energy	6.50%	6.50%	6.00%	6.33%	\$ 89.72	\$ 1.98
New Jersey Resources	6.00%	6.00%	2.00%	4.67%	\$ 44.14	\$ 1.09
NiSource, Inc.	5.70%	7.65%	5.50%	6.28%	\$ 27.27	\$ 0.70
Northwest Natural Gas	4.50%	4.00%	7.00%	5.17%	\$ 67.17	\$ 1.89
ONE Gas, Inc.	6.30%	6.00%	9.50%	7.27%	\$ 77.26	\$ 1.68
South Jersey Industries	7.50%	6.00%	8.50%	7.33%	\$ 32.69	\$ 1.09
Southwest Gas	6.50%	4.00%	8.00%	6.17%	\$ 82.62	\$ 1.98
Spire, Inc.	5.00%	4.52%	8.00%	5.84%	\$ 78.97	\$ 2.25
Mean	6.00%	5.58%	6.81%	6.13%		

	G	H	I	J	K	L
	Dividend Yield (Rate/Price)	Expected Dividend Yield	Flotation Adjusted Expected Dividend Yield	Long-Run Projected EPS Growth Rate, 4.0%	Weighted Projected Growth Rate, 4.0%	Multistage Weighted Cost of Equity
Company Name						
Atmos Energy	2.21%	2.28%	2.36%	4.00%	5.56%	7.92%
New Jersey Resources	2.47%	2.53%	2.62%	4.00%	4.44%	7.07%
NiSource, Inc.	2.57%	2.65%	2.75%	4.00%	5.52%	8.27%
Northwest Natural Gas	2.81%	2.89%	2.99%	4.00%	4.78%	7.77%
ONE Gas, Inc.	2.17%	2.25%	2.34%	4.00%	6.18%	8.52%
South Jersey Industries	3.33%	3.46%	3.59%	4.00%	6.22%	9.81%
Southwest Gas	2.40%	2.47%	2.56%	4.00%	5.44%	8.01%
Spire, Inc.	2.85%	2.93%	3.04%	4.00%	5.23%	8.27%
Mean	2.60%	2.68%	2.78%	4.00%	5.42%	8.10%

A: Zacks website, November 26, 2017. MFG-Workpaper 5.

B: Yahoo! Finance website; November 28, 2017. MFG-Workpaper 6.

C: Value Line Investment Survey; December 1, 2017. MFG-Workpaper 7.

E: Yahoo! Finance website; October 30, 2017-November 24, 2017 (19 trading days).

F: Higher of Value Line Investment Survey; October 13, 2017 and Zacks report, November 25, 2017. See Exhibit MFG-6.

J: Congressional Budget Office, *An Update to the Budget and Economic Outlook: 2017 to 2027*, June 2017, www.cbo.gov/publication/52801

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

G: = F/E

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

I: H/(1.00 -0.0360); K: = 2/3*D + 1/3*J
 Flotation adjustment
 See Exhibit MFG-7

L: = H + J

ROE and ROR Analysis for Montana-Dakota Utilities
Comparison Group
Discounted Cash Flow Constant-Growth Model Analysis with Gaske Flotation Adjustment
Common Equity Share Prices—November 6, 2017-December 1, 2017
Zacks, Yahoo! Finance, and Value Line EPS Growth-Rate
Estimates—November/December 2017

	A	B	C	D	E	F
	Zacks Growth Rate (%)	Yahoo! Finance EPS Growth Rates (%)	Value Line EPS Growth Rates (%)	Zacks- Yahoo! Finance- Value Line Mean Growth Rate (%)	Average of Closing Prices	Annualized Dividend
Company Name	6.50%	6.50%	6.00%	6.33%	\$ 89.72	\$ 1.98
Atmos Energy	6.00%	6.00%	2.00%	4.67%	\$ 44.14	\$ 1.09
New Jersey Resources	5.70%	7.65%	5.50%	6.28%	\$ 27.27	\$ 0.70
NiSource, Inc.	4.50%	4.00%	7.00%	5.17%	\$ 67.17	\$ 1.89
Northwest Natural Gas	6.30%	6.00%	9.50%	7.27%	\$ 77.26	\$ 1.68
ONE Gas, Inc.	7.50%	6.00%	8.50%	7.33%	\$ 32.69	\$ 1.09
South Jersey Industries	6.50%	4.00%	8.00%	6.17%	\$ 82.62	\$ 1.98
Southwest Gas	5.00%	4.52%	8.00%	5.84%	\$ 78.97	\$ 2.25
Spire, Inc.						
Mean	6.00%	5.58%	6.81%	6.13%		

	G	H	I	J	K
	Dividend Yield (Rate/Price)	Expected Dividend Yield	Flotation Adjusted Expected Dividend Yield	Required Rate of Return on Equity	Required Rate of Return on Equity w/ Gaske Flotation
Company Name	2.21%	2.28%	2.36%	8.70%	8.92%
Atmos Energy	2.47%	2.53%	2.62%	7.29%	7.45%
New Jersey Resources	2.57%	2.65%	2.75%	9.03%	9.25%
NiSource, Inc.	2.81%	2.89%	2.99%	8.16%	8.34%
Northwest Natural Gas	2.17%	2.25%	2.34%	9.60%	9.86%
ONE Gas, Inc.	3.33%	3.46%	3.59%	10.92%	11.18%
South Jersey Industries	2.40%	2.47%	2.56%	8.73%	8.95%
Southwest Gas	2.85%	2.93%	3.04%	8.88%	9.09%
Spire, Inc.					
Mean	2.60%	2.68%	2.78%	8.91%	9.13%

A: Zacks website, November 26, 2017. MFG-Workpaper 5.

B: Yahoo! Finance website, November 28, 2017. MFG-Workpaper 6.

C: Value Line Investment Survey: December 1, 2017. MFG-Workpaper 7.

E: Yahoo! Finance website, November 6, 2017-December 1, 2017 (19 trading days).

F: Higher of Value Line Investment Survey: December 1, 2017 and Zacks report, November 26, 2017. See Exhibit MFG-6.

K: (D + H)*1.036

J: D + I

I: H/(1.00-0.0360)

H: G*(1+(0.5*D))

G: F/E

D: (A + B + C)/3

Flotation adjustment

See Exhibit MFG-7

**MONTANA-DAKOTA UTILITIES CO.
NORTH DAKOTA PUBLIC SERVICE COMMISSION
SET 8 - DATA REQUESTS
ISSUED NOVEMBER 21, 2017
CASE NO. PU-17-295**

- 8.1. Please refer to page 8, lines 5-8 of the Direct Testimony of Tammy Nygard and to Statement D-3, page 1. Please provide the date, amount, the dollar amount of underwriters' commissions, and dollar amount of issuance expense for the three most recent common equity issuances by Montana-Dakota Utilities Co., MDU Resources, or the other unit of MDU Resources in whose name the issuances were made that contributed to the Common Equity balance of \$2,301,244,327 as of 12/31/16 shown in Statement D-3, page 1.

Response:

The three most recent stock issuances were in the 401(k) Plan and Dividend Reinvestment Program, and as a result did not incur any flotation costs.

<u>Date</u>	<u>Shares</u>	<u>Net Proceeds</u>
8/31/2015	36,115	\$644,652.75
8/27/2015	7,324	123,409.30
8/20/2015	2,704	50,645.80

Gas Natural, Inc. Issuances

July 11, 2013

October 31, 2013

Amounts of Issuances and Flotation Costs (Gross Spreads)

ROE and ROR Analysis for Montana-Dakota Utilities

**Docket No. Docket No. PU-17-295
Exhibit MFG-10, Page 2 of 5**

Overview

Basic Details

Company Name	Gas Natural Inc.
Industry	Gas Utilities
Headquarters	Cleveland, OH, US
Offering Type	Follow-On
Status	Completed

Dates

Announcement Date	7/10/2013
Trade Date	7/11/2013
Settlement Date	7/16/2013
Completion Date	7/11/2013
Overallotment Expiration Date	8/15/2013
Lock-up Expiration	10/9/2013
Date Overallotment Exercised	7/23/2013
Shelf Filing Date	12/21/2012

Additional Details

Restricted 144a?	No
Mandatory Redemption?	No
Convertible?	No
Exchange for Existing Issue?	No
Flow-Through Share Issuance?	No

Issue Details

Security Details

Description	Common stock, \$0.15 par value
ISIN	US3672041049
CUSIP	367204104
Issue Currency	USD
Trading Symbol & Exchange	EGAS (NYSE MKT)

ROE and ROR Analysis for Montana-Dakota Utilities

Docket No. Docket No. PU-17-295
Exhibit MFG-10, Page 3 of 5

Valuation Details

Offer Price (\$)	10,000
Gross Amount Offered (\$000)	15,000
Amount Including Overallotment (\$000)	17,250
Total Shares Offered (actual)	1,500,000
Original Shelf Value (\$000)	17,250
Shares Offered, Including Overallotment (actual)	1,725,000

Underwriting Fees

Gross Spread (\$)	0.58
Gross Spread (%)	5.75
Aggregate Gross Underwriting Spread (\$000)	863
Sales Concession (\$)	0.34
Reallowance (\$)	0.12

Overallotment Values

	<i>Overallotment Shares Available (actual)</i>	<i>Overallotment Value Available (\$000)</i>	<i>Overallotment Shares Exercised (actual)</i>	<i>Overallotment Value Exercised (\$000)</i>
Issuer	225,000	2,250	225,000	2,250
Transaction Fees				

Administrative Fees

Other Fees (\$000)	285
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Summary

Use of Proceeds

The net proceeds from the offering will be used for capital expenditures, working capital, and other general corporate purposes. Pending use of the proceeds the company intends to invest the proceeds in short-term interest-bearing investment grade instruments.

Deal Advisors

Underwriters

ROE and ROR Analysis for Montana-Dakota Utilities

Docket No. Docket No. PU-17-295

Exhibit MFG-10, Page 4 of 5

Overview

Basic Details

Company Name	Gas Natural Inc.
Industry	Gas Utilities
Headquarters	Cleveland, OH, US
Offering Type	Follow-On
Status	Completed

Dates

Announcement Date	10/30/2013
Trade Date	10/31/2013
Settlement Date	11/5/2013
Completion Date	10/31/2013
Overallotment Expiration Date	12/5/2013
Lock-up Expiration	1/29/2014
Shelf Filing Date	9/24/2013

Additional Details

Restricted 144a?	No
Mandatory Redemption?	No
Convertible?	No
Exchange for Existing Issue?	No
Flow-Through Share Issuance?	No

Issue Details

Security Details

Description	Common stock, \$0.15 par value
ISIN	US3672041049
CUSIP	367204104
Issue Currency	USD
Trading Symbol & Exchange	EGAS (NYSE MKT)

ROE and ROR Analysis for Montana-Dakota Utilities

Docket No. Docket No. PU-17-295

Exhibit MFG-10, Page 5 of 5

Offer Price (\$)	10.0000
Gross Amount Offered (\$000)	11,342
Amount Including Overallotment (\$000)	11,342
Total Shares Offered (actual)	1,134,155
Original Shelf Value (\$000)	11,342
Shares Offered, Including Overallotment (actual)	1,134,155

Selling Securityholders

Amount Offered by Shareholders (\$000)	10,542
Shares Offered by Shareholders (actual)	1,054,155

Underwriting Fees

Gross Spread (\$)	0.58
Gross Spread (%)	5.75
Aggregate Gross Underwriting Spread (\$000)	652
Sales Concession (\$)	0.35
Reallowance (\$)	0.12

Overallotment Values

	<i>Overallotment Shares Available (actual)</i>	<i>Overallotment Value Available (\$000)</i>	<i>Overallotment Shares Exercised (actual)</i>	<i>Overallotment Value Exercised (\$000)</i>
Issuer	170,000	1,700		

Transaction Fees

Administrative Fees

Other Fees (\$000)	288
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Summary

Use of Proceeds

The net proceeds from the offering will be used for capital expenditures, working capital, and other general corporate purposes. Pending use of the proceeds the company intends to invest the proceeds in short-term interest-bearing investment grade instruments. The company will not receive any proceeds from the sale of shares of the common stock by the selling shareholders.

ROE and ROR Analysis for Montana-Dakota Utilities Gas Natural Information, 2016 10K

Docket No. Docket No. PU-17-295
Exhibit MFG-11, Page 1 of 4

PART I

Item 1. Business.

(dollars in thousands)

Our Business

Energy West was originally incorporated in Montana in 1909 and was reorganized as a holding company in 2009. On July 9, 2010, we changed our name to Gas Natural Inc. (the "Company," "we," "us," or "our") and reincorporated in Ohio. We are a natural gas company with operations in four states. In October 2016, we implemented a plan of reorganization and formed a new holding company, PHC, an Ohio corporation, which is the parent company of our regulated utility subsidiaries, Cut Bank Gas, EWM, Frontier Natural Gas, Bangor Gas, NEO, Brainard, Orwell, and Spelman. Gas Natural is the parent company of Energy West Propane, Inc., EWR, GNR, Lone Wolfe and PHC. PHC is the parent company of multiple entities that are natural gas utility companies with regulated operations in Maine, Montana, North Carolina and Ohio. EWR is a natural gas marketing and production company with non-regulated operations in Montana. GNR is a natural gas marketing company that markets gas in Ohio. Energy West Propane, Inc. distributes propane with non-regulated operations in Montana. Lone Wolfe serves as an insurance agent for us. We have three operating and reporting segments:

- **Natural Gas.** Representing the majority of our revenue, we annually distribute approximately 21 Bcf of natural gas to approximately 69,400 customers through regulated utilities operating in Maine, Montana, North Carolina and Ohio. Our natural gas utility subsidiaries include Bangor Gas (Maine), Brainard (Ohio), Cut Bank Gas (Montana), EWM (Montana), Frontier Natural Gas (North Carolina), NEO (Ohio) and Orwell (Ohio).
- **Marketing and Production.** Annually, we market approximately 3.6 Bcf of natural gas to a regulated utility in Wyoming and to commercial and industrial customers in Montana and Ohio through our EWR and GNR subsidiaries. Our EWR subsidiary also manages midstream supply and production assets for transportation customers and utilities. EWR owns an interest in 160 natural gas producing wells and gas gathering assets located in Glacier and Toole Counties in Montana. See *Note 11 – Property, Plant & Equipment* in the Notes to the Consolidated Financial Statements in this Annual Report on Form 10-K for the year ended December 31, 2016 (our "Annual Report").
- **Corporate and Other.** Included in corporate and other are costs associated with business development and acquisitions, dividend income, recognized gains or losses from the sale of marketable securities, activity from Lone Wolfe which serves as an insurance agent for us and other businesses in the energy industry, and the results of our discontinued operations from the sales of EWW, the Shoshone and Glacier pipelines, and Independence.

For financial information about each of our segments, see *Note 18 – Segment Reporting* in the Notes to the Consolidated Financial Statements in this Annual Report.

Recent Events

SEC Investigation

We received a letter from the Chicago Regional Office of the SEC dated March 3, 2015, stating that the staff of the SEC is conducting an investigation regarding (i) audits by the PUCO and Rehmann Corporate Investigative Services, (ii) the determination and calculation of the GCR, (iii) our financial statements and internal controls, and (iv) various entities affiliated with our former chairman and chief executive officer, Richard M. Osborne. On May 29, 2015, we received a subpoena regarding a formal investigation, case number C-08186-A. On March 15, 2016, we received a second subpoena regarding the same case. On January 30, 2017, the SEC notified us that the investigation had been closed without a recommendation of an enforcement action.

Debt Agreements and Restructuring

On October 19, 2016, we entered into a credit agreement and revolving note with Bank of America, N.A. ("Bank of America"). The credit agreement provides for a \$42,000 unsecured revolving credit facility which incurs variable interest on a grid structure, based on our leverage ratio. The credit facility has a maturity date of October 19, 2021. The credit agreement requires us to maintain compliance with a number of covenants, including limitations on our minimum net worth, incurring additional debt, dispositions and investments, and requirements to maintain a total debt to capital ratio of not more than 0.50 to 1.00, and an interest coverage ratio of not less than 2.00 to 1.00. Although we are in compliance with these covenants at December 31, 2016, under the terms of the credit agreement and revolving note, the occurrence and continuation of one or more of the events of default specified in the credit agreement could require us to immediately pay all amounts then remaining unpaid on the revolving note.

**ROE and ROR Analysis for Montana-Dakota Utilities
Gas Natural Information, 2016 10K**

**Docket No. Docket No. PU-17-295
Exhibit MFG-11, Page 2 of 4**

Item 6. Selected Financial Data.

The selected financial data presented below are derived from our historical consolidated financial statements, which were audited by our independent registered public accounting firms in each of those years. Prior period amounts have been reclassified to reflect current year presentations. The selected financial data should be read in conjunction with Management's Discussion and Analysis of Financial Condition and Results of Operations and our Consolidated Financial Statements and the Notes to the Consolidated Financial Statements included elsewhere in this Annual Report.

	Years Ended December 31,				
	2016	2015	2014 ⁽¹⁾	2013 ^(2,3)	2012
<i>(\$ in thousands, except share and per share data)</i>					
Revenue	\$ 99,441	\$ 112,361	\$ 132,570	\$ 109,400	\$ 81,394
Income from continuing operations	\$ 525	\$ 1,169	\$ 2,729	\$ 5,852	\$ 3,195
Income (loss) from discontinued operations	(12)	3,519	1,033	819	524
Net income	\$ 513	\$ 4,688	\$ 3,762	\$ 6,671	\$ 3,719
Basic and diluted earnings per share:					
Continuing operations	\$ 0.05	\$ 0.11	\$ 0.26	\$ 0.63	\$ 0.39
Discontinued operations	-	0.34	0.10	0.08	0.07
Net income per share	\$ 0.05	\$ 0.45	\$ 0.36	\$ 0.71	\$ 0.46
Dividend declared per weighted average common share	\$ 0.30	\$ 0.54	\$ 0.50	\$ 0.55	\$ 0.54
Weighted average shares outstanding - basic	10,510,644	10,496,979	10,478,312	9,339,002	8,163,814
Weighted average shares outstanding - diluted	10,511,267	10,498,455	10,478,817	9,339,722	8,169,679
Plant, property, & equipment, net	\$ 139,691	\$ 142,416	\$ 142,011	\$ 124,588	\$ 107,413
Total assets	\$ 197,424	\$ 197,387	\$ 214,004	\$ 203,732	\$ 174,463
Non-current liabilities	\$ 67,982	\$ 56,436	\$ 56,352	\$ 54,361	\$ 53,426
Capitalization	\$ 142,349	\$ 129,916	\$ 136,031	\$ 137,678	\$ 120,045

- 1) In 2014, due to the then pending sale of EWW and the Pipeline Assets, we reclassified the results of operations and financial position of these entities to discontinued operations. All prior periods have been reclassified to match the current year's presentation. See *Note 3 – Discontinued Operations* to the Notes to the Consolidated Financial Statements included elsewhere in this Annual Report.
- 2) In 2013, we completed the purchase of substantially all the assets of JDOG Marketing.
- 3) In 2013, we sold our Independence subsidiary. The results of operations and financial position for this subsidiary for the years presented have been reclassified to discontinued operations. See *Note 3 – Discontinued Operations* to the Notes to the Consolidated Financial Statements included elsewhere in this Annual Report.

**ROE and ROR Analysis for Montana-Dakota Utilities
Gas Natural Information, 2016 10K**

**Docket No. Docket No. PU-17-295
Exhibit MFG-11, Page 3 of 4**

**Gas Natural Inc. and Subsidiaries
Consolidated Balance Sheets
(in thousands)**

		December 31,	
		2016	2015
<u>ASSETS</u>			
CURRENT ASSETS			
Cash and cash equivalents		\$ 6,463	\$ 2,728
Accounts receivable, less allowance for doubtful accounts of \$385 and \$506, respectively		11,093	10,823
Unbilled gas		7,256	6,995
Inventory			
Natural gas		3,380	4,063
Materials and supplies		2,065	2,271
Regulatory assets, current		3,131	2,469
Other current assets		<u>2,423</u>	<u>2,174</u>
Total current assets		35,811	31,523
PROPERTY, PLANT, & EQUIPMENT, NET			
		139,691	142,416
OTHER ASSETS			
Regulatory assets, non-current		1,032	1,523
Goodwill		15,872	15,872
Customer relationships, net of amortization		2,322	2,625
Restricted cash		-	1,898
Other non-current assets		2,696	1,530
Total other assets		<u>21,922</u>	<u>23,448</u>
TOTAL ASSETS		<u>\$ 197,424</u>	<u>\$ 197,387</u>

The accompanying notes are an integral part of these consolidated financial statements.

**ROE and ROR Analysis for Montana-Dakota Utilities
Gas Natural Information, 2016 10K**

**Docket No. Docket No. PU-17-295
Exhibit MFG-11, Page 4 of 4**

**Gas Natural Inc. and Subsidiaries
Consolidated Statements of Comprehensive Income
(in thousands, except per share data)**

	Year Ended December 31,		
	2016	2015	2014
REVENUES			
Natural gas operations	\$ 87,464	\$ 103,978	\$ 123,053
Marketing and production	11,977	8,383	9,517
Total revenues	<u>99,441</u>	<u>112,361</u>	<u>132,570</u>
COST OF SALES			
Natural gas operations	45,812	60,502	79,222
Marketing and production	10,705	7,650	8,772
Total cost of sales	<u>56,517</u>	<u>68,152</u>	<u>87,994</u>
GROSS MARGIN	42,924	44,209	44,576
OPERATING EXPENSES			
Distribution, general, and administrative	27,338	26,104	24,645
Maintenance	984	1,422	1,225
Depreciation, amortization and accretion	8,034	7,257	6,657
Taxes other than income	4,006	4,119	3,927
Provision for doubtful accounts	182	278	1,112
Contingent consideration loss (gain)	(672)	(75)	62
Total operating expenses	<u>39,872</u>	<u>39,105</u>	<u>37,628</u>
OPERATING INCOME	3,052	5,104	6,948
Loss from unconsolidated affiliate	-	-	(352)
Gain on sale of marketable securities	-	-	184
Acquisition expense	-	-	(7)
Other income (loss), net	(65)	86	730
Interest expense	(3,169)	(3,604)	(3,226)
Income (loss) before income taxes	(182)	1,586	4,277
Income tax benefit (expense)	707	(417)	(1,548)
INCOME FROM CONTINUING OPERATIONS	525	1,169	2,729
Discontinued operations, net of income taxes (See Note 3)	(12)	3,519	1,033
NET INCOME	<u>\$ 513</u>	<u>\$ 4,688</u>	<u>\$ 3,762</u>
BASIC & DILUTED EARNINGS PER SHARE:			
Continuing operations	\$ 0.05	\$ 0.11	\$ 0.26
Discontinued operations	-	0.34	0.10
Net income per share	<u>\$ 0.05</u>	<u>\$ 0.45</u>	<u>\$ 0.36</u>
Weighted average dividends declared per common share	<u>\$ 0.30</u>	<u>\$ 0.54</u>	<u>\$ 0.50</u>
COMPREHENSIVE INCOME:			
Net income	\$ 513	\$ 4,688	\$ 3,762
OTHER COMPREHENSIVE INCOME (LOSS), NET OF TAX			
Unrealized gain on available for sale securities, net of tax of \$8 for the year ended December 31, 2014	-	-	15
Accumulated unrealized gain on available for sale securities transferred to earnings, net of tax of \$64 for the year ended December 31, 2014	-	-	(120)
Other comprehensive income (loss), net of tax	-	-	(105)
COMPREHENSIVE INCOME	<u>\$ 513</u>	<u>\$ 4,688</u>	<u>\$ 3,657</u>

The accompanying notes are an integral part of these consolidated financial statements.

Part II

The information below follows the same accounting policies as described in the Summary of Significant Accounting Policies. Information on the Company's businesses as of December 31 and for the years then ended was as follows:

	2016	2015	2014
	(In thousands)		
External operating revenues:			
Regulated operations:			
Electric	\$ 322,356	\$ 280,615	\$ 277,874
Natural gas distribution	766,115	817,419	921,986
Pipeline and midstream	52,983	51,004	47,043
	1,141,454	1,149,038	1,246,903
Nonregulated operations:			
Pipeline and midstream	39,602	54,281	64,494
Construction materials and contracting	1,873,696	1,901,530	1,740,089
Construction services	1,072,663	907,767	1,062,055
Other	1,413	1,436	1,532
	2,987,374	2,865,014	2,868,170
Total external operating revenues	\$ 4,128,828	\$ 4,014,052	\$ 4,115,073
Intersegment operating revenues:			
Regulated operations:			
Electric	\$ —	\$ —	\$ —
Natural gas distribution	—	—	—
Pipeline and midstream	48,794	49,065	45,013
	48,794	49,065	45,013
Nonregulated operations:			
Pipeline and midstream	223	554	742
Construction materials and contracting	574	2,752	25,241
Construction services	609	18,660	57,474
Other	7,230	7,755	7,832
	8,636	29,721	91,289
Intersegment eliminations	(57,430)	(78,786)	(136,302)
Total intersegment operating revenues	\$ —	\$ —	\$ —
Depreciation, depletion and amortization:			
Electric	\$ 50,220	\$ 37,583	\$ 35,008
Natural gas distribution	65,426	64,756	54,700
Pipeline and midstream	24,885	27,981	29,749
Construction materials and contracting	58,413	65,937	68,557
Construction services	15,307	13,420	12,874
Other	2,067	2,070	2,196
Total depreciation, depletion and amortization	\$ 216,318	\$ 211,747	\$ 203,084
Interest expense:			
Electric	\$ 24,982	\$ 17,421	\$ 15,595
Natural gas distribution	30,405	29,471	27,217
Pipeline and midstream	7,903	9,895	9,946
Construction materials and contracting	15,265	15,183	16,368
Construction services	4,059	3,959	4,176
Other	5,854	15,853	13,823
Intersegment eliminations	(620)	(603)	(254)
Total interest expense	\$ 87,848	\$ 91,179	\$ 86,871

Docket No. PU-17-295
Exhibit MFG-12, Page 2 of 3 Part II

	2016	2015	2014
	(In thousands)		
Income taxes:			
Electric	\$ 1,449	\$ 11,523	\$ 12,442
Natural gas distribution	9,181	11,377	11,350
Pipeline and midstream	12,408	7,505	12,232
Construction materials and contracting	60,625	41,619	18,586
Construction services	17,748	16,432	24,753
Other	(2,028)	(9,834)	(11,136)
Intersegment eliminations	(6,251)	(7,958)	(3,805)
Total income taxes	\$ 93,132	\$ 70,664	\$ 64,422
Earnings (loss) on common stock:			
Regulated operations:			
Electric	\$ 42,222	\$ 35,914	\$ 36,731
Natural gas distribution	27,102	23,607	30,484
Pipeline and midstream	22,060	20,680	15,440
Nonregulated operations:			
Pipeline and midstream	91,384	80,201	82,655
Construction materials and contracting	1,375	(7,430)	9,226
Construction services	102,687	89,096	51,510
Other	33,945	23,762	54,432
Intersegment eliminations (a)	(3,231)	(14,941)	(7,386)
Earnings on common stock before income (loss) from discontinued operations	134,776	90,487	107,782
Income (loss) from discontinued operations, net of tax (a)	6,251	5,016	(6,095)
Loss from discontinued operations attributable to noncontrolling interest	232,411	175,704	184,342
Total earnings (loss) on common stock	(300,354)	(834,080)	109,311
Capital expenditures:			
Electric	\$ 111,134	\$ 332,876	\$ 185,121
Natural gas distribution	126,272	130,793	120,613
Pipeline and midstream	34,467	18,315	61,754
Construction materials and contracting	37,845	48,126	37,896
Construction services	60,344	38,269	26,942
Other	2,358	3,755	2,131
Total capital expenditures (b)	\$ 372,420	\$ 572,134	\$ 434,457
Assets:			
Electric (c)	\$ 1,406,694	\$ 1,325,858	\$ 1,028,001
Natural gas distribution (c)	2,099,296	2,038,433	1,935,271
Pipeline and midstream	550,615	591,651	651,925
Construction materials and contracting	1,220,459	1,261,963	1,260,534
Construction services	513,093	442,845	437,322
Other (d)	283,255	287,940	315,495
Assets held for sale	211,055	616,464	2,176,857
Total assets	\$ 6,284,467	\$ 6,565,154	\$ 7,805,405

Part II

Item 6. Selected Financial Data

	2016	2015	2014	2013	2012	2011
Selected Financial Data						
Operating revenues (000's):						
Electric	\$ 322,356	\$ 280,615	\$ 277,874	\$ 257,260	\$ 236,895	\$ 225,468
Natural gas distribution	766,115	817,419	921,986	851,945	754,848	907,400
Pipeline and midstream	141,602	154,904	157,292	144,568	142,610	152,972
Construction materials and contracting	1,874,270	1,904,282	1,765,330	1,712,137	1,617,425	1,510,010
Construction services	1,073,272	926,427	1,119,529	1,039,839	938,558	854,389
Other	8,643	9,191	9,364	9,620	10,370	11,446
Intersegment eliminations	(57,430)	(78,786)	(136,302)	(95,201)	(74,595)	(68,482)
	\$ 4,128,828	\$ 4,014,052	\$ 4,115,073	\$ 3,920,168	\$ 3,626,111	\$ 3,593,203
Operating income (loss) (000's):						
Electric	\$ 68,497	\$ 57,955	\$ 61,331	\$ 54,274	\$ 49,852	\$ 49,096
Natural gas distribution	65,014	53,810	65,633	78,829	67,579	82,856
Pipeline and midstream	43,374	29,988	46,713	20,896	49,139	45,365
Construction materials and contracting	178,719	146,026	86,462	93,629	57,864	51,092
Construction services	53,705	43,376	82,309	85,246	66,531	39,144
Other	(189)	(8,438)	(5,366)	(4,384)	(5,325)	(7,079)
Intersegment eliminations	—	(2,942)	(9,900)	(7,176)	—	—
	\$ 409,120	\$ 319,775	\$ 327,182	\$ 321,314	\$ 285,640	\$ 260,474
Earnings (loss) on common stock (000's):						
Electric	\$ 42,222	\$ 35,914	\$ 36,731	\$ 34,837	\$ 30,634	\$ 29,258
Natural gas distribution	27,102	23,607	30,484	37,656	29,409	38,398
Pipeline and midstream	23,435	13,250	24,666	7,701	26,588	23,082
Construction materials and contracting	102,687	89,096	51,510	50,946	32,420	26,430
Construction services	33,945	23,762	54,432	52,213	38,429	21,627
Other	(3,231)	(14,941)	(7,386)	(10,776)	(7,209)	(5,918)
Intersegment eliminations	6,251	5,016	(6,095)	(4,307)	—	—
	\$ 232,411	175,704	184,342	168,270	150,271	132,877
Earnings on common stock before income (loss) from discontinued operations	232,411	175,704	184,342	168,270	150,271	132,877
Income (loss) from discontinued operations, net of tax*	(300,354)	(834,080)	109,311	109,615	(151,710)	79,464
Loss from discontinued operations attributable to noncontrolling interest	(131,691)	(35,256)	(3,895)	(363)	—	—
	\$ 63,748	\$ (623,120)	\$ 297,548	\$ 278,248	\$ (1,439)	\$ 212,341
Earnings (loss) per common share before discontinued operations - diluted						
	\$ 1.19	\$.90	\$.96	\$.89	\$.80	\$.70
Discontinued operations attributable to the Company, net of tax						
	(.86)	(4.10)	.59	.58	(.81)	.42
	\$.33	\$ (3.20)	\$ 1.55	\$ 1.47	\$ (.01)	\$ 1.12
Common Stock Statistics						
Weighted average common shares outstanding - diluted (000's)						
	195,618	194,986	192,587	189,693	188,826	188,905
Dividends declared per common share	\$.7550	\$.7350	\$.7150	\$.6950	\$.6750	\$.6550
Book value per common share	\$ 11.78	\$ 12.83	\$ 16.66	\$ 15.01	\$ 13.95	\$ 14.62
Market price per common share (year end)	\$ 28.77	\$ 18.32	\$ 23.50	\$ 30.55	\$ 21.24	\$ 21.46
Market price ratios:						
Dividend payout**	63%	82%	74%	78%	84%	94%
Yield	2.7%	4.1%	3.1%	2.3%	3.2%	3.1%
Market value as a percent of book value	244.2%	142.8%	141.1%	203.5%	152.3%	146.8%

* Reflects oil and natural gas properties noncash write-downs of \$315.3 million (after tax) and \$246.8 million (after tax) in 2015 and 2012, respectively, and fair value impairments of assets held for sale of \$157.8 million (after tax) and \$475.4 million (after tax) in 2016 and 2015, respectively.
** Based on continuing operations.

ry Finance

costs of bond/stock issues in order to finance capital projects designed to serve future as well as current generations. Moreover, expensing flotation costs requires an estimate of the market pressure effect for each individual issue, which is likely to prove unreliable. A more reliable approach is to estimate market pressure for a large sample of stock offerings rather than for one individual issue.

An alternative regulatory treatment is to incorporate flotation costs into the rate base as an intangible asset. While this solves the intergenerational problem and compensates investors fairly for their investment, the method clashes with the "used and useful" principle of rate base inclusions. An intangible asset related to flotation costs is unlikely to be viewed as a used and useful asset in public service by regulators.

The conventional approach to flotation cost adjustment can be derived as follows. From the standard DCF model, the investor's required return on equity capital is expressed as:

$$K = D_1/P_0 + g \quad (10-1)$$

If P_0 is regarded as the proceeds per share actually received by the company from which dividends and earnings will be generated, that is, P_0 equals B_0 , the book value per share, then the company's required return is:

$$r = D_1/B_0 + g \quad (10-2)$$

Denoting the percentage flotation costs f , the proceeds per share B_0 are related to market price P_0 as follows:

$$\begin{aligned} P - fP &= B_0 \\ P(1 - f) &= B_0 \end{aligned} \quad (10-3)$$

Substituting Equation 10-3 into 10-2, we obtain:

$$r = D_1/P(1 - f) + g \quad (10-4)$$

which is the utility's required return adjusted for flotation cost.²

² Another way to look at it is that in order to prevent dilution of book value per share, the market-to-book ratio must be at least $1/(1 - f)$. The Target Market-to-Book method discussed in Chapter 12 can be used to translate the DCF cost of equity figure into an appropriate allowed return on book equity. As shown in Chapter 12, the allowed return consistent with a target M/B ratio that allows for the recapture of flotation costs is:

$$r = M/B (K - g) + g$$

Daily Treasury Yield Curve Rates (Percent)

November 6–December 1, 2017

Date	1 mo	3 mo	6 mo	1 yr	2 yr	3 yr	5 yr	7 yr	10 yr	20 yr	30 yr
11/6/17	1.03	1.19	1.30	1.50	1.61	1.73	1.99	2.17	2.32	2.58	2.80
11/7/17	1.05	1.22	1.33	1.49	1.63	1.75	1.99	2.17	2.32	2.56	2.77
11/8/17	1.05	1.23	1.35	1.53	1.65	1.77	2.01	2.19	2.32	2.57	2.79
11/9/17	1.07	1.24	1.36	1.53	1.63	1.75	2.01	2.20	2.33	2.59	2.81
11/10/17	1.06	1.23	1.37	1.54	1.67	1.79	2.06	2.27	2.40	2.67	2.88
11/13/17	1.07	1.24	1.37	1.55	1.70	1.82	2.08	2.27	2.40	2.67	2.87
11/14/17	1.06	1.26	1.40	1.55	1.68	1.81	2.06	2.26	2.38	2.64	2.84
11/15/17	1.08	1.25	1.39	1.55	1.68	1.79	2.04	2.21	2.33	2.58	2.77
11/16/17	1.08	1.27	1.42	1.59	1.72	1.83	2.07	2.25	2.37	2.62	2.81
11/17/17	1.08	1.29	1.42	1.60	1.73	1.83	2.06	2.23	2.35	2.59	2.78
11/20/17	1.09	1.30	1.46	1.62	1.77	1.86	2.09	2.26	2.37	2.60	2.78
11/21/17	1.15	1.30	1.45	1.62	1.77	1.88	2.11	2.27	2.36	2.58	2.76
11/22/17	1.16	1.29	1.45	1.61	1.74	1.84	2.05	2.22	2.32	2.57	2.75
11/24/17	1.14	1.29	1.45	1.61	1.75	1.85	2.07	2.23	2.34	2.58	2.76
11/27/17	1.15	1.27	1.41	1.62	1.74	1.84	2.06	2.21	2.32	2.57	2.76
11/28/17	1.16	1.30	1.46	1.61	1.75	1.85	2.07	2.24	2.34	2.58	2.77
11/29/17	1.17	1.29	1.45	1.61	1.78	1.86	2.09	2.27	2.37	2.62	2.81
11/30/17	1.14	1.27	1.44	1.62	1.78	1.90	2.14	2.31	2.42	2.65	2.83
12/1/17	1.14	1.27	1.45	1.62	1.78	1.90	2.13	2.28	2.37	2.58	2.76

Mean 2.79

**ROE and ROR Analysis for Montana-Dakota Utilities
Capital Asset Pricing Model (CAPM) Analysis
Beta calculation for Comparison Group**

**Docket No. PU-17-295
Exhibit MFG-14, Schedule 2**

Company Name	Value Line Betas-- Comparison Group
Atmos Energy	0.70
New Jersey Resources	0.80
NiSource, Inc.	0.60
Northwest Natural Gas	0.70
ONE Gas, Inc.	0.70
South Jersey Industries	0.85
Southwest Gas	0.80
Spire, Inc.	0.70
Mean	0.73

Value Line dividends taken from December 1, 2017 Investment Survey reports.



File at the front of the
Ratings & Reports
binder. Last week's
Summary & Index
should be removed.

December 15, 2017

TABLE OF SUMMARY & INDEX CONTENTS		Summary & Index Page Number
Industries, in alphabetical order	.....	1
Stocks, in alphabetical order	.....	2-23
Noteworthy Rank Changes	.....	24
SCREENS		
Industries, in order of Timeliness Rank	.....	24
Timely Stocks in Timely Industries	.....	25-26
Timely Stocks (1 & 2 for Performance)	.....	27-29
Conservative Stocks (1 & 2 for Safety)	.....	30-31
Highest Dividend Yielding Stocks	.....	32
Stocks with High 3- to 5-year Price Potential	.....	32
Biggest "Free Flow" Cash Generators	.....	33
Best Performing Stocks last 13 Weeks	.....	33
Worst Performing Stocks last 13 Weeks	.....	33
Widest Discounts from Book Value	.....	34
Stocks with Lowest P/Es	.....	35
Stocks with Highest P/Es	.....	35
Stocks with Highest Annual Total Returns	.....	36
Stocks with Highest 3- to 5-year Dividend Yield	.....	36
High Returns Earned on Total Capital	.....	37
Bargain Basement Stocks	.....	37
Untimely Stocks (5 for Performance)	.....	38
Highest Dividend Yielding Non-utility Stocks	.....	38
Highest Growth Stocks	.....	39

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

20.3

26 Weeks Ago	Market Low	Market High
19.7	3-9-09 10.3	11-8-17 19.6

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
2.1%	3-9-09 4.0%	11-8-17 2.0%

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

30%

26 Weeks Ago	Market Low	Market High
35%	3-9-09 185%	11-8-17 30%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER

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

	PAGE		PAGE		PAGE		PAGE
Advertising (13)	2391	Electric Utility (West) (34)	2223	Investment Co.(Foreign) (-)	420	Railroad (60)	339
Aerospace/Defense (51)	701	Electronics (57)	1317	Machinery (37)	1701	R.E.I.T. (86)	1511
Air Transport (22)	301	Engineering & Const (74)	1231	Maritime (95)	330	Recreation (32)	2301
Apparel (68)	2101	Entertainment (29)	2327	Medical Services (12)	794	Reinsurance (96)	2021
Automotive (70)	101	Entertainment Tech (89)	2007	Med Supp Invasive (39)	168	Restaurant (49)	351
*Auto Parts (24)	971	Environmental (73)	410	Med Supp Non-Invasive (45)	195	Retail Automotive (26)	2118
Bank (4)	2501	Financial Svcs. (Div.) (19)	2534	Metal Fabricating (82)	729	Retail Building Supply (23)	1138
Bank (Midwest) (20)	776	Food Processing (71)	1901	Metals & Mining (Div.) (59)	1578	Retail (Hardlines) (54)	2164
Beverage (44)	1964	Foreign Electronics (36)	1983	Natural Gas Utility (18)	547	Retail (Softlines) (79)	2199
Biotechnology (47)	829	Furn/Home Furnishings (28)	1147	Natural Gas (Div.) (80)	525	Retail Store (61)	2134
Brokers & Exchanges (7)	1792	Healthcare Information (65)	821	Newspaper (84)	2384	Retail/Wholesale Food (66)	1944
Building Materials (27)	1101	Heavy Truck & Equip (41)	150	Office Equip/Supplies (64)	1410	Semiconductor (3)	1347
*Cable TV (21)	1017	Homebuilding (5)	1123	Oil/Gas Distribution (97)	608	Semiconductor Equip (2)	1379
Chemical (Basic) (90)	1595	Hotel/Gaming (15)	2351	Oilfield Svcs/Equip. (94)	1648, 2419	Shoe (72)	2155
Chemical (Diversified) (1)	2443	Household Products (69)	1188	Packaging & Container (16)	1173	Steel (38)	740
Chemical (Specialty) (35)	559	Human Resources (31)	1636	Paper/Forest Products (25)	1163	*Telecom. Equipment (55)	938
Computers/Peripherals (9)	1393	Industrial Services (50)	379	Petroleum (Integrated) (48)	501	*Telecom. Services (62)	918
Computer Software (43)	2586	Information Services (30)	435	Petroleum (Producing) (46)	2400	*Telecom. Utility (92)	1025
Diversified Co. (40)	1738	IT Services (17)	2609	*Pharmacy Services (33)	962	Thrift (83)	1501
Drug (76)	1606	Insurance (Life) (14)	1550	Pipeline MLPs (81)	618	Tobacco (52)	1991
E-Commerce (11)	1812	Insurance (Prop/Cas.) (93)	755	Power (88)	1214	*Toiletries/Cosmetics (77)	1007
Educational Services (10)	1998	Internet (75)	2632	Precious Metals (87)	1562	Trucking (42)	318
Electrical Equipment (58)	1301	Investment Banking (6)	1804	Precision Instrument (53)	112	Water Utility (78)	1782
*Electric Util. (Central) (63)	901	Investment Co. (-)	1203	Public/Private Equity (85)	2657	Wireless Networking (56)	593
Electric Utility (East) (91)	137			Publishing (67)	2376		

*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. 18.
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ROE and ROR Analysis for Montana-Dakota Utilities
 Capital Asset Pricing Model (CAPM) Analysis
 Calculation of ROE

Docket No. PU-17-295
 Exhibit MFG-14, Schedule 4

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

$r =$	2.79%	30-Year Treasury Bill November 6-December 1, 2017 average, Exhibit MFG-13, Schedule 1
$(k_m - r) =$	5.99%	Market risk premium
$\beta =$	0.73	Value Line mean beta for Comparison Group, Exhibit MFG-13, Schedule 2
$\beta (k_m - r) =$	4.38%	
$k =$	7.17%	

CAPM ROE

*-Exhibit MFG-13, Schedule 3

4-Year Annualized Growth Rate for Value Line Data

Value Line December 15, 2017 forecast data*	2.00%
Dividend yield	
30 percent market appreciation potential, 3-5 years	6.78% ^{1/3}
4-year growth rate $(1.30^{0.25} - 1.00)$	8.78%
Value Line forecast result $(2.0\% + 6.78\%)$	5.99%
Market risk premium $(8.78\% - 2.79\%)$	

Empirical CAPM (ECAPM) calculations**

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

Where:

$$x = 0.25$$

$$k = 2.79\% + 0.25 * (8.78\% - 2.79\%) + (1 - 0.25) * 0.73 * (8.78\% - 2.79\%)$$

ECAPM ROE

$$k = 7.57\%$$

**-See Pages 190-191, Morin, Roger, *New Regulatory Finance* (2006), Public Utilities Reports, Inc., Vienna, Virginia, Exhibit MFG-14, Schedule 5

TABLE 6-2
EMPIRICAL EVIDENCE ON THE ALPHA FACTOR

Author	Range of alpha
Fischer (1983)	-3.6% to 3.6%
Fischer, Jensen and Scholes (1972)	-9.61% to 12.24%
Fama and McBeth (1972)	4.08% to 9.36%
Fama and French (1992)	10.08% to 13.56%
Litzenberger and Ramaswamy (1979)	5.32% to 8.17%
Litzenberger, Ramaswamy and Sosin (1980)	1.63% to 5.04%
Peitencill, Sundaram and Maitur (1995)	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 0.30. 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 Montana-Dakota Utilities

Docket No. PU-17-295

Summary of Authorized ROEs in Fully Litigated Natural Gas Rate Cases, January 1, 2016-December 7, 2017

Exhibit MFG-15

Source: S&P Global Market Intelligence Regulatory Research Associates Rate Case History

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
2017										
Wisconsin	Northern States Power Co - WI	D-4220-UR-123	(G) Natural Gas	Distribution	5/4/17	12/7/17	Fully Litigated	NA	9.80	12/2018
Virginia	Washington Gas Light Co.	C-PUR-2017-0010	Natural Gas	Distribution	7/26/17	11/21/17	Fully Litigated	7.35	9.50	12/2018
Oklahoma	CenterPoint Energy Resources	Ca-PUD20170007	Natural Gas	Distribution	3/15/17	10/19/17	Fully Litigated	NA	NA	12/2016
South Carolina	South Carolina Electric & Gas	D-2017-6-G	Natural Gas	Distribution	6/15/17	9/27/17	Fully Litigated	8.15	NA	03/2017
Alaska	ENSTAR Natural Gas Co.	D-U-16-066	Natural Gas	Distribution	6/1/16	9/22/17	Fully Litigated	8.59	11.88	12/2015
Michigan	Consumers Energy Co.	C-U-18124	Natural Gas	Distribution	8/1/16	7/31/17	Fully Litigated	5.97	10.10	12/2017
Idaho	Intermountain Gas Co.	C-INT-G-16-2	Natural Gas	Distribution	8/12/16	4/28/17	Fully Litigated	7.30	9.50	12/2016
New York	National Fuel Gas Dist Corp.	C-16-G-0257	Natural Gas	Distribution	4/28/16	4/20/17	Fully Litigated	6.92	8.70	03/2018
District of Columbia	Washington Gas Light Co.	FC-1137	Natural Gas	Distribution	2/26/16	3/1/17	Fully Litigated	7.57	9.25	09/2015
								Mean	9.82	
								Range	8.70-11.88	
								Median	9.50	
								Mean w/o HI	9.48	

ROE and ROR Analysis for Montana-Dakota Utilities

Docket No. PU-17-295

Summary of Authorized ROEs in Fully Litigated Natural Gas Rate Cases, January 1, 2016–December 7, 2017

Exhibit MFG-15

Source: S&P Global Market Intelligence Regulatory Research Associates Rate Case History

2016													
Washington	Avista Corp.	D-UG-160229	Natural Gas	Distribution	2/19/16	12/15/16	Fully Litigated	NA	NA	NA			
Michigan	DTE Gas Co.	C-U-17999	Natural Gas	Distribution	12/18/15	12/9/16	Fully Litigated	5.76	10.10	10/2017			
Wisconsin	Madison Gas and Electric Co.	D-3270-UR-121	(G) Natural Gas	Distribution	4/8/16	11/9/16	Fully Litigated	7.88	9.80	12/2017			
Wisconsin	Northern States Power Co - WI	D-4220-UR-122	(G) Natural Gas	Distribution	4/1/16	10/26/16	Fully Litigated	NA	NA	12/2017			
South Carolina	South Carolina Electric & Gas	D-2016-6-G	Natural Gas	Distribution	6/15/16	10/13/16	Fully Litigated	8.11	NA	03/2016			
Minnesota	Minnesota Energy Resources	D-G-011/GR-15-7	Natural Gas	Distribution	9/30/15	9/29/16	Fully Litigated	6.88	9.11	12/2016			
Texas	Texas Gas Service Co.	D-GUD-10506	Natural Gas	Distribution	3/31/16	9/27/16	Fully Litigated	7.28	9.50	09/2015			
Maryland	Baltimore Gas and Electric Co.	C-9406 (gas)	Natural Gas	Distribution	11/6/15	6/3/16	Fully Litigated	7.23	9.65	11/2015			
Minnesota	CenterPoint Energy Resources	D-G-008/GR-15-4	Natural Gas	Distribution	8/3/15	5/5/16	Fully Litigated	7.07	9.49	09/2016			
Massachusetts	Fitchburg Gas & Electric Lights	DPU 15-81	Natural Gas	Distribution	6/16/15	4/29/16	Fully Litigated	8.46	9.80	12/2014			
Oregon	Avista Corp.	D-UG 288	Natural Gas	Distribution	5/1/15	2/29/16	Fully Litigated	7.46	9.40	12/2016			
Kansas	Black Hills Kansas Gas	D-16-BHCG-277-1	Natural Gas	Distribution	12/10/15	2/25/16	Fully Litigated	NA	NA	10/2015			
Colorado	Public Service Co. of CO	D-15AL-0135G	Natural Gas	Distribution	3/3/15	2/16/16	Fully Litigated	7.33	9.50	12/2014			
							Mean		9.59				
							Range		9.11-10.10				
							Median		9.50				

**ROE and ROR Analysis for Montana-Dakota Utilities
ROR for Comparison Group**

**Docket No. PU-17-295
Exhibit MFG-16**

	Constant-Growth DCF ROE Analysis			Other ROE Analysis Results					
	DCF Ratio	DCF Cost	WACC	Multistage DCF Cost	WACC	CAPM Cost	WACC	ECAP M Cost	WACC
Long-Term Debt	43.04%	5.28%	2.27%	5.28%	2.27%	5.28%	2.27%	5.28%	2.27%
Short-Term Debt	5.97%	2.83%	0.17%	2.83%	0.17%	2.83%	0.17%	2.83%	0.17%
Common Equity	51.00%	8.91%	4.55%	8.10%	4.13%	7.17%	3.66%	7.57%	3.86%
Overall Rate of Return			6.99%		6.57%		6.10%		6.30%

The recommended common equity cost of 8.91 percent is taken from ROE analysis in Exhibit MFG-8, Schedule 1. The Multistage DCF common equity cost is taken from ROE analysis performed in Exhibit MFG-8, Schedule 3. The CAPM and ECAPM costs of common equity are taken from ROE analysis performed in Exhibit MFG-14, Schedule 4.

The long-term debt cost, short-term debt cost, and capital structure ratios are those proposed by Montana-Dakota Utilities Co. in Statement D, page 1. They are accepted. The ratios shown differ slightly from those proposed by Montana-Dakota. The values in the cells are carried out to three decimal places as Montana-Dakota presents them, but are rounded to two places.

ROE and ROR Analysis for Montana-Dakota Utilities
Blue Chip Financial Forecasts
Forecasted Interest Rates vs. Actual Interest Rates
Pauline Ahern Cases except where noted

Docket No. PU-17-295
Exhibit MFG-17

Ahern Forecasts Sources	Blue Chip 30-Year Treasury Forecast	30-Year Treasury Actual	30-Year Treasury Actual Averages						
			2009Q3	2009Q4	2010Q1	2010Q2	2010Q3	2010Q4	
Blue Chip September 1, 2009 South Carolina PSC, Docket No. 2009-479-W/S, United Utility Companies, Direct Testimony, Pages 41-42, February 2010	2009Q3-2010Q4	4.67%	4.32%	4.34%	4.62%	4.37%	3.86%	4.17%	
	Difference	-0.39%							
Blue Chip June 1, 2011 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	2011Q2-2012Q3	4.78%	4.34%	2011Q3 3.69%	2011Q4 3.04%	2012Q1 3.14%	2012Q2 2.94%	2012Q3 2.74%	
	Difference	-1.46%							
Blue Chip January 1, 2013 New Hampshire PUC, DOCKET NO. DW 12-085, Rebuttal Testimony, Page 23, March 6, 2013	2013Q2-2014Q3	3.60%	2013Q2 3.14%	2013Q3 3.71%	2013Q4 3.79%	2014Q1 3.68%	2014Q2 3.44%	2014Q3 3.27%	
	Difference	-0.09%							
Blue Chip June 1, 2014 466, Rebuttal Testimony, Page 9, Pages 19-20, Exhibit No. T-6R, Schedule 9, Pages 20, 21, and 24 of 37, June 25, 2014.	2014Q2-2015Q3, 2016-2020, and 2021-2025	4.33%	2014Q2 3.44%	2014Q3 3.27%	2014Q4 2.97%	2015Q1 2.55%	2015Q2 2.88%	2015Q3 2.96%	
	Difference	-1.45%	2016 2.60%	2017Q1-2017Q4* 2.90%					
Blue Chip January 1, 2015 New Jersey Board of Public Utilities, Docket No. WR15020269, Prepared Testimony, Page 27, February 27,	2015Q1-2016Q2, 2016-2020, and 2021-2025	3.94%	2015Q1 2.55%	2015Q2 2.88%	2015Q3 2.96%	2015Q4 2.96%	2016Q1 2.72%	2016Q2 2.57%	
	Difference	-1.18%	2016 2.60%	2017Q1-2017Q4* 2.90%					
Blue Chip December 1, 2015 Delaware PSC, PSC Docket No. 16-0163, Prepared Testimony, Page 28, February 5, 2016.	2015Q4-2017Q1, 2017-2021, and 2022-2026	3.70%	2015Q4 2.96%	2016Q1 2.72%	2016Q2 2.57%	2016Q3 2.28%	2016Q4 2.83%	2017Q1 3.05%	
	Difference	-0.88%	2017Q1-2017Q4* 2.90%						
Blue Chip February 1, 2016 New York PSC, Case No. 16-W-0130, Testimony, Page 7, Page 34, February 26, 2016.	2016Q1-2017Q2, 2017-2021, and 2022-2026	3.75%	2016Q1 2.72%	2016Q2 2.57%	2016Q3 2.28%	2016Q4 2.83%	2017Q1 3.05%	2017Q2 2.90%	
	Difference	-0.94%	2017Q1-2017Q4* 2.90%						
Blue Chip February 1, 2017 New Jersey Board of Public Utilities, Case No. 16W16060510, Rebuttal Testimony, PRT-2, Page 32, February 26, 2016.	2017Q1-2018Q2, 2018-2022, and 2023-2027	3.65%	2017Q1 3.05%	2017Q2 2.90%	2017Q3 2.82%	2017Q4* 2.82%	2018Q1	2018Q2	
	Difference	-0.75%	2018						
Blue Chip April 1, 2017** North Dakota PSC, Docket No. PU-17-295, Direct Testimony, Schedule 8, page 1 of 2, July 21, 2017	2017Q2-2018Q3	3.52%	2017Q2 2.90%	2017Q3 2.82%	2017Q4* 2.82%	2018Q1 -	2018Q2 -	2018Q3 -	
	Difference	-0.67%							
Blue Chip June 1, 2017** North Dakota PSC, Docket No. PU-17-295, Direct Testimony, Page 11, July 21, 2017	2019-2023	4.30%	2019 -	2020 -	2021 -	2022 -	2023 -		
	Difference	NA							

** J. Stephen Gaske Testimony

* 2017Q4 averages through December 15, 2017

ROE and ROR Analysis for Montana-Dakota Utilities
 30-Year Treasury Interest Rates, January 1, 2017-December 15, 2017

Docket No. PU-17-295
 Exhibit MFG-18

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 Hold 0.50-0.75	5/1/2017	3.00	0.75-1.00
2/1/2017	3.08	FOMC Hold 0.50-0.75	5/2/2017	2.97	FOMC Hold 0.75-1.00
2/2/2017	3.09	0.50-0.75	5/3/2017	2.97	FOMC Hold 0.75-1.00
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
3/14/2017	3.17	FOMC Raise 0.50-0.75	6/12/2017	2.86	0.75-1.00
3/15/2017	3.11	FOMC Raise 0.50-0.75	6/13/2017	2.87	FOMC Raise 0.75-1.00
3/16/2017	3.14	FOMC Raise 0.75-1.00	6/14/2017	2.79	FOMC 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

2017Q1 Mean 3.05

6/30/2017 2.84
2017Q2 Mean 2.90

1.00-1.25

30-year Treasury			30-year Treasury		
Date	rate	Federal Funds rate	Date	rate	Federal 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 Hold 1.00-1.25	10/24/2017	2.92	1.00-1.25
7/26/2017	2.89	FOMC Hold 1.00-1.25	10/25/2017	2.95	1.00-1.25
7/27/2017	2.93	1.00-1.25	10/26/2017	2.96	1.00-1.25
7/28/2017	2.89	1.00-1.25	10/27/2017	2.93	1.00-1.25
7/31/2017	2.89	1.00-1.25	10/30/2017	2.88	1.00-1.25
8/1/2017	2.86	1.00-1.25	10/31/2017	2.88	FOMC Hold 1.00-1.25
8/2/2017	2.85	1.00-1.25	11/1/2017	2.85	FOMC Hold 1.00-1.25
8/3/2017	2.81	1.00-1.25	11/2/2017	2.83	1.00-1.25
8/4/2017	2.84	1.00-1.25	11/3/2017	2.82	1.00-1.25
8/7/2017	2.84	1.00-1.25	11/6/2017	2.80	1.00-1.25
8/8/2017	2.86	1.00-1.25	11/7/2017	2.77	1.00-1.25
8/9/2017	2.82	1.00-1.25	11/8/2017	2.79	1.00-1.25
8/10/2017	2.79	1.00-1.25	11/9/2017	2.81	1.00-1.25
8/11/2017	2.79	1.00-1.25	11/10/2017	2.88	1.00-1.25
8/14/2017	2.81	1.00-1.25	11/13/2017	2.87	1.00-1.25
8/15/2017	2.84	1.00-1.25	11/14/2017	2.84	1.00-1.25
8/16/2017	2.81	1.00-1.25	11/15/2017	2.77	1.00-1.25
8/17/2017	2.78	1.00-1.25	11/16/2017	2.81	1.00-1.25
8/18/2017	2.78	1.00-1.25	11/17/2017	2.78	1.00-1.25
8/21/2017	2.77	1.00-1.25	11/20/2017	2.78	1.00-1.25
8/22/2017	2.79	1.00-1.25	11/21/2017	2.76	1.00-1.25
8/23/2017	2.75	1.00-1.25	11/22/2017	2.75	1.00-1.25
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 Raise 1.00-1.25
9/13/2017	2.79	1.00-1.25	12/13/2017	2.74	FOMC 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			1.25-1.50
9/19/2017	2.81	FOMC Hold 1.00-1.25			1.25-1.50
9/20/2017	2.82	FOMC Hold 1.00-1.25			1.25-1.50
9/21/2017	2.80	1.00-1.25			1.25-1.50
9/22/2017	2.80	1.00-1.25			1.25-1.50
9/25/2017	2.76	1.00-1.25			1.25-1.50
9/26/2017	2.78	1.00-1.25			1.25-1.50
9/27/2017	2.86	1.00-1.25			1.25-1.50
9/28/2017	2.87	1.00-1.25			1.25-1.50
9/29/2017	2.86	1.00-1.25			1.25-1.50

2017Q3 Mean 2.82

2017Q4 Mean 2.82

**MONTANA-DAKOTA UTILITIES CO.
NORTH DAKOTA PUBLIC SERVICE COMMISSION
SET 3 - DATA REQUESTS
ISSUED OCTOBER 10, 2017
CASE NO. PU-17-295**

- 3.15 Please refer to the Direct Testimony of Nicole A. Kivisto, page 2, lines 3-8. Please describe in detail the coordination of strategies and policies relative to Montana-Dakota Utilities Co., Great Plains Natural Gas Company Co., Cascade Natural Gas Corporation, and Intermountain Gas Company carried out by Ms. Kivisto as President and Chief Executive Officer of the four companies.**

Response:

We operate as one utility with four brands sharing the same strategy of providing safe, reliable and cost effective service. We develop one shared strategic plan each year that focuses on our five critical success factors, namely integrity, safety, our customers, our employees and our shareholders. Where possible when it makes good economic sense and provides efficiencies or cost savings for our customers we have integrated policies for all four brands. As an example, with safety being a top priority we realigned our safety department with all brands reporting up through one Safety Director who reports directly to the President and CEO. We have aligned many of our safety policies and procedures across the brands and have developed one strategic plan for continuous improvement of employee and public safety. Another example would be our Human Resources policies which are consistent across all brands providing the ability to operate that department with less people than needed if we did not integrate. We are also delivering information technology on a consistent basis where possible such as our customer care and billing system and have streamlined associated policies and procedures. We consolidated our call center, serving all eight states. In addition, we have worked together across brands to increase our purchasing power by aligning purchases of common materials and supplies. These are just a few examples of the coordination of strategies and policies across the brands. We continue to look for other opportunities and have recently initiated an effort on the operations side of the business. The industry as whole is dealing with aging infrastructure and changing regulation requiring additional focus on pipeline safety management systems. Together, our four brands are evaluating how to move forward with potential additional pipeline safety regulation while continuing to enhance the safety of our system and provide the most cost effective service for our customers.

**MONTANA-DAKOTA UTILITIES CO.
NORTH DAKOTA PUBLIC SERVICE COMMISSION
SET 3 - DATA REQUESTS
ISSUED OCTOBER 10, 2017
CASE NO. PU-17-295**

3.16 Please refer to the Direct Testimony of Tammy J. Nygard, page 1, line 10- page 2, line 2. Please describe in detail the management of the accounting and financial forecasting/planning functions for Montana-Dakota Utilities Co., Great Plains Natural Gas Company Co., Cascade Natural Gas Corporation, and Intermountain Gas Company carried out by Ms. Nygard as Controller of the four companies.

Response:

Primary Function

Provide leadership and management of the accounting, revenue administration, accounts payable, fixed asset accounting, financing, financial reporting and planning functions, which include overall direction and management of the accounting principles, practices, procedures, initiatives and controls for the maintenance of fiscal records, including compliance with Sarbanes Oxley (SOX) requirements, regulatory requirements, and the preparation of financial reports. Exercises primary daily management responsibility for financial reporting and planning, internal controls, general accounting, accounts payable, fixed asset accounting, and revenue administration, as well as budgetary control. Provide leadership for the financing requirements of the company.

Responsibilities

- A. Direct the financial reporting function activities, including the analysis and reporting of all financial transactions of Montana-Dakota Utilities Co., Great Plains Natural Gas Co., Cascade Natural Gas Corporation and Intermountain Gas Company.
- B. Direct general accounting functions including general ledger, customer information, disbursement, fixed asset accounting, and responsibility accounting functions; and the establishment of internal controls applicable to the Utility Group's general and responsibility accounting systems and procedures pursuant to Sarbanes Oxley requirements.
- C. Evaluate, plan, and recommend the optimal type of capital necessary to meet the long-term financing needs of the Utility Group.
- D. Direct the financial forecasting and planning function, including the development of the Utility Group's annual Operating Plan, and 5-Year Financial Forecast as well as operation and maintenance and capital budgets.
- E. Provide financial expertise and guidance on proposed business transactions.
- F. Testify before state and federal regulatory and legislative bodies as a technical and policy expert in matters related to primary function areas.
- G. Serve as Montana-Dakota Utilities Co., Great Plains Natural Gas Co, Cascade Natural Gas Corporation and Intermountain Natural Gas Company's financial representative on select corporate committees including Employee Benefit Committee (EBC) and Risk Management Advisory Committee (RMAC).

- H. Participate as a member of the Utility Group executive team.
- I. Assist in the leadership and direction of long range goals and objectives as well as formulating and administering company policies.
- J. Assist in assuring compliance with various Utility Group financing arrangements.
- K. Develop and maintain a well-coordinated and efficient working team capable of planning and administering the functions within the identified scope.
- L. Prepare and manage necessary budgets within all responsibilities of the primary functions.
- M. Keep abreast of all company activities including financial results.
- N. Direct the financial audits and risk assessments in accordance with requirements of the Sarbanes Oxley Act.

