



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE LEGAL OPERATIONS AGENCY



**BEFORE THE
NORTH DAKOTA PUBLIC SERVICE COMMISSION**

**MONTANA-DAKOTA UTILITIES CO., A DIVISON)
OF MDU RESOURCES GROUP, INC.)
2017 NATURAL GAS RATE INCREASE APPLICATION)
_____)**

Case No. PU-17-295

December 18, 2017

Darrell Nitschke, Executive Secretary
North Dakota Public Service Commission
State Capital Building
600 E. Boulevard Avenue
Bismarck, ND 58505-0480

Secretary Nitchke:

Enclosed for filing on behalf of Federal Executive Agencies (“FEA”) is the Direct Testimony and Exhibits of Michael P. Gorman.

Thank you for your assistance. If you should have any question about this filing, please do not hesitate to contact me.

Sincerely,

Attorneys for Federal Executive Agencies

By: /s/ Natalie A. Cepak _____

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cc: Direct Testimony of Michael P. Gorman
Counsel for Parties of Record (w/enc)

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing has been furnished by electronically and/or by or U.S. mail 18th day of December, 2017 to the following:

/s/ Ebony M. Payton
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STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

MONTANA DAKOTA UTILITIES)
CO., A DIVISION OF MDU)
RESOURCES GROUP, INC. 2017)
NATURAL GAS RATE INCREASE)
APPLICATION)

CASE NO. PU-17-295

Direct Testimony and Exhibit of

Michael P. Gorman

On behalf of

Federal Executive Agencies

December 18, 2017



STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

MONTANA DAKOTA UTILITIES)	CASE NO. PU-15-90
CO., A DIVISION OF MDU)	
RESOURCES GROUP, INC.)	
NATURAL GAS SERVICE RATE)	
INCREASE APPLICATION)	OAH FILE NO. 20150091

Direct Testimony of Michael P. Gorman

1 Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

2 A Michael P. Gorman. My business address is 16690 Swingley Ridge Road, Suite 140,
3 Chesterfield, MO 63017.

4 Q WHAT IS YOUR OCCUPATION?

5 A I am a consultant in the field of public utility regulation and a Managing Principal of
6 Brubaker & Associates, Inc. ("BAI"), energy, economic and regulatory consultants.

7 Q PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

8 A This information is included in Appendix A to my testimony.

9 Q ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?

10 A I am appearing on behalf of the Federal Executive Agencies ("FEA"). FEA consists of
11 certain agencies of the United States Government which have offices, facilities,
12 and/or installations in the service area of Montana-Dakota Utilities ("MDU" or
13 Company). Chief among the Federal customers served by MDU is Minot Air Force

1 Base (“AFB”). Minot AFB is a major consumer of gas purchased from MDU and an
2 increase in rates could affect the ability of Minot AFB to operate many of its loads to
3 the fullest extent possible, and thereby affect the military mission of Minot AFB.

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

5 A In my testimony I will make the following recommendations concerning the
6 Company’s claimed cost of service, rate design, and revenue requirement:

- 7 1. Review and comment on the Company’s estimated class cost of service study.
8 2. Proposed spread of the claimed revenue deficiency in this proceeding.
9 3. Comment on the Company’s requested return on equity, and the resulting
10 revenue requirement.

11 **I. SUMMARY**

12 **Q PLEASE SUMMARIZE YOUR RECOMMENDATIONS AND CONCLUSIONS ON**
13 **THE COMPANY’S CLASS COST OF SERVICE STUDY AND PROPOSED CLASS**
14 **SPREAD OF THE REVENUE DEFICIENCY IN THIS CASE.**

15 A The Company’s proposed class cost of service study reasonably and accurately
16 measures its cost of providing local gas transmission and distribution service to its
17 various retail rate classes. As outlined later in this testimony, the Company’s
18 assignment of its cost based on its class load profiles reasonably align with cost
19 causation and can be used to provide reasonable, accurate price signals to its retail
20 customers. Accurate price signals will provide incentives for customers to make
21 economic consumption decisions, which will help customers manage their bills, and
22 also allow MDU to provide gas service to retail classes under more efficient greater
23 utilization of infrastructure investments.

1 I also find that the Company's proposed spread of the revenue deficiency
2 across rate classes reasonably aligns with a movement toward cost of service while
3 mitigating impact on each rate class. Therefore, I support the Company's proposed
4 class revenue spread.

5 **Q PLEASE SUMMARIZE YOUR RECOMMENDATIONS AND CONCLUSIONS ON**
6 **RATE OF RETURN.**

7 A I recommend the Public Service Commission of North Dakota ("Commission") award
8 a return on common equity of 9.10%, which is the approximate midpoint of my
9 recommended range of 8.80% to 9.30%. My recommended return on equity will fairly
10 compensate the Company for its current market cost of common equity, and it will
11 mitigate the Company's claimed revenue deficiency in this proceeding while providing
12 a return that fairly balances the interests of customers and shareholders.

13 I also respond to MDU witness Dr. J. Stephen Gaske's return on equity
14 recommendation of 10.0%.¹

15 My recommended return on equity is reasonable because it will preserve the
16 Company's investment grade bond rating and access to external capital at
17 reasonable costs to MDU's customers.

18 **Q WHAT IS THE IMPACT ON THE COMPANY'S CLAIMED REVENUE DEFICIENCY**
19 **BY REDUCING THE RETURN ON EQUITY FROM THE COMPANY'S PROPOSED**
20 **10% DOWN TO YOUR RECOMMENDED 9.1% RETURN ON EQUITY?**

21 A Adjusting the return on equity reduces the Company's claimed revenue deficiency of
22 \$5.87 million by approximately \$1.1 million.

¹Gaske Direct Testimony at 3.

1 Q DO YOU BELIEVE MARKET-BASED MODELS PRODUCE REASONABLE
2 ESTIMATES OF MDU'S CURRENT COST OF EQUITY?

3 A Yes. I believe the application of a Discounted Cash Flow ("DCF") analysis, risk
4 premium, and Capital Asset Pricing Model ("CAPM") produces reasonable and
5 accurate estimates of the current market cost of equity for MDU and other utility
6 companies of similar investment risk.

7 Q PLEASE EXPLAIN WHY YOU BELIEVE THE DCF MODELS PRODUCE A
8 REASONABLE ESTIMATE OF MDU'S MARKET COST OF COMMON EQUITY.

9 A The results of the DCF model are economically logical in comparison to alternative
10 income investments and exhibit robust growth outlooks.

11 The DCF results generally produce economically logical results by comparison
12 of the two major components of the DCF return: (1) the dividend yield, and (2) the
13 growth rate. The utility stock investments are both income investments and growth
14 investments. Hence, the stock yield component of the DCF model can be compared
15 to alternative income investments of comparable risk to assess how it compares to
16 alternative market investments.

17 On my Exhibit No.____(MPG-2), Schedule 1, page 1, I show a comparison of
18 electric utility stock dividend yields compared to A-rated utility bond yields. This is an
19 approximate risk comparable investment for the income component of a utility stock
20 DCF return. As shown on this exhibit, utility stock yields are around 3.4%, which
21 compares to A-rated utility bond yields of around 4.1%. This spread of around 70
22 basis points is relatively low in comparison to the 12-year average shown on this
23 schedule. On my Exhibit No.____(MPG-2), Schedule 1, page 2, I show a comparison
24 of gas utility stock dividend yields compared to A-rated utility bond yields. This is an

1 approximate risk comparable investment for the income component of a utility stock
2 DCF return. As shown on this exhibit, utility stock yields are around 2.6%, which
3 compares to A-rated utility bond yields of around 4.1%. This spread of around 150 is
4 also consistent with the 12-year average shown on this Exhibit.

5 From a DCF growth perspective, utility stocks are also producing strong
6 growth outlooks relative to the past. The industry historical growth in dividends has
7 been around 4.0% to 4.5%. (Exhibit No.____(MPG-2), Schedule 2, pages 3-4). This
8 compares to outlooks for future growth in utility dividends and earnings of around
9 4.5% to 5.0%. These growth outlooks will be discussed in more detail later in this
10 testimony. As such, a DCF return on utility stocks reflects a yield component and a
11 growth component that both reflect robust return outlooks for utility stock investors,
12 and are economically logical in comparison to alternative investments of comparable
13 risk.

14 Further, as discussed in more detail later in this testimony, the CAPM return
15 also reflects a relatively low risk-free rate by historical standards, but this low risk-free
16 rate is combined with a market risk premium that is above historical actual achieved
17 market risk premiums relative to Treasury bond investments. Thus, the CAPM and
18 risk premium return estimate is also economically logical based on observable market
19 fundamentals and alternative investments.

20 For these reasons, the DCF and CAPM models produce reasonable results.

II. COST OF SERVICE

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Q DID THE COMPANY PERFORM AN EMBEDDED CLASS COST OF SERVICE STUDY (“ECOSS”) IN ORDER TO ALLOCATE ITS PROPOSED REVENUE REQUIREMENT TO ITS RATE CLASSES?

A Yes. The Company performed an ECOSS based on its projected 2018 revenue requirement results. The overall natural gas rate of return calculated by the Company in its ECOSS was 4.85%.

The results of the Company’s class cost of service study were offered by MDU witness Jordan R. Hatzenbuhler in his Direct Testimony. At page 4 of Mr. Hatzenbuhler’s testimony he summarizes the rate of return by class as follows:

Customer Class	ROR
Residential Service	3.413%
Small Firm General Service	5.144%
Large Firm General Service	6.634%
Air Force Delivery Service	14.194%
Small Interruptible Sales & Transportation	16.043%
Large Interruptible Sales & Transportation	13.378%
System Average	4.850%

As shown in the table above, classes that have a rate of return above 4.850% are paying above cost of service, and classes that are paying a rate of return at or below the system average rate of return are not fully compensating MDU for its cost of service.

Q WHAT AREA OF COST IS THE LARGEST CONTRIBUTOR TO A GAS DISTRIBUTION UTILITY’S OVERALL COST OF SERVICE?

A The largest contributor to the overall cost of service of a gas distribution utility is the cost associated with distribution mains, including the return on, and return of, the utility’s capital investment in distribution mains.

1 **Q HOW DID THE COMPANY ALLOCATE THE COSTS OF DISTRIBUTION MAINS**
2 **TO CLASSES IN ITS ECOS?**

3 A The Company classified 75% of its investment in distribution mains as demand
4 related, while 25% of its investment in distribution mains has been classified as
5 customer related.

6 The amount of cost classified as demand related was allocated to each rate
7 class based on the design day demand attributed to each rate class. The amount of
8 cost classified as customer related was allocated to each rate class based on the
9 average number of customers in each rate class.

10 **Q IS THE COMPANY'S PROPOSAL FOR THE ALLOCATION OF THE COSTS**
11 **ASSOCIATED WITH DISTRIBUTION MAINS TO ITS RATE CLASSES**
12 **REASONABLE?**

13 A Yes. A gas distribution utility designs and constructs its system of distribution mains
14 to meet the design day demand of its system. This ensures that all firm customers on
15 the utility's system will be able to receive delivery of gas on the day of greatest
16 expected system gas demand. The costs of the distribution mains system related to
17 the capacity size of the mains are properly classified as demand related and allocated
18 to customers based on their contribution to system design day demand.

19 The utility also designs and constructs its system to ensure that all customers
20 are connected to the system of distribution mains in order to provide customers the
21 opportunity to take delivery of gas. The costs of the distribution main system not
22 related to the capacity of the system but rather to the length of mains necessary to
23 connect customers to the system are properly classified as customer related and
24 allocated to customers based on the number of customers on the system.

1 Classifying distribution main costs partially as demand related and allocating
2 those costs on a design day demand basis, while classifying distribution main costs
3 partially as customer related and allocating those costs on a customer basis reflects
4 how the utility incurs the costs of designing and constructing its system of distribution
5 mains and a result, best reflects class cost causation on the utility's system.

6 **Q DOES THE COMPANY BASE ITS PROPOSED CLASS REVENUE ALLOCATION**
7 **ON ITS ECROSS?**

8 A The Company uses the results of its ECROSS as a guide in allocating its revenue
9 requirement to its rate classes. Because the Air Force Delivery, Small Interruptible,
10 and Large Interruptible classes are producing above system average rates of return
11 in the ECROSS, the Company proposes to hold these classes at current rate levels.
12 The Company proposes increases to the North Dakota retail Residential and Firm
13 General classes of 5.9% and 5.5%, respectively, as compared to the proposed
14 system average increase of 5.4%.

Class	Increase
Residential	5.9%
Firm General	5.5%
Air Force Delivery	0.0%
Small Interruptible	0.0%
Large Interruptible	0.0%
System	5.4%

Source: Direct Testimony of Jordan R. Hatzenbuhler at 9.

15 The increase proposed is less than that which is necessary to move the
16 Residential and Firm General Service classes to cost of service. Nevertheless, it
17 represents a reasonable movement toward cost of service, with each class getting
18 less than 1.1x the system average increase.

1 Q IS THE COMPANY'S PROPOSED CLASS REVENUE ALLOCATION
2 REASONABLE?

3 A Even though certain classes are deserving of a rate decrease as indicated by the
4 Company's ECOSS, holding those classes at current rate levels is reasonable. By
5 doing so, this provides the Company the opportunity to provide rate mitigation to the
6 Residential class. Mitigation of the Residential class increase recognizes the
7 principle of gradualism and prevents the Residential class from experiencing rate
8 shock in the form of a rate increase nearly double the system average increase of
9 5.4%.

10 III. RATE OF RETURN

11 Q PLEASE DESCRIBE THIS SECTION OF YOUR TESTIMONY.

12 A In this section of my testimony, I will explain the analysis I performed to determine the
13 reasonable rate of return in this proceeding and present the results of my analysis. I
14 begin my estimate of a fair return on equity by reviewing the authorized returns
15 approved by the regulatory commissions in various jurisdictions, the market
16 assessment of the regulated utility industry investment risk, credit standing, and stock
17 price performance. I used this information to get a sense of the market's perception
18 of the risk characteristics of regulated utility investments in general, which is then
19 used to produce a refined estimate of the market's return requirement for assuming
20 investment risk similar to MDU's utility operations.

21 As described below, I find the credit rating outlook of the industry to be strong,
22 supportive of the industry's financial integrity and access to capital. Further,
23 regulated utilities' stocks have exhibited strong price performance over the last
24 several years, which is evidence of utility access to capital.

1 Based on this review of credit outlooks and stock price performance, I
2 conclude that the market continues to embrace the regulated utility industry as a safe-
3 haven investment and views utility equity and debt investments as low-risk securities.

4 I also assessed the projections of changes in interest rates over the next
5 three- to five-year period, along with the Federal Reserve's monetary policy impacts
6 that could affect cost of capital, interest rates and a fair return on equity in this
7 proceeding. This information is used to assess whether or not current capital market
8 costs are reasonable estimates of the capital market costs that will prevail during the
9 period that rates determined in this proceeding will be in effect.

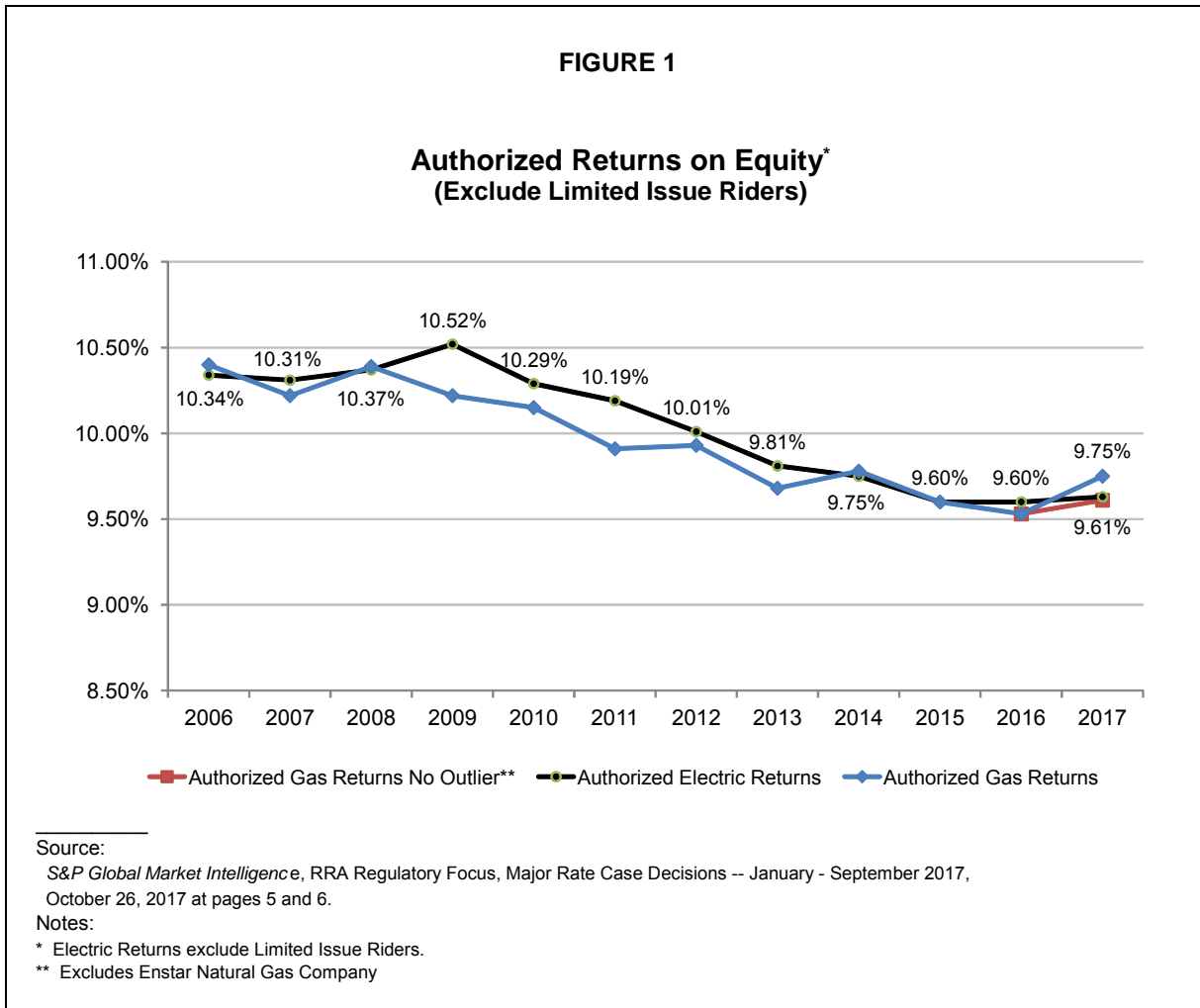
10 **III.A. Industry Authorized Returns on Equity,**
11 **Access to Capital, And Credit Strength**

12 **Q PLEASE DESCRIBE THE OBSERVABLE EVIDENCE ON TRENDS IN**
13 **AUTHORIZED RETURNS ON EQUITY FOR REGULATED UTILITIES, UTILITIES'**
14 **CREDIT STANDING, AND UTILITIES' ACCESS TO CAPITAL USED TO FUND**
15 **INFRASTRUCTURE INVESTMENT.**

16 **A** Authorized returns on equity for both electric and gas utilities have been steadily
17 declining over the last ten years, as illustrated in Figure 1 below. More recent
18 authorized returns on equity for electric and gas utilities have declined downward to
19 about 9.60%. This trend continued during the first three quarters of 2017 for the
20 electric utilities. However, in the gas sector in September 2017 the Regulatory
21 Commission of Alaska authorized a return on equity of 11.88%. RRA found this
22 award to be an "outlier":

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RRA notes that the year to date gas data includes an 11.88% ROE determination for an Alaska utility. Absent this "outlier," the 2017 year to date gas ROE average is 9.61%.²



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The graph for 2017 reports the authorized returns on equity for both gas and electric utilities. Also, for 2017, I show the RRA reported gas utility return on equity adjusted to remove a material outlier. While the declines in authorized returns on equity are public knowledge, and align with declining capital market costs, utilities are maintaining a stable investment grade credit outlook, and have been able to attract large amounts of capital at low cost to fund very large capital programs.

² S&P Global Market Intelligence, RRA Regulatory Focus, Major Rate Case Decisions -- January - September 2017, October 26, 2017 at 1.

1 Q PLEASE DESCRIBE THE ACTIVITY OF CREDIT RATING AGENCIES WITH
2 RESPECT TO THE REGULATED UTILITY INDUSTRY DURING THE PERIOD OF
3 DECLINING RETURNS ON EQUITY.

4 A The credit rating changes for the electric and gas utility industry reflect a significant
5 strengthening of the industry credit outlook.

6 The natural gas utility industry credit rating changes are shown in Table 1
7 below. The gas industry changes in credit ratings are similar to the electric utilities.
8 In 2009, 42% of the gas industry had a credit rating in the BBB category, but by the
9 end of 2016, 66% of gas utilities' credit ratings improved to A- or above. This trend
10 continues through 2017.

<u>Description</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017*</u>
A or higher	57%	57%	50%	50%	38%	33%	33%	44%	56%
A-	0%	0%	0%	0%	38%	33%	33%	22%	11%
BBB+	14%	14%	38%	38%	13%	22%	33%	33%	33%
BBB	14%	14%	0%	0%	0%	0%	0%	0%	0%
BBB-	14%	14%	13%	13%	13%	11%	0%	0%	0%
Below BBB-	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

* As of December 4, 2017.
Source: S&P CAPITAL IQ, downloaded 12/4/2017.
Note: Subsidiary rating is used if parent not rated.

11 As shown in Table 2 below, in 2008, approximately 69% of the electric utility
12 industry was rated from BBB- to BBB+, 18% had a bond rating better than BBB+, and
13 around 13% of the industry was below investment grade. This industry rating
14 improved steadily over the subsequent eight years. By the first quarter 2017, the
15 industry no longer had below investment grade companies, 62% were in the range of
16 BBB- to BBB+, and 37% of the industry had a bond rating above BBB+. Overall, the

1 improvement to the credit rating of the electric utility industry has been very
2 significant.

TABLE 2
S&P Ratings by Category
Electric Utilities
(Year End)

<u>Description</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017 Q1</u>
A or higher	8%	7%	9%	8%	6%	3%	3%	3%	6%	6%
A-	10%	15%	14%	14%	17%	20%	21%	22%	28%	31%
BBB+	23%	22%	17%	19%	14%	17%	32%	33%	36%	31%
BBB	23%	27%	31%	35%	36%	49%	37%	33%	22%	20%
BBB-	23%	20%	17%	14%	17%	6%	3%	3%	8%	11%
Below BBB-	<u>13%</u>	<u>10%</u>	<u>11%</u>	<u>11%</u>	<u>11%</u>	<u>6%</u>	<u>5%</u>	<u>6%</u>	<u>0%</u>	<u>0%</u>
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: EEI 2017 Q1 Credit Ratings. Tab V. S&P Rating by Comp. Category.

3 Moody's comments on this improved credit standing of regulated utility
4 companies in its publication, "Regulation Remains a Credit Supportive Ratings Driver
5 Two Years After Sector-Wide Upgrades." Moody's stated as follows:

6 **Summary**

7 In January and February 2014, we upgraded the ratings of 147 US
8 regulated electric and gas utility debt issuers as part of a sector-wide
9 rating action that reflected our more favorable view of the relative
10 credit supportiveness of US utility regulation. Factors supporting this
11 view include better cost-recovery provisions, reduced regulatory lag,
12 and generally fair and open relationships between utilities and their
13 state regulators.³

14 **Q HAVE CREDIT RATING AGENCIES COMMENTED ON DECLINING AUTHORIZED**
15 **RETURNS ON EQUITY?**

16 **A** Yes. Credit rating agencies recognize the declining trend in authorized returns and
17 the expectation that regulators will continue lowering the returns for U.S. utilities while
18 maintaining a stable credit profile. Specifically, Moody's states:

³Moody's Investor Service: "U.S. Regulated Utilities: Regulation Remains a Credit Supportive Ratings Driver Two Years After Sector-Wide Upgrades," November 6, 2015, emphasis added.

1 **Lower Authorized Equity Returns Will Not Hurt Near-Term Credit**
2 **Profiles**

3 The credit profiles of US regulated utilities will remain intact over the
4 next few years despite our expectation that regulators will continue to
5 trim the sector's profitability by lowering its authorized returns on equity
6 (ROE).⁴

7 Further, in a report, Standard & Poor's ("S&P") states:

8 **2. Earned returns will remain in line with authorized returns**

9 Authorized returns on equity granted by U.S. utility regulators in rate
10 cases this year have been steady at about 9.5%. Utilities have been
11 adept at earning at or very near those authorized returns in today's
12 economic and fiscal environment. A slowly recovering economy,
13 natural gas and electric prices coming down and then stabilizing at
14 fairly low levels, and the same experience with interest rates have led
15 to a perfect "non-storm" for utility ratepayers and regulators, with
16 utilities benefitting alongside those important constituencies. Utilities
17 have largely used this protracted period of favorable circumstances to
18 consolidate and institutionalize the regulatory practices that support
19 earnings and cash flow stability.⁵

20 **Q HAVE UTILITIES BEEN ABLE TO ACCESS EXTERNAL CAPITAL TO SUPPORT**
21 **INFRASTRUCTURE CAPITAL PROGRAMS?**

22 A Yes. In its October 23, 2017 Capital Expenditure Update report, *RRA Financial*
23 *Focus*, a division of S&P Global Market Intelligence, made several relevant comments
24 about utility investments generally:

- 25 • Projected 2017 capital expenditures for the 53 gas and electric utilities
26 in the RRA universe has stayed steady at about \$117.5 billion, which
27 would be an all-time high for the sector.

- 28 • CapEx projections for the longer term increased modestly from our
29 previous analysis in March 2017, rising to \$111.8 billion for 2018 and
30 \$102.4 billion for 2019, as companies' plans for future projects
31 solidified and new opportunities arose.

⁴*Moody's Investors Service*, "US Regulated Utilities: Lower Authorized Equity Returns Will Not Hurt Near-Term Credit Profiles," March 10, 2015.

⁵*Standard & Poor's Ratings Services*: "Corporate Industry Credit Research: Industry Top Trends 2016, Utilities," December 9, 2015, at 23, emphasis added.

1 The nation's electric and gas utilities are investing in infrastructure to
2 upgrade aging transmission and distribution systems, build new natural
3 gas, solar and wind generation and implement new technologies. We
4 expect considerable levels of spending to serve as the basis for solid
5 profit expansion for the foreseeable future.

6 * * *

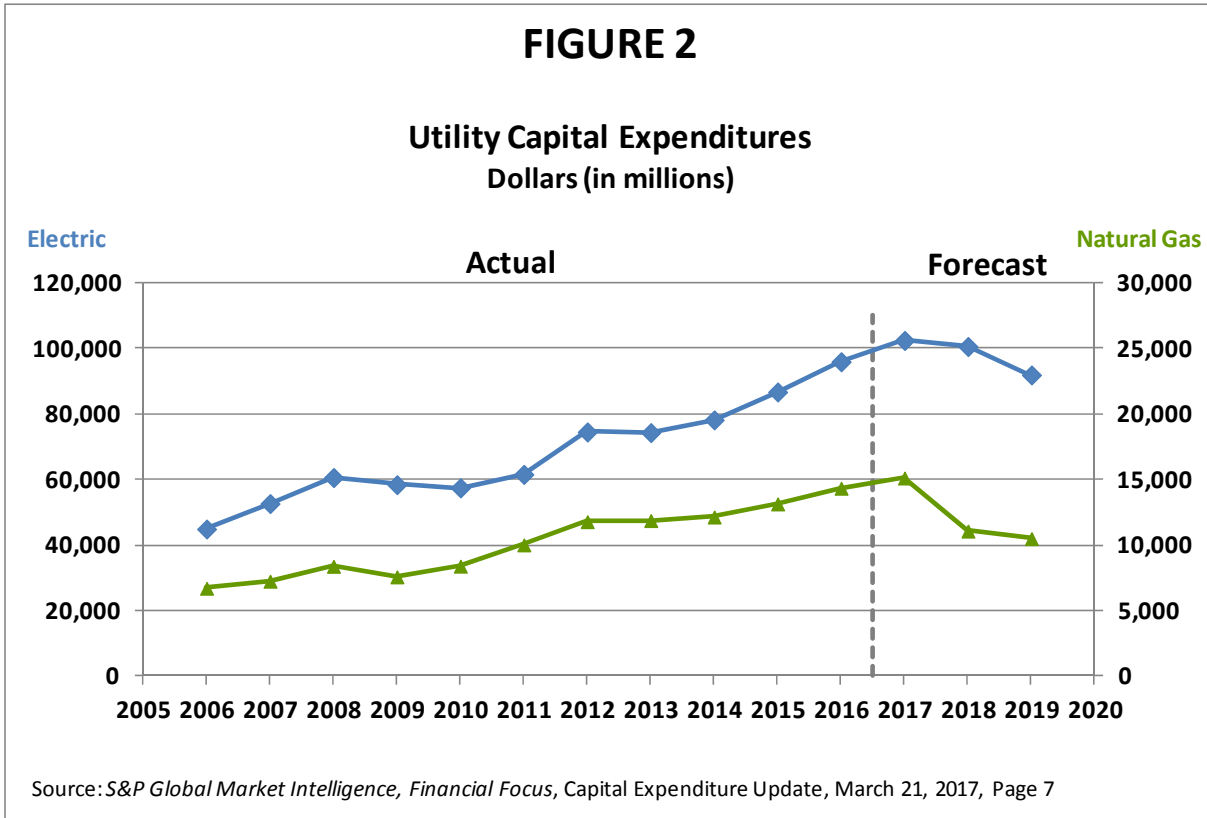
- 7 • From a natural gas perspective, many utilities are participating in the sizable
8 and ongoing expansion of the nation's gas midstream network. In addition,
9 replacement of mature gas distribution infrastructure has gained widespread
10 momentum and is likely to continue at material levels for many years,
11 considering state and federal mandates to address safety.

12 * * *

- 13 • For gas utilities, the CapEx/OCF ratio has fluctuated far more substantially
14 than for electric utilities. Gas utilities saw large swings in the ratio from 2000
15 through 2012, with a peak of 1.5x in 2000 and a low of 0.7 in 2009. Since
16 reaching 1.4x in 2012, the ratio appears to have stabilized somewhat,
17 although 2015 was slightly lower at 1.0x, before jumping up again to 1.3x in
18 2016, and dipping down to 1.1x in the first half of 2017.^{6/}

19 Historical versus projected outlooks for the electric and gas industries' capital
20 investments are shown in Figure 2 below. As shown in this graph, gas industry
21 investment outlooks are expected to be considerably higher in the forecast (2016-
22 2019), relative to the last ten-year historical period. As noted by S&P Global Market
23 Intelligence, this capital investment is exceeding internal sources of funds to the gas
24 utilities, requiring them to seek external capital to fund capital investments.

⁶S&P Global Market Intelligence, RRA Financial Focus: "Utility Capital Expenditures," October 23, 2017, Table 1.



1 As shown in Figure 2 above, the capital investments for the electric utility
 2 industry are significantly higher than the capital investments for the gas industry but
 3 they follow the same trend over the historical and forecasted period.

4 **Q IS THERE EVIDENCE OF ROBUST VALUATIONS OF GAS UTILITY**
 5 **SECURITIES?**

6 **A** Yes. Robust valuations are an indication that utilities can sell securities at high
 7 prices, which is a strong indication that they can access equity capital under
 8 reasonable terms and conditions, and at relatively low cost. As shown on Exhibit
 9 No. ___(MPG-2), Schedule 2, the historical valuation of the gas utilities followed by
 10 *Value Line*, based on a price-to-earnings (“P/E”) ratio, price-to-cash flow (“P/CF”)
 11 ratio, and market price-to-book value (“M/B”) ratio, indicates utility security valuations
 12 today are very strong and robust relative to the last 12 years. These strong

1 valuations of utility stocks indicate that utilities have access to equity capital under
2 reasonable terms and at lower costs.

3 **Q HOW SHOULD THE COMMISSION USE THIS MARKET INFORMATION IN**
4 **ASSESSING A FAIR RETURN FOR MDU?**

5 A Market evidence is quite clear that capital market costs are near historically low
6 levels. Authorized returns on equity have fallen to the low to mid 9.0% area; utilities
7 continue to have access to large amounts of external capital to fund large capital
8 programs; and utilities' investment grade credit standings are stable to improving.
9 The Commission should carefully weigh all this important observable market evidence
10 in assessing a fair return on equity for MDU.

11 **III.B. Regulated Utility Industry Market Outlook**

12 **Q PLEASE DESCRIBE THE CREDIT RATING OUTLOOK FOR REGULATED**
13 **UTILITIES.**

14 A Regulated utilities' credit ratings have improved over the last few years and the
15 outlook has been labeled "Stable" by credit rating agencies. Credit analysts have
16 also observed that utilities have strong access to capital at attractive pricing (i.e., low
17 capital costs), which has supported very large capital programs.

18 S&P recently published a report titled "Corporate Industry Credit Research:
19 Industry Top Trends 2017, Utilities." In that report, S&P noted the following:

20 – **Ratings Outlook:** Rating trends across regulated utilities remain
21 mostly stable supported by stable regulatory oversight, slow but steady
22 demand for utility services, and tempered by aggressive capital
23 spending that will keep credit metrics from improving. Emerging new
24 political trends in historically stable regions like Europe and the U.S.
25 may have far-reaching effect on utilities over time, but S&P Global
26 Ratings sees little immediate influence from those factors in 2017.

1 Sovereign rating developments can influence utility ratings in some
2 countries and we expect them to vary in different parts of the globe.

3 * * *

4 – **Assumptions:** Sales growth at most utilities is closely tied to the
5 general economic outlook in its service territory, which can vary
6 considerably from utility to utility. We project solid regulatory support
7 for utility earnings and cash flow, with the occasional exception due to
8 specific political or policy issues at the local level. Capital spending will
9 continue to be elevated in most areas, with substantial infrastructure
10 needs.

11 * * *

12 – **Industry Trends:** The utility industry in most regions is stable,
13 consistent with our general ratings outlook and the nature of the
14 essential products and services utilities sell.⁷

15 Similarly, Fitch states:

16 **Strong and Stable Median Ratings:** The UDC sector has typically
17 enjoyed strong investment-grade ratings, with the historical median
18 centered at 'BBB' for Fitch's coverage. Key rating drivers include lower
19 operational risks than those faced by integrated utilities, ongoing state
20 regulatory support for the upgrade of existing T&D infrastructure, timely
21 recovery of costs and a rising proportion of investments regulated by
22 the Federal Energy Regulatory Commission (FERC), which Fitch
23 continues to deem more supportive than many state regimes.

24 **Median ROE Trends Lower:** The median authorized return on equity
25 (ROE) has continued to inch downwards given a persistently low
26 interest rate environment. The median ROE was 9.60% in 2016, a
27 modest improvement of 50bps from 2015, yet remaining below the
28 median ROE of 9.68% in 2014 and 9.73% in 2013. Fitch believes that
29 the long-term downward trend of authorized ROEs is stabilizing at or
30 near current levels but does not anticipate a reversal in trend anytime
31 soon. Gas LDCs have typically fared better than electric T&D utilities.⁸

32 Moody's recent comments on the U.S. Utility Sector state as follows:

33 **2017 Outlook - Timely Cost-Recovery Drives Stable Outlook**

34 Our outlook for the US regulated utilities industry is stable. This
35 outlook reflects our expectations for the fundamental business
36 conditions in the industry over the next 12 to 18 months.

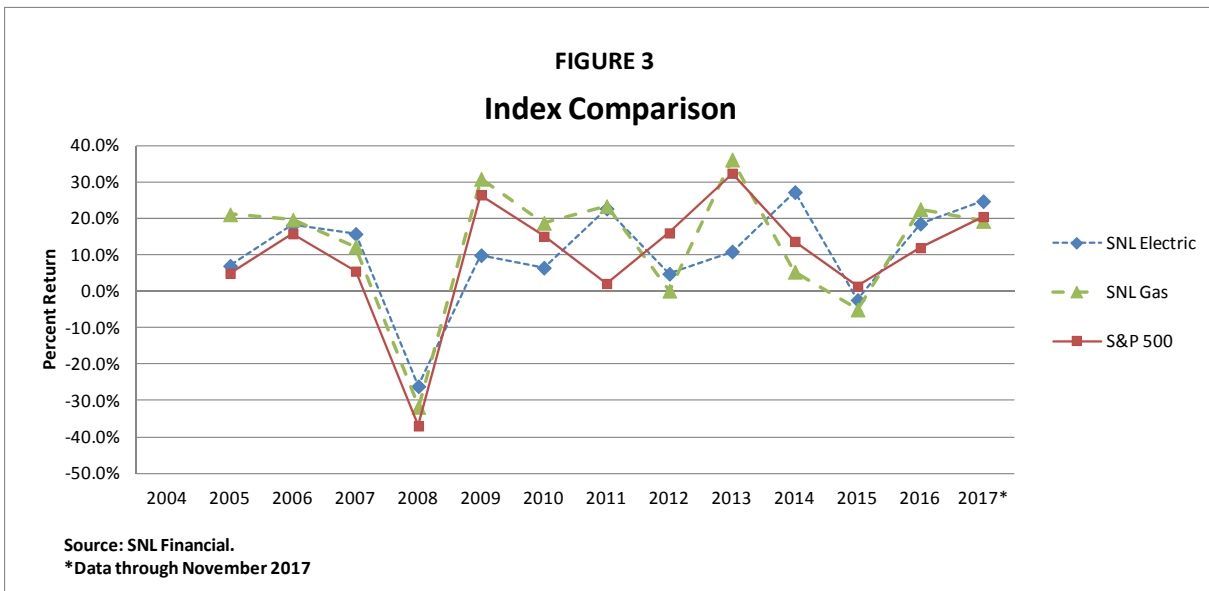
⁷Standard & Poor's Global Ratings: "Industry Top Trends 2017, Utilities," February 16, 2017, at 1, emphasis added.

⁸Fitch Ratings: "U.S. Transmission and Distribution Utilities Handbook," May 15, 2017, at 1, emphasis added.

1 **A credit-supportive regulatory environment is the main driver of**
 2 **our stable outlook.** Our stable outlook for the US regulated utility
 3 industry is based on our expectation that utilities will continue to
 4 recover costs in a timely manner and maintain stable cash flows.⁹

5 **Q PLEASE DESCRIBE UTILITY STOCK PRICE PERFORMANCE OVER THE LAST**
 6 **SEVERAL YEARS.**

7 A As shown in Figure 3 below, SNL Financial (“SNL”) has recorded utility stock price
 8 performance compared to the market. The industry’s stock performance data from
 9 2004 through the third quarter of 2017 shows that the SNL Electric and Gas
 10 Company Indexes have largely outperformed the market through downturns and
 11 recoveries. This relatively stable price performance for utilities supports my
 12 conclusion that utility stock investments are regarded by market participants as
 13 moderate- to low-risk investments.



⁹Moody’s Investors Service: “Regulated Utilities - US: 2017 Outlook – Timely Cost-Recovery Drives Stable Outlook,” November 4, 2016, at 1, emphasis added.

1 **III.C. Federal Reserve and Market Capital Costs Outlook**

2 **Q HAVE YOU CONSIDERED CONSENSUS MARKET OUTLOOKS FOR CHANGES**
3 **IN INTEREST RATES IN FORMING YOUR RECOMMENDED RETURN ON EQUITY**
4 **IN THIS CASE?**

5 A Yes. The outlook for changes in interest rates has been highly impacted by
6 expectations that the Federal Reserve Bank Open Market Committee (“FOMC”) will
7 raise short-term interest rates, and outlooks for inflation and GDP growth after the
8 recent Presidential election. The consensus economists are expecting continued
9 increases in the Federal Funds Rate as the FOMC continues to normalize interest
10 rates in response to the strengthening of the U.S. economy.

11 This is evident from a comparison of current and forecasted changes in the
12 Federal Funds Rate, as shown in Table 1 below.

13 However, while the Federal Funds Rate is expected to increase over the next
14 several years, consensus economists are not projecting significant increases in
15 long-term interest rates. This is also illustrated in Table 3 below.

TABLE 3									
Blue Chip Financial Forecasts									
<u>Projected Federal Funds Rate, 30-Year Treasury Bond Yields, and GDP Price Index</u>									
<u>Publication Date</u>	<u>1Q</u>	<u>2Q</u>	<u>3Q</u>	<u>4Q</u>	<u>1Q</u>	<u>2Q</u>	<u>3Q</u>	<u>4Q</u>	<u>1Q</u>
	<u>2017</u>	<u>2017</u>	<u>2017</u>	<u>2017</u>	<u>2018</u>	<u>2018</u>	<u>2018</u>	<u>2018</u>	<u>2019</u>
<u>Federal Funds Rate</u>									
Jul-17		0.9	1.2	1.3	1.5	1.7	1.9	2.1	
Aug-17		0.9	1.2	1.3	1.5	1.6	1.8	2.0	
Sep-17		0.9	1.2	1.3	1.5	1.6	1.8	2.0	
Oct-17			1.2	1.2	1.4	1.6	1.8	2.0	2.2
Nov-17			1.2	1.2	1.4	1.6	1.8	2.0	2.1
Dec-17			1.2	1.2	1.4	1.6	1.8	2.0	2.2
<u>T-Bond, 30 yr.</u>									
Jul-17		2.9	3.0	3.2	3.3	3.5	3.6	3.7	
Aug-17		2.9	3.0	3.1	3.3	3.4	3.6	3.7	
Sep-17		2.9	2.9	3.1	3.2	3.4	3.5	3.6	
Oct-17			2.8	2.9	3.1	3.3	3.4	3.5	3.6
Nov-17			2.8	3.0	3.1	3.3	3.4	3.5	3.6
Dec-17			2.8	2.9	3.1	3.3	3.4	3.5	3.6
<u>GDP Price Index</u>									
Jul-17		1.3	1.9	2.0	2.1	2.1	2.1	2.2	
Aug-17		1.0	1.7	2.0	2.1	2.1	2.1	2.2	
Sep-17		1.0	1.7	2.0	2.1	2.0	2.1	2.1	
Oct-17			1.7	2.0	1.9	1.9	2.1	2.1	2.2
Nov-17			2.2	2.0	1.9	2.0	2.1	2.1	2.2
Dec-17			2.2	2.2	2.0	1.9	2.1	2.1	2.2
Source and Note:									
Blue Chip Financial Forecasts, July 2017 through December 2017.									
Actual Yields in Bold									

1 I note that the five increases in the Federal Funds Rate experienced over the
2 last few years have not caused comparable changes in outlooks for changes in
3 long-term interest rates. This is illustrated on my attached Exhibit No.____(MPG-2),
4 Schedule 3. As shown on that Exhibit, the actions taken by the FOMC to increase
5 the Federal Funds Rate have simply flattened the yield curve, and have not resulted
6 in an increase in long-term interest rates. This is significant because cost of common
7 equity is impacted by long-term interest rates, not short-term interest rates. As a

1 result, the recent increases in the Federal Funds Rate, and the expectation of
2 continued increases in the Federal Funds Rate, have not, and are not expected to,
3 significantly impact long-term interest rates.

4 In a recent Federal Reserve meeting, it also announced a strategy to begin to
5 unwind its balance sheet position in long-term securities toward the end of this year.
6 Currently, the Federal Reserve has built up over approximately \$4.7 trillion of
7 Treasury and mortgage-backed securities as part of a quantitative easing (“QE”)
8 program that spanned 2008 to 2014. During this QE program, the Federal Reserve
9 procured long-term securities in an effort to support the Federal Reserve’s monetary
10 policy and mitigate long-term interest rates.

11 There has been concern that if the Federal Reserve starts to unwind this
12 balance sheet position, it will cause an increase in long-term interest rates. However,
13 the Federal Reserve announced that if it does unwind its balance sheet position, it will
14 do so in small increments so as to not have a significant impact on long-term interest
15 rates.¹⁰ In its most recent meeting the Federal Reserve announced that it will
16 continue unwinding its balance sheet position.¹¹

17 For these reasons, the Federal Reserve actions on short-term interest rates
18 have not resulted in increases in long-term interest rates. Further, the Federal
19 Reserve’s proposed plan for unwinding its balance sheet position is not expected to
20 have a significant impact on long-term interest rates. All this indicates that the
21 Federal Reserve QE monetary policy changes related to a strengthening economy
22 have not and are not expected to increase long-term interest rates. Further, this
23 outlook is reflected in consensus economists’ forecasts of long-term interest rates,

¹⁰Board of Governors of the Federal Reserve System, Press Release, “Federal Reserve Issues FOMC Statement,” June 14, 2017.

¹¹Board of Governors of the Federal Reserve System, Press Release, “Implementation Note issued December 13, 2017,” December 13, 2017.

1 which indicate a relatively low capital market cost period for at least the intermediate
2 period.

3 **Q HAVE PROJECTIONS OF INTEREST RATES MODERATED MORE RECENTLY**
4 **RELATIVE TO THE LAST FEW YEARS?**

5 A Yes. This is shown below in Table 4. There, for each quarter from 2014 through Q3,
6 2017, I show the prevailing quarterly average Treasury bond yield, and the
7 projections of Treasury bond yields two years out, and five to ten years out.
8 Significantly, actual Treasury bond yields in 2017 have been moderate and
9 comparable to those in 2015 and 2016, and are lower than the two year projected
10 yields in 2015, which would cover 2017. In addition, current projections of future
11 Treasury bond yields five and ten years out are now generally lower than they were
12 over the last three years. Indeed, in 2014 Treasury bond yields five to ten years out
13 were projected to increase to 5.6% from then prevailing yields of 3.26% to 3.79%.
14 The five to ten-year projections have steadily declined through 2015 and 2016. Most
15 recently, long-term projected Treasury bond yields are now expected to remain
16 relatively low in the 4.3% to 4.5% range 10 years out. It is also valuable to note that
17 2014's five and ten year projections are much higher than 2017's two year projections
18 although they cover the same time period.

19 While the accuracy of projected increases in interest rates is uncertain, what is
20 significant is that current costs remain low, and that consensus market economists
21 now project that capital market costs over the next five to ten years will remain
22 relatively low. This outlook represents a material moderation in capital market costs
23 over this intermediate forecast period.

TABLE 4

30-Year Treasury Bond Yield Actual Vs. Projection

<u>Description</u>	<u>Quarterly Average</u>	<u>2-Year Projected</u>	<u>5- to 10-Year Projected</u>
<u>2014</u>			
Q1	3.79%	4.40%	5.0% - 5.5%
Q2	3.69%	4.50%	
Q3	3.44%	4.40%	5.3% - 5.6%
Q4	3.26%	4.30%	
<u>2015</u>			
Q1	2.97%	4.00%	4.9% - 5.1%
Q2	2.55%	3.70%	
Q3	2.83%	4.00%	4.8% - 5.0%
Q4	2.84%	3.90%	
<u>2016</u>			
Q1	2.96%	3.80%	4.5% - 4.8%
Q2	2.72%	3.60%	
Q3	2.64%	3.40%	4.3% - 4.6%
Q4	2.29%	3.10%	
<u>2017</u>			
Q1	2.82%	3.70%	4.2% - 4.5%
Q2	3.05%	3.80%	
Q3	2.91%	3.70%	4.3% - 4.5%
Q4	2.82%	3.60%	

Sources:

Blue Chip Financial Forecasts,
December 2013 through December 2017.

1 Q HOW SHOULD THE COMMISSION USE THIS MARKET INFORMATION IN
2 ASSESSING A FAIR RETURN FOR MDU?

3 A Market evidence is quite clear that capital market costs are near historically low
4 levels. Regulated utilities continue to have access to large amounts of external

1 capital to fund large capital programs; and utilities' investment grade credit standings
2 are stable to improving. The Commission should carefully weigh all this important
3 observable market evidence in assessing a fair return on equity for MDU.

4 **III.D. MDU's Investment Risk**

5 **Q PLEASE DESCRIBE THE MARKET'S ASSESSMENT OF THE INVESTMENT RISK**
6 **OF MDU.**

7 A The market's assessment of MDU's investment risk is described by credit rating
8 analysts' reports. MDU or its parent company is not currently rate by Moody's. Also,
9 MDU does not have a stand-alone credit rating from S&P; rather, it is a wholly-owned
10 subsidiary of MDU Resources. MDU Resources' current corporate bond rating from
11 S&P is BBB+ with a Stable outlook.

12 Specifically, S&P states:

13 **Rationale**

14 The stable outlook reflects MDU's announced sale of its unregulated
15 natural gas processing facility, which is consistent with the company's
16 longer-term strategy of selling its higher risk assets and focusing its
17 growth on its lower-risk regulated businesses. The company's recent
18 sale of its exploration and production businesses and its oil refinery
19 increases our confidence that the company will continue to
20 successfully execute on this strategy. On a forward-looking basis, we
21 expect that the lower-risk regulated utility and pipeline businesses will
22 account for more than 50% of the consolidated company. Based on
23 the lower-risk strategy, MDU's financial measures will be better
24 positioned in the future to support our current view of the company's
25 financial risk.

26 MDU's business risk profile incorporates our combined view of its
27 various diverse businesses, which include lower-risk regulated utilities,
28 partially offset by relatively higher-risk construction services. On a
29 forward-looking basis we view MDU as consisting of four primary
30 business segments: regulated utilities (44%), regulated pipelines (8%),
31 construction materials (37%), and construction services (11%).

32 * * *

1 We assess MDU's financial risk based on our projections that FFO to
2 debt will approximate 17%-20%. We expect the company's financial
3 measures to gradually improve and stabilize following the sale of its
4 higher risk assets and the use of proceeds to reduce debt. Under our
5 base-case scenario of continued rate case increases, capital spending
6 at about \$350 million, modest utility customer growth, and continued
7 EBITDA growth at the construction materials business, we expect
8 2017 FFO to debt of about 18%, placing the company solidly in its
9 financial risk profile category.

10 Our issuer credit rating on MDU benefits from diversity and in
11 comparison to its peers. Diversity comes with its four business
12 segments that are not highly correlated. Our ratings on MDU also
13 reflect our assessment that MDU's business risk profile is at the higher
14 end of its category due to the high percentage of lower-risk regulated
15 utility businesses.¹²

16 **III.E. Return on Equity**

17 **Q PLEASE DESCRIBE WHAT IS MEANT BY A “UTILITY’S COST OF COMMON**
18 **EQUITY.”**

19 A A utility’s cost of common equity is the expected return that investors require on an
20 investment in the utility. Investors expect to earn their required return from receiving
21 dividends and through stock price appreciation.

22 **Q PLEASE DESCRIBE THE FRAMEWORK FOR DETERMINING A REGULATED**
23 **UTILITY’S COST OF COMMON EQUITY.**

24 A In general, determining a fair cost of common equity for a regulated utility has been
25 framed by two hallmark decisions of the U.S. Supreme Court: Bluefield Water Works
26 & Improvement Co. v. Pub. Serv. Comm’n of W. Va., 262 U.S. 679 (1923) and Fed.
27 Power Comm’n v. Hope Natural Gas Co., 320 U.S. 591 (1944).

¹²*Standard & Poor’s RatingsDirect*. “MDU Resources Group Inc. Outlook Revised To Stable From Negative On Planned Sale Of Unregulated Assets; Ratings Affirmed, at 2-3.

1 These decisions identify the general financial and economic standards to be
2 considered in establishing the cost of common equity for a public utility. Those
3 general standards provide that the authorized return should: (1) be sufficient to
4 maintain financial integrity; (2) attract capital under reasonable terms; and (3) be
5 commensurate with returns investors could earn by investing in other enterprises of
6 comparable risk.

7 **Q PLEASE DESCRIBE THE METHODS YOU HAVE USED TO ESTIMATE MDU'S**
8 **COST OF COMMON EQUITY.**

9 A I have used several models based on financial theory to estimate MDU's cost of
10 common equity. These models are: (1) a constant growth Discounted Cash Flow
11 ("DCF") model using consensus analysts' growth rate projections; (2) a constant
12 growth DCF using sustainable growth rate estimates; (3) a multi-stage growth DCF
13 model; and (4) a Capital Asset Pricing Model ("CAPM"). I have applied these models
14 to a group of publicly traded utilities with investment risk similar to MDU.

15 **III.F. Risk Proxy Group**

16 **Q PLEASE DESCRIBE HOW YOU IDENTIFIED A PROXY UTILITY GROUP TO**
17 **ESTIMATE MDU'S CURRENT MARKET COST OF EQUITY.**

18 A My gas utility proxy group is the same as the proxy group relied on by MDU's witness,
19 Dr. Gaske, with one exception. I have excluded South Jersey Industries, Inc.
20 because on October 16, 2017, it entered a definitive agreement to purchase
21 Elizabethtown gas business. My proxy group is shown on my Exhibit
22 No.____(MPG-2), Schedule 4.

1 Q WHY IS IT APPROPRIATE TO EXCLUDE COMPANIES WHICH ARE INVOLVED
2 IN MERGER AND ACQUISITION (“M&A”) ACTIVITY FROM THE PROXY GROUP?

3 A M&A activity can distort the market factors used in DCF and risk premium studies.
4 M&A activity can have impacts on stock prices, growth outlooks, and relative volatility
5 in historical stock prices if the market was anticipating or expecting the M&A activity
6 prior to it actually being announced. This distortion in the market data thus impacts
7 the reliability of the DCF and risk premium estimates for a company involved in M&A.

8 Moreover, companies generally enter into M&A in order to produce greater
9 shareholder value by combining companies. The enhanced shareholder value
10 normally could not be realized had the two companies not combined.

11 When companies announce an M&A, the public assesses the proposed
12 merger and develops outlooks on the value of the two companies after the
13 combination based on expected synergies or other value adds created by the M&A.

14 As a result, the stock value before the merger is completed may not reflect the
15 forward-looking earnings and dividend payments for the company absent the merger
16 or on a stand-alone basis. Therefore, an accurate DCF return estimate on
17 companies involved in M&A activities cannot be produced because their stock prices
18 do not reflect the stand-alone investment characteristics of the companies. Rather,
19 the stock price more likely reflects the shareholder enhancement produced by the
20 proposed transaction. For these reasons, it is appropriate to remove companies
21 involved in M&A activity from a proxy group used to estimate a fair return on equity for
22 a utility.

1 Q PLEASE DESCRIBE WHY YOU BELIEVE YOUR GAS UTILITY PROXY GROUP IS
2 REASONABLY COMPARABLE IN INVESTMENT RISK TO MDU.

3 A The gas proxy group has an average bond rating from S&P of A-, which is a notch
4 higher than S&P's senior unsecured bond rating for MDU (MDU Resources, Inc.) of
5 BBB+. The proxy group has an average bond rating from Moody's of A3. However,
6 MDU is not rated by Moody's.

7 The gas proxy group has an average common equity ratio of 46.5% (including
8 short-term debt) from S&P and 51.7% (excluding short-term debt) from *Value Line* in
9 2016. The proxy group common equity ratio is lower than the Company's proposed
10 ratemaking capital structure common equity ratio of 51.0%. Therefore the Company
11 has lower financial risk relative to the proxy group.

12 I believe that my gas proxy group reasonably approximates the investment
13 risk of MDU, and can be used to estimate a fair return on equity for MDU.

14 **III.G. Discounted Cash Flow Model**

15 Q PLEASE DESCRIBE THE DCF MODEL.

16 A The DCF model posits that a stock price is valued by summing the present value of
17 expected future cash flows discounted at the investor's required rate of return or cost
18 of capital. This model is expressed mathematically as follows:

19
$$P_0 = \frac{D_1}{(1+K)^1} + \frac{D_2}{(1+K)^2} \dots \frac{D_\infty}{(1+K)^\infty} \quad \text{(Equation 1)}$$

20

21 P_0 = Current stock price
22 D = Dividends in periods 1 - ∞
23 K = Investor's required return

24 This model can be rearranged in order to estimate the discount rate or
25 investor-required return otherwise known as "K." If it is reasonable to assume that

1 earnings and dividends will grow at a constant rate, then Equation 1 can be
2 rearranged as follows:

3
$$K = D_1/P_0 + G$$
 (Equation 2)

4 K = Investor's required return
5 D₁ = Dividend in first year
6 P₀ = Current stock price
7 G = Expected constant dividend growth rate

8 Equation 2 is referred to as the annual "constant growth" DCF model.

9 **Q PLEASE DESCRIBE THE INPUTS TO YOUR CONSTANT GROWTH DCF MODEL.**

10 A As shown in Equation 2 above, the DCF model requires a current stock price,
11 expected dividend, and expected growth rate in dividends.

12 **Q WHAT STOCK PRICE HAVE YOU RELIED ON IN YOUR CONSTANT GROWTH**
13 **DCF MODEL?**

14 A I relied on the average of the weekly high and low stock prices of the utilities in the
15 proxy group over a 13-week period ending on November 17, 2017. An average stock
16 price is less susceptible to market price variations than a price at a single point in
17 time. Therefore, an average stock price is less susceptible to aberrant market price
18 movements, which may not reflect the stock's long-term value.

19 A 13-week average stock price reflects a period that is still short enough to
20 contain data that reasonably reflects current market expectations but the period is not
21 so short as to be susceptible to market price variations that may not reflect the stock's
22 long-term value. In my expert opinion, a 13-week average stock price is a reasonable
23 balance between the need to reflect current market expectations and the need to
24 capture sufficient data to smooth out aberrant market movements.

1 Q WHAT DIVIDEND DID YOU USE IN YOUR CONSTANT GROWTH DCF MODEL?

2 A I used the most recently paid quarterly dividend as reported in *Value Line*.¹³ This
3 dividend was annualized (multiplied by 4) and adjusted for next year's growth to
4 produce the D_1 factor for use in Equation 2 above.

5 Q WHAT DIVIDEND GROWTH RATES HAVE YOU USED IN YOUR CONSTANT
6 GROWTH DCF MODEL?

7 A There are several methods that can be used to estimate the expected growth in
8 dividends. However, regardless of the method, for purposes of determining the
9 market-required return on common equity, one must attempt to estimate investors'
10 consensus about what the dividend, or earnings growth rate, will be and not what an
11 individual investor or analyst may use to make individual investment decisions.

12 As predictors of future returns, security analysts' growth estimates have been
13 shown to be more accurate than growth rates derived from historical data.¹⁴ That is,
14 assuming the market generally makes rational investment decisions, analysts' growth
15 projections are more likely to influence investors' decisions, which are captured in
16 observable stock prices more so than growth rates derived only from historical data.

17 For my constant growth DCF analysis, I have relied on a consensus, or mean,
18 of professional security analysts' earnings growth estimates as a proxy for investor
19 consensus dividend growth rate expectations. I used the average of analysts' growth
20 rate estimates from three sources: Zacks, SNL, and Reuters. All such projections
21 were available on November 17, 2017, as reported online.

22 Each consensus growth rate projection is based on a survey of security
23 analysts. There is no clear evidence whether a particular analyst is most influential

¹³*The Value Line Investment Survey*, September 1, 2017.

¹⁴See, e.g., David Gordon, Myron Gordon, and Lawrence Gould, "Choice Among Methods of Estimating Share Yield," *The Journal of Portfolio Management*, Spring 1989.

1 on general market investors. Therefore, a single analyst's projection does not as
2 reliably predict consensus investor outlooks as does a consensus of market analysts'
3 projections. The consensus estimate is a simple arithmetic average, or mean, of
4 surveyed analysts' earnings growth forecasts. A simple average of the growth
5 forecasts gives equal weight to all surveyed analysts' projections. Therefore, a
6 simple average, or arithmetic mean, of analyst forecasts is a good proxy for market
7 consensus expectations.

8 **Q WHAT ARE THE GROWTH RATES YOU USED IN YOUR CONSTANT GROWTH**
9 **DCF MODEL?**

10 A The growth rates I used in my DCF analysis are shown in Exhibit No.____(MPG-2),
11 Schedule 5. The average growth rate for my proxy group is 5.80%.

12 **Q WHAT ARE THE RESULTS OF YOUR CONSTANT GROWTH DCF MODEL?**

13 A As shown in Exhibit No.____(MPG-2), Schedule 6, the average and median constant
14 growth DCF returns for my proxy group for the 13-week analysis are 8.47% and
15 8.37%, respectively.

16 **Q DO YOU HAVE ANY COMMENTS ON THE RESULTS OF YOUR CONSTANT**
17 **GROWTH DCF ANALYSIS?**

18 A Yes. The constant growth DCF analysis for my proxy group is based on a group
19 average long-term sustainable growth rate of 5.80%. The three- to five-year growth
20 rates are higher than my estimate of a maximum long-term sustainable growth rate of
21 4.20%, which I discuss later in this testimony. I believe the constant growth DCF
22 analysis produces a reasonable high-end return estimate from my DCF studies.

1 Q HOW DID YOU ESTIMATE A MAXIMUM LONG-TERM SUSTAINABLE GROWTH
2 RATE?

3 A A long-term sustainable growth rate for a utility stock cannot exceed the growth rate
4 of the economy in which it sells its goods and services. Hence, the long-term
5 maximum sustainable growth rate for a utility investment is best proxied by the
6 projected long-term Gross Domestic Product (“GDP”). *Blue Chip Financial Forecasts*
7 projects that over the next five and ten years, the U.S. nominal GDP will grow
8 approximately 4.20%. These GDP growth projections reflect a real growth outlook of
9 2.0% and an inflation outlook of 2.1% going forward. As such, the average growth
10 rate over the next five to ten years is approximately 4.20%, which is a reasonable
11 proxy of long-term sustainable growth.¹⁵

12 In my multi-stage growth DCF analysis, I discuss academic and investment
13 practitioner support for using the projected long-term GDP growth outlook as a
14 maximum sustainable growth rate projection. Hence, recognizing the long-term GDP
15 growth rate as a maximum sustainable growth is logical, and is generally consistent
16 with academic and economic practitioner accepted practices.

17 **III.H. Sustainable Growth DCF**

18 Q PLEASE DESCRIBE HOW YOU ESTIMATED A SUSTAINABLE LONG-TERM
19 GROWTH RATE FOR YOUR SUSTAINABLE GROWTH DCF MODEL.

20 A A sustainable growth rate is based on the percentage of the utility’s earnings that is
21 retained and reinvested in utility plant and equipment. These reinvested earnings
22 increase the earnings base (rate base). Earnings grow when plant funded by

¹⁵*Blue Chip Financial Forecasts*, December 1, 2017, at 14.

1 reinvested earnings is put into service, and the utility is allowed to earn its authorized
2 return on such additional rate base investment.

3 The internal growth methodology is tied to the percentage of earnings retained
4 in the company and not paid out as dividends. The earnings retention ratio is 1 minus
5 the dividend payout ratio. As the payout ratio declines, the earnings retention ratio
6 increases. An increased earnings retention ratio will fuel stronger growth because
7 the business funds more investments with retained earnings.

8 The payout ratios of the proxy group are shown in my Exhibit No.____(MPG-2),
9 Schedule 7. These dividend payout ratios and earnings retention ratios can be used
10 to develop a sustainable long-term earnings retention growth rate. A sustainable
11 long-term earnings retention ratio will help gauge whether analysts' current three- to
12 five-year growth rate projections can be sustained over an indefinite period of time.

13 The data used to estimate the long-term sustainable growth rate is based on
14 MDU's current market-to-book ratio and on *Value Line's* three- to five-year projections
15 of earnings, dividends, earned returns on book equity, and stock issuances.

16 As shown in Exhibit No.____(MPG-2), Schedule 8, the average sustainable
17 growth rate for the proxy group using this internal growth rate model is 6.40%.

18 **Q DO YOU HAVE ANY COMMENTS CONCERNING YOUR SUSTAINABLE**
19 **GROWTH RATE?**

20 **A** Yes. As shown on my Exhibit No.____(MPG-2), Schedule 8, page 1, the internal
21 growth by reinvesting retained earnings is about 4.65%. This growth rate is
22 reasonably consistent with a long-term sustainable growth. However, after reflecting
23 sales of additional shares, the sustainable growth rate is increased from 4.65% up to
24 6.40%. While this growth rate may be achieved over the relatively short run, this

1 significant impact on the internal growth caused by sales of additional shares is not
2 sustainable. Therefore, I conclude that the three- to five-year projection of growth
3 does not produce a reasonable estimate of sustainable growth.

4 **Q WHAT IS THE DCF ESTIMATE USING THESE SUSTAINABLE LONG-TERM**
5 **GROWTH RATES?**

6 A A DCF estimate based on these sustainable growth rates is developed in Exhibit
7 No.____(MPG-2), Schedule 9. As shown there, a sustainable growth DCF analysis
8 produces proxy group average and median DCF results for the 13-week period of
9 9.08% and 8.81%, respectively.

10 **III.I. Multi-Stage Growth DCF Model**

11 **Q HAVE YOU CONDUCTED ANY OTHER DCF STUDIES?**

12 A Yes. My first constant growth DCF is based on consensus analysts' growth rate
13 projections so it is a reasonable reflection of rational investment expectations over the
14 next three to five years. The limitation on this constant growth DCF model is that it
15 cannot reflect a rational expectation that a period of high or low short-term growth can
16 be followed by a change in growth to a rate that is more reflective of long-term
17 sustainable growth. Hence, I performed a multi-stage growth DCF analysis to reflect
18 this outlook of changing growth expectations.

19 **Q WHY DO YOU BELIEVE GROWTH RATES CAN CHANGE OVER TIME?**

20 A Analyst-projected growth rates over the next three to five years will change as utility
21 earnings growth outlooks change. Utility companies go through cycles in making
22 investments in their systems. When utility companies are making large investments,

1 their rate base grows rapidly, which in turn accelerates earnings growth. Once a
2 major construction cycle is completed or levels off, growth in the utility rate base
3 slows and its earnings growth slows from an abnormally high three- to five-year rate
4 to a lower sustainable growth rate.

5 As major construction cycles extend over longer periods of time, even with an
6 accelerated construction program, the growth rate of the utility will slow simply
7 because rate base growth will slow and the utility has limited human and capital
8 resources available to expand its construction program. Therefore, the three- to five-
9 year growth rate projection could be used as a long-term sustainable growth rate but
10 not without making a reasonable informed judgment to determine whether it
11 considers the current market environment, the industry, and whether the three- to
12 five-year growth outlook is sustainable.

13 **Q PLEASE DESCRIBE YOUR MULTI-STAGE GROWTH DCF MODEL.**

14 **A** The multi-stage growth DCF model reflects the possibility of non-constant growth for
15 a company over time. The multi-stage growth DCF model reflects three growth
16 periods: (1) a short-term growth period consisting of the first five years; (2) a transition
17 period, consisting of the next five years (6 through 10); and (3) a long-term growth
18 period starting in year 11 through perpetuity.

19 For the short-term growth period, I relied on the consensus analysts' growth
20 projections described above in the discussion of my constant growth DCF model. For
21 the transition period, the growth rates were reduced or increased by an equal factor
22 reflecting the difference between the analysts' growth rates and the long-term
23 sustainable growth rate. For the long-term growth period, I assumed each company's
24 growth would converge on the maximum sustainable long-term growth rate.

1 Q WHY IS THE GDP GROWTH PROJECTION A REASONABLE PROXY FOR THE
2 MAXIMUM SUSTAINABLE LONG-TERM GROWTH RATE?

3 A Utilities cannot indefinitely sustain a growth rate that exceeds the growth rate of the
4 economy in which they sell services. Utilities' earnings/dividend growth is created by
5 increased utility investment or rate base. Such investment, in turn, is driven by
6 service area economic growth and demand for utility service. In other words, utilities
7 invest in plant to meet sales demand growth. Sales growth, in turn, is tied to
8 economic growth in their service areas.

9 The U.S. Department of Energy, Energy Information Administration ("EIA")
10 has observed utility sales growth tracks the U.S. GDP growth, albeit at a lower level,
11 as shown in Exhibit No.____(MPG-2), Schedule 10. Utility sales growth has lagged
12 behind GDP growth for more than a decade. Therefore, the U.S. GDP nominal
13 growth rate is a conservative (i.e., generous to the utility) proxy for the highest
14 sustainable long-term growth rate of a utility.

15 Q IS THERE RESEARCH THAT SUPPORTS YOUR POSITION THAT, OVER THE
16 LONG TERM, A COMPANY'S EARNINGS AND DIVIDENDS CANNOT GROW AT
17 A RATE GREATER THAN THE GROWTH OF THE U.S. GDP?

18 A Yes. This concept is supported in published analyst literature and academic work.
19 Specifically, in a textbook titled "Fundamentals of Financial Management," published
20 by Eugene Brigham and Joel F. Houston, the authors state as follows:

21 The constant growth model is most appropriate for mature companies
22 with a stable history of growth and stable future expectations.
23 Expected growth rates vary somewhat among companies, but
24 dividends for mature firms are often expected to grow in the future at

1 about the same rate as nominal gross domestic product (real GDP
2 plus inflation).¹⁶

3 The use of the economic growth rate is also supported by investment
4 practitioners as outlined as follows:

5 **Estimating Growth Rates**

6 One of the advantages of a three-stage discounted cash flow model is
7 that it fits with life cycle theories in regards to company growth. In
8 these theories, companies are assumed to have a life cycle with
9 varying growth characteristics. Typically, the potential for extraordinary
10 growth in the near term eases over time and eventually growth slows
11 to a more stable level.

12 * * *

13 Another approach to estimating long-term growth rates is to focus on
14 estimating the overall economic growth rate. Again, this is the
15 approach used in the *Ibbotson Cost of Capital Yearbook*. To obtain
16 the economic growth rate, a forecast is made of the growth rate's
17 component parts. Expected growth can be broken into two main parts:
18 expected inflation and expected real growth. By analyzing these
19 components separately, it is easier to see the factors that drive
20 growth.¹⁷

21 **Q IS THERE ANY ACTUAL INVESTMENT HISTORY THAT SUPPORTS THE**
22 **THEORY THAT THE CAPITAL APPRECIATION FOR STOCK INVESTMENTS**
23 **WILL NOT EXCEED THE NOMINAL GROWTH OF THE U.S. GDP?**

24 **A** Yes. This is evidenced by a comparison of the compound annual growth of the U.S.
25 GDP compared to the geometric growth of the U.S. stock market. Morningstar
26 measures the historical geometric growth of the U.S. stock market over the period

¹⁶"*Fundamentals of Financial Management*," Eugene F. Brigham and Joel F. Houston, Eleventh Edition 2007, Thomson South-Western, a Division of Thomson Corporation at 298, emphasis added.

¹⁷*Morningstar, Inc., Ibbotson SBBI 2013 Valuation Yearbook* at 51 and 52.

1 1926-2016 to be approximately 5.8%.¹⁸ During this same time period, the U.S.
2 nominal compound annual growth of the U.S. GDP was approximately 6.4%.¹⁹

3 As such, the compound geometric growth of the U.S. nominal GDP has been
4 higher but comparable to the nominal growth of the U.S. stock market capital
5 appreciation. This historical relationship indicates the U.S. GDP growth outlook is a
6 conservative estimate of the long-term sustainable growth of U.S. stock investments.

7 **Q HOW DID YOU DETERMINE A SUSTAINABLE LONG-TERM GROWTH RATE**
8 **THAT REFLECTS THE CURRENT CONSENSUS OUTLOOK OF THE MARKET?**

9 A I relied on the consensus analysts' projections of long-term GDP growth. *Blue Chip*
10 *Financial Forecasts* publishes consensus economists' GDP growth projections twice
11 a year. These consensus analysts' GDP growth outlooks are the best available
12 measure of the market's assessment of long-term GDP growth. These analyst
13 projections reflect all current outlooks for GDP and are likely the most influential on
14 investors' expectations of future growth outlooks. The consensus economists'
15 published GDP growth rate outlook is 4.20% over the next five to ten years.²⁰

16 Therefore, I propose to use the consensus economists' projected five- and
17 ten-year average GDP consensus growth rates of 4.20%, as published by *Blue Chip*
18 *Financial Forecasts*, as an estimate of long-term sustainable growth. *Blue Chip*
19 *Financial Forecasts* projections provide real GDP growth projections of 2.0% and
20 GDP inflation of 2.1%²¹ over the five-year and ten-year projection periods. These
21 consensus GDP growth forecasts represent the most likely views of market
22 participants because they are based on published consensus economist projections.

¹⁸ *Duff & Phelps, 2017 SBBi Yearbook* at 6-17.

¹⁹ U.S. Bureau of Economic Analysis, February 28, 2017.

²⁰ *Blue Chip Financial Forecasts*, December 1, 2017, at 14.

²¹ *Id.*

1 Q DID YOU CONSIDER OTHER SOURCES OF PROJECTED LONG-TERM GDP
2 GROWTH?

3 A Yes, and these sources corroborate my consensus analysts' projections, as shown
4 below in Table 5.

TABLE 5				
<u>GDP Forecasts</u>				
<u>Source</u>	<u>Term</u>	<u>Real GDP</u>	<u>Inflation</u>	<u>Nominal GDP</u>
<i>Blue Chip Financial Forecasts</i>	5-10 Yrs	2.0%	2.1%	4.2%
EIA – Annual Energy Outlook	29 Yrs	2.0%	2.1%	4.2%
Congressional Budget Office	6 Yrs	1.9%	2.0%	4.0%
Moody's Analytics	25 Yrs	2.0%	2.0%	4.0%
Social Security Administration	49 Yrs			4.4%
The Economist Intelligence Unit	25 Yrs	1.7%	1.9%	3.6%

5 The EIA, in its *Annual Energy Outlook*, projects real GDP out until 2050. In its
6 2017 Annual Report, the EIA projects real GDP through 2050 to be 2.0% and a long-
7 term GDP price inflation projection of 2.1%. The EIA data supports a long-term
8 nominal GDP growth outlook of 4.2%.²²

9 Also, the Congressional Budget Office (“CBO”) makes long-term economic
10 projections. The CBO is projecting real GDP growth to be 1.9% during the next
11 6 years with a GDP price inflation outlook of 2.0%. The CBO 6-year outlook for
12 nominal GDP based on this projection is 4.0%.²³

²²DOE/EIA Annual Energy Outlook 2017 With Projections to 2050, downloaded March 1, 2017.

²³CBO: *The Budget and Economic Outlook: 2017 to 2027*, January 2017, downloaded March 1, 2017.

1 Moody's Analytics also makes long-term economic projections. In its recent
2 25-year outlook, Moody's Analytics is projecting real GDP growth of 2.0% with GDP
3 inflation of 2.0%. Based on these projections, Moody's is projecting nominal GDP
4 growth of 4.0% over the next 25 years.²⁴

5 The Social Security Administration ("SSA") makes long-term economic
6 projections out to 2090. The SSA's nominal GDP projection, under its intermediate
7 cost scenario of 49 years, is 4.4%.²⁵

8 The Economist Intelligence Unit, a division of *The Economist* and a third-party
9 data provider to SNL, makes a long-term economic projection out to 2050. The
10 Economist Intelligence Unit is projecting real GDP growth of 1.7% with an inflation
11 rate of 1.9% out to 2050. The real GDP growth projection is in line with the
12 consensus economists. The long-term nominal GDP projection based on these
13 outlooks is approximately 3.6%.²⁶

14 The real GDP and nominal GDP growth projections made by these
15 independent sources support the use of the consensus economists' five-year and ten-
16 year projected GDP growth outlooks as a reasonable estimate of market participants'
17 long-term GDP growth outlooks.

18 **Q WHAT STOCK PRICE, DIVIDEND, AND GROWTH RATES DID YOU USE IN YOUR**
19 **MULTI-STAGE GROWTH DCF ANALYSIS?**

20 A I relied on the same 13-week average stock prices and the most recent quarterly
21 dividend payment data discussed above. For stage one growth, I used the
22 consensus analysts' growth rate projections discussed above in my constant growth

²⁴www.economy.com, *Moody's Analytics Forecast*, February 6, 2017.

²⁵www.ssa.gov, "2017 OASDI Trustees Report," Table VI.G4, downloaded July 20,
2017.

²⁶*SNL Financial, Economist Intelligence Unit*, downloaded on March 1, 2017.

1 DCF model. The first stage growth covers the first five years, consistent with the term
 2 of the analyst growth rate projections. The second stage, or transition stage, begins
 3 in year 6 and extends through year 10. The second stage growth transitions the
 4 growth rate from the first stage to the third stage using a linear trend. For the third
 5 stage, or long-term sustainable growth stage, starting in year 11, I used a 4.20%
 6 long-term sustainable growth rate based on the consensus economists' long-term
 7 projected nominal GDP growth rate.

8 **Q WHAT ARE THE RESULTS OF YOUR MULTI-STAGE GROWTH DCF MODEL?**

9 A As shown in Exhibit No.____(MPG-2), Schedule 11, both the average and median
 10 DCF returns on equity for my proxy group using the 13-week average stock price are
 11 7.10%.

12 **Q PLEASE SUMMARIZE THE RESULTS FROM YOUR DCF ANALYSES.**

13 A The results from my DCF analyses are summarized in Table 6 below:

TABLE 6		
<u>Summary of DCF Results</u>		
<u>Description</u>	<u>Proxy Group</u>	
	<u>Average</u>	<u>Median</u>
Constant Growth DCF Model (Analysts' Growth)	8.47%	8.37%
Constant Growth DCF Model (Sustainable Growth)	9.08%	8.81%
Multi-Stage Growth DCF Model	7.10%	7.10%

14 I conclude that my DCF studies support a return on equity of 8.80%.
 15 I consider the results of all my studies, along with my assessment of the inputs and
 16 results as described above. Based on this assessment, I find a return on equity of

1 around 8.80% generally reflects results of my proxy group DCF studies, and a
2 sustainable DCF return estimate for the proxy group, but should be regarded as a
3 conservative high-end DCF return for the reasons outlined above.

4 **III.J. Risk Premium Model**

5 **Q PLEASE DESCRIBE YOUR BOND YIELD PLUS RISK PREMIUM MODEL.**

6 A This model is based on the principle that investors require a higher return to assume
7 greater risk. Common equity investments have greater risk than bonds because
8 bonds have more security of payment in bankruptcy proceedings than common equity
9 and the coupon payments on bonds represent contractual obligations. In contrast,
10 companies are not required to pay dividends or guarantee returns on common equity
11 investments. Therefore, common equity securities are considered to be riskier than
12 bond securities.

13 This risk premium model is based on two estimates of an equity risk premium.
14 First, I estimated the difference between the required return on utility common equity
15 investments and U.S. Treasury bonds. The difference between the required return on
16 common equity and the Treasury bond yield is the risk premium. I estimated the risk
17 premium on an annual basis for each year over the period January 1986 through
18 September 2017. The common equity required returns were based on regulatory
19 commission-authorized returns for gas utility companies. Authorized returns are
20 typically based on expert witnesses' estimates of the contemporary investor-required
21 return.

22 The second equity risk premium estimate is based on the difference between
23 regulatory commission-authorized returns on common equity and contemporary
24 "A" rated utility bond yields by Moody's. I selected the period January 1986 through

1 September 2017 because public utility stocks consistently traded at a premium to
2 book value during that period. This is illustrated in Exhibit No.____(MPG-2), Schedule
3 12, which shows the market-to-book ratio since 1986 for the electric utility industry
4 was consistently above a multiple of 1.0x. Over this period, regulatory authorized
5 returns were sufficient to support market prices that at least exceeded book value.
6 This is an indication that regulatory authorized returns on common equity supported a
7 utility's ability to issue additional common stock without diluting existing shares. It
8 further demonstrates utilities were able to access equity markets without a detrimental
9 impact on current shareholders.

10 **Q DO YOU BELIEVE THAT THE TIME PERIOD USED TO DERIVE THESE EQUITY**
11 **RISK PREMIUM ESTIMATES IS APPROPRIATE TO FORM ACCURATE**
12 **CONCLUSIONS ABOUT CONTEMPORARY MARKET CONDITIONS?**

13 **A** Yes. The time period I use in this risk premium study is a generally accepted period
14 to develop a risk premium study using "expectational" data.

15 Contemporary market conditions can change dramatically during the period
16 that rates determined in this proceeding will be in effect. A relatively long period of
17 time where stock valuations reflect premiums to book value is an indication the
18 authorized returns on equity and the corresponding equity risk premiums were
19 supportive of investors' return expectations and provided utilities access to the equity
20 markets under reasonable terms and conditions. Further, this time period is long
21 enough to smooth abnormal market movement that might distort equity risk
22 premiums. While market conditions and risk premiums do vary over time, this
23 historical time period is a reasonable period to estimate contemporary risk premiums.

1 Alternatively, some studies, such as Duff & Phelps referred to later in this
2 testimony, have recommended that use of “actual achieved investment return data” in
3 a risk premium study should be based on long historical time periods. The studies
4 find that achieved returns over short time periods may not reflect investors’ expected
5 returns due to unexpected and abnormal stock price performance. Short-term,
6 abnormal actual returns would be smoothed over time and the achieved actual
7 investment returns over long time periods would approximate investors’ expected
8 returns. Therefore, it is reasonable to assume that averages of annual achieved
9 returns over long time periods will generally converge on the investors’ expected
10 returns.

11 My risk premium study is based on expectational data, not actual investment
12 returns, and, thus, need not encompass a very long historical time period.

13 **Q WHAT EQUITY RISK PREMIUMS DID THIS HISTORICAL TIME PERIOD**
14 **SUGGEST ARE USEFUL IN MEASURING THE CURRENT MARKET COST OF**
15 **EQUITY?**

16 **A** Based on this analysis, as shown in Exhibit No.____(MPG-2), Schedule 13, the
17 average indicated equity risk premium over U.S. Treasury bond yields has been
18 5.41%. Since the risk premium can vary depending upon market conditions and
19 changing investor risk perceptions, I believe using an estimated range of risk
20 premiums provides the best method to measure the current return on common equity
21 for a risk premium methodology.

22 I incorporated five-year and 10-year rolling average risk premiums over the
23 study period to gauge the variability over time of risk premiums. These rolling
24 average risk premiums mitigate the impact of anomalous market conditions and

1 skewed risk premiums over an entire business cycle. As shown on my Exhibit
2 No.____(MPG-2), Schedule 13, the five-year rolling average risk premium over
3 Treasury bonds ranged from 4.17% to 6.68%, while the 10-year rolling average risk
4 premium ranged from 4.30% to 6.44%.

5 As shown on my Exhibit No.____(MPG-2), Schedule 14, the average indicated
6 equity risk premium over contemporary Moody's utility bond yields was 4.04%. The
7 five-year and 10-year rolling average risk premiums ranged from 2.80% to 5.52% and
8 3.11% to 5.09%, respectively.

9 **Q BASED ON HISTORICAL DATA, WHAT RISK PREMIUM HAVE YOU USED TO**
10 **ESTIMATE MDU'S COST OF COMMON EQUITY IN THIS PROCEEDING?**

11 A The equity risk premium should reflect the relative market perception of risk in the
12 utility industry today. I have gauged investor perceptions in utility risk today in Exhibit
13 No.____(MPG-2), Schedule 15, where I show the yield spread between utility bonds
14 and Treasury bonds over the last 38 years. As shown in this schedule, the average
15 utility bond yield spreads over Treasury bonds for "A" and "Baa" rated utility bonds for
16 this historical period are 1.51% and 1.95%, respectively. The utility bond yield
17 spreads over Treasury bonds for "A" and "Baa" rated utilities for 2017 are 1.11% and
18 1.50%, respectively. The current average "A" rated utility bond yield spread over
19 Treasury bond yields is now lower than the 38-year average spread. The current
20 "Baa" rated utility bond yield spread over Treasury bond yields is lower than the
21 38-year average spread.

22 A current 13-week average "A" rated utility bond yield of 3.87% when
23 compared to the current Treasury bond yield of 2.81%, as shown in Exhibit
24 No.____(MPG-2), Schedule 16, page 1, implies a yield spread of 106 basis points.

1 This current utility bond yield spread is lower than the 38-year average spread for “A”
2 rated utility bonds of 1.51%. The current spread for the “Baa” rated utility bond yield
3 of 1.41% is also lower than the 38-year average spread of 1.95%.

4 These utility bond yield spreads are evidence that the market perception of
5 utility risk is about average relative to this historical time period and demonstrate that
6 utilities continue to have strong access to capital in the current market.

7 **Q HOW DO YOU DETERMINE WHERE A REASONABLE RISK PREMIUM IS IN THE**
8 **CURRENT MARKET?**

9 A I observed the spread of Treasury securities relative to public utility bonds and
10 corporate bonds in gauging whether or not the risk premium in current market prices
11 is stable relative to the past. What this observation of market evidence clearly
12 demonstrates is that the valuations in the current market place an above average risk
13 premium on securities that have greater risk.

14 This market evidence is summarized below in Table 7, which shows the utility
15 bond yield spreads over Treasury bond yields on average for the period 1980 through
16 September 2017, and the corporate bond yield spreads for Aaa corporates and Baa
17 corporates.

TABLE 7

Comparison of Yield Spreads Over Treasury Bonds

<u>Description</u>	<u>Utility</u>		<u>Corporate</u>	
	<u>A</u>	<u>Baa</u>	<u>Aaa</u>	<u>Baa</u>
Average Historical Spread	1.51%	1.95%	0.84%	1.93%
2016 Spread	1.33%	2.08%	1.07%	2.12%
2017 Spread	1.11%	1.50%	0.86%	1.56%

Source: Exhibit No.____(MPG-2), Schedule 15.

1 The observable yield spreads shown in the table above illustrate that
2 securities of greater risk have recently had above average risk premiums relative to
3 the long-term historical average risk premium. Specifically, A-rated utility bonds to
4 Treasuries, a relatively low-risk investment, have a yield spread in 2017 that has
5 been lower than, though comparable to that of, its long-term historical yield spread.
6 The A-rated utility bond yield spread is actually below the yield spread over the last
7 38 years. This is an indication that low risk investments like A-rated utility bonds have
8 premium values relative to minimal risk Treasury securities.

9 Only recently have Baa-rated utility bond yield spreads gone below the
10 38-year average of 1.95%. For example, in 2016, the Baa-rated yield spread
11 averaged 2.08%, which is approximately 13 basis points above the long-term average
12 of 1.95%. While the higher risk Baa utility and corporate bond yields currently have a
13 below-average yield spread of approximately 40 basis points (1.51% vs. 1.95%),
14 there appears to be more volatility in the spread. The higher risk Baa utility bond
15 yields do not have the same premium valuations as their lower risk A-rated utility
16 bond yields, and thus the yield spread for greater risk investments is wider than lower
17 risk investments.

1 This illustrates that securities with greater risk, such as Baa-rated bonds
2 versus A-rated bonds, have recently commanded above average risk premium
3 spreads in the marketplace. Utility equity securities are greater risk than Baa utility
4 bonds. Because greater risk securities appear to support an above-average risk
5 premium relative to historical averages, this would support an above-average risk
6 premium in measuring a fair return on equity for a utility stock or equity security.

7 **Q WHAT IS YOUR RECOMMENDED RETURN FOR MDU BASED ON YOUR RISK**
8 **PREMIUM STUDY?**

9 A To be conservative, I am recommending more weight to the high-end risk premium
10 estimates than the low-end. Hence, I propose to provide 70% weight to my high-end
11 risk premium estimates and 30% to the low-end. Applying these weights, the risk
12 premium for Treasury bond yields would be approximately 5.9%,²⁷ which is
13 considerably higher than the 32-year average risk premium of 5.41% and reasonably
14 reflective of the 3.6% projected Treasury bond yield. A Treasury bond risk premium
15 of 5.9% and projected Treasury bond yield of 3.6% produce a risk premium estimate
16 of 9.50%.

17 Similarly, applying these weights to the utility risk premium indicates a risk
18 premium of 4.7%.²⁸ This risk premium is above the 32-year historical average risk
19 premium of 4.04%. This risk premium in connection with the current observable Baa
20 utility bond yield of 4.22% produces an estimated return on equity of approximately
21 8.92%.

²⁷ $(4.17\% * 30\%) + (6.68\% * 70\%) = 5.93\%$.

²⁸ $(2.80\% * 30\%) + (5.52\% * 70\%) = 4.70\%$.

1 Based on this methodology, my Treasury bond risk premium and my utility
2 bond risk premium indicate a return in the range of 8.9% to 9.5%, with a midpoint of
3 9.20%.

4 **III.K. Capital Asset Pricing Model (“CAPM”)**

5 **Q PLEASE DESCRIBE THE CAPM.**

6 A The CAPM method of analysis is based upon the theory that the market-required rate
7 of return for a security is equal to the risk-free rate, plus a risk premium associated
8 with the specific security. This relationship between risk and return can be expressed
9 mathematically as follows:

10 $R_i = R_f + B_i \times (R_m - R_f)$ where:

11 R_i = Required return for stock i
12 R_f = Risk-free rate
13 R_m = Expected return for the market portfolio
14 B_i = Beta - Measure of the risk for stock

15 The stock-specific risk term in the above equation is beta. Beta represents
16 the investment risk that cannot be diversified away when the security is held in a
17 diversified portfolio. When stocks are held in a diversified portfolio, firm-specific risks
18 can be eliminated by balancing the portfolio with securities that react in the opposite
19 direction to firm-specific risk factors (e.g., business cycle, competition, product mix,
20 and production limitations).

21 The risks that cannot be eliminated when held in a diversified portfolio are
22 non-diversifiable risks. Non-diversifiable risks are related to the market in general
23 and are referred to as systematic risks. Risks that can be eliminated by diversification
24 are non-systematic risks. In a broad sense, systematic risks are market risks and
25 non-systematic risks are business risks. The CAPM theory suggests the market will
26 not compensate investors for assuming risks that can be diversified away. Therefore,

1 the only risk investors will be compensated for are systematic or non-diversifiable
2 risks. The beta is a measure of the systematic or non-diversifiable risks.

3 **Q PLEASE DESCRIBE THE INPUTS TO YOUR CAPM.**

4 A The CAPM requires an estimate of the market risk-free rate, MDU's beta, and the
5 market risk premium.

6 **Q WHAT DID YOU USE AS AN ESTIMATE OF THE MARKET RISK-FREE RATE?**

7 A Currently, as published in the *Blue Chip Financial Forecasts*, the consensus
8 economists have projected the 30-year Treasury bond yield to be 3.60%.²⁹ I used
9 *Blue Chip Financial Forecasts'* projected 30-year Treasury bond yield of 3.60% for my
10 CAPM analysis.

11 **Q WHY DID YOU USE LONG-TERM TREASURY BOND YIELDS AS AN ESTIMATE
12 OF THE RISK-FREE RATE?**

13 A Treasury securities are backed by the full faith and credit of the United States
14 government, so long-term Treasury bonds are considered to have negligible credit
15 risk. Also, long-term Treasury bonds have an investment horizon similar to that of
16 common stock. As a result, investor-anticipated long-run inflation expectations are
17 reflected in both common stock required returns and long-term bond yields.
18 Therefore, the nominal risk-free rate (or expected inflation rate and real risk-free rate)
19 included in a long-term bond yield is a reasonable estimate of the nominal risk-free
20 rate included in common stock returns.

²⁹*Blue Chip Financial Forecasts*, December 1, 2017, at 2.

1 Treasury bond yields, however, do include risk premiums related to
2 unanticipated future inflation and interest rates. A Treasury bond yield is not a risk-
3 free rate. Risk premiums related to unanticipated inflation and interest rates are
4 systematic market risks. Consequently, for companies with betas less than 1.0, using
5 the Treasury bond yield as a proxy for the risk-free rate in the CAPM analysis can
6 produce an overstated estimate of the CAPM return.

7 **Q WHAT BETA DID YOU USE IN YOUR ANALYSIS?**

8 A As shown in Exhibit No.____(MPG-2), Schedule 17, the proxy group average *Value*
9 *Line* beta estimate is 0.73.

10 **Q HOW DID YOU DERIVE YOUR MARKET RISK PREMIUM ESTIMATE?**

11 A I derived two market risk premium estimates: a forward-looking estimate and one
12 based on a long-term historical average.

13 The forward-looking estimate was derived by estimating the expected return
14 on the market (as represented by the S&P 500) and subtracting the risk-free rate from
15 this estimate. I estimated the expected return on the S&P 500 by adding an expected
16 inflation rate to the long-term historical arithmetic average real return on the market.
17 The real return on the market represents the achieved return above the rate of
18 inflation.

19 Duff & Phelps' *2017 SBBI Yearbook* estimates the historical arithmetic
20 average inflation-adjusted market return over the period 1926 to 2016 as 8.9%.³⁰ A
21 current consensus analysts' inflation projection, as measured by the Consumer Price

³⁰*Duff & Phelps, 2017 SBBI Yearbook* at 6-18.

1 Index, is 2.3%.³¹ Using these estimates, the expected market return is approximately
2 11.40%.³² The market risk premium then is the difference between the 11.40%
3 expected market return and my 3.60% risk-free rate estimate, or approximately
4 7.80%.

5 My historical estimate of the market risk premium was also calculated by using
6 data provided by Duff & Phelps in its *2017 SBBI Yearbook*. Over the period 1926
7 through 2016, the Duff & Phelps study estimated that the arithmetic average of the
8 achieved total return on the S&P 500 was 12.0%³³ and the total return on long-term
9 Treasury bonds was 6.0%.³⁴ The indicated market risk premium is 6.0% (12.0% -
10 6.0% = 6.0%).

11 **Q HOW DOES YOUR ESTIMATED MARKET RISK PREMIUM RANGE COMPARE TO**
12 **THAT ESTIMATED BY DUFF & PHELPS?**

13 A The Duff & Phelps analysis indicates a market risk premium falls somewhere in the
14 range of 5.5% to 6.9%. My market risk premium falls in the range of 6.0% to 7.8%.
15 My average market risk premium of approximately 6.9% is at the high-end of the Duff
16 & Phelps range.

17 **Q HOW DOES DUFF & PHELPS MEASURE A MARKET RISK PREMIUM?**

18 A Duff & Phelps makes several estimates of a forward-looking market risk premium
19 based on actual achieved data from the historical period of 1926 through 2016, as
20 well as normalized data. Using this data, Duff & Phelps estimates a market risk
21 premium derived from the total return on large company stocks (S&P 500), less the

³¹ *Blue Chip Financial Forecasts*, December 1, 2017 at 2.

³² $\{ [(1 + 0.089) * (1 + 0.023)] - 1 \} * 100$.

³³ *Duff & Phelps, 2017 SBBI Yearbook* at 6-17.

³⁴ *Id.*

1 income return on Treasury bonds. The total return includes capital appreciation,
2 dividend or coupon reinvestment returns, and annual yields received from coupons
3 and/or dividend payments. The income return, in contrast, only reflects the income
4 return received from dividend payments or coupon yields. Duff & Phelps claims the
5 income return is the only true risk-free rate associated with Treasury bonds and is the
6 best approximation of a truly risk-free rate.³⁵ I disagree with this assessment from
7 Duff & Phelps because it does not reflect a true investment option available to the
8 marketplace and therefore does not produce a legitimate estimate of the expected
9 premium of investing in the stock market versus that of Treasury bonds.
10 Nevertheless, I will use Duff & Phelps' conclusion to show the reasonableness of my
11 market risk premium estimates.

12 Duff & Phelps' range is based on several methodologies. First, Duff & Phelps
13 estimates a market risk premium of 6.9% based on the difference between the total
14 market return on common stocks (S&P 500) less the income return on Treasury bond
15 investments over the 1926-2016 period.

16 Second, Duff & Phelps updated the Ibbotson & Chen supply-side model,
17 which found that the 6.9% market risk premium based on the S&P 500 was
18 influenced by an abnormal expansion of price-to-earnings ("P/E") ratios relative to
19 earnings and dividend growth during the period, primarily over the last 30 years. Duff
20 & Phelps believes this abnormal P/E expansion is not sustainable.³⁶ Therefore, Duff
21 & Phelps adjusted this market risk premium estimate to normalize the growth in the
22 P/E ratio to be more in line with the growth in dividends and earnings. Based on this

³⁵ *Duff & Phelps, 2017 Valuation Handbook* at 3-32.

³⁶ *Id.* at 3-36.

1 alternative methodology, Duff & Phelps published a long-horizon supply-side market
2 risk premium of 5.97%.³⁷

3 Finally, Duff & Phelps develops its own recommended equity, or market risk
4 premium by employing an analysis that takes into consideration a wide range of
5 economic information, multiple risk premium estimation methodologies, and the
6 current state of the economy by observing measures such as the level of stock
7 indices and corporate spreads as indicators of perceived risk. Based on this
8 methodology, and utilizing a “normalized” risk-free rate of 3.5%, Duff & Phelps
9 concludes the current expected, or forward-looking, market risk premium is 5.5%,
10 implying an expected return on the market of 9.0%.³⁸

11 **Q WHAT ARE THE RESULTS OF YOUR CAPM ANALYSIS?**

12 A As shown in Exhibit No.____(MPG-2), Schedule 18 using the CAPM equation above,
13 based on my prospective market risk premium of 7.8% and my low market risk
14 premium of 6.0%, a risk-free rate of 3.6%, and a beta of 0.73, my CAPM analysis
15 produces return estimates of 9.29% and 7.98%, respectively. Based on my
16 assessment of risk premiums in the market, as discussed above, I will place primary
17 reliance on my high-end CAPM return estimate rounded to 9.30%.

18 **III.L. Return on Equity Summary**

19 **Q BASED ON THE RESULTS OF YOUR RETURN ON COMMON EQUITY**
20 **ANALYSES DESCRIBED ABOVE, WHAT RETURN ON COMMON EQUITY DO**
21 **YOU RECOMMEND FOR MDU?**

22 A Based on my analyses, I estimate MDU’s current market cost of equity to be 9.10%.

³⁷ *Id.*

³⁸ *Id.* at 3-48.

<u>Description</u>	<u>Results</u>
DCF	8.80%
Risk Premium	9.20%
CAPM	9.30%

1 My recommended return on common equity of 9.10% is at the approximate
2 midpoint of my estimated range of 8.80% to 9.30%. As shown in Table 8 above, the
3 high-end of my estimated range is based on my risk premium result.

4 My return on equity estimates reflect observable market evidence, the impact
5 of Federal Reserve policies on current and expected long-term capital market costs,
6 an assessment of the current risk premium built into current market securities, a
7 general assessment of the current investment risk characteristics of the utility
8 industry, and the market's demand for utility securities.

9 **IV. RESPONSE TO MDU WITNESS DR. J. STEPHEN GASKE**

10 **Q WHAT IS DR. GASKE'S RETURN ON EQUITY RECOMMENDATION?**

11 **A** Dr. Gaske recommends a return on equity of 10.0% based on results summarized in
12 Table 9 below.

TABLE 9

Dr. Gaske's Results

	<u>Median</u> (1)	<u>High</u> (2)	<u>Low</u> (3)	<u>Adjusted Median</u> (4)
<u>DCF</u>				
Basic (Analyst) Growth	9.22%	11.84%	7.11%	8.87%
Blended Growth	9.13%	10.75%	7.85%	8.78%
<u>Risk Premium</u>				
Large Company Stocks (S&P 500)	9.90%			9.20%
Small Company Stocks	18.20%			Reject
Regression Analysis	10.00%			9.20%
Market DCF (S&P 500)	12.50%			9.20%
Forward-Looking CAPM	11.30%			9.30%

Source: Direct Testimony of Dr. J. Stephen Gaske (Exhibit No.____(JSG-1) at 36.

1 As outlined in Table 9 above under Column (4), Dr. Gaske's DCF models
2 indicate a return no higher than 8.9%. Further, reasonable adjustments to his risk
3 premium studies would indicate a fair return on equity for MDU regulated operations
4 of no higher than 9.30%. Hence, a reasonable interpretation of Dr. Gaske's models,
5 adjusted to reflect MDU's regulated operations investment risk, indicates a fair return
6 on equity in this proceeding of 8.9% to 9.3%, which supports my return on equity
7 recommendation.

8 **Q DO DR. GASKE'S RETURN ON EQUITY STUDIES SUPPORT A 10.0% RETURN**
9 **FOR MDU?**

10 **A No.** Dr. Gaske's studies support a return on equity in the range of 8.9% to 9.3% for
11 MDU.

1 **Q PLEASE DESCRIBE DR. GASKE’S DCF ANALYSIS.**

2 A Dr. Gaske developed two versions of the DCF analysis. His first approach is based
3 on a traditional or basic DCF analysis using analysts’ projected growth rate estimates.
4 This basic DCF analysis estimates a return on equity for MDU in the range of 6.83%
5 and 11.38%, with a median of 8.87%. Then, Dr. Gaske increased his proxy group
6 return by adjusting each DCF estimate by a 4.0% flotation cost adjustment. This
7 increased the proxy group median from 8.87% up to 9.22%. (Exhibit No.____(JSG-2),
8 Exhibit 4, at 5).

9 Second, Dr. Gaske develops a blended DCF analysis relying on both his
10 retention and analysts’ projected growth rate estimates. His retention growth rate is
11 based on Value Line projected dividends, earnings and returns. This blended
12 approach yields a return on equity in the range of 7.55% to 10.34% with a median of
13 8.78%. Again, Dr. Gaske adjusted his blended growth DCF return by a 4.0% to
14 account for flotation costs. This increased his blended growth DCF return from 8.78%
15 to 9.13%. (Exhibit No.____(JSG-2), Exhibit 4, at 6).

16 **Q PLEASE DESCRIBE THE ISSUES YOU HAVE WITH DR. GASKE’S DCF**
17 **ANALYSES.**

18 A My primary issue with Dr. Gaske’s DCF studies lies in his proposal to adjust all of the
19 DCF return estimates by a flotation cost adder of 4.0%. The effect of this flotation
20 cost adjustment is to increase the DCF return estimate by approximately 35 basis
21 points.

1 Q DO YOU BELIEVE THAT DR. GASKE'S FLOTATION COST ADJUSTMENT TO
2 HIS DCF RETURN ESTIMATES IS REASONABLE?

3 A No. Dr. Gaske's proposed flotation cost adjustment for MDU is not based on known
4 and measurable costs for MDU. Therefore, his flotation cost adjustment should be
5 rejected.

6 Q HOW DID DR. GASKE DEVELOP A FLOTATION COST ADJUSTMENT FOR
7 MDU?

8 A Dr. Gaske reviews a representative sample of flotation costs incurred with 34 new
9 common stock issues by gas utilities since January 2004. This produces an average
10 flotation cost of 4.09%. Dr. Gaske rounds this up to 4.0%, and increases his
11 proposed return on equity by approximately 35 basis points. This flotation cost
12 adjustment is intended to recover the cost a utility incurred by issuing additional stock
13 to the public.³⁹

14 Q WHY IS DR. GASKE'S FLOTATION COST ADJUSTMENT FLAWED?

15 A Dr. Gaske's flotation cost adjustment is not based on the recovery of prudent and
16 reasonable flotation expenses for MDU. Rather, as discussed at page 15 of his direct
17 testimony, Dr. Gaske derives a flotation cost adjustment based on cost information of
18 other companies relying on publicly available information. Because Dr. Gaske does
19 not show that his adjustment is based on MDU's actual and verifiable flotation
20 expenses, there are no means of verifying whether his proposal is reasonable or
21 appropriate. Stated differently, Dr. Gaske's flotation cost adder is not based on

³⁹ Gaske Direct testimony at 15.

1 known and measurable MDU costs. Therefore, the Commission should reject his
2 proposed flotation expense return on equity adder.

3 **Q IF DR. GASKE HAD SHOWN AN ACTUAL AND VERIFIABLE FLOTATION**
4 **EXPENSE ALLOCATED TO MDU'S REGULATED OPERATIONS, WOULD HIS**
5 **PROPOSED FLOTATION COST ADJUSTMENT BE REASONABLE?**

6 A No. A clear understanding of how the actual and verifiable flotation costs were
7 treated in the past for ratemaking purposes is also needed. Specifically, if the
8 flotation expenses had been amortized to cost of service, then these costs would
9 have already been recovered in past rates. If this is the case, then allowing a return
10 on equity adjustment in this case would provide cost recognition in prospective rates
11 for costs that have already been recovered, this double recovery of flotation costs
12 would be unjust and unreasonable.

13 As such, Dr. Gaske would have to identify MDU Resources' actual flotation
14 costs that are properly allocated to regulated operations, show the time period these
15 costs were incurred, and show how they have been treated for ratemaking purposes
16 in the past. Without this clear demonstration, Dr. Gaske's proposed flotation cost
17 adjustment is simply not a known and measurable component of MDU's cost of
18 service in this case.

19 **Q CAN DR. GASKE'S DCF ANALYSES BE ADJUSTED TO PRODUCE MORE**
20 **REASONABLE RESULTS?**

21 A Yes. Removing the flotation cost adjustment from Dr. Gaske's DCF studies produces
22 a DCF return in the range of 8.8% up to 8.9%. These are the medians of his proxy
23 group studies which eliminate low-end and high-end outliers. Hence, these estimates

1 reasonably reflect the investment risk and a fair return for his proxy group based on
2 his own DCF studies. Conservatively, Dr. Gaske's DCF studies demonstrate that a
3 fair return on equity for MDU in this case is no higher than 8.9%.

4 **Q DO YOU HAVE ANY OTHER ISSUES WITH DR. GASKE'S DCF RETURN**
5 **RESULTS?**

6 A Yes. Dr. Gaske's proposal to set the return on equity for MDU between the median
7 and the third quartile of his DCF results will place an unreasonable burden on the
8 ratepayers and should be rejected.⁴⁰ As discussed above, MDU's relative risk is
9 comparable to the risk of the utility companies included in the proxy group.

10 **Q WHY DO YOU BELIEVE THAT MDU FACES RISKS THAT ARE COMPARABLE**
11 **TO THE RISKS FACED BY DR. GASKE'S PROXY GROUP COMPANIES?**

12 A This is evident by Dr. Gaske's own testimony. He describes his stringent
13 methodology to identify companies that are risk comparable to MDU's operations and
14 on his Exhibit No.____ (JSG-2), Schedule 3, he shows that the average credit rating
15 for his proxy group of A- is slightly higher than the MDU Resources' credit rating of
16 BBB+ from S&P. The relative risks discussed on pages 30-38 of Dr. Gaske testimony
17 are already incorporated in the credit ratings of the proxy group companies. S&P and
18 other credit rating agencies go through great detail in assessing a utility's business
19 risk and financial risk in order to evaluate their assessment of its total investment risk.
20 Therefore, this total risk investment assessment of MDU, in comparison to a proxy
21 group, is fully absorbed into the market's perception of MDU's risk and the proxy
22 group fully captures the investment risk of MDU.

⁴⁰ Gaske Direct Testimony at 39.

1 Q HOW DOES S&P ASSIGN CORPORATE CREDIT RATINGS FOR REGULATED
2 UTILITIES?

3 A In assigning corporate credit ratings the credit rating agency considers both business
4 and financial risks. Business risks among others include company's size and
5 competitive position, generation portfolio, as well as a consideration of the regulatory
6 environment, current state of the industry and the economy as whole. Specifically,
7 S&P states:

8 To determine the assessment for a corporate issuer's business risk
9 profile, the criteria combine our assessments of industry risk, country
10 risk, and competitive position. Cash flow/leverage analysis determines
11 a company's financial risk profile assessment. The analysis then
12 combines the corporate issuer's business risk profile assessment and
13 its financial risk profile assessment to determine its anchor. In general,
14 the analysis weighs the business risk profile more heavily for
15 investment-grade anchors, while the financial risk profile carries more
16 weight for speculative-grade anchors.⁴¹

17 Q PLEASE DESCRIBE DR. GASKE'S UTILITY RISK PREMIUM ANALYSES.

18 A Dr. Gaske develops three risk premium studies based on the average Moody's
19 corporate bond yield for the 6-month period from November 2016 to April 2017 of
20 4.24%.⁴² For his first risk premium study Dr. Gaske derived an equity risk premium of
21 5.7%, which is the difference between the annual total return on a large company
22 stock of 12.0% and the return on long-term corporate bonds of 6.3% since 1926 as
23 published by Duff & Phelps 2017 Valuation Handbook.⁴³ Then, Dr. Gaske added the
24 Moody's corporate bond yield of 4.2% to his risk premium of 5.7% to produce a return
25 on equity for MDU of 9.9%. (Gaske Direct Testimony at 26).

26 In his second risk premium analysis Dr. Gaske estimates a risk premium over
27 the return for a small company stock again using the data from Ibbotson Associates.

⁴¹Standard & Poor's RatingsDirect: "Criteria/Corporates/General: Corporate Methodology,"
November 19, 2013.

⁴² Gaske Direct Testimony at 26.

⁴³ Id.

1 He estimates MDU's market capitalization based on the Company's projected rate
2 base and equity ratio and he determines that MDU falls in the Ibbotson's 10th decile,
3 which has a return of 20.3%. Then, he estimates a risk premium of 14.0% over the
4 return of long-term corporate bonds of 6.3%. Adding his small company risk premium
5 of 14.0% to Moody's corporate bond yield of 4.2% produces a return on equity of
6 18.2%. (Gaske Direct testimony at 27).

7 Finally, Dr. Gaske developed an additional risk premium based on the concept
8 that equity risk premiums are inversely related to interest rates. He developed a
9 regression analysis based on the authorized gas returns and 30-year Treasury yields
10 during the period 1992 to the second quarter of 2017. Applying his regression
11 equation to the current (2.80%), near-term projected (3.40%) and long-term projected
12 (4.30%) yields, Dr. Gaske estimates an average return on equity based on this model
13 of 9.96% for MDU.

14 **Q ARE DR. GASKE'S LARGE AND SMALL COMPANY RISK PREMIUMS A FAIR**
15 **RETURN ON EQUITY ESTIMATE FOR MDU?**

16 A No. Dr. Gaske's large and small risk premium estimates reasonably reflect returns on
17 the overall market or some unregulated market index. These returns on equity were
18 not calibrated to reflect the low risk of MDU's regulated utility operations.

19 **Q DO YOU BELIEVE THAT DR. GASKE'S PROPOSAL FOR A SMALL COMPANY**
20 **RETURN ON EQUITY ADDER FOR MDU IS REASONABLY DEVELOPED?**

21 A No. This is unreasonable for several reasons. First, Dr. Gaske has not properly
22 gauged an investment risk adjustment for MDU relative to his proxy group.
23 Therefore, to the extent MDU could justify a small company risk adder, it should be

1 relative to the proxy group market return and not to the return on the total market.
2 Second, the development of a small company adder should not be the only
3 consideration in developing a fair return for MDU's regulated business operations.
4 The risk assessment for MDU's regulated operations should reflect small company
5 risk adders, as well as regulatory risk reductions. Dr. Gaske's small company risk
6 return is not a fair return for MDU because he ignores the risk reduction produced by
7 regulatory protections and cost-based prices.

8 Finally, Dr. Gaske's small company risk premium of 14.0% is unreasonable.
9 The total return of 20.3% for the 10th decile reflects risks that are not characteristic of
10 MDU. This total return used by Dr. Gaske reflects companies that have beta
11 estimates of approximately 1.40.⁴⁴ These beta estimates are substantially higher
12 than the average beta of 0.73 for the proxy group. Therefore, his small company risk
13 premium produces a return estimate that is inflated and does not reflect a risk
14 appropriate return for MDU. Hence, the return produced by Dr. Gaske small
15 company risk premium is not reasonable and should be rejected.

16 **Q DO YOU HAVE ANY COMMENTS CONCERNING DR. GASKE'S LARGE**
17 **COMPANY RISK PREMIUM?**

18 **A** His large company risk premium suffers from the same deficiencies described above
19 in regards to his small company risk premium. However, Dr. Gaske's large company
20 risk premium produces a return on equity that is more in line with market expectation.

⁴⁴2017 Duff & Phelps Valuation Handbook at 4-10.

1 Q IS DR. GASKE REGRESSION RISK PREMIUM METHODOLOGY REASONABLE?

2 A No. Dr. Gaske's contention that there is a simplistic inverse relationship between
3 equity risk premiums and interest rates is not supported by academic research. While
4 academic studies have shown that, in the past, there has been an inverse
5 relationship among these variables, researchers have found that the relationship
6 changes over time and is influenced by changes in perception of the risk of bond
7 investments relative to equity investments, and not simply changes to interest rates.⁴⁵

8 In the 1980s, equity risk premiums were inversely related to interest rates but
9 that was likely attributable to the interest rate volatility that existed at that time. As
10 such, when interest rates were more volatile, the relative perception of bond
11 investment risk increased relative to the investment risk of equities. This changing
12 investment risk perception caused changes in equity risk premiums.

13 In today's marketplace, interest rate volatility is not as extreme as it was
14 during the 1980s.⁴⁶ Nevertheless, changes in the perceived risk of bond investments
15 relative to equity investments still drive changes in equity premiums and cannot be
16 measured simply by observing nominal interest rates. Changes in nominal interest
17 rates are heavily influenced by changes to inflation outlooks, which also change
18 equity return expectations. As such, the relevant factor needed to explain changes in
19 equity risk premiums is the relative changes to the risk of equity versus debt
20 securities investments, and not simply changes in interest rates.

21 Importantly, Dr. Gaske's analysis simply ignores investment risk differentials.
22 He bases his adjustment to the equity risk premium exclusively on changes in

⁴⁵"The Market Risk Premium: Expectational Estimates Using Analysts' Forecasts," Robert S. Harris and Felicia C. Marston, *Journal of Applied Finance*, Volume 11, No. 1, 2001 and "The Risk Premium Approach to Measuring a Utility's Cost of Equity," Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, *Financial Management*, Spring 1985.

⁴⁶"The Risk Premium Approach to Measuring a Utility's Cost of Equity," Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, *Financial Management*, Spring 1985, at 44.

1 nominal interest rates. This is a flawed methodology that does not produce accurate
2 or reliable risk premium estimates.

3 **Q DO YOU HAVE ANY OTHER ISSUES WITH DR. GASKE'S REGRESSION RISK**
4 **PREMIUM?**

5 A Yes. Dr. Gaske's long-term projected Treasury bond yield of 4.30% is simply too high
6 and should be rejected. His projected 4.30% yield is approximately 150 basis points
7 higher than the current Treasury bond yield of 2.80% and approximately 70 basis
8 points higher than the projected Treasury yield of 3.6%⁴⁷ that will cover the
9 rate-effective period as projected by the consensus economists. Dr. Gaske's long-
10 term projected Treasury yield of 4.30% is well beyond the rate-effective period, and
11 as such, is not a reasonable interest rate to use in a risk premium study.

12 **Q CAN DR. GASKE'S REGRESSION RISK PREMIUM ANALYSIS BE REVISED TO**
13 **REFLECT CURRENT PROJECTIONS OF TREASURY YIELDS?**

14 A Yes. Disregarding Dr. Gaske's simplistic and incomplete belief that risk premiums
15 can be explained by only changes to nominal interest rates, his data can be used to
16 produce a reasonable return estimate. By adding my weighted average equity risk
17 premium over Treasury bonds of 5.93% to his updated current (2.82%), near-term
18 (3.6%) projected Treasury yields will produce a return on equity estimate in the range
19 of 8.8% to 9.5% with a midpoint of 9.2% for MDU.

⁴⁷Blue Chip Financial Forecasts, December 1, 2016 at 2.

1 Q PLEASE DESCRIBE DR. GASKE'S MARKET DCF ANALYSIS.

2 A Dr. Gaske developed a market DCF analysis as a benchmark to test the
3 reasonableness of his proxy group DCF estimates. He calculated the required return
4 for the companies included in the S&P 500, based on an expected dividend yield of
5 2.54% and an expected growth rate of 10.00%, which produced a market DCF return
6 of 12.54%.⁴⁸

7 Q DO YOU HAVE ANY CONCERNS IN REGARDS TO DR. GASKE'S MARKET DCF
8 ANALYSIS.

9 A Yes. I have two major concerns with his analysis. First, his market DCF return is
10 based on a growth rate of 10.0%, which is significantly above the long-term
11 sustainable growth rate of 4.2% that I discussed earlier. It is unreasonable to assume
12 that this growth rate that is more than twice the growth of the U.S. economy can be
13 sustained indefinitely.

14 Second, the S&P 500 includes companies with risk characteristics significantly
15 different than the risks encountered by MDU and its parent company. The companies
16 in the utility industry operate as natural monopolies and are shielded from the
17 economic turbulence faced by corporations operating in other industries. As noted by
18 the major credit rating agencies, the utility industry has relatively low risk in
19 comparison with the market. Indeed, the regulatory process itself provides an
20 effective mechanism to mitigate some of the market risks influencing the U.S.
21 economy. Therefore, using Dr. Gaske's market DCF analysis as a benchmark will
22 produce an unreliable and inflated return on equity for a low-risk utility such as MDU.

⁴⁸ Exhibit No.____(JSG-2), Schedule 6, Page 1 of 9.

1 Therefore, the Commission should disregard the results of Dr. Gaske's market DCF
2 analysis.

3 **Q CAN DR. GASKE'S RISK PREMIUM STUDIES BE USED TO ESTIMATE A FAIR**
4 **RETURN FOR MDU REGULATED OPERATIONS?**

5 A Dr. Gaske's risk premium models largely ignore the investment risk and a fair return
6 based on that risk for MDU's regulated operations. Hence, these models are
7 primarily just not useful in estimating a fair risk-adjusted return for regulated utility
8 systems.

9 However, he has estimated two returns for the S&P 500: one based on a risk
10 premium estimate of 9.9% (Dr. Gaske's large company risk premium) and one based
11 on a DCF return on the market of 12.5%. The midpoint of these two estimates
12 produces a market return estimate of 11.2%. Using a risk-free rate of 3.6%, and a
13 comparable risk proxy group systematic risk beta factor of 0.73, would produce a risk
14 premium estimated fair return for the proxy group of 9.2%.⁴⁹

15 As discussed above his small company stock return of 18.2% is based on
16 non-regulated small companies. There has been no demonstration that this proxy
17 group reasonably reflects the investment risk of MDU Resources, much less its lower-
18 risk regulated subsidiaries. Hence, this small company market return estimate should
19 simply be rejected. Therefore, I did not include this market return in the revision of his
20 market DCF.

⁴⁹(11.2% - 3.6%) x 0.73 + 3.6% = 9.15%, rounded to 9.2%.

1 **Q PLEASE DESCRIBE DR. GASKE’S CAPM STUDY.**

2 A Dr. Gaske develops a CAPM study based on a DCF-market return of 12.5% as
3 described above, a risk-free rate of 3.52% based on the 30-Yr. Treasury yield, and a
4 proxy group beta of 0.73. These inputs produced a market risk premium of 9.0% and
5 CAPM return on equity of 10.1%, which he increased by 1.2% to 10.3% to account for
6 MDU’s smaller size. Exhibit No.____ (JSG-2), Exhibit 8.

7 **Q WHAT ISSUES DO YOU HAVE WITH DR. GASKE’S CAPM ANALYSIS?**

8 A In his CAPM study Dr. Gaske again relies on his DCF-derived market return of
9 12.5%, which as I described above consists of a growth rate estimate of 10.0% and a
10 dividend yield of 2.5%. This growth estimate is significantly higher than the
11 consensus economist projections for a long-term sustainable growth rate of 4.2%.
12 Therefore Dr. Gaske’s market risk premium of 9.0% is overstated and should be
13 rejected. Further, as also discussed above in regards to Dr. Gaske small company
14 risk premium, the size adjustment is not appropriate and should be rejected.

15 **Q CAN DR. GASKE’S CAPM STUDY BE REVISED TO PRODUCE A FAIR RETURN**
16 **FOR MDU REGULATED OPERATIONS?**

17 A Yes. Using my highest market risk premium of 7.8%, an updated risk-free rate of
18 3.6% and a beta estimate of 0.73, will result in a CAPM return estimate of 9.3%⁵⁰,
19 which will fairly compensate investors and ratepayers.

20 **Q DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

21 A Yes, it does.

⁵⁰ $7.8\% \times 0.73 + 3.6\% = 9.3\%$

Qualifications of Michael P. Gorman

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

2 A Michael P. Gorman. My business address is 16690 Swingley Ridge Road, Suite 140,
3 Chesterfield, MO 63017.

4 **Q PLEASE STATE YOUR OCCUPATION.**

5 A I am a consultant in the field of public utility regulation and a Managing Principal with
6 the firm of Brubaker & Associates, Inc. ("BAI"), energy, economic and regulatory
7 consultants.

8 **Q PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND WORK
9 EXPERIENCE.**

10 A In 1983 I received a Bachelors of Science Degree in Electrical Engineering from
11 Southern Illinois University, and in 1986, I received a Masters Degree in Business
12 Administration with a concentration in Finance from the University of Illinois at
13 Springfield. I have also completed several graduate level economics courses.

14 In August of 1983, I accepted an analyst position with the Illinois Commerce
15 Commission ("ICC"). In this position, I performed a variety of analyses for both formal
16 and informal investigations before the ICC, including: marginal cost of energy, central
17 dispatch, avoided cost of energy, annual system production costs, and working
18 capital. In October of 1986, I was promoted to the position of Senior Analyst. In this
19 position, I assumed the additional responsibilities of technical leader on projects, and
20 my areas of responsibility were expanded to include utility financial modeling and
21 financial analyses.

1 In 1987, I was promoted to Director of the Financial Analysis Department. In
2 this position, I was responsible for all financial analyses conducted by the Staff.
3 Among other things, I conducted analyses and sponsored testimony before the ICC
4 on rate of return, financial integrity, financial modeling and related issues. I also
5 supervised the development of all Staff analyses and testimony on these same
6 issues. In addition, I supervised the Staff's review and recommendations to the
7 Commission concerning utility plans to issue debt and equity securities.

8 In August of 1989, I accepted a position with Merrill-Lynch as a financial
9 consultant. After receiving all required securities licenses, I worked with individual
10 investors and small businesses in evaluating and selecting investments suitable to
11 their requirements.

12 In September of 1990, I accepted a position with Drazen-Brubaker &
13 Associates, Inc. ("DBA"). In April 1995, the firm of Brubaker & Associates, Inc. was
14 formed. It includes most of the former DBA principals and Staff. Since 1990, I have
15 performed various analyses and sponsored testimony on cost of capital, cost/benefits
16 of utility mergers and acquisitions, utility reorganizations, level of operating expenses
17 and rate base, cost of service studies, and analyses relating to industrial jobs and
18 economic development. I also participated in a study used to revise the financial
19 policy for the municipal utility in Kansas City, Kansas.

20 At BAI, I also have extensive experience working with large energy users to
21 distribute and critically evaluate responses to requests for proposals ("RFPs") for
22 electric, steam, and gas energy supply from competitive energy suppliers. These
23 analyses include the evaluation of gas supply and delivery charges, cogeneration
24 and/or combined cycle unit feasibility studies, and the evaluation of third-party
25 asset/supply management agreements. I have participated in rate cases on rate

1 design and class cost of service for electric, natural gas, water and wastewater
2 utilities. I have also analyzed commodity pricing indices and forward pricing methods
3 for third party supply agreements, and have also conducted regional electric market
4 price forecasts.

5 In addition to our main office in St. Louis, the firm also has branch offices in
6 Phoenix, Arizona and Corpus Christi, Texas.

7 **Q HAVE YOU EVER TESTIFIED BEFORE A REGULATORY BODY?**

8 A Yes. I have sponsored testimony on cost of capital, revenue requirements, cost of
9 service and other issues before the Federal Energy Regulatory Commission and
10 numerous state regulatory commissions including: Arkansas, Arizona, California,
11 Colorado, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas,
12 Louisiana, Michigan, Mississippi, Missouri, Montana, New Jersey, New Mexico, New
13 York, North Carolina, Ohio, Oklahoma, Oregon, South Carolina, Tennessee, Texas,
14 Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming, and before
15 the provincial regulatory boards in Alberta and Nova Scotia, Canada. I have also
16 sponsored testimony before the Board of Public Utilities in Kansas City, Kansas;
17 presented rate setting position reports to the regulatory board of the municipal utility
18 in Austin, Texas, and Salt River Project, Arizona, on behalf of industrial customers;
19 and negotiated rate disputes for industrial customers of the Municipal Electric
20 Authority of Georgia in the LaGrange, Georgia district.

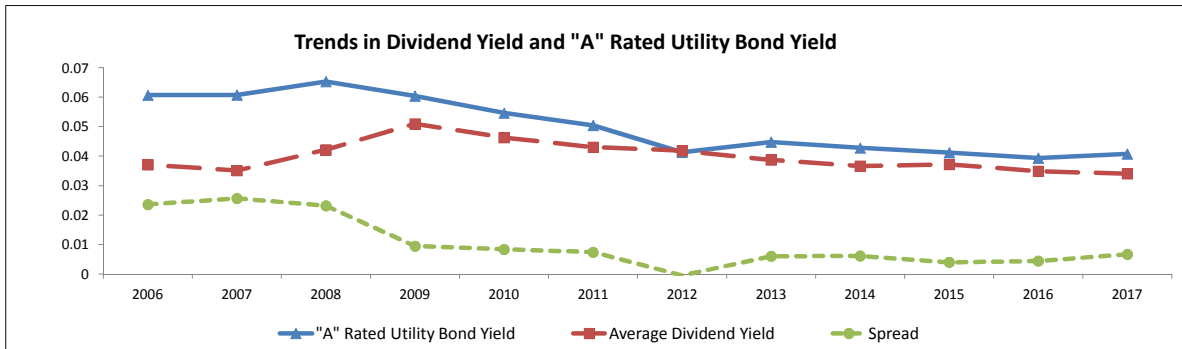
1 Q PLEASE DESCRIBE ANY PROFESSIONAL REGISTRATIONS OR
2 ORGANIZATIONS TO WHICH YOU BELONG.

3 A I earned the designation of Chartered Financial Analyst (“CFA”) from the CFA
4 Institute. The CFA charter was awarded after successfully completing three
5 examinations which covered the subject areas of financial accounting, economics,
6 fixed income and equity valuation and professional and ethical conduct. I am a
7 member of the CFA Institute’s Financial Analyst Society.

Montana-Dakota Utilities Co.

Electric Utilities
 (Valuation Metrics)

Line	Company	Dividend Yield ¹												
		Average (1)	2017 ^{2a} (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (13)
1	ALLETE	4.12%	3.06%	3.56%	3.97%	3.92%	3.89%	4.49%	4.58%	5.03%	5.79%	4.37%	3.60%	3.16%
2	Alliant Energy	3.87%	3.16%	3.21%	3.60%	3.53%	3.74%	4.07%	4.28%	4.61%	5.73%	4.10%	3.13%	3.32%
3	Ameren Corp.	4.77%	3.17%	3.50%	3.96%	4.02%	4.61%	4.97%	5.28%	5.76%	5.98%	6.21%	4.88%	4.93%
4	American Electric Power	4.21%	3.51%	3.54%	3.80%	3.83%	4.23%	4.58%	4.96%	4.90%	5.50%	4.20%	3.40%	4.06%
5	Avangrid, Inc.	4.07%	3.87%	4.26%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	Avista Corp.	3.83%	3.16%	3.39%	3.97%	3.99%	4.51%	4.55%	4.54%	4.76%	4.49%	3.39%	2.68%	2.52%
7	Black Hills	3.88%	2.70%	2.87%	3.55%	2.84%	3.19%	4.39%	4.64%	4.79%	6.17%	4.21%	3.40%	3.79%
8	CenterPoint Energy	4.54%	3.92%	4.70%	5.06%	3.94%	3.57%	4.04%	4.27%	5.29%	6.37%	4.98%	3.87%	4.39%
9	CMS Energy Corp.	3.35%	2.96%	2.99%	3.36%	3.59%	3.76%	4.16%	4.25%	3.98%	3.97%	2.69%	1.16%	N/A
10	Consol. Edison	4.59%	3.45%	3.62%	4.12%	4.38%	4.25%	4.07%	4.46%	5.16%	5.99%	5.67%	4.84%	5.04%
11	Dominion Resources	3.93%	3.97%	3.82%	3.66%	3.43%	3.78%	4.06%	4.13%	4.41%	5.20%	3.77%	3.32%	3.60%
12	DTE Energy	4.32%	3.21%	3.34%	3.53%	3.54%	3.84%	4.19%	4.68%	4.75%	6.29%	5.24%	4.36%	4.86%
13	Duke Energy	4.81%	4.21%	4.26%	4.34%	4.26%	4.45%	4.68%	5.21%	5.71%	6.25%	5.16%	4.44%	N/A
14	Edison Int'l	2.95%	2.88%	2.81%	2.83%	2.62%	2.85%	2.97%	3.37%	3.66%	3.95%	2.69%	2.21%	2.58%
15	EI Paso Electric	2.78%	2.55%	2.75%	3.13%	2.97%	2.99%	2.97%	2.11%	N/A	N/A	N/A	N/A	N/A
16	Entergy Corp.	4.12%	4.66%	4.55%	4.59%	4.47%	5.07%	4.91%	4.85%	4.20%	3.97%	2.92%	2.39%	2.82%
17	Eversource Energy	3.36%	3.20%	3.22%	3.34%	3.40%	3.48%	3.52%	3.23%	3.64%	4.16%	3.25%	2.60%	3.27%
18	Exelon Corp.	3.96%	3.50%	3.75%	3.88%	3.69%	4.69%	5.73%	4.96%	4.95%	4.26%	2.78%	2.48%	2.83%
19	FirstEnergy Corp.	4.37%	4.71%	4.31%	4.23%	4.26%	4.26%	4.90%	5.23%	5.76%	5.09%	3.21%	3.12%	3.40%
20	Fortis Inc.	3.65%	3.76%	3.80%	3.76%	3.88%	3.84%	3.64%	3.58%	3.80%	4.21%	3.76%	3.01%	2.79%
21	Great Plains Energy	4.54%	3.84%	3.64%	3.76%	3.62%	3.84%	4.08%	4.15%	4.49%	5.03%	6.96%	5.49%	5.60%
22	Hawaiian Elec.	4.85%	3.72%	3.99%	4.05%	4.76%	4.72%	4.70%	5.04%	5.51%	6.89%	5.00%	5.18%	4.59%
23	IDACORP, Inc.	3.33%	2.64%	2.77%	3.06%	3.12%	3.21%	3.28%	3.10%	3.44%	4.46%	3.95%	3.55%	3.39%
24	MGE Energy	3.37%	1.95%	2.23%	2.78%	2.78%	2.91%	3.25%	3.63%	3.98%	4.36%	4.24%	4.14%	4.25%
25	NextEra Energy, Inc.	3.27%	2.87%	2.91%	3.01%	3.00%	3.30%	3.65%	3.96%	3.90%	3.55%	3.02%	2.65%	3.40%
26	NorthWestern Corp	4.16%	3.51%	3.43%	3.61%	3.30%	3.66%	4.17%	4.51%	4.93%	5.75%	5.38%	4.09%	3.65%
27	OGE Energy	3.59%	3.62%	3.87%	3.51%	2.63%	2.48%	2.94%	3.06%	3.68%	4.96%	4.52%	3.77%	3.99%
28	Otter Tail Corp.	4.38%	3.28%	3.87%	4.33%	4.14%	4.11%	5.21%	5.57%	5.68%	5.38%	3.63%	3.46%	3.92%
29	PG&E Corp.	3.78%	3.43%	3.22%	3.45%	3.96%	4.20%	4.25%	4.24%	4.08%	4.26%	4.01%	3.07%	3.22%
30	Pinnacle West Capital	4.71%	3.24%	3.46%	3.88%	4.09%	3.98%	5.32%	4.81%	5.43%	6.76%	6.17%	4.75%	4.67%
31	PNM Resources	3.36%	2.54%	2.69%	2.90%	2.79%	2.99%	2.96%	3.19%	4.09%	4.76%	4.85%	3.36%	3.21%
32	Portland General	3.79%	2.96%	3.06%	3.27%	3.34%	3.67%	4.11%	4.37%	5.20%	5.36%	4.28%	3.34%	2.54%
33	PPL Corp.	4.28%	4.28%	4.25%	4.55%	4.45%	4.81%	5.07%	5.10%	5.12%	4.51%	3.10%	2.69%	3.41%
34	Public Serv. Enterprise	3.87%	3.73%	3.78%	3.81%	3.92%	4.35%	4.55%	4.24%	4.30%	4.30%	3.26%	2.73%	3.47%
35	SCANA Corp.	4.39%	4.25%	3.29%	3.90%	4.05%	4.15%	4.25%	4.78%	4.93%	5.67%	4.92%	4.29%	4.21%
36	Sempra Energy	2.93%	2.99%	2.92%	2.71%	2.61%	3.03%	3.71%	3.65%	3.08%	3.23%	2.62%	2.08%	2.47%
37	Southern Co.	4.68%	4.59%	4.42%	4.78%	4.69%	4.61%	4.29%	4.63%	5.13%	5.52%	4.58%	4.39%	4.52%
38	Vectren Corp.	4.39%	2.86%	3.31%	3.60%	3.62%	4.15%	4.82%	5.06%	5.53%	5.85%	4.79%	4.53%	4.52%
39	WEC Energy Group	3.05%	3.42%	3.35%	3.49%	3.40%	3.49%	3.24%	3.35%	2.97%	3.16%	2.41%	2.14%	2.18%
40	Westar Energy	4.37%	3.02%	2.90%	3.73%	3.88%	4.27%	4.57%	4.84%	5.32%	6.27%	5.22%	4.16%	4.28%
41	Xcel Energy Inc.	4.07%	3.18%	3.33%	3.69%	3.83%	3.86%	3.90%	4.20%	4.54%	5.14%	4.70%	4.05%	4.40%
42	Average	3.98%	3.40%	3.49%	3.71%	3.66%	3.87%	4.18%	4.30%	4.63%	5.09%	4.21%	3.51%	3.71%
43	Median	3.98%	3.28%	3.43%	3.71%	3.76%	3.85%	4.18%	4.42%	4.76%	5.14%	4.21%	3.40%	3.60%
44	"A" Rated Utility Bond Yield ³	5.02%	4.07%	3.93%	4.12%	4.28%	4.48%	4.13%	5.04%	5.46%	6.04%	6.53%	6.07%	6.07%
45	Spread	1.04%	0.67%	0.44%	0.40%	0.61%	0.61%	-0.05%	0.74%	0.84%	0.95%	2.32%	2.57%	2.36%



Sources:

¹ The Value Line Investment Survey Investment Analyzer Software, downloaded on June 21, 2017.

² The Value Line Investment Survey, September 15, October 27, and November 17, 2017.

³ www.moodys.com, Bond Yields and Key Indicators, through October 31, 2017.

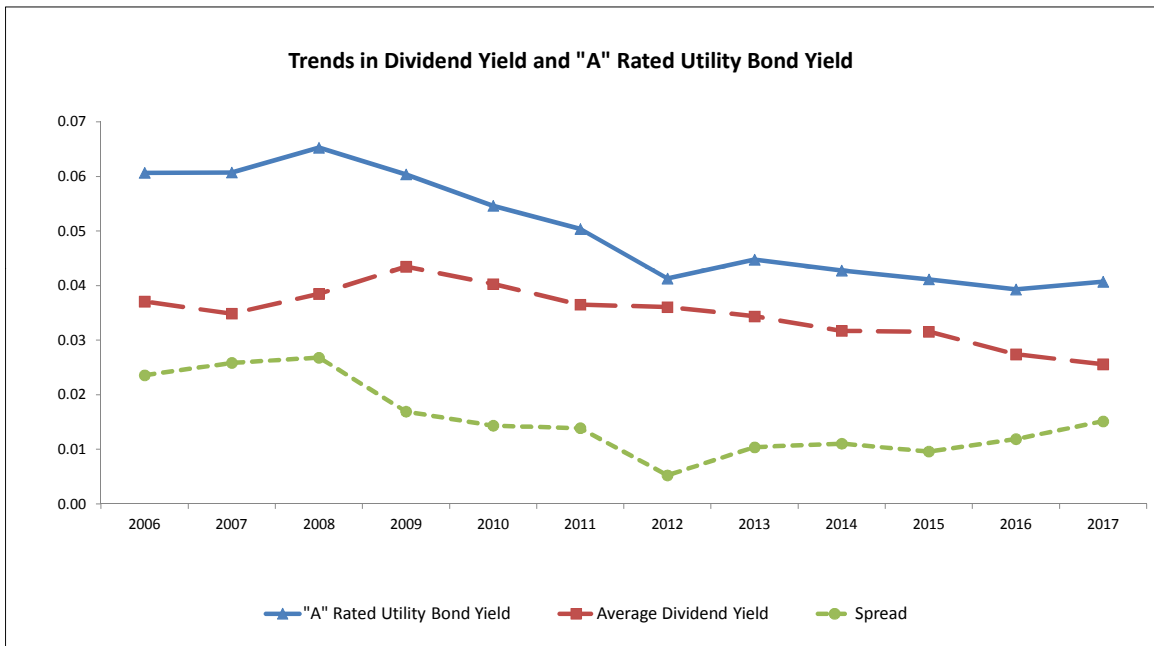
Notes:

^a Based on the average of the high and low price for 2017 and the projected 2017 Dividends Declared per share, published in the Value Line Investment Survey, September 15, October 27, and November 17, 2017.

Montana-Dakota Utilities Co.

Natural Gas Utilities (Valuation Metrics)

Line	Company	Dividend Yield ¹												
		12-Year												
		Average (1)	2017 ^{2/a} (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (13)
1	Atmos Energy	3.84%	2.23%	2.39%	2.88%	3.11%	3.53%	4.13%	4.19%	4.70%	5.34%	4.78%	4.16%	4.66%
2	Chesapeake Utilities	3.10%	1.76%	1.91%	2.18%	2.44%	2.87%	3.25%	3.36%	3.91%	4.09%	4.10%	3.62%	3.76%
3	New Jersey Resources	3.27%	2.62%	2.86%	3.14%	3.50%	3.71%	3.38%	3.33%	3.69%	3.46%	3.35%	3.02%	3.19%
4	NiSource Inc.	4.25%	2.87%	2.76%	3.53%	2.69%	3.30%	3.84%	4.53%	5.66%	7.64%	5.69%	4.29%	4.21%
5	Northwest Nat. Gas	3.65%	3.07%	3.28%	4.01%	4.14%	4.22%	3.83%	3.85%	3.63%	3.73%	3.27%	3.12%	3.73%
6	ONE Gas Inc.	2.44%	2.46%	2.32%	2.71%	2.28%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	South Jersey Inds.	3.23%	3.15%	3.64%	3.95%	3.40%	3.14%	3.22%	2.81%	3.00%	3.43%	3.08%	2.81%	3.15%
8	Southwest Gas	2.87%	2.49%	2.62%	2.87%	2.72%	2.69%	2.75%	2.78%	3.15%	4.01%	3.19%	2.56%	2.60%
9	Spire Inc.	3.93%	3.01%	3.08%	3.53%	3.78%	3.96%	4.11%	4.31%	4.70%	3.91%	3.94%	4.43%	4.34%
10	UGI Corp.	2.88%	1.96%	2.35%	2.50%	2.61%	3.01%	3.68%	3.30%	3.48%	3.23%	2.85%	2.69%	2.96%
11	WGL Holdings Inc.	3.91%	2.52%	2.94%	3.41%	4.24%	3.94%	3.89%	4.06%	4.37%	4.62%	4.22%	4.19%	4.48%
12	Average	3.48%	2.56%	2.74%	3.16%	3.17%	3.44%	3.61%	3.65%	4.03%	4.35%	3.85%	3.49%	3.71%
13	Median	3.40%	2.52%	2.76%	3.14%	3.11%	3.42%	3.75%	3.60%	3.80%	3.96%	3.65%	3.37%	3.75%
14	"A" Rated Utility Bond Yield³	5.02%	4.07%	3.93%	4.12%	4.28%	4.48%	4.13%	5.04%	5.46%	6.04%	6.53%	6.07%	6.07%
15	Spread	1.54%	1.51%	1.19%	0.96%	1.11%	1.04%	0.52%	1.39%	1.43%	1.69%	2.68%	2.59%	2.36%



Sources:

¹ The Value Line Investment Survey Investment Analyzer Software, downloaded on June 21, 2017.

² The Value Line Investment Survey, September 1, 2017.

³ www.moodys.com, Bond Yields and Key Indicators, through October 31, 2017.

Notes:

^a Based on the average of the high and low price for 2017 and the projected 2017 Dividends Declared per share, published in The Value Line Investment Survey, September 1, 2017.

Montana-Dakota Utilities Co.

**Electric Utilities
(Valuation Metrics)**

Line	Company	Dividend per Share ¹												
		12-Year Average (1)	2017 ² (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (13)
1	ALLETE	1.84	2.14	2.08	2.02	1.96	1.90	1.84	1.78	1.76	1.76	1.72	1.64	1.45
2	Alliant Energy	0.89	1.26	1.18	1.10	1.02	0.94	0.90	0.85	0.79	0.75	0.70	0.64	0.58
3	Ameren Corp.	1.85	1.78	1.72	1.66	1.61	1.60	1.60	1.56	1.54	1.54	2.54	2.54	2.54
4	American Electric Power	1.88	2.39	2.27	2.15	2.03	1.95	1.88	1.85	1.71	1.64	1.64	1.58	1.50
5	Avangrid, Inc.	1.73	1.73	1.73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	Avista Corp.	1.04	1.43	1.37	1.32	1.27	1.22	1.16	1.10	1.00	0.81	0.69	0.60	0.57
7	Black Hills	1.50	1.78	1.68	1.62	1.56	1.52	1.48	1.46	1.44	1.42	1.40	1.37	1.32
8	CenterPoint Energy	0.84	1.07	1.03	0.99	0.95	0.83	0.81	0.79	0.78	0.76	0.73	0.68	0.60
9	CMS Energy Corp.	0.85	1.33	1.24	1.16	1.08	1.02	0.96	0.84	0.66	0.50	0.36	0.20	N/A
10	Consol. Edison	2.46	2.76	2.68	2.60	2.52	2.46	2.42	2.40	2.38	2.36	2.34	2.32	2.30
11	Dominion Resources	2.10	3.04	2.80	2.59	2.40	2.25	2.11	1.97	1.83	1.75	1.58	1.46	1.38
12	DTE Energy	2.49	3.36	3.06	2.84	2.69	2.59	2.42	2.32	2.18	2.12	2.12	2.12	2.08
13	Duke Energy	3.03	3.49	3.36	3.24	3.15	3.09	3.03	2.97	2.91	2.82	2.70	2.58	N/A
14	Edison Int'l	1.45	2.21	1.98	1.73	1.48	1.37	1.31	1.29	1.27	1.25	1.23	1.18	1.10
15	El Paso Electric	1.07	1.32	1.23	1.17	1.11	1.05	0.97	0.66	N/A	N/A	N/A	N/A	N/A
16	Entergy Corp.	3.13	3.50	3.42	3.34	3.32	3.32	3.32	3.32	3.24	3.00	3.00	2.58	2.16
17	Eversource Energy	1.26	1.90	1.78	1.67	1.57	1.47	1.32	1.10	1.03	0.95	0.83	0.78	0.73
18	Exelon Corp.	1.70	1.31	1.26	1.24	1.24	1.46	2.10	2.10	2.10	2.10	2.05	1.82	1.64
19	FirstEnergy Corp.	1.86	1.44	1.44	1.44	1.44	1.65	2.20	2.20	2.20	2.20	2.20	2.05	1.85
20	Fortis Inc.	1.18	1.65	1.55	1.43	1.30	1.25	1.21	1.17	1.12	1.04	1.00	0.82	0.67
21	Great Plains Energy	1.11	1.12	1.06	1.00	0.94	0.88	0.86	0.84	0.83	0.83	1.66	1.66	1.66
22	Hawaiian Elec.	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
23	IDACORP, Inc.	1.51	2.24	2.08	1.92	1.76	1.57	1.37	1.20	1.20	1.20	1.20	1.20	1.20
24	MGE Energy	1.05	1.26	1.21	1.16	1.11	1.07	1.04	1.01	0.99	0.97	0.96	0.94	0.93
25	NextEra Energy, Inc.	2.45	3.93	3.48	3.08	2.90	2.64	2.40	2.20	2.00	1.89	1.78	1.64	1.50
26	NorthWestern Corp	1.55	2.10	2.00	1.92	1.60	1.52	1.48	1.44	1.36	1.34	1.32	1.28	1.24
27	OGE Energy	0.86	1.27	1.16	1.05	0.95	0.85	0.80	0.76	0.73	0.71	0.70	0.68	0.67
28	Otter Tail Corp.	1.20	1.28	1.25	1.23	1.21	1.19	1.19	1.19	1.19	1.19	1.19	1.17	1.15
29	PG&E Corp.	1.74	2.08	1.93	1.82	1.82	1.82	1.82	1.82	1.82	1.68	1.56	1.44	1.32
30	Pinnacle West Capital	2.29	2.70	2.56	2.44	2.33	2.23	2.67	2.10	2.10	2.10	2.10	2.10	2.03
31	PNM Resources	0.71	0.97	0.88	0.80	0.76	0.68	0.58	0.50	0.50	0.50	0.61	0.91	0.86
32	Portland General	1.06	1.34	1.26	1.18	1.12	1.10	1.08	1.06	1.04	1.01	0.97	0.93	0.68
33	PPL Corp.	1.40	1.58	1.52	1.50	1.49	1.47	1.44	1.40	1.40	1.38	1.34	1.22	1.10
34	Public Serv. Enterprise	1.41	1.72	1.64	1.56	1.48	1.44	1.42	1.37	1.37	1.33	1.29	1.17	1.14
35	SCANA Corp.	2.00	2.45	2.30	2.18	2.10	2.03	1.98	1.94	1.90	1.88	1.84	1.76	1.68
36	Sempra Energy	2.13	3.29	3.02	2.80	2.64	2.52	2.40	1.92	1.56	1.56	1.37	1.24	1.20
37	Southern Co.	1.91	2.30	2.22	2.15	2.08	2.01	1.94	1.87	1.80	1.73	1.66	1.60	1.54
38	Vectren Corp.	1.42	1.70	1.62	1.54	1.46	1.43	1.41	1.39	1.37	1.35	1.31	1.27	1.23
39	WEC Energy Group	1.17	2.08	1.98	1.74	1.56	1.45	1.20	1.04	0.80	0.68	0.54	0.50	0.46
40	Westar Energy	1.30	1.60	1.52	1.44	1.40	1.36	1.32	1.28	1.24	1.20	1.16	1.08	0.98
41	Xcel Energy Inc.	1.10	1.44	1.36	1.28	1.20	1.11	1.07	1.03	1.00	0.97	0.94	0.91	0.88
42	Average	1.58	1.97	1.86	1.76	1.67	1.61	1.59	1.51	1.47	1.42	1.42	1.36	1.27
43	Industry CAGR	4.02%												

Sources:

¹ The Value Line Investment Survey Investment Analyzer Software, downloaded on June 21, 2017.

² The Value Line Investment Survey, September 15, October 27, and November 17, 2017.

Notes:

CAGR = Compound Annual Growth Rate

Montana-Dakota Utilities Co.

**Natural Gas Utilities
(Valuation Metrics)**

Line	Company	Dividend per Share ¹												
		12-Year												
		Average (1)	2017 ² (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (13)
1	Atmos Energy	1.43	1.80	1.68	1.56	1.48	1.40	1.38	1.36	1.34	1.32	1.30	1.28	1.26
2	Chesapeake Utilities	0.97	1.26	1.19	1.12	1.07	1.01	0.96	0.91	0.87	0.83	0.81	0.78	0.77
3	New Jersey Resources	0.74	1.02	0.98	0.93	0.86	0.81	0.77	0.72	0.68	0.62	0.56	0.51	0.48
4	NiSource Inc.	0.89	0.70	0.64	0.83	1.02	0.98	0.94	0.92	0.92	0.92	0.92	0.92	0.92
5	Northwest Nat. Gas	1.71	1.88	1.87	1.86	1.85	1.83	1.79	1.75	1.68	1.60	1.52	1.44	1.39
6	ONE Gas Inc.	1.28	1.68	1.40	1.20	0.84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	South Jersey Inds.	0.79	1.10	1.06	1.02	0.96	0.90	0.83	0.75	0.68	0.61	0.56	0.51	0.46
8	Southwest Gas	1.25	1.98	1.80	1.62	1.46	1.32	1.18	1.06	1.00	0.95	0.90	0.86	0.82
9	Spire Inc.	1.67	2.10	1.96	1.84	1.76	1.70	1.66	1.61	1.57	1.53	1.49	1.45	1.40
10	UGI Corp.	0.69	0.95	0.93	0.89	0.79	0.74	0.71	0.68	0.60	0.52	0.50	0.48	0.46
11	WGL Holdings Inc.	1.62	2.02	1.93	1.83	1.72	1.66	1.59	1.55	1.50	1.47	1.41	1.37	1.35
12	Average	1.17	1.50	1.40	1.34	1.25	1.24	1.18	1.13	1.08	1.04	1.00	0.96	0.93
43	Industry CAGR	4.44%												

Sources:

¹ The Value Line Investment Survey Investment Analyzer Software, downloaded on June 21, 2017.

² The Value Line Investment Survey, September 1, 2017.

Notes:

CAGR = Compound Annual Growth Rate

Montana-Dakota Utilities Co.

Electric Utilities (Valuation Metrics)

		Price to Earnings (P/E) Ratio ¹																
Line	Company	16-Year																
		Average (1)	2017 ² (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (13)	2005 (14)	2004 (15)	2003 (16)	2002 (17)
1	ALLETE	17.42	23.40	18.63	15.06	17.23	18.59	15.88	14.66	15.98	16.08	13.95	14.78	16.55	17.91	25.21	N/A	N/A
2	Alliant Energy	15.82	21.10	22.30	18.07	16.60	15.28	14.50	14.45	12.47	13.86	13.43	15.08	16.82	12.59	14.00	12.69	19.93
3	Ameren Corp.	15.46	20.80	18.29	17.55	16.71	16.52	13.35	11.93	9.66	9.26	14.21	17.45	19.39	16.72	16.28	13.51	15.78
4	American Electric Power	13.85	19.50	15.16	15.77	15.88	14.49	13.77	11.92	13.42	10.03	13.06	16.27	12.91	13.70	12.42	10.66	12.68
5	Avangrid, Inc.	28.48	24.00	20.49	40.94	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	Avista Corp.	18.37	29.90	18.80	17.60	17.28	14.64	19.30	14.08	12.74	11.42	14.97	30.88	15.39	19.45	24.43	13.84	19.27
7	Black Hills	17.64	19.00	22.29	16.14	19.03	18.24	17.13	31.13	18.10	9.93	N/A	15.02	15.77	17.27	17.13	15.95	12.52
8	CenterPoint Energy	14.86	21.90	21.91	18.10	16.96	18.75	14.85	14.58	13.78	11.81	11.27	15.00	10.27	19.06	17.84	6.05	5.59
9	CMS Energy Corp.	16.72	21.60	20.94	18.29	17.30	16.32	15.07	13.62	12.46	13.56	10.87	26.84	22.18	12.60	12.39	N/A	N/A
10	Consol. Edison	15.31	21.20	18.80	15.59	15.90	14.72	15.39	15.08	13.30	12.55	12.29	13.78	15.49	15.13	18.21	14.30	13.28
11	Dominion Resources	17.99	21.30	21.33	22.14	22.97	19.25	18.91	17.27	14.35	12.74	13.78	20.63	15.98	24.89	15.07	15.24	12.05
12	DTE Energy	15.43	20.60	18.97	18.11	14.91	17.92	14.89	13.51	12.27	10.41	14.81	18.27	17.43	13.80	16.04	13.69	11.28
13	Duke Energy	16.89	20.30	21.25	18.22	17.91	17.45	17.46	13.76	12.69	13.32	17.28	16.13	N/A	N/A	N/A	N/A	N/A
14	Edison Int'l	13.98	18.30	17.92	14.77	13.05	12.70	9.71	11.81	10.32	9.72	12.36	16.03	12.99	11.74	37.59	6.97	7.78
15	El Paso Electric	17.12	22.00	18.66	18.33	16.38	15.88	14.47	12.60	10.72	10.79	11.89	15.26	16.92	26.72	22.03	18.26	22.99
16	Entergy Corp.	13.27	12.10	10.92	12.53	12.89	13.21	11.22	9.06	11.57	11.98	16.56	19.30	14.28	16.28	15.09	13.77	11.53
17	Eversource Energy	17.61	20.10	18.69	18.11	17.92	16.94	19.86	15.35	13.42	11.96	13.66	18.75	27.07	19.76	20.77	13.35	16.07
18	Exelon Corp.	14.52	15.40	18.68	12.58	16.02	13.43	19.08	11.30	10.97	11.49	17.97	18.22	16.53	15.37	12.99	11.77	10.46
19	FirstEnergy Corp.	17.33	12.10	15.91	17.02	39.79	13.06	21.10	22.39	11.75	13.02	15.64	15.59	14.23	16.07	14.13	22.47	12.95
20	Fortis Inc.	19.23	17.10	21.60	18.00	24.29	19.97	20.12	18.79	18.22	16.36	17.48	21.14	17.68	N/A	N/A	N/A	N/A
21	Great Plains Energy	16.98	38.90	17.98	19.37	16.47	14.19	15.53	16.11	12.10	16.03	20.55	16.35	18.30	13.96	12.59	12.23	11.09
22	Hawaiian Elec.	18.04	21.50	13.56	20.40	15.88	16.21	15.81	17.09	18.59	19.79	23.16	21.57	20.33	18.27	19.18	13.76	13.47
23	IDACORP, Inc.	16.01	22.00	19.06	16.22	14.67	13.45	12.41	11.54	11.83	10.20	13.93	18.19	15.07	16.70	15.49	26.51	18.88
24	MGE Energy	18.07	27.50	24.90	20.28	17.19	17.01	17.23	15.82	14.98	15.14	14.22	15.01	15.88	22.40	17.98	17.55	15.96
25	NextEra Energy, Inc.	15.90	22.70	20.71	16.89	17.25	16.57	14.43	11.54	10.83	13.42	14.48	18.90	13.65	17.88	13.65	17.88	13.60
26	NorthWestern Corp.	16.72	17.30	17.19	18.36	16.24	16.86	15.72	12.62	12.90	11.54	13.87	21.74	25.95	17.09	N/A	N/A	N/A
27	OGE Energy	14.87	18.10	17.68	17.69	18.27	17.69	15.16	14.37	13.31	10.83	12.41	13.75	13.68	14.95	14.13	11.84	14.12
28	Otter Tail Corp.	24.41	23.80	20.19	18.20	18.84	21.12	21.75	47.48	55.10	31.16	30.06	19.02	17.35	15.40	17.34	17.77	16.01
29	PG&E Corp.	16.63	15.90	21.13	26.40	15.00	23.67	20.70	15.46	15.80	13.01	12.08	16.85	14.84	15.37	13.81	9.50	N/A
30	Pinnacle West Capital	15.61	20.50	18.74	16.04	15.89	15.27	14.35	14.60	12.57	13.74	16.07	14.93	13.69	19.24	15.80	13.96	14.43
31	PNM Resources	17.95	22.70	19.83	16.85	18.68	16.13	14.97	14.53	14.05	18.09	N/A	35.65	15.57	17.38	15.02	14.73	15.08
32	Portland General	16.12	20.10	19.06	17.71	15.32	16.88	13.98	12.37	12.00	14.40	16.30	11.94	23.35	N/A	N/A	N/A	N/A
33	PPL Corp.	14.28	17.50	12.83	13.92	14.08	12.84	10.88	10.52	11.93	25.69	17.64	17.26	14.10	15.12	12.51	10.59	11.06
34	Public Serv. Enterprise	13.38	17.10	15.35	12.41	12.61	13.50	12.79	10.40	10.37	10.04	13.65	16.54	17.81	16.74	14.26	10.58	10.00
35	SCANA Corp.	13.73	10.80	16.80	14.67	13.68	14.43	14.80	13.67	12.93	11.63	12.67	14.96	15.42	14.44	13.57	13.05	12.17
36	Sempra Energy	14.53	22.60	24.37	19.73	21.87	19.68	14.89	11.77	12.60	10.09	11.80	14.01	11.50	11.79	8.65	8.96	8.19
37	Southern Co.	15.79	17.30	17.76	15.85	16.04	16.19	16.97	15.85	14.90	13.52	16.13	15.95	16.19	15.92	14.68	14.83	14.63
38	Vectren Corp.	17.12	24.60	19.18	17.92	19.98	20.66	15.02	15.83	15.10	12.89	16.79	15.33	18.92	15.11	17.57	14.80	14.16
39	WEC Energy Group	15.99	20.90	19.95	21.33	17.71	16.50	15.76	14.25	14.01	13.35	14.77	16.47	15.97	14.46	17.51	12.43	10.46
40	Westar Energy	15.40	20.60	21.59	18.45	15.36	14.04	13.43	14.78	12.96	14.95	16.96	14.10	12.18	14.79	17.44	10.78	14.02
41	Xcel Energy Inc.	16.78	20.50	18.48	16.54	15.44	15.04	14.82	14.24	14.13	12.66	13.69	16.65	14.80	15.36	13.65	11.62	40.80
42	Average	16.29	20.60	18.97	18.00	17.39	16.38	15.69	15.30	14.28	13.56	15.18	17.74	16.47	16.52	16.57	13.70	14.31
43	Median	15.61	20.60	18.80	17.71	16.54	16.27	15.04	14.31	12.91	12.82	14.21	16.41	15.88	15.92	15.29	13.60	13.47

Sources:

¹ The Value Line Investment Survey Investment Analyzer Software, downloaded on June 21, 2017.

² The Value Line Investment Survey, September 15, October 27, and November 17, 2017.

Montana-Dakota Utilities Co.

Electric Utilities
(Valuation Metrics)

Line	Company	Market Price to Cash Flow (MP/CF) Ratio ¹																
		16-Year																
		Average	2017 ^{2/a}	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1	ALLETE	9.26	9.57	8.26	7.49	8.80	9.15	8.18	7.91	8.04	8.51	9.29	10.30	11.06	11.54	11.46	N/A	N/A
2	Alliant Energy	7.31	9.98	10.67	8.86	8.40	7.52	7.50	7.21	6.59	6.23	7.49	7.92	8.00	5.09	5.52	4.76	5.20
3	Ameren Corp.	6.82	8.07	7.44	6.87	6.95	6.61	5.48	5.02	4.23	4.25	6.35	7.69	8.57	8.57	8.24	6.74	7.96
4	American Electric Power	6.12	8.56	7.57	7.09	7.00	6.57	5.93	5.46	5.54	4.71	5.71	6.84	5.54	6.07	5.50	4.69	5.19
5	Avangrid, Inc.	9.72	9.30	8.56	11.30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	Avista Corp.	6.45	8.80	7.63	6.76	7.30	6.21	6.88	6.40	5.80	4.06	5.12	7.58	5.30	6.58	7.58	5.36	5.90
7	Black Hills	7.53	9.04	9.33	8.06	8.81	8.03	6.04	7.85	6.16	4.25	11.26	7.62	6.92	7.57	6.69	6.89	5.92
8	CenterPoint Energy	4.84	7.00	5.96	5.75	6.25	6.56	5.15	5.39	4.70	4.05	4.29	5.17	3.94	4.70	4.26	2.08	2.16
9	CMS Energy Corp.	5.43	8.49	8.50	7.53	7.13	6.68	6.03	5.41	4.48	3.64	3.45	5.57	4.40	4.04	3.20	2.88	NMF
10	Consol. Edison	8.15	9.51	9.39	7.96	7.89	7.77	8.31	8.15	7.39	6.72	6.89	8.31	8.65	8.59	9.31	7.90	7.64
11	Dominion Resources	9.30	11.17	11.59	11.84	12.27	10.88	9.92	9.45	8.12	6.98	8.27	8.65	7.81	10.09	7.68	7.51	6.53
12	DTE Energy	6.03	8.69	8.64	8.52	6.42	6.65	5.91	5.18	4.69	3.59	4.90	5.73	5.21	5.54	6.00	5.62	5.20
13	Duke Energy	7.57	8.16	8.57	7.95	8.12	8.11	9.53	6.56	6.01	5.96	7.13	7.16	N/A	N/A	N/A	N/A	N/A
14	Edison Int'l	5.27	6.94	6.77	5.92	5.68	5.46	4.59	4.22	4.11	3.95	5.63	7.01	5.87	5.61	6.84	2.82	2.96
15	El Paso Electric	5.70	8.21	7.46	6.47	6.33	6.19	5.78	5.16	4.31	3.98	4.95	6.44	6.25	6.67	4.65	3.90	4.39
16	Entergy Corp.	5.72	4.02	4.01	4.11	4.21	4.03	4.23	3.90	4.66	5.68	7.96	9.21	7.16	8.76	7.12	6.84	5.57
17	Eversource Energy	6.50	10.32	10.14	10.12	10.14	8.08	9.30	6.99	4.97	4.61	4.12	6.18	6.02	3.55	3.78	2.85	2.75
18	Exelon Corp.	6.21	4.65	4.80	4.70	5.09	4.61	5.54	5.86	5.10	5.98	9.65	9.89	8.62	7.97	6.29	5.71	4.97
19	FirstEnergy Corp.	6.20	4.78	5.12	5.38	7.43	6.15	7.42	7.33	4.49	4.91	7.58	7.89	7.53	6.04	5.15	6.90	5.10
20	Fortis Inc.	8.19	8.05	10.46	7.29	9.25	7.93	8.09	8.38	7.40	6.76	7.58	9.18	7.89	N/A	N/A	N/A	N/A
21	Great Plains Energy	6.61	10.07	8.63	6.66	6.45	5.73	6.09	5.74	4.49	5.06	7.71	7.13	7.68	6.70	6.52	5.92	5.14
22	Hawaiian Elec.	7.92	9.12	7.44	9.25	7.64	8.15	8.05	7.73	7.81	6.95	9.10	7.95	8.47	8.29	8.44	6.12	6.20
23	IDACORP, Inc.	7.88	11.38	10.95	9.37	8.59	7.78	7.05	6.64	6.52	5.31	7.10	8.23	7.73	7.55	7.15	7.27	7.53
24	MGE Energy	10.86	17.20	15.66	12.53	11.42	11.20	10.77	9.48	9.05	8.40	8.42	9.23	9.30	11.73	11.04	10.20	8.09
25	NextEra Energy, Inc.	7.21	9.58	9.23	7.93	7.98	7.60	7.58	5.98	5.33	6.09	7.34	9.02	6.51	6.71	6.71	5.97	5.77
26	NorthWestern Corp	7.53	8.67	8.65	8.99	9.01	7.61	6.85	5.89	5.79	5.05	5.57	8.45	9.39	7.31	8.13	N/A	N/A
27	OGE Energy	7.65	10.48	9.03	9.25	10.65	9.93	7.35	7.48	6.61	5.37	6.43	7.58	7.50	7.04	6.73	5.62	5.39
28	Otter Tail Corp.	9.07	10.68	9.38	9.04	9.45	9.58	8.43	9.04	8.07	8.01	11.65	9.53	8.66	8.18	9.01	8.13	8.33
29	PG&E Corp.	6.22	6.60	7.26	7.24	5.65	6.84	5.86	5.32	5.42	4.71	4.61	5.84	5.28	5.07	5.13	4.05	14.69
30	Pinnacle West Capital	5.97	8.38	7.89	6.91	7.03	6.85	6.34	5.80	5.65	3.84	4.19	4.76	4.48	7.48	5.88	4.80	5.21
31	PNM Resources	6.67	7.28	7.64	6.95	7.48	6.47	5.80	4.94	4.58	4.53	7.10	10.67	7.50	7.62	6.84	5.55	5.72
32	Portland General	5.62	7.43	7.12	6.73	5.49	6.06	5.08	4.86	4.13	4.63	4.81	5.34	5.74	N/A	N/A	N/A	N/A
33	PPL Corp.	7.50	10.41	8.37	8.73	7.32	6.59	5.87	5.98	7.46	8.82	9.17	8.90	7.58	7.57	6.49	5.41	5.30
34	Public Serv. Enterprise	7.28	8.17	8.56	6.66	6.48	6.40	6.40	6.03	6.04	6.20	8.46	9.83	8.41	8.59	7.17	6.79	6.24
35	SCANA Corp.	7.07	7.84	9.59	8.33	7.50	7.49	7.40	6.75	6.52	5.88	6.38	7.15	7.03	5.40	6.86	6.59	6.36
36	Sempra Energy	7.56	10.13	10.88	9.99	10.77	9.37	7.26	6.13	6.53	6.07	7.07	8.61	7.22	6.96	5.16	4.85	4.00
37	Southern Co.	8.22	7.89	8.83	8.23	8.42	8.30	8.75	8.22	7.79	7.08	8.18	8.62	8.47	8.41	8.28	8.28	7.83
38	Vectren Corp.	7.07	10.15	8.60	7.82	7.57	6.82	5.79	5.81	5.58	5.24	6.90	6.53	7.37	7.06	7.63	7.27	6.92
39	West Energy Group	8.24	10.88	10.95	12.90	10.27	9.58	9.24	8.43	8.15	6.87	7.57	7.84	7.27	6.40	6.27	4.91	4.27
40	Westar Energy	6.91	10.80	10.86	9.05	7.93	7.23	6.71	6.67	5.51	5.32	7.09	6.88	5.81	7.00	6.54	4.24	2.94
41	Xcel Energy Inc.	6.36	8.31	8.10	7.62	7.31	7.00	6.85	6.47	6.28	5.43	5.71	6.51	5.54	5.62	5.31	4.27	5.46
42	Average	7.07	8.90	8.65	8.05	7.85	7.39	6.98	6.53	6.00	5.59	6.95	7.72	7.12	7.13	6.77	5.70	5.85
43	Median	6.95	8.69	8.57	7.93	7.54	7.12	6.85	6.27	5.80	5.35	7.09	7.76	7.37	7.04	6.71	5.62	5.52

Sources:

¹ The Value Line Investment Survey Investment Analyzer Software, downloaded on June 21, 2017.

² The Value Line Investment Survey, September 15, October 27, and November 17, 2017.

Note:

^a Based on the average of the high and low price for 2017 and the projected 2017 Cash Flow per share, published in The Value Line Investment Survey, September 15, October 27, and November 17, 2017.

Montana-Dakota Utilities Co.

Electric Utilities (Valuation Metrics)

Line	Company	Market Price to Book Value (MP/BV) Ratio ¹													
		13-Year													
		Average	2017 ^{2b}	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1	ALLETE	1.57	1.75	1.53	1.37	1.42	1.51	1.34	1.35	1.28	1.15	1.55	1.89	2.09	2.22
2	Alliant Energy	1.62	2.29	2.17	1.86	1.86	1.70	1.57	1.46	1.31	1.04	1.33	1.67	1.52	1.33
3	Ameren Corp.	1.35	1.85	1.67	1.46	1.45	1.29	1.18	0.90	0.83	0.78	1.25	1.60	1.62	1.68
4	American Electric Power	1.50	1.85	1.81	1.55	1.54	1.40	1.31	1.23	1.23	1.08	1.48	1.85	1.56	1.57
5	Avangrid, Inc.	0.82	0.91	0.83	0.72	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	Avista Corp.	1.27	1.71	1.57	1.36	1.33	1.25	1.21	1.19	1.07	0.94	1.11	1.29	1.30	1.13
7	Black Hills	1.47	2.08	1.94	1.59	1.79	1.62	1.21	1.14	1.07	0.83	1.22	1.57	1.47	1.63
8	CenterPoint Energy	2.46	3.27	2.73	2.43	2.27	2.30	1.99	1.87	1.96	1.77	2.49	3.13	2.75	3.06
9	CMS Energy Corp.	1.86	2.77	2.72	2.43	2.26	2.09	1.91	1.66	1.48	1.10	1.23	1.82	1.42	1.32
10	Consol. Edison	1.39	1.64	1.58	1.42	1.34	1.38	1.47	1.38	1.22	1.08	1.17	1.47	1.47	1.52
11	Dominion Resources	2.67	3.04	3.15	3.34	3.55	2.97	2.84	2.37	2.01	1.80	2.42	2.69	2.07	2.50
12	DTE Energy	1.41	1.99	1.82	1.65	1.62	1.51	1.35	1.20	1.16	0.89	1.10	1.35	1.29	1.39
13	Duke Energy	1.17	1.40	1.35	1.29	1.28	1.19	1.12	1.11	1.00	0.91	1.06	1.15	N/A	N/A
14	Edison Int'l	1.63	2.00	1.92	1.76	1.68	1.57	1.53	1.24	1.07	1.04	1.56	2.05	1.80	1.93
15	El Paso Electric	1.53	1.86	1.68	1.48	1.52	1.49	1.59	1.64	1.17	0.98	1.33	1.69	1.71	1.76
16	Entergy Corp.	1.70	1.59	1.67	1.40	1.33	1.21	1.31	1.35	1.62	1.66	2.44	2.65	1.89	2.01
17	Eversource Energy	1.39	1.70	1.64	1.53	1.47	1.38	1.28	1.50	1.31	1.12	1.31	1.60	1.22	1.05
18	Exelon Corp.	2.37	1.29	1.20	1.14	1.28	1.17	1.46	1.95	2.07	2.57	4.39	4.79	3.89	3.60
19	FirstEnergy Corp.	1.69	1.99	2.37	1.16	1.15	1.28	1.44	1.33	1.36	1.54	2.52	2.23	1.92	1.64
20	Fortis Inc.	1.49	1.30	1.26	1.33	1.35	1.45	1.59	1.69	1.56	1.33	1.48	1.63	1.96	N/A
21	Great Plains Energy	1.20	1.21	1.17	1.12	1.11	1.02	0.96	0.93	0.87	0.80	1.11	1.66	1.77	1.86
22	Hawaiian Elec.	1.60	1.72	1.63	1.71	1.49	1.54	1.62	1.54	1.44	1.16	1.61	1.57	2.01	1.78
23	IDACORP, Inc.	1.33	1.90	1.76	1.54	1.45	1.33	1.19	1.17	1.13	0.92	1.09	1.26	1.37	1.22
24	MGE Energy	2.00	2.93	2.60	2.10	2.10	2.06	1.92	1.75	1.65	1.54	1.62	1.75	1.83	2.09
25	NextEra Energy, Inc.	1.97	2.51	2.30	2.09	2.15	1.93	1.74	1.55	1.49	1.70	2.06	2.34	1.80	1.93
26	NorthWestern Corp	1.45	1.67	1.68	1.60	1.54	1.56	1.42	1.35	1.22	1.07	1.15	1.48	1.65	1.42
27	OGE Energy	1.85	1.96	1.73	1.79	2.22	2.24	1.94	1.90	1.70	1.37	1.52	1.98	1.91	1.80
28	Otter Tail Corp.	1.71	2.20	1.90	1.78	1.90	1.96	1.58	1.35	1.19	1.18	1.71	1.93	1.76	1.74
29	PG&E Corp.	1.58	1.63	1.69	1.57	1.39	1.38	1.41	1.46	1.56	1.41	1.50	1.94	1.83	1.84
30	Pinnacle West Capital	1.35	1.87	1.72	1.52	1.44	1.47	1.39	1.25	1.14	0.95	1.00	1.26	1.26	1.25
31	PNM Resources	1.12	1.75	1.56	1.33	1.21	1.09	0.98	0.80	0.69	0.56	0.66	1.23	1.21	1.45
32	Portland General	1.26	1.67	1.56	1.42	1.37	1.28	1.14	1.09	0.94	0.92	1.05	1.32	1.36	N/A
33	PPL Corp.	2.17	2.42	2.46	2.24	1.64	1.55	1.58	1.47	1.61	2.10	3.19	3.05	2.43	2.50
34	Public Serv. Enterprise	1.92	1.78	1.67	1.58	1.57	1.44	1.46	1.59	1.67	1.78	2.58	2.99	2.46	2.45
35	SCANA Corp.	1.49	1.41	1.74	1.47	1.48	1.48	1.48	1.36	1.33	1.20	1.45	1.62	1.64	1.72
36	Sempra Energy	1.74	2.07	2.00	2.17	2.20	1.84	1.53	1.28	1.35	1.32	1.60	1.87	1.70	1.73
37	Southern Co.	2.06	2.10	2.01	1.99	2.02	2.04	2.15	1.99	1.83	1.73	2.12	2.24	2.23	2.35
38	Vectren Corp.	1.83	2.71	2.29	2.11	2.08	1.82	1.57	1.53	1.41	1.34	1.64	1.74	1.77	1.82
39	WEC Energy Group	1.85	2.08	2.09	1.82	2.34	2.21	2.05	1.81	1.65	1.40	1.57	1.77	1.71	1.62
40	Westar Energy	1.37	1.89	1.95	1.49	1.44	1.33	1.26	1.20	1.10	0.93	1.10	1.36	1.30	1.41
41	Xcel Energy Inc.	1.51	2.00	1.88	1.66	1.55	1.50	1.51	1.41	1.32	1.19	1.30	1.53	1.40	1.38
42	Average	1.65	1.94	1.85	1.67	1.68	1.60	1.51	1.43	1.35	1.25	1.63	1.90	1.78	1.80
43	Median	1.55	1.87	1.74	1.57	1.53	1.49	1.47	1.37	1.31	1.15	1.48	1.71	1.71	1.73

Sources:

¹ The Value Line Investment Survey Investment Analyzer Software, downloaded on June 21, 2017.

² The Value Line Investment Survey, September 15, October 27, and November 17, 2017.

Notes:

^b Based on the average of the high and low price for 2017 and the projected 2017 Book Value per share, published in The Value Line Investment Survey, September 15, October 27, and November 17, 2017.

Montana-Dakota Utilities Co.

Natural Gas Utilities (Valuation Metrics)

		Price to Earnings (P/E) Ratio ¹												
Line	Company	12-Year												
		Average (1)	2017 ² (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (13)
1	Atmos Energy	16.12	24.20	20.80	17.50	16.09	15.87	15.93	14.36	13.21	12.54	13.59	15.87	13.52
2	Chesapeake Utilities	17.27	28.90	21.77	19.15	17.70	15.62	14.81	14.16	12.21	14.20	14.15	16.72	17.85
3	New Jersey Resources	16.93	24.10	21.25	16.61	11.73	15.98	16.83	16.76	14.98	14.93	12.27	21.61	16.13
4	NiSource Inc.	20.75	29.90	23.18	37.34	22.74	18.89	17.87	19.36	15.33	14.34	12.07	18.82	19.16
5	Northwest Nat. Gas	20.16	28.30	26.92	23.69	20.69	19.38	21.08	19.02	16.97	15.17	18.08	16.74	15.85
6	ONE Gas Inc.	21.26	24.70	22.74	19.79	17.83	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	South Jersey Inds.	18.06	28.00	21.71	17.95	18.03	18.90	16.94	18.48	16.81	14.96	15.90	17.18	11.86
8	Southwest Gas	17.29	22.50	21.64	19.35	17.86	15.76	15.00	15.69	13.97	12.20	20.27	17.26	15.94
9	Spire Inc.	16.15	19.90	19.61	16.49	19.80	21.25	14.46	13.05	13.74	13.39	14.31	14.19	13.60
10	UGI Corp.	15.34	20.80	19.33	17.71	15.81	15.44	16.38	15.03	10.86	10.30	13.30	15.14	13.97
11	WGL Holdings Inc.	16.61	24.20	20.05	16.99	15.15	18.25	15.27	16.97	15.11	12.58	13.66	15.60	15.46
12	Average	17.47	25.05	21.73	20.23	17.58	17.53	16.46	16.29	14.32	13.46	14.76	16.91	15.33
13	Median	17.14	24.20	21.64	17.95	17.83	17.11	16.15	16.22	14.48	13.80	13.91	16.73	15.66

		Market Price to Cash Flow (MP/CF) Ratio ¹												
Line	Company	12-Year												
		Average (1)	2017 ^{2a} (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (13)
1	Atmos Energy	7.97	12.40	11.36	9.30	8.79	7.72	7.02	6.87	6.15	5.76	6.48	7.44	6.36
2	Chesapeake Utilities	9.28	15.24	12.06	10.16	9.25	8.12	7.46	7.35	6.36	9.48	7.88	8.58	9.40
3	New Jersey Resources	11.90	15.29	13.94	11.71	8.95	11.29	12.29	12.71	11.32	11.34	9.15	13.76	11.01
4	NiSource Inc.	7.47	9.19	8.56	10.38	10.56	8.71	7.81	6.81	5.09	4.06	4.87	6.69	6.87
5	Northwest Nat. Gas	9.23	11.34	11.57	9.46	8.84	8.61	9.48	9.08	8.94	8.26	8.75	8.54	7.83
6	ONE Gas Inc.	10.00	11.56	11.10	9.19	8.16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	South Jersey Inds.	10.95	14.54	10.88	10.70	10.57	11.57	10.95	11.98	10.78	9.57	10.38	11.23	8.32
8	Southwest Gas	5.86	8.59	7.41	6.56	6.35	5.94	5.55	5.60	4.91	3.84	4.89	5.42	5.28
9	Spire Inc.	9.61	11.24	10.32	8.47	12.03	13.76	8.80	8.08	8.12	8.58	8.95	8.46	8.46
10	UGI Corp.	7.49	10.32	9.02	8.47	7.49	6.55	6.30	7.51	6.02	5.74	7.11	7.92	7.48
11	WGL Holdings Inc.	9.27	14.07	11.36	9.59	8.46	9.83	9.03	9.52	8.34	7.17	7.68	8.39	7.81
12	Average	8.89	12.16	10.69	9.45	9.04	9.21	8.47	8.55	7.60	7.38	7.62	8.64	7.88
13	Median	8.72	11.56	11.10	9.46	8.84	8.66	8.31	7.80	7.24	7.71	7.78	8.42	7.82

		Market Price to Book Value (MP/BV) Ratio ¹												
Line	Company	12-Year												
		Average (1)	2017 ^{2b} (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (13)
1	Atmos Energy	1.48	2.20	2.11	1.72	1.55	1.39	1.28	1.30	1.18	1.05	1.20	1.40	1.34
2	Chesapeake Utilities	1.85	2.41	2.28	2.19	2.12	1.83	1.66	1.61	1.40	1.37	1.64	1.84	1.85
3	New Jersey Resources	2.22	2.72	2.52	2.28	2.13	2.05	2.33	2.31	2.09	2.16	1.92	2.17	2.01
4	NiSource Inc.	1.39	1.92	1.84	1.95	1.94	1.58	1.37	1.15	0.92	0.69	0.94	1.16	1.19
5	Northwest Nat. Gas	1.78	2.05	1.92	1.63	1.59	1.56	1.72	1.70	1.78	1.73	1.96	2.05	1.69
6	ONE Gas Inc.	1.45	1.80	1.67	1.26	1.07	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	South Jersey Inds.	2.10	2.02	1.79	1.77	2.07	2.27	2.21	2.59	2.38	1.95	2.08	2.21	1.93
8	Southwest Gas	1.53	2.12	1.96	1.68	1.68	1.61	1.51	1.43	1.24	0.97	1.20	1.46	1.46
9	Spire Inc.	1.55	1.76	1.64	1.44	1.33	1.34	1.51	1.46	1.39	1.68	1.71	1.66	1.71
10	UGI Corp.	2.00	2.80	2.41	2.29	1.97	1.69	1.45	1.75	1.55	1.66	2.01	2.16	2.21
11	WGL Holdings Inc.	1.81	2.65	2.45	2.15	1.69	1.71	1.66	1.63	1.50	1.45	1.59	1.64	1.59
12	Average	1.75	2.22	2.05	1.85	1.74	1.70	1.67	1.69	1.54	1.47	1.62	1.78	1.70
13	Median	1.71	2.12	1.96	1.77	1.69	1.65	1.58	1.62	1.45	1.56	1.67	1.75	1.70

Sources:

¹ The Value Line Investment Survey Investment Analyzer Software, downloaded on June 21, 2017.

² The Value Line Investment Survey, September 1, 2017.

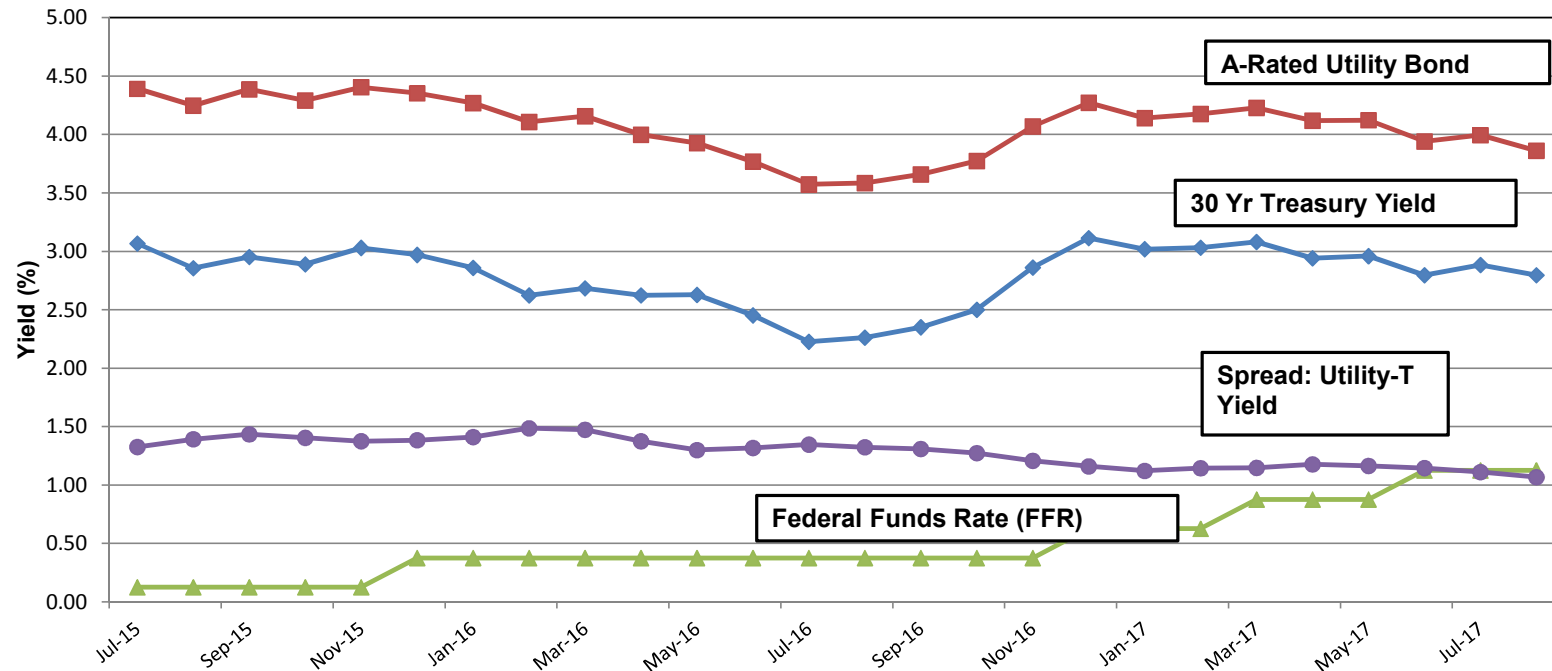
Notes:

^a Based on the average of the high and low price for 2017 and the projected 2017 Cash Flow per share, published in The Value Line Investment Survey, September 1, 2017.

^b Based on the average of the high and low price for 2017 and the projected 2017 Book Value per share, published in The Value Line Investment Survey, September 1, 2017.

Montana-Dakota Utilities Co.

Timeline of Federal Funds Rate Increases



Fed FFR Actions:

December 2015	0.25	→	0.50
December 2016	0.50	→	0.75
March 2017	0.75	→	1.00
June 2017	1.00	→	1.25
December 2017	1.25	→	1.50

Sources:

Federal Reserve Bank of New York, <https://apps.newyorkfed.org/markets/autorates/fed-funds-search-page>
 Board of Governors of the Federal Reserve System, <https://www.federalreserve.gov/datadownload/>
 Moody's Credit Trends, <https://credittrends.moody.com/>

Montana-Dakota Utilities Co.

Proxy Group

<u>Line</u>	<u>Company</u>	<u>Credit Ratings¹</u>		<u>Common Equity Ratios</u>	
		<u>S&P</u> (1)	<u>Moody's</u> (2)	<u>SNL¹</u> (3)	<u>Value Line²</u> (4)
1	Atmos Energy Corporation	A	A2	51.4%	61.3%
2	New Jersey Resources Corporation	A	Aa2	48.5%	52.3%
3	NiSource Inc.	BBB+	Baa2	34.0%	40.2%
4	Northwest Natural Gas Company	A+	A3	52.4%	55.6%
5	Southwest Gas Holdings, Inc.	BBB+	Baa1	50.7%	51.8%
6	Spire Inc.	A-	Baa2	41.7%	49.1%
7	Average	A-	A3	46.5%	51.7%
8	Montana-Dakota Utilities Co.	BBB+³	N/A³	51%⁴	

Sources:

¹ S&P Market Intelligence, Downloaded on November 17, 2017.

² *The Value Line Investment Survey*, September 1, 2017.

³ Exhibit No.____(JSG-2), Schedule 3, Page 2 of 2

⁴ Statement D

Note: When credit rating or common equity ratio is unavailable,
subsidiary or parent company is used

Montana-Dakota Utilities Co.

Consensus Analysts' Growth Rates

<u>Line</u>	<u>Company</u>	<u>Zacks</u>		<u>SNL</u>		<u>Reuters</u>		<u>Average of Growth Rates</u>
		<u>Estimated Growth %¹</u> (1)	<u>Number of Estimates</u> (2)	<u>Estimated Growth %²</u> (3)	<u>Number of Estimates</u> (4)	<u>Estimated Growth %³</u> (5)	<u>Number of Estimates</u> (6)	
1	Atmos Energy Corporation	6.50%	N/A	7.00%	1	6.50%	1	6.67%
2	New Jersey Resources Corporation	6.00%	N/A	7.00%	1	N/A	N/A	6.50%
3	NiSource Inc.	5.70%	N/A	7.00%	1	7.64%	2	6.78%
4	Northwest Natural Gas Company	4.50%	N/A	5.00%	2	N/A	N/A	4.75%
5	Southwest Gas Holdings, Inc.	6.50%	N/A	4.00%	1	N/A	N/A	5.25%
6	Spire Inc.	5.30%	N/A	4.75%	2	4.52%	2	4.86%
7	Average	5.75%	N/A	5.79%	1	6.22%	2	5.80%

Sources:

¹ Zacks Elite, <http://www.zackselite.com/>, downloaded on November 17, 2017.

² S&P Market Intelligence, <http://www.snl.com/>, downloaded on November 17, 2017.

³ Reuters, <http://www.reuters.com/>, downloaded on November 17, 2017.

Montana-Dakota Utilities Co.

Constant Growth DCF Model (Consensus Analysts' Growth Rates)

<u>Line</u>	<u>Company</u>	<u>13-Week AVG Stock Price¹</u> (1)	<u>Analysts' Growth²</u> (2)	<u>Annualized Dividend³</u> (3)	<u>Adjusted Yield</u> (4)	<u>Constant Growth DCF</u> (5)
1	Atmos Energy Corporation	\$86.92	6.67%	\$1.80	2.21%	8.88%
2	New Jersey Resources Corporation	\$43.33	6.50%	\$1.02	2.51%	9.01%
3	NiSource Inc.	\$26.62	6.78%	\$0.70	2.81%	9.59%
4	Northwest Natural Gas Company	\$65.95	4.75%	\$1.88	2.99%	7.74%
5	Southwest Gas Holdings, Inc.	\$79.78	5.25%	\$1.98	2.61%	7.86%
6	Spire Inc.	\$76.70	4.86%	\$2.10	2.87%	7.73%
7	Average	\$63.22	5.80%	\$1.58	2.67%	8.47%
8	Median					8.37%

Sources:

¹ S&P Market Intelligence, Downloaded on November 20, 2017.

² Exhibit No.____(MPG-2), Schedule 5, Page 1 of 1

³ *The Value Line Investment Survey*, September 1, 2017.

Montana-Dakota Utilities Co.

Payout Ratios

<u>Line</u>	<u>Company</u>	<u>Dividends Per Share</u>		<u>Earnings Per Share</u>		<u>Payout Ratio</u>	
		<u>2016</u> (1)	<u>Projected</u> (2)	<u>2016</u> (3)	<u>Projected</u> (4)	<u>2016</u> (5)	<u>Projected</u> (6)
1	Atmos Energy Corporation	\$1.68	\$2.30	\$3.38	\$4.50	49.70%	51.11%
2	New Jersey Resources Corporation	\$0.98	\$1.12	\$1.61	\$2.15	60.87%	52.09%
3	NiSource Inc.	\$0.64	\$1.00	\$1.00	\$1.50	64.00%	66.67%
4	Northwest Natural Gas Company	\$1.87	\$2.00	\$2.12	\$3.15	88.21%	63.49%
5	Southwest Gas Holdings, Inc.	\$1.80	\$2.50	\$3.18	\$4.75	56.60%	52.63%
6	Spire Inc.	\$1.96	\$2.50	\$3.24	\$4.65	60.49%	53.76%
7	Average	\$1.49	\$1.90	\$2.42	\$3.45	63.31%	56.63%

Source:

The Value Line Investment Survey, September 1, 2017.

Montana-Dakota Utilities Co.

Sustainable Growth Rate

<u>Line</u>	<u>Company</u>	<u>3 to 5 Year Projections</u>									<u>Sustainable</u>	
		<u>Dividends</u>	<u>Earnings</u>	<u>Book Value</u>	<u>Book Value</u>		<u>Adjustment</u>	<u>Adjusted</u>	<u>Payout</u>	<u>Retention</u>	<u>Internal</u>	<u>Growth</u>
		<u>Per Share</u>	<u>Per Share</u>	<u>Per Share</u>	<u>Growth</u>	<u>ROE</u>	<u>Factor</u>	<u>ROE</u>	<u>Ratio</u>	<u>Rate</u>	<u>Growth Rate</u>	<u>Rate</u>
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	Atmos Energy Corporation	\$2.30	\$4.50	\$38.50	2.93%	11.69%	1.01	11.86%	51.11%	48.89%	5.80%	10.49%
2	New Jersey Resources Corporation	\$1.12	\$2.15	\$18.25	6.09%	11.78%	1.03	12.13%	52.09%	47.91%	5.81%	5.87%
3	NiSource Inc.	\$1.00	\$1.50	\$13.60	1.54%	11.03%	1.01	11.11%	66.67%	33.33%	3.70%	4.17%
4	Northwest Natural Gas Company	\$2.00	\$3.15	\$32.25	1.65%	9.77%	1.01	9.85%	63.49%	36.51%	3.60%	4.74%
5	Southwest Gas Holdings, Inc.	\$2.50	\$4.75	\$52.90	8.59%	8.98%	1.04	9.35%	52.63%	47.37%	4.43%	6.77%
6	Spire Inc.	\$2.50	\$4.65	\$48.30	4.52%	9.63%	1.02	9.84%	53.76%	46.24%	4.55%	6.35%
7	Average	\$1.90	\$3.45	\$33.97	4.22%	10.48%	1.02	10.69%	56.63%	43.37%	4.65%	6.40%

Sources and Notes:

Cols. (1), (2) and (3): *The Value Line Investment Survey*, September 1, 2017.

Col. (4): [Col. (3) / Page 2 Col. (2)] ^ (1/number of years projected) - 1.

Col. (5): Col. (2) / Col. (3).

Col. (6): [2 * (1 + Col. (4))] / (2 + Col. (4)).

Col. (7): Col. (6) * Col. (5).

Col. (8): Col. (1) / Col. (2).

Col. (9): 1 - Col. (8).

Col. (10): Col. (9) * Col. (7).

Col. (11): Col. (10) + Page 2 Col. (9).

Montana-Dakota Utilities Co.

Sustainable Growth Rate

<u>Line</u>	<u>Company</u>	<u>13-Week</u>	<u>2016</u>	<u>Market</u>	<u>Common Shares</u>		<u>Growth</u>	<u>S Factor</u> ³	<u>V Factor</u> ⁴	<u>S * V</u>
		<u>Average</u>	<u>Book Value</u>		<u>to Book</u>	<u>Outstanding (in Millions)</u> ²				
		<u>Stock Price</u> ¹	<u>Per Share</u> ²	<u>Ratio</u>	<u>2016</u>	<u>3-5 Years</u>	<u>(6)</u>	<u>(7)</u>	<u>(8)</u>	<u>(9)</u>
		(1)	(2)	(3)	(4)	(5)				
1	Atmos Energy Corporation	\$86.92	\$33.32	2.61	103.93	120.00	2.92%	7.61%	61.66%	4.69%
2	New Jersey Resources Corporation	\$43.33	\$13.58	3.19	85.88	86.00	0.03%	0.09%	68.66%	0.06%
3	NiSource Inc.	\$26.62	\$12.60	2.11	323.16	330.00	0.42%	0.89%	52.67%	0.47%
4	Northwest Natural Gas Company	\$65.95	\$29.71	2.22	28.63	30.00	0.94%	2.09%	54.95%	1.15%
5	Southwest Gas Holdings, Inc.	\$79.78	\$35.03	2.28	47.48	52.00	1.84%	4.18%	56.09%	2.34%
6	Spire Inc.	\$76.70	\$38.73	1.98	45.65	50.00	1.84%	3.64%	49.51%	1.80%
7	Average	\$63.22	\$27.16	2.40	105.79	111.33	1.33%	3.08%	57.26%	1.75%

Sources and Notes:

¹ S&P Market Intelligence, Downloaded on November 20, 2017.

² *The Value Line Investment Survey*, September 1, 2017.

³ Expected Growth in the Number of Shares, Column (3) * Column (6).

⁴ Expected Profit of Stock Investment, [1 - 1 / Column (3)].

Montana-Dakota Utilities Co.

Constant Growth DCF Model (Sustainable Growth Rate)

<u>Line</u>	<u>Company</u>	<u>13-Week AVG Stock Price¹</u> (1)	<u>Sustainable Growth²</u> (2)	<u>Annualized Dividend³</u> (3)	<u>Adjusted Yield</u> (4)	<u>Constant Growth DCF</u> (5)
1	Atmos Energy Corporation	\$86.92	10.49%	\$1.80	2.29%	12.78%
2	New Jersey Resources Corporation	\$43.33	5.87%	\$1.02	2.49%	8.36%
3	NiSource Inc.	\$26.62	4.17%	\$0.70	2.74%	6.91%
4	Northwest Natural Gas Company	\$65.95	4.74%	\$1.88	2.99%	7.73%
5	Southwest Gas Holdings, Inc.	\$79.78	6.77%	\$1.98	2.65%	9.42%
6	Spire Inc.	\$76.70	6.35%	\$2.10	2.91%	9.26%
7	Average	\$63.22	6.40%	\$1.58	2.68%	9.08%
8	Median					8.81%

Sources:

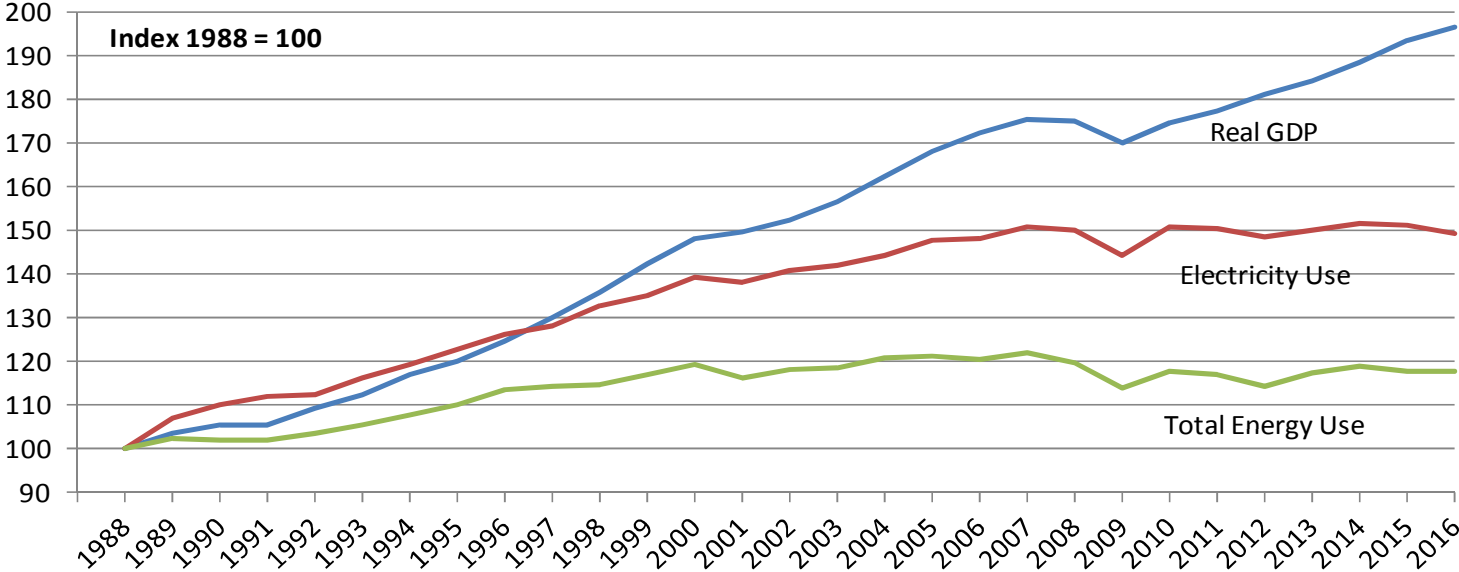
¹ S&P Market Intelligence, Downloaded on November 20, 2017.

² Exhibit No.____(MPG-2), Schedule 8, Page 1 of 2

³ *The Value Line Investment Survey*, September 1, 2017.

Montana-Dakota Utilities Co.

Electricity Sales Are Linked to U.S. Economic Growth



Note:
1988 represents the base year. Graph depicts increases or decreases from the base year.

Sources:
U.S. Energy Information Administration
Federal Reserve Bank of St. Louis

Montana-Dakota Utilities Co.

Multi-Stage Growth DCF Model

Line	Company	13-Week AVG	Annualized	First Stage	Second Stage Growth					Third Stage	Multi-Stage
		Stock Price ¹	Dividend ²	Growth ³	Year 6	Year 7	Year 8	Year 9	Year 10	Growth ⁴	Growth DCF
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Atmos Energy Corporation	\$86.92	\$1.80	6.67%	6.26%	5.84%	5.43%	5.02%	4.61%	4.20%	6.72%
2	New Jersey Resources Corporation	\$43.33	\$1.02	6.50%	6.12%	5.73%	5.35%	4.97%	4.58%	4.20%	7.04%
3	NiSource Inc.	\$26.62	\$0.70	6.78%	6.35%	5.92%	5.49%	5.06%	4.63%	4.20%	7.43%
4	Northwest Natural Gas Company	\$65.95	\$1.88	4.75%	4.66%	4.57%	4.48%	4.38%	4.29%	4.20%	7.27%
5	Southwest Gas Holdings, Inc.	\$79.78	\$1.98	5.25%	5.08%	4.90%	4.73%	4.55%	4.38%	4.20%	6.96%
6	Spire Inc.	\$76.70	\$2.10	4.86%	4.75%	4.64%	4.53%	4.42%	4.31%	4.20%	7.17%
7	Average	\$63.22	\$1.58	5.80%	5.53%	5.27%	5.00%	4.73%	4.47%	4.20%	7.10%
8	Median										7.10%

Sources:

¹ S&P Market Intelligence, Downloaded on November 20, 2017.

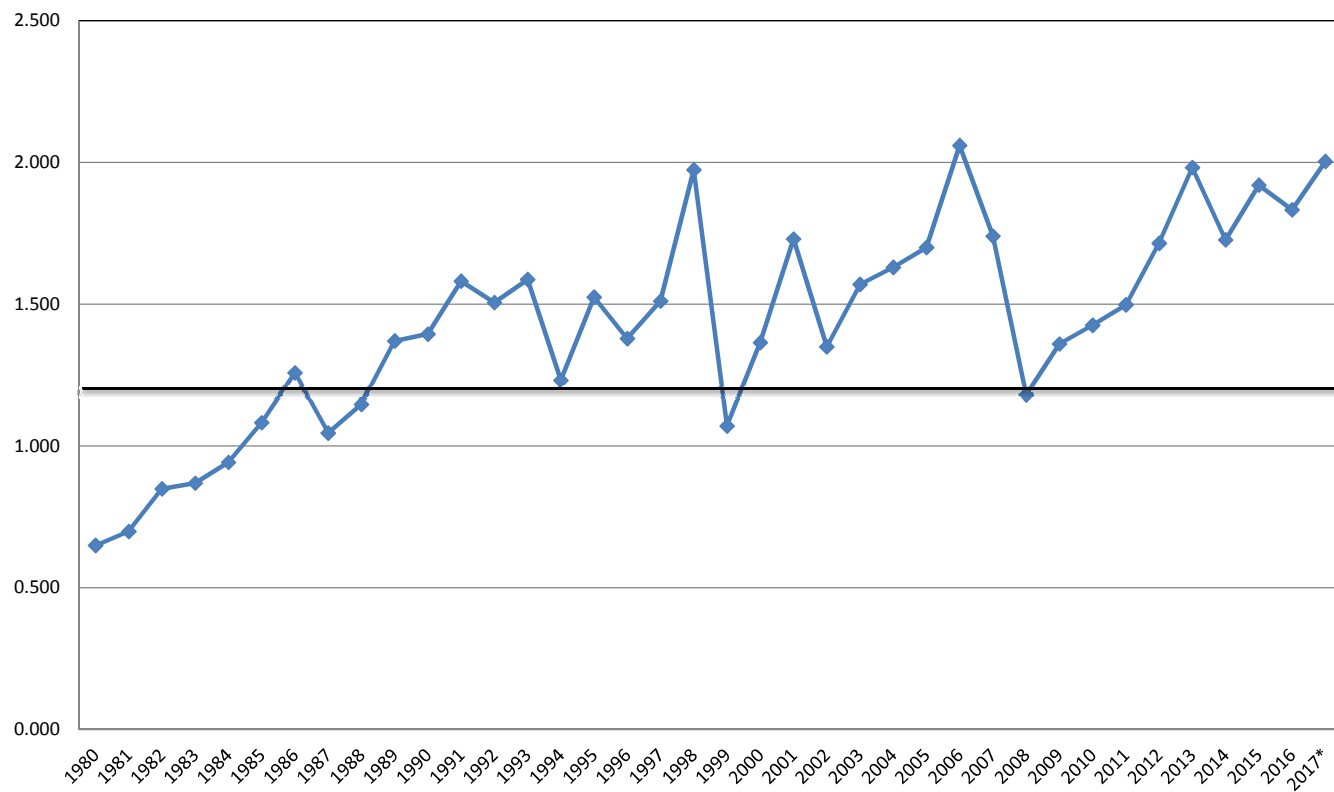
² *The Value Line Investment Survey*, September 1, 2017.

³ Exhibit No.____(MPG-2), Schedule 5, Page 1 of 1

⁴ *Blue Chip Economic Indicators*, October 10, 2017 at 14.

Montana-Dakota Utilities Co.

Common Stock Market/Book Ratio



Source:

1980 - 2000: Mergent Public Utility Manual.

2001 - 2015: AUS Utility Reports, multiple dates.

2016 - 2017: Value Line Investment Survey, multiple dates.

* Value Line Investment Survey Reports, September 1, September 15, October 27, and November 17, 2017

Montana-Dakota Utilities Co.

Equity Risk Premium - Treasury Bond

<u>Line</u>	<u>Year</u>	<u>Authorized Gas Returns¹</u> (1)	<u>30 yr. Treasury Bond Yield²</u> (2)	<u>Indicated Risk Premium</u> (3)	<u>Rolling 5 - Year Average</u> (4)	<u>Rolling 10 - Year Average</u> (5)
1	1986	13.46%	7.80%	5.66%		
2	1987	12.74%	8.58%	4.16%		
3	1988	12.85%	8.96%	3.89%		
4	1989	12.88%	8.45%	4.43%		
5	1990	12.67%	8.61%	4.06%	4.44%	
6	1991	12.46%	8.14%	4.32%	4.17%	
7	1992	12.01%	7.67%	4.34%	4.21%	
8	1993	11.35%	6.60%	4.75%	4.38%	
9	1994	11.35%	7.37%	3.98%	4.29%	
10	1995	11.43%	6.88%	4.55%	4.39%	4.42%
11	1996	11.19%	6.70%	4.49%	4.42%	4.30%
12	1997	11.29%	6.61%	4.68%	4.49%	4.35%
13	1998	11.51%	5.58%	5.93%	4.73%	4.55%
14	1999	10.66%	5.87%	4.79%	4.89%	4.59%
15	2000	11.39%	5.94%	5.45%	5.07%	4.73%
16	2001	10.95%	5.49%	5.46%	5.26%	4.84%
17	2002	11.03%	5.43%	5.60%	5.45%	4.97%
18	2003	10.99%	4.96%	6.03%	5.47%	5.10%
19	2004	10.59%	5.05%	5.54%	5.62%	5.25%
20	2005	10.46%	4.65%	5.81%	5.69%	5.38%
21	2006	10.40%	4.90%	5.50%	5.70%	5.48%
22	2007	10.22%	4.83%	5.39%	5.66%	5.55%
23	2008	10.39%	4.28%	6.11%	5.67%	5.57%
24	2009	10.22%	4.07%	6.15%	5.79%	5.70%
25	2010	10.15%	4.25%	5.90%	5.81%	5.75%
26	2011	9.92%	3.91%	6.01%	5.91%	5.80%
27	2012	9.94%	2.92%	7.02%	6.24%	5.95%
28	2013	9.68%	3.45%	6.23%	6.26%	5.97%
29	2014	9.78%	3.34%	6.44%	6.32%	6.06%
30	2015	9.60%	2.84%	6.76%	6.49%	6.15%
31	2016	9.54%	2.60%	6.94%	6.68%	6.29%
32	2017 ³	9.75%	2.92%	6.83%	6.64%	6.44%
33	Average	11.03%	5.61%	5.41%	5.36%	5.36%
34	Minimum				4.17%	4.30%
35	Maximum				6.68%	6.44%

Sources:

¹ Regulatory Research Associates, Inc., Regulatory Focus, Major Rate Case Decisions, Jan. 1997 p. 5, and Jan. 2011 p. 3. S&P Global Market Intelligence, RRA Regulatory Focus, Major Rate Case Decisions, January-September 2017, October 26, 2017, p. 5.

² St. Louis Federal Reserve: Economic Research, <http://research.stlouisfed.org/>.

The yields from 2002 to 2005 represent the 20-Year Treasury yields obtained from the Federal Reserve Bank.

³ Data includes January - September 2017.

Montana-Dakota Utilities Co.

Equity Risk Premium - Utility Bond

<u>Line</u>	<u>Year</u>	<u>Authorized Gas Returns¹</u> (1)	<u>Average "A" Rated Utility Bond Yield²</u> (2)	<u>Indicated Risk Premium</u> (3)	<u>Rolling 5 - Year Average</u> (4)	<u>Rolling 10 - Year Average</u> (5)
1	1986	13.46%	9.58%	3.88%		
2	1987	12.74%	10.10%	2.64%		
3	1988	12.85%	10.49%	2.36%		
4	1989	12.88%	9.77%	3.11%		
5	1990	12.67%	9.86%	2.81%	2.96%	
6	1991	12.46%	9.36%	3.10%	2.80%	
7	1992	12.01%	8.69%	3.32%	2.94%	
8	1993	11.35%	7.59%	3.76%	3.22%	
9	1994	11.35%	8.31%	3.04%	3.21%	
10	1995	11.43%	7.89%	3.54%	3.35%	3.16%
11	1996	11.19%	7.75%	3.44%	3.42%	3.11%
12	1997	11.29%	7.60%	3.69%	3.49%	3.22%
13	1998	11.51%	7.04%	4.47%	3.64%	3.43%
14	1999	10.66%	7.62%	3.04%	3.64%	3.42%
15	2000	11.39%	8.24%	3.15%	3.56%	3.45%
16	2001	10.95%	7.76%	3.19%	3.51%	3.46%
17	2002	11.03%	7.37%	3.66%	3.50%	3.50%
18	2003	10.99%	6.58%	4.41%	3.49%	3.56%
19	2004	10.59%	6.16%	4.43%	3.77%	3.70%
20	2005	10.46%	5.65%	4.81%	4.10%	3.83%
21	2006	10.40%	6.07%	4.33%	4.33%	3.92%
22	2007	10.22%	6.07%	4.15%	4.43%	3.96%
23	2008	10.39%	6.53%	3.86%	4.32%	3.90%
24	2009	10.22%	6.04%	4.18%	4.27%	4.02%
25	2010	10.15%	5.47%	4.68%	4.24%	4.17%
26	2011	9.92%	5.04%	4.88%	4.35%	4.34%
27	2012	9.94%	4.13%	5.81%	4.68%	4.55%
28	2013	9.68%	4.48%	5.20%	4.95%	4.63%
29	2014	9.78%	4.28%	5.50%	5.22%	4.74%
30	2015	9.60%	4.12%	5.48%	5.38%	4.81%
31	2016	9.54%	3.93%	5.61%	5.52%	4.94%
32	2017 ³	9.75%	4.04%	5.71%	5.50%	5.09%
33	Average	11.03%	6.99%	4.04%	3.99%	3.95%
34	Minimum				2.80%	3.11%
35	Maximum				5.52%	5.09%

Sources:

¹ *Regulatory Research Associates, Inc.*, Regulatory Focus, Major Rate Case Decisions, Jan. 1997 p. 5, and Jan. 2011 p. 3.
S&P Global Market Intelligence, RRA Regulatory Focus, Major Rate Case Decisions, January-September 2017, October 26, 2017, p. 5.

² Mergent Public Utility Manual, Mergent Weekly News Reports, 2003.
The utility yields for the period 2001-2009 were obtained from the Mergent Bond Record.
The utility yields from 2010-2017 were obtained from <http://credittrends.moodys.com/>.

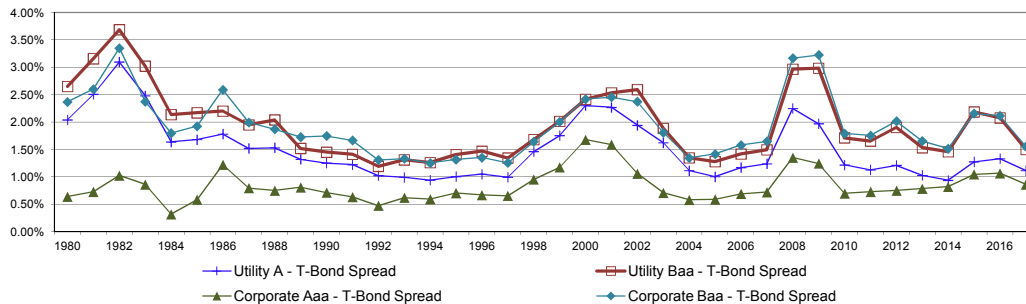
³ Data includes January - September 2017.

Montana-Dakota Utilities Co.

Bond Yield Spreads

Line	Year	T-Bond Yield ¹ (1)	Public Utility Bond				Corporate Bond				Utility to Corporate	
			A ² (2)	Baa ² (3)	A-T-Bond Spread (4)	Baa-T-Bond Spread (5)	Aaa ³ (6)	Baa ³ (7)	Aaa-T-Bond Spread (8)	Baa-T-Bond Spread (9)	Baa Spread (10)	A-Aaa Spread (11)
1	1980	11.30%	13.34%	13.95%	2.04%	2.65%	11.94%	13.67%	0.64%	2.37%	0.28%	1.40%
2	1981	13.44%	15.95%	16.60%	2.51%	3.16%	14.17%	16.04%	0.73%	2.60%	0.56%	1.78%
3	1982	12.76%	15.86%	16.45%	3.10%	3.69%	13.79%	16.11%	1.03%	3.35%	0.34%	2.07%
4	1983	11.18%	13.66%	14.20%	2.48%	3.02%	12.04%	13.55%	0.86%	2.38%	0.65%	1.62%
5	1984	12.39%	14.03%	14.53%	1.64%	2.14%	12.71%	14.19%	0.32%	1.80%	0.34%	1.32%
6	1985	10.79%	12.47%	12.96%	1.68%	2.17%	11.37%	12.72%	0.58%	1.93%	0.24%	1.10%
7	1986	7.80%	9.58%	10.00%	1.78%	2.20%	9.02%	10.39%	1.22%	2.59%	-0.39%	0.56%
8	1987	8.58%	10.10%	10.53%	1.52%	1.95%	9.38%	10.58%	0.80%	2.00%	-0.05%	0.72%
9	1988	8.96%	10.49%	11.00%	1.53%	2.04%	9.71%	10.83%	0.75%	1.87%	0.17%	0.78%
10	1989	8.45%	9.77%	9.97%	1.32%	1.52%	9.26%	10.18%	0.81%	1.73%	-0.21%	0.51%
11	1990	8.61%	9.86%	10.06%	1.25%	1.45%	9.32%	10.36%	0.71%	1.75%	-0.30%	0.54%
12	1991	8.14%	9.36%	9.55%	1.22%	1.41%	8.77%	9.80%	0.63%	1.67%	-0.25%	0.59%
13	1992	7.67%	8.69%	8.86%	1.02%	1.19%	8.14%	8.98%	0.47%	1.31%	-0.12%	0.55%
14	1993	6.60%	7.59%	7.91%	0.99%	1.31%	7.22%	7.93%	0.62%	1.33%	-0.02%	0.37%
15	1994	7.37%	8.31%	8.63%	0.94%	1.26%	7.96%	8.62%	0.59%	1.25%	0.01%	0.35%
16	1995	6.88%	7.89%	8.29%	1.01%	1.41%	7.59%	8.20%	0.71%	1.32%	0.09%	0.30%
17	1996	6.70%	7.75%	8.17%	1.05%	1.47%	7.37%	8.05%	0.67%	1.35%	0.12%	0.38%
18	1997	6.61%	7.60%	7.95%	0.99%	1.34%	7.26%	7.86%	0.66%	1.26%	0.09%	0.34%
19	1998	5.58%	7.04%	7.26%	1.46%	1.68%	6.53%	7.22%	0.95%	1.64%	0.04%	0.51%
20	1999	5.87%	7.62%	7.88%	1.75%	2.01%	7.04%	7.87%	1.18%	2.01%	0.01%	0.58%
21	2000	5.94%	8.24%	8.36%	2.30%	2.42%	7.62%	8.36%	1.68%	2.42%	-0.01%	0.62%
22	2001	5.49%	7.76%	8.03%	2.27%	2.54%	7.08%	7.95%	1.59%	2.45%	0.08%	0.68%
23	2002	5.43%	7.37%	8.02%	1.94%	2.59%	6.49%	7.80%	1.06%	2.37%	0.22%	0.88%
24	2003	4.96%	6.58%	6.84%	1.62%	1.89%	5.67%	6.77%	0.71%	1.81%	0.08%	0.91%
25	2004	5.05%	6.16%	6.40%	1.11%	1.35%	5.63%	6.39%	0.58%	1.35%	0.00%	0.53%
26	2005	4.65%	5.65%	5.93%	1.00%	1.28%	5.24%	6.06%	0.59%	1.42%	-0.14%	0.41%
27	2006	4.90%	6.07%	6.32%	1.17%	1.42%	5.59%	6.48%	0.69%	1.58%	-0.16%	0.48%
28	2007	4.83%	6.07%	6.33%	1.24%	1.50%	5.56%	6.48%	0.72%	1.65%	-0.15%	0.52%
29	2008	4.28%	6.53%	7.25%	2.25%	2.97%	5.63%	7.45%	1.35%	3.17%	-0.20%	0.90%
30	2009	4.07%	6.04%	7.06%	1.97%	2.99%	5.31%	7.30%	1.24%	3.23%	-0.24%	0.73%
31	2010	4.25%	5.47%	5.96%	1.22%	1.71%	4.95%	6.04%	0.70%	1.79%	-0.08%	0.52%
32	2011	3.91%	5.04%	5.57%	1.13%	1.66%	4.64%	5.67%	0.73%	1.76%	-0.10%	0.40%
33	2012	2.92%	4.13%	4.83%	1.21%	1.90%	3.67%	4.94%	0.75%	2.02%	-0.11%	0.46%
34	2013	3.45%	4.48%	4.98%	1.03%	1.53%	4.24%	5.10%	0.79%	1.65%	-0.12%	0.24%
35	2014	3.34%	4.28%	4.80%	0.94%	1.46%	4.16%	4.86%	0.82%	1.52%	-0.06%	0.12%
36	2015	2.84%	4.12%	5.03%	1.27%	2.19%	3.89%	5.00%	1.05%	2.16%	0.03%	0.23%
37	2016	2.60%	3.93%	4.67%	1.33%	2.08%	3.66%	4.71%	1.07%	2.12%	-0.04%	0.27%
38	2017 ⁴	2.92%	4.04%	4.42%	1.11%	1.50%	3.78%	4.48%	0.86%	1.56%	-0.06%	0.25%
39	Average	6.62%	8.13%	8.57%	1.51%	1.95%	7.46%	8.55%	0.84%	1.93%	0.01%	0.67%

Yield Spreads
Treasury Vs. Corporate & Treasury Vs. Utility



Sources:

- ¹ St. Louis Federal Reserve: Economic Research, <http://research.stlouisfed.org/>.
- ² The utility yields for the period 1980-2000 were obtained from Mergent Public Utility Manual, Mergent Weekly News Reports, 2003. The utility yields for the period 2001-2009 were obtained from the Mergent Bond Record. The utility yields for the period 2010-2017 were obtained from <http://credittrends.moodys.com/>.
- ³ The corporate yields for the period 1980-2009 were obtained from the St. Louis Federal Reserve: Economic Research, <http://research.stlouisfed.org/>. The corporate yields from 2010-2017 were obtained from <http://credittrends.moodys.com/>.
- ⁴ Data includes January - September 2017.

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Treasury and Utility Bond Yields

<u>Line</u>	<u>Date</u>	<u>Treasury Bond Yield¹</u> (1)	<u>"A" Rated Utility Bond Yield²</u> (2)	<u>"Baa" Rated Utility Bond Yield²</u> (3)
1	11/17/17	2.78%	3.83%	4.17%
2	11/09/17	2.81%	3.83%	4.15%
3	11/03/17	2.82%	3.83%	4.15%
4	10/27/17	2.93%	3.94%	4.28%
5	10/20/17	2.89%	3.91%	4.26%
6	10/13/17	2.81%	3.85%	4.19%
7	10/06/17	2.91%	3.95%	4.30%
8	09/29/17	2.86%	3.92%	4.28%
9	09/22/17	2.80%	3.88%	4.25%
10	09/15/17	2.77%	3.86%	4.23%
11	09/08/17	2.67%	3.78%	4.15%
12	09/01/17	2.77%	3.85%	4.23%
13	08/25/17	2.75%	3.83%	4.20%
14	Average	2.81%	3.87%	4.22%
15	Spread To Treasury		1.06%	1.41%

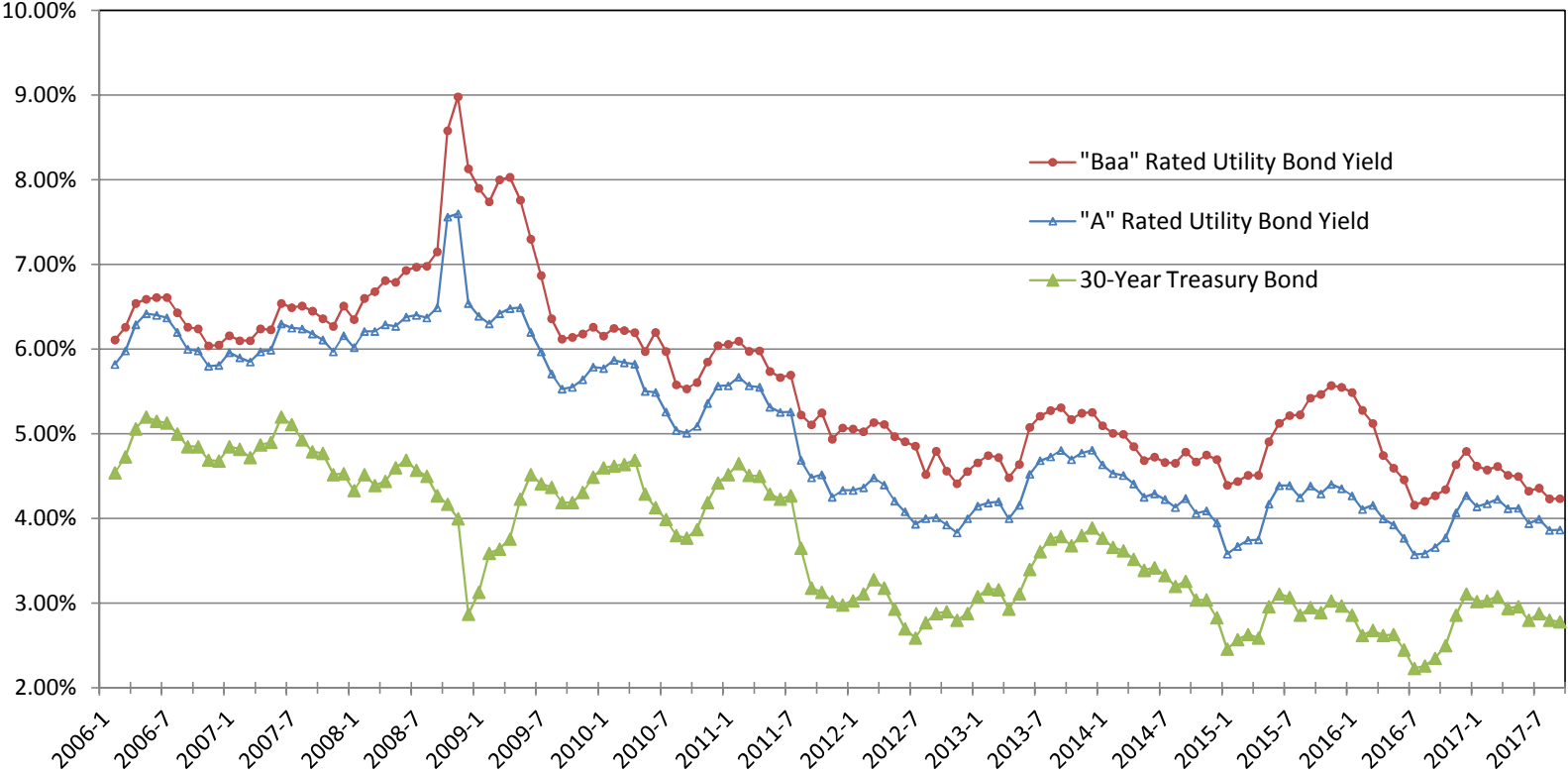
Sources:

¹ St. Louis Federal Reserve: Economic Research, <http://research.stlouisfed.org>.

² <http://credittrends.moody.com/>.

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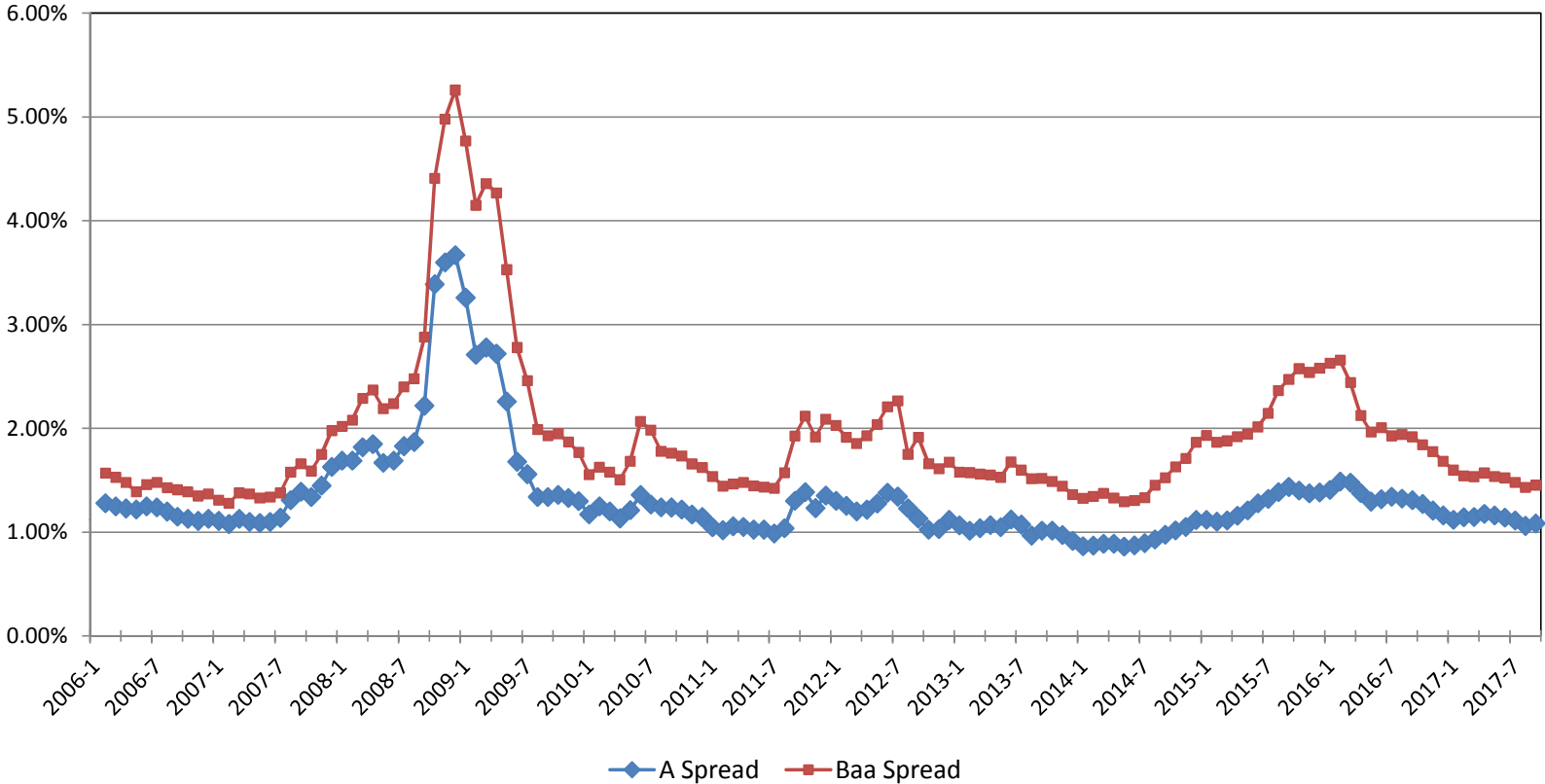
Trends in Bond Yields



Sources:
Mergent Bond Record.
www.moodys.com, Bond Yields and Key Indicators.
St. Louis Federal Reserve: Economic Research, <http://research.stlouisfed.org/>

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Yield Spread Between Utility Bonds and 30-Year Treasury Bonds



Sources:
Mergent Bond Record.
www.moodys.com, Bond Yields and Key Indicators.
St. Louis Federal Reserve: Economic Research, <http://research.stlouisfed.org/>

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Value Line Beta

<u>Line</u>	<u>Company</u>	<u>Beta</u>
1	Atmos Energy Corporation	0.70
2	New Jersey Resources Corporation	0.80
3	NiSource Inc.	NMF
4	Northwest Natural Gas Company	0.70
5	Southwest Gas Holdings, Inc.	0.75
6	Spire Inc.	0.70
7	Average	0.73

Source:
The Value Line Investment Survey,
September 1, 2017.

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CAPM Return

<u>Line</u>	<u>Description</u>	<u>High Market Risk Premium (1)</u>	<u>Low Market Risk Premium (2)</u>
1	Risk-Free Rate ¹	3.60%	3.60%
2	Risk Premium ²	7.80%	6.00%
3	Beta ³	0.73	0.73
4	CAPM	9.29%	7.98%

Sources:

¹ *Blue Chip Financial Forecasts*, December 1, 2017, at 2.

² *Duff & Phelps, 2017 SBBi Yearbook* at 6-17 and 6-18, and
Duff & Phelps, 2017 Valuation Handbook at 3-36 and 3-48.

³ Exhibit No.__(MPG-2), Schedule 17, Page 1 of 1