BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. G-9, SUB 743

In the Matter of		
Application of Piedmont Natural Gas	)	TESTIMONY OF
Company, Inc., for an Adjustment of	)	JOHN R. HINTON
Rates, Charges, and Tariffs Applicable	)	PUBLIC STAFF – NORTH
to Service in North Carolina,	)	CAROLINA UTILITIES
Continuation of its IMR Mechanism ,	)	COMMISSION
Adoption of an EDIT Rider, and Other	)	
Relief		

PIEDMONT NATURAL GAS COMPANY, INC.
DOCKET NO. G-9 SUB 743

TESTIMONY OF JOHN R. HINTON
ON BEHALF OF THE PUBLIC STAFF –
NORTH CAROLINA UTILITIES COMMISSION

July 19, 2019

1 **Q.** **PLEASE STATE YOUR NAME, POSITION, AND BUSINESS**

2 **ADDRESS FOR THE RECORD.**

3 A. My name is John R. Hinton and my business address is 430 North

4 Salisbury Street, Dobbs Building, Raleigh, North Carolina. I am the

5 Director of the Economic Research Division of the Public Staff –

6 North Carolina Utilities Commission (Public Staff). My qualifications

7 and experience are provided in Appendix A.

8 **Q.** **WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS**

9 **PROCEEDING?**

10 A. The purpose of my testimony is to present to the North Carolina

11 Utilities Commission (Commission) the results of my analysis and

12 my recommendations as to the fair rate of return to be used in

13 establishing rates for natural gas distribution utility service

14 provided by Piedmont Natural Gas Company, Inc. (Piedmont or the

15 Company).

1 **Q.** **WHAT IS THE CURRENTLY APPROVED COST OF CAPITAL**

2 **FOR PIEDMONT?**

3 A. In the last Piedmont general rate case in Docket No. G-9, Sub 631,

4 the Commission approved an overall cost of capital of 7.51%, which

5 is comprised of a capital structure ratio of 46.52% long-term debt,

6 2.82% short-term debt, and 50.66% common equity. The overall

7 weighted cost rate includes 5.23% for long-term debt, 0.53% for

8 short-term debt, and 10.00% cost of common equity.

9 **Q.** **WHAT IS THE COST OF CAPITAL REQUESTED BY PIEDMONT**

10 **IN THIS PROCEEDING?**

11 A. Piedmont has requested an overall cost of capital or rate of return

12 of 7.68%. This applied-for rate of return is based on a capital

13 structure consisting of 47.18% long-term debt, 0.82% short-term

14 debt, and 52.00% common equity as noted in the testimony of

15 Company witness Sullivan. The overall weighted cost rate includes

16 4.55% for long-term debt, 2.82% for short-term debt, and 10.60%

17 cost of common equity.

18 **Q.** **HOW DOES PIEDMONT WITNESS HEVERT DEVELOP HIS**

19 **RECOMMENDED 10.60% COST OF EQUITY?**

20 A. Company witness Hevert utilizes four cost of equity methods: (1) the

21 Discounted Cash Flow (DCF) model; (2) the Capital Asset Pricing

1   Model (CAPM); (3) the Risk Premium method; and (4) the Expected

2   Earnings method. He applies these methodologies to a proxy group of

3   eight publically-traded natural gas distribution companies. His first

4   method relies on the DCF model which produces cost of equity results

5   ranging from 9.60% to 12.03%. Company witness Hevert includes

6   results from his CAPM results ranging from 9.26% to 13.52%. The

7   witness includes results from his Risk Premium method ranging from

8   9.89% to 10.11%. The witness also includes the results of his

9   Expected Earnings method ranging from 9.58% to 12.13%. Company

10   witness Hevert also opines that the cost of equity should include the

11   five basis point effect of flotation costs with an overall recommendation

12   of a 10.60% cost rate for common equity.

13 **Q.   WHAT IS THE OVERALL RATE OF RETURN RECOMMENDED**

14   **BY THE PUBLIC STAFF?**

15 A. The Public Staff recommends an overall rate of return of 6.71%.

16   This is based on a capital structure consisting of 49.94% long-term

17   debt, 0.85% short-term debt, and 49.21% common equity. The

18   overall weighted cost rate includes a 4.41% cost of long-term debt,

19   2.72% for short-term debt, and 9.13% cost of common equity.

20 **Q.   HOW IS THE REMAINDER OF YOUR TESTIMONY**

21   **STRUCTURED?**

1 A. The remainder of my testimony is presented in the following five

2 sections:

3 I. Legal and Economic Guidelines for Fair Rate of Return

4 II. Present Financial Market Conditions

5 III. Appropriate Capital Structure and Cost of Long-Term Debt

6 IV. The Cost of Common Equity Capital

7 V. Concerns with Company witness Hevert's testimony

8 VI. Summary and Recommendation

9 **I. LEGAL AND ECONOMIC GUIDELINES FOR**

10 **FAIR RATE OF RETURN**

11 **Q. PLEASE BRIEFLY DESCRIBE THE ECONOMIC AND LEGAL**

12 **FRAMEWORK OF YOUR ANALYSIS.**

13 A. Public utilities possess certain characteristics of natural

14 monopolies. For instance, it is more efficient for a single firm to

15 provide a service such as natural gas utility service than for two or

16 more firms to offer the same service in the same area. Therefore,

17 regulatory bodies have assigned franchised territories to public

18 utilities to provide services more efficiently and at a lower cost to

19 consumers.

20 **Q. WHAT IS THE ECONOMIC RELATIONSHIP BETWEEN RISK**

21 **AND THE COST OF CAPITAL?**

1 A. The cost of equity capital to a firm is equal to the rate of return

2 investors expect to earn on the firm's securities given the securities'

3 level of risk. An investment with a greater risk will require a higher

4 expected return by investors. In Federal Power Com. v. Hope

5 Natural Gas Co., 320 U.S. 591, 603, 64 S. Ct. 281, 288 (1944)

6 (Hope), the United States Supreme Court stated:

> 7 [T]he return to the equity owner should be
> 8 commensurate with returns on investments in other
> 9 enterprises having corresponding risks. That return,
> 10 moreover, should be sufficient to assure confidence in
> 11 the financial integrity of the enterprise, so as to
> 12 maintain its credit and to attract capital.
>
> 13 In Bluefield Waterworks & Improvement Co. v. Public
> 14 Service Comm'n, 262 U.S. 679, 692-93, 43 S. Ct.
> 15 675, 679 (1923) (Bluefield) the United States
> 16 Supreme Court stated: A public utility is entitled to
> 17 such rates as will permit it to earn a return on the
> 18 value of the property which it employs for the
> 19 convenience of the public equal to that generally
> 20 being made at the same time and in the same general
> 21 part of the country on investments in other business
> 22 undertakings which are attended by corresponding
> 23 risks and uncertainties, but it has no constitutional
> 24 right to profits such as are realized or anticipated in
> 25 highly profitable enterprises or speculative ventures.
> 26 The return should be reasonably sufficient to assure
> 27 confidence in the financial soundness of the utility,
> 28 and should be adequate, under efficient and
> 29 economical management, to maintain and support its
> 30 credit and enable it to raise the money necessary for
> 31 the proper discharge of its public duties. A rate of
> 32 return may be reasonable at one time and become
> 33 too high or too low by changes affecting opportunities
> 34 for investment, the money market, and business
> 35 conditions generally.

1   These two decisions recognize that utilities are competing for the

2   capital of investors and provide legal guidelines as to how the

3   allowed rate of return should be set. The decisions specifically

4   speak to the standards or criteria of capital attraction, financial

5   integrity, and comparable earnings. The Hope decision, in

6   particular, recognizes that the cost of common equity is

7   commensurate with risk relative to investments in other enterprises.

8   In competitive capital markets, the required return on common

9   equity will be the expected return foregone by not investing in

10   alternative stocks of comparable risk. Thus, in order for the utility to

11   attract capital, possess financial integrity, and exhibit comparable

12   earnings, the return allowed on a utility's common equity should be

13   that return required by investors for stocks with comparable risk. As

14   such, the return requirements of debt and equity investors, which is

15   shaped by expected risk and return, is paramount in attracting

16   capital.

17   It is widely recognized that a public utility should be allowed a rate

18   of return on capital which will allow the utility, under prudent

19   management, to attract capital under the criteria or standards

20   referenced by the Hope and Bluefield decisions. If the allowed rate

21   of return is set too high, consumers are burdened with excessive

22   costs, current investors receive a windfall, and the utility has an

23   incentive to overinvest. Likewise, customers will be charged prices

1   that are greater than the true economic costs of providing these

2   services. Consumers will consume too few of these services from a

3   point of view of efficient resource allocation. If the return is set too

4   low, then the utility stockholders will suffer because a declining

5   value of the underlying property will be reflected in a declining value

6   of the utility's equity shares. This could happen because the utility

7   would not be earning enough to maintain and expand its facilities to

8   meet customer demand for service, cover its operating costs, and

9   attract capital on reasonable terms. Lenders will shy away from the

10   company because of increased risk that the utility will default on its

11   debt obligations. Because a public utility is capital intensive, the

12   cost of capital is a very large part of its overall revenue requirement

13   and is a crucial issue for a company and its ratepayers.

14   The Hope and Bluefield standards are embodied in N.C. Gen. Stat.

15   § 62-133(b)(4), which requires that the allowed rate of return be

16   sufficient to enable a utility by sound management

17   to produce a fair return for its shareholders,
18   considering changing economic conditions and
19   other factors . . . to maintain its facilities and
20   services in accordance with the reasonable
21   requirements of its customers in the territory
22   covered by its franchise, and to compete in the
23   market for capital funds on terms that are
24   reasonable and are fair to its customers and to
25   its existing investors.

1   On April 12, 2013, the North Carolina Supreme Court decided <u>State</u>

2   <u>ex rel. Utils. Comm'n v. Cooper</u>, 366 N.C. 484, 739 S.E.2d 541

3   (2013) (<u>Cooper</u>). In that decision, the Supreme Court reversed and

4   remanded the Commission's January 27, 2012 Order in Docket No.

5   E-7, Sub 989, approving a stipulated return on equity of 10.50% for

6   Duke Energy Carolinas, LLC. In its decision, the Supreme Court

7   held (1) that the 10.50% return on equity was not supported by the

8   Commission's own independent findings and analysis as required

9   by <u>State ex rel. Utils. Comm'n v. Carolina Util. Customers Ass'n</u>,

10   348 N.C. 452, 500 S.E.2d 693 (1988) (<u>CUCA I</u>), in cases involving

11   nonunanimous stipulations, and (2) that the Commission must

12   make findings of fact regarding the impact of changing economic

13   conditions on consumers when determining the proper return on

14   equity for a public utility. In <u>Cooper</u>, however, the Court's holding

15   introduced a new factor to be considered by the Commission

16   regardless of whether there is a stipulation.

17   In considering this new element, the Commission is guided by

18   ratemaking principles laid down by statute and interpreted by a

19   body of North Carolina case law developed over many years.

20   According to these principles, the test of a fair rate of return is a

21   return on equity that will provide a utility, by sound management,

22   the opportunity to (1) produce a fair profit for its shareholders in

23   view of current economic conditions, (2) maintain its facilities and

1   service, and (3) compete in the marketplace for capital. <u>State ex rel.</u>

2   <u>Utils. Comm'n v. General Tel. Co.</u>, 281 N.C. 318, 370, 189 S.E.2d

3   705, 738 (1972). Rates should be set as low as reasonably

4   possible consistent with constitutional constraints. <u>State ex rel.</u>

5   <u>Utils. Comm'n v. Pub. Staff-North Carolina Utilities Com.</u>, 323 N.C.

6   481, 490, 374 S.E.2d 361, 366 (1988). The exercise of subjective

7   judgment is a necessary part of setting an appropriate return on

8   equity. <u>Id</u>. Thus, in a particular case, the Commission must strike a

9   balance that (1) avoids setting a return so low that it impairs the

10   utility's ability to attract capital, (2) avoids setting a return any

11   higher than needed to raise capital on reasonable terms, and (3)

12   considers the impact of changing economic conditions on

13   consumers.

14   **Q.   WHAT IS A FAIR RATE OF RETURN?**

15   A.   The fair rate of return is simply a percentage which, when multiplied

16   by a utility's rate base investment, will yield the dollars of net

17   operating income a utility should reasonably have the opportunity to

18   earn. This dollar amount of net operating income is available to pay

19   the interest cost on a utility's debt capital and a return to the

20   common equity investor. The fair rate of return multiplied by the

21   utility's rate base yields the dollars a utility needs to recover in order

22   to earn for investors the cost of capital.

1 **Q. HOW DID YOU DETERMINE THE FAIR RATE OF RETURN THAT**

2 **YOU RECOMMEND IN THIS PROCEEDING?**

3 A.   To determine the fair rate of return, I performed a cost of capital

4   study consisting of three steps. First, I determined the appropriate

5   capital structure for ratemaking purposes, i.e., the proper

6   proportions of each form of capital. Utilities normally finance assets

7   with debt and common equity. Because each of these forms of

8   capital have different costs, especially after income tax

9   considerations, the relative amounts of each form employed to

10   finance the assets can have a significant influence on the overall

11   cost of capital, revenue requirements, and rates. Thus, the

12   determination of the appropriate capital structure for ratemaking

13   purposes is important to the utility and to ratepayers. Second, I

14   determined the cost rate of each form of capital. The individual debt

15   issues have contractual agreements explicitly stating the cost of

16   each issue. The embedded annual cost of debt may be calculated

17   by simply considering these agreements and the utility's books and

18   records over the life of the bond. The cost of common equity is

19   more difficult to determine because it is based on the investor's

20   opportunity cost of capital and there are no defined terms

21   associated with the investment. Various economic and financial

22   models or methods are available to measure the cost of common

23   equity. Third, by combining the appropriate capital structure ratios

1   for ratemaking purposes with the associated cost rates, I calculated

2   an overall weighted cost of capital or fair rate of return.

3   II. **PRESENT FINANCIAL MARKET CONDITIONS**

4 **Q.   CAN YOU BRIEFLY DESCRIBE CURRENT FINANCIAL MARKET**

5   **CONDITIONS?**

6 A.   Yes. The cost of financing is much lower today than in the more

7   inflationary period of the 1990s. More recently, the continued low

8   rates of inflation and expectations of future low inflation rates have

9   contributed to even lower interest rates. According to Moody's <u>Bond</u>

10   <u>Survey</u>, the yield on long-term "A" rated public utility bonds as of

11   June 2019 are 3.82% as compared to 4.83% for December 2013,

12   which is at the approximate date[1] of the Commission Order in the

13   Company's last rate case. The overall decline in long-term interest

14   rates over the last ten years is shown in Exhibit JRH-1. A similar

15   observation is seen with the decline in the long end of the yield curve

16   that indicates a significant lower cost of long-term financing.[2]

17   However, there has been an increase in the cost of short-term

18   financing, as indicated in the below graph, which has put upward

19   pressure on the cost of short-term debt.

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[1] The Commission issued its Order in Docket No. G-9, Sub 631, on December 17, 2013.
[2] See Federal Reserve, H15 Selected Interest Rates.

Treasury Yield Curves
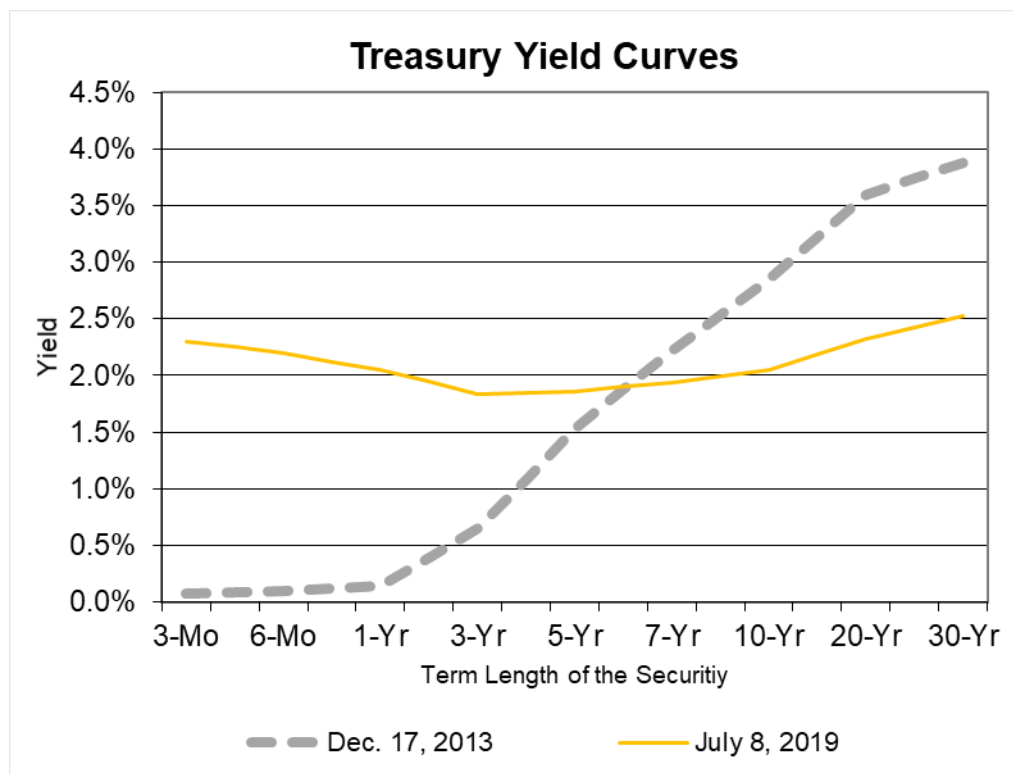
1 **Q. HOW DO INTEREST RATES AFFECT THE FINANCING COSTS**

2 **OF A COMPANY?**

3 A. In simple terms, the current lower interest rates and stable

4   inflationary environment indicate that borrowers are paying less for

5   the time value of money. This is significant because utility stocks and

6   utility capital costs are highly interest rate-sensitive relative to most

7   industries within the securities markets. Furthermore, given that

8   investors often view the purchase of common stocks of utilities as

9   substitutes for fixed income investments, the reductions in interest

10   rates observed over the past have paralleled the decreases in

1   investor required rates of return on common equity, as evidenced by

2   the reductions in allowed returns on common equity.

3   **Q.   DID YOU RELY ON INTEREST RATE FORECASTS IN YOUR**

4   **INVESTIGATION?**

5   A.   No. While I believe forecasts of earnings and dividends influence

6   investor behavior, I generally do not believe interest rate forecasts to

7   be reliable in determining the cost of equity. Rather, I believe that

8   current interest rates, especially in relation to yields on long-term

9   bonds, are more appropriate for ratemaking. This is because it is

10   reasonable to expect that, as investors are pricing bonds, they are

11   based on expectations on future interest rates, inflation rates, etc. To

12   suggest the current bond yields do not reflect expectations of future

13   interest rate levels suggests that investors don't have information on

14   interest rate projections or the bond market is not efficient. I do not

15   think either position is true.

16   While I'm confident in the market's ability to reasonably weight

17   forecasts of future interest rates, I am less confident in the use

18   interest rate forecasts for utility rate cases because I have seen

19   numerous interest rate forecasts that do not materialize as expected.

20   An example of this may be found in the testimony of Company

21   witness Hevert in Duke Energy Progress' 2012 rate case, Docket

22   No. E-2, Sub 1023. In that case, Company witness Hevert relied in

1   part on predicted 30-year treasury yields published by the Blue Chip

2   Financial Forecasts[3] in his CAPM and his Risk Premium analyses.

3   The June 1, 2012 publication predicted that the 30-year treasury

4   yields would rise to 4.2% in 2014 and 5.5% by 2018. However, these

5   forecasts were approximately 200 to 300 basis points higher than the

6   actual 30-year treasury yields observed from 2014 through 2018. In

7   the more recent rate case involving Duke Energy Carolinas, Docket

8   No. E-7, Sub 1146, the forecast errors associated with the 30-year

9   treasury securities were smaller; however, the predicted yield for

10   2019 was over 140 basis points larger than the actual yields

11   observed thus far in 2019.

12   Another example may be found in the interest rate prediction testified

13   to by Aqua North Carolina, Inc.'s (Aqua) rate of return witness

14   Pauline Ahern in the 2013 Aqua rate case, Docket No. W-218, Sub

15   363. In her testimony Ms. Ahearn testified[4] to several forecasts of 30-

16   year Treasury bond yields that were predicted to rise to 4.3% in

17   2015, 4.7% in 2016, 5.2% in 2017, and 5.5% for 2020-2024. In 2013,

18   Ms. Ahern was a Principal with AUS Consultants. She is currently

19   Executive Director at ScottMadden, Inc., the same firm as Piedmont

20   witness Hevert. As illustrated in the graph below, the forecasts Ms.

[3] See page 28, footnote 20 of witness Hevert's prefiled testimony in Docket No. E-7, Sub 1026.
[4] See page 13, lines 14-17 and page 14, lines 4-9 of Ms. Ahern's Prefiled Supplemental Direct Testimony in Docket No. W-218, Sub 363.

1   Ahearn testified to in the 2013 Aqua rate case significantly over-

2   estimated actual interest rates for 30-year Treasury bonds.
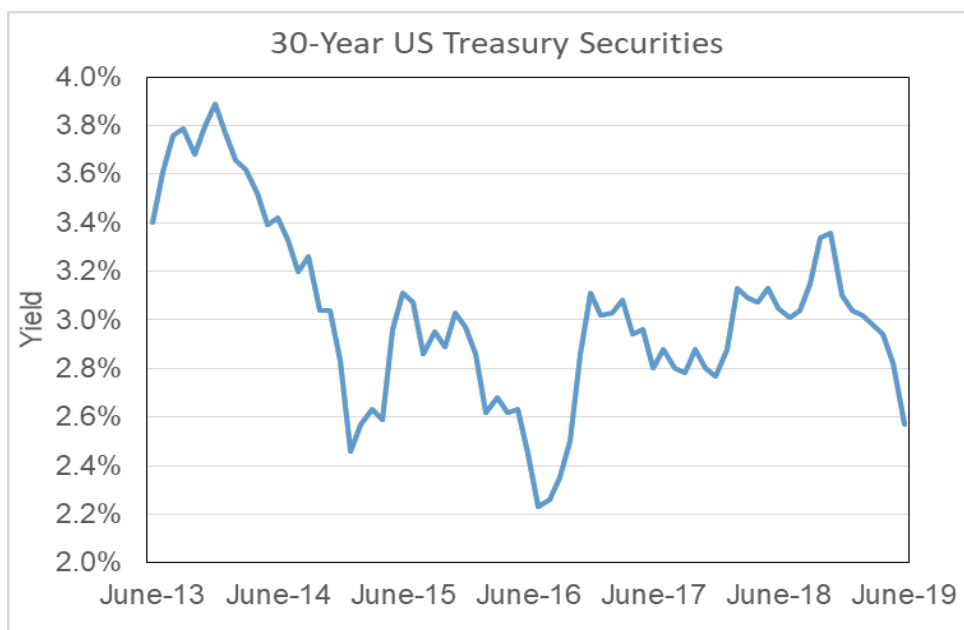
3   The foregoing examples illustrate why I tend to place more weight in

4   current market interest rates which are inherently forward looking as

5   they reflect investor expectations of both current and future returns

6   on bonds, and to an extent, future rates of inflation.

7   **III. APPROPRIATE CAPITAL STRUCTURE AND COST OF LONG-**

8   **TERM DEBT**

9   **Q.   WHY   IS   THE   APPROPRIATE   CAPITAL   STRUCTURE**

10   **IMPORTANT FOR RATEMAKING PURPOSES?**

1 A. For companies that do not have monopoly power, the price that an

2 individual company charges for its products or services is set in a

3 competitive market, and that price is generally not influenced by the

4 company's capital structure. However, the capital structure that is

5 determined to be appropriate for a regulated public utility has a

6 direct bearing on the fair rate of return and revenue requirement,

7 and, therefore, the prices charged to captive ratepayers.

8 **Q. PLEASE EXPLAIN THE TERM CAPITAL STRUCTURE AND**

9 **HOW THE CAPITAL STRUCTURE APPROVED FOR**

10 **RATEMAKING PURPOSES AFFECTS RATES.**

11 A. A local gas distribution company (LDC) obtains external capital from

12 investors by borrowing debt and issuing common equity. The capital

13 structure is simply a representation of how a utility's assets are

14 financed. It is the relative proportions or ratios of debt and common

15 equity to the total of these forms of capital, which have different

16 costs. Common equity is far more expensive than debt for

17 ratemaking purposes for two reasons. First, as mentioned earlier,

18 there are income tax considerations. Interest on debt is deductible

19 for purposes of calculating income taxes. The cost of common

20 equity, on the other hand, must be "grossed up" to allow the utility

21 sufficient revenue to pay income taxes and to earn its cost of

22 common equity on a net or after-tax basis. Therefore, the amount of

1   revenue the utility must collect from ratepayers to meet income tax

2   obligations is directly related to both the common equity ratio in the

3   capital structure and cost of common equity. A second reason for

4   this cost difference is that the cost of common equity must be set at

5   a marginal or current cost rate. Conversely, the cost of debt is set at

6   an embedded rate because the utility is incurring costs that are

7   previously established in contracts with security holders.

8   Because the Commission has the duty to promote economical

9   utility service, it must decide whether or not a utility's requested

10   capital structure is appropriate for ratemaking purposes. An

11   example of the cost difference can be seen in the Company's filing.

12   Based upon the Company's requested capital cost rates, each

13   dollar of its common equity, and each dollar of its long-term debt

14   that supports the retail rate base has the following approximate

15   annual costs (including income tax and regulatory fee expense) to

16   ratepayers:

17   1)   each $1 of common equity costs ratepayers approximately 12
18   cents

19   2)   each $1 of short-term debt costs ratepayers approximately 3
20   cents

21   3)   each $1 of long-term debt costs ratepayers approximately 4
22   cents

23   Because of the capital cost differences, an appropriate capital

24   structure for ratemaking purposes should be fair to both ratepayers

1   and the utility's debt and equity investors. An appropriate capital

2   structure should contain balances of debt and equity that provide

3   capital cost and income tax savings without a corresponding

4   increase in the overall cost of capital due to the increased financial

5   risk. Therefore, a concern with the Company's capital structure is

6   that the debt and equity ratios adopted in determining the overall rate

7   of return on rate base investment should be no greater than required

8   to allow Piedmont to qualify for reasonable credit ratings and to

9   provide the ability to attract capital.

10 **Q.   WHAT   CAPITAL   STRUCTURE   HAS   THE   COMPANY**

11 **REQUESTED IN THIS CASE?**

12 A.   Company witness Sullivan has requested the use of a hypothetical

13   capital structure of 47.18% long-term debt, 0.82% short-term debt,

14   and 52.00% common equity as shown on Exhibit JLS-1 of the

15   Company's Application. The exhibit contains the Company's capital

16   structure as of December 31, 2018, containing 53.43% common

17   equity. Company witness Sullivan's Exhibit JSL-1 also contains

18   projected balances of long-term debt, short-term debt, and common

19   equity for December 31, 2019, June 30, 2020, and December 31,

20   2020. The projected capital structures assume a certain amount of

21   growth through retained earnings and external financing with the

22      $600,000,000 debt issue in May 2019, the June 2018 infusion of

1    $300,000,000 common equity, and the expected infusion of

2    $150,000,000 later in 2019 of common equity by its ultimate parent,

3   Duke Energy Corporation (Duke Energy). Company witness

4   Sullivan effectively averages these four capital structures to arrive

5   at his recommended capital structure that reflects the Company's

6   future plans to issue debt, generate future earnings from

7   operations, and infuse equity capital from Duke Energy.

8 **Q.   DO YOU SUPPPORT THE HYPOTHETICAL CAPITAL**

9 **STRUTURE PROPOSED BY COMPANY WITNESS SULLIVAN?**

10 A.   No. I have concerns with the heavy reliance on projected balances

11   of debt and equity capital, as compared to the traditional use of a

12   historical test year capital structure. Furthermore, I am concerned

13   that the use of a 52.00% common equity ratio and 48% combined

14   long-term debt and short-term debt ratio provides for an excessive

15   degree of equity that is not reasonable, and it is not reflective of

16   Piedmont's historical capitalization. Piedmont's historical

17   capitalization ratio using North Carolina allotment of gas inventory

18   as short-term debt is shown in the below graph. Since the issuance

19   of the Commission's Order dated December 17, 2013, in Docket

20   No. G-9, Sub 631, Piedmont's average common equity ratio is

21   48.97%, and the average equity ratio since the acquisition by Duke

22   Energy on October 3, 2016, has averaged 48.21%. In order to

1   observe average common equity ratios greater than 52.00%, one

2   has to look back to 2014 and prior years. As indicated by the recent

3   May 24, 2019 debt issuance of $600 million at 3.50%, Piedmont

4   appears to have adequate access to capital with its "A-" rating,

5   which does not lend support to the Company's request to raise its

6   common equity levels back to the elevated levels that existed prior

7   to 2014.

Piedmont's %Common Equity
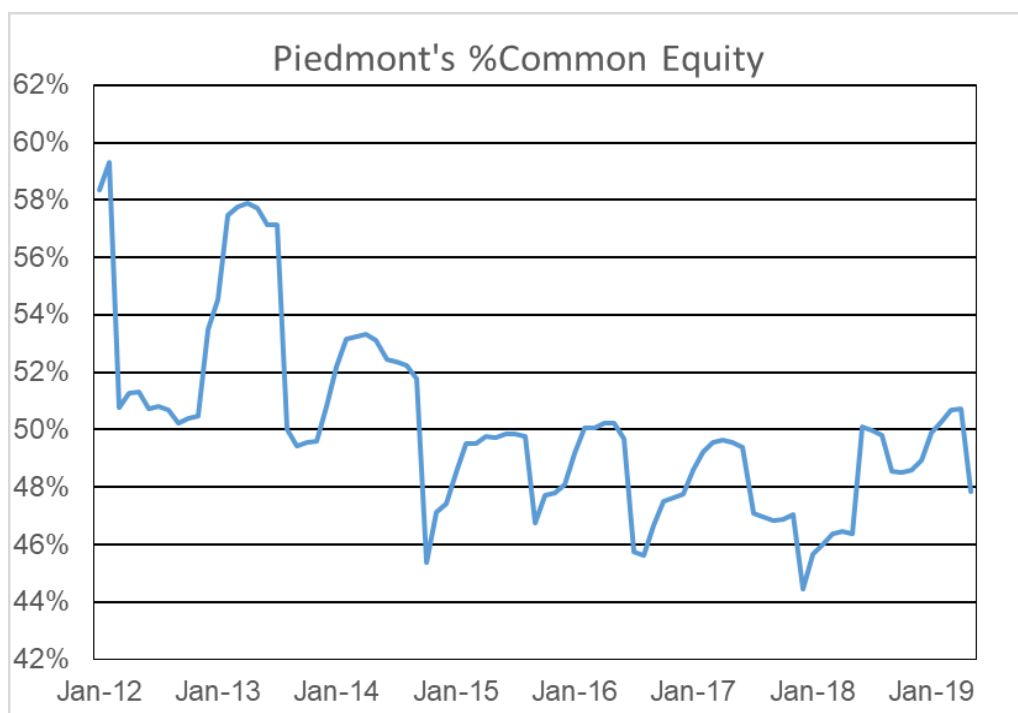
8 **Q.   WHAT APPROACH DO YOU RECOMMEND TO DETERMINE A**

9   **REPRESENTATIVE   AND   REASONABLE   CAPITAL**

10   **STRUCTURE?**

11 A.   I recommend a capital structure for ratemaking purposes that is

12   based on a 13-month average of long-term debt, short-term debt,

---

1   and common equity. More specifically, to determine the capital

2   structure, I averaged common equity, long-term debt, and short-

3   term debt balances as of May 31, 2018, through May 31, 2019.

4 Q. **WHAT CAPITAL STRUCTURE DO YOU RECOMMEND THE**

5   **COMMISISON EMPLOY FOR RATE MAKING PURPOSES?**

6 A. I recommend that the following capital structure be employed for

7   ratemaking purposes in this proceeding:

8   Piedmont Natural Gas Capital Structure
9   Thirteen Month Average as of May 31, 2019
10   ($1,000)

Capital Item	Amount	Ratios
Long-Term Debt	$ 2,121,868	49.94%
Short-Term Debt	36,170	0.85%
Common Equity	2,090,579	49.21%
Total Capital	$ 4,248,617	100.00%

16   Page 2 of Exhibit JRH-2 presents the balance(s) of long-term debt

17   which are comprised of the outstanding long-term debt of

18    $1,800,000,000 throughout the 13-month period from May 31,

19   2018, through May 31, 2019, and the current maturities of debt that

20   ranged from $250,000,000 for the first four months and

21    $350,000,000 for eight months up to May 2019, when the balance

22   went to zero dollars. Each month there is a deduction to the debt

23   balance for the unamortized debt issuance expense and May's debt

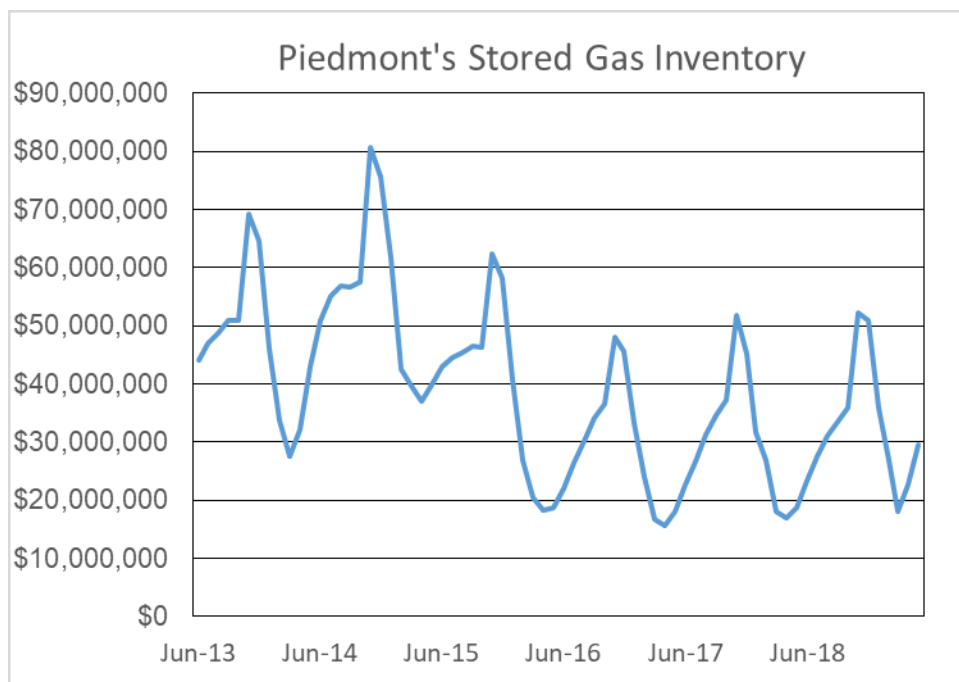24   balance includes an additional $600,000,000 from the May 24,

1   2019 issuance of a 10-year, 3.50% Senior Unsecured Note. The

2   balance of common equity is comprised of $859,846,537 common

3   stock, retained earnings which ranged from $883,752,309 to

4      $1,059,443,975, other comprehensive income which ranged from

5      $129,653 to $378,793, and a June 2018 $300,000,000 infusion

6   from the parent company. The timing of the equity infusion from

7   Duke Energy can be seen in the increase in the balance of equity

8   from $1.8 billion in May, 2018 to $2.1 billion balance for June, 2018.

9   During this 13-month period there were no dividends paid to Duke

10   Energy.

11   To determine the amount of short-term debt, I recommend a

12   balance of short-term debt equal to the Public Staff's recommended

13   dollar value of stored gas inventory[5] included in the rate base of

14     $36,169,890[6]. The graph below shows the seasonality of

15   Piedmont's gas inventory, as recorded by the Company. Since

16   short-term debt finances gas inventory, matching the amount of

17   short-term debt included in the capital structure to the gas inventory

18   in the rate base establishes a reasonable amount of short-term

19   debt for ratemaking purposes. Furthermore, this approach better

20   aligns the actual financing cost of the gas inventory in rate base.

---

[5] This use of gas inventory as a proxy for short-term debt was upheld by the North Carolina Supreme Court in State ex rel. Utilities Comm'n v. Carolina Util. Customers Ass'n, 351 N.C. 223, 524 S.E.2d 10 (2000). This Case involved a 1998 general rate case with Public Service Company of North Carolina, Inc., Docket No. G-5, Sub 495.
[6] Gas inventory per Public Staff witness Jayasheela, Exhibit I, Schedule 2-2.

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Piedmont's Stored Gas Inventory

1 **Q.   WHAT IS YOUR RECOMMENDED COST RATES OF LONG-**

2 **TERM DEBT AND SHORT-TERM DEBT?**

3 A.   I recommend the use of the Company's updated 4.41% cost rate of

4 long-term debt as of May 31, 2019, and I recommend a 2.72% cost rate of

5 short-term debt. The short-term cost is based on the 13-month average

6 spread between the prime rate and the Company's cost of short-term debt

7 over the 13 months ending May 31, 2019, producing an average spread of

8 278 basis points. I then deducted 2.78% from the current 5.50% prime

9 rate to produce the 2.72% cost rate of short-term debt.

1   IV. **THE COST OF COMMON EQUITY CAPITAL**

2   **Q.   HOW DO YOU DEFINE THE COST OF COMMON EQUITY**

3   **CAPITAL?**

4   A.   The cost of equity capital for a firm is the expected rate of return on

5   common equity that investors require in order to induce them to

6   purchase shares of the firm's common stock. The return is

7   expected or forward-looking because, when the investor buys a

8   share of the firm's common stock, he does not know with certainty

9   what his returns will be in the future.

10   **Q.   HOW DID YOU DETERMINE THE COST OF COMMON EQUITY**

11   **CAPITAL FOR THE COMPANY?**

12   A.   I used the discounted cash flow (DCF) model and a regression

13   analysis of approved returns for LDCs to determine the cost of

14   equity. I have used the Comparable Earnings Analysis and the

15   Capital Asset Pricing Model (CAPM) as a check on the results of

16   my DCF analysis and my Regression Analysis of Approved Equity

17   Returns.

1 **A. DCF METHOD**

2 **Q. PLEASE DESCRIBE YOUR DCF ANALYSIS.**

3 A. The DCF model is a method of evaluating the expected cash flows

4 from an investment by giving appropriate consideration to the time

5 value of money. The DCF model is based on the theory that the

6 price of the investment will equal the discounted cash flows of

7 returns. The model provides an estimate of the rate of return

8 required to attract common equity financing as a function of the

9 market price of a stock, the company's dividends, and investors'

10 growth expectations. The return to an equity investor comes in the

11 form of expected future dividends and price appreciation. However,

12 as the new price will again be the sum of the discounted cash

13 flows, price appreciation is ignored and attention is instead focused

14 on the expected stream of dividends. Mathematically, this

15 relationship may be expressed as follows:

16 Let D_1 = expected dividends per share over the next twelve
17 months;

18 g = expected growth rate of dividends;

19 k = cost of equity capital; and

20 P = price of stock or present value of the future income
21 stream.

22 Then,

23
24 $$P = \frac{D_1}{1+k} + \frac{D_1(1+g)}{(1+k)^2} + \frac{D_1(1+g)^2}{(1+k)^3} + ... + \frac{D_1(1+g)^{t-1}}{(1+k)^t}$$
25

1   This equation represents the amount an investor would be willing to

2   pay for a share of common stock with a dividend stream over the

3   future periods. Using the formula for a sum of an infinite geometric

4   series, this equation may be reduced to:

5
6                       $$P = \frac{D_1}{k-g}$$
7

8   Solving for k yields the DCF equation:

9
10                      $$k = \frac{D_1 + g}{P}$$
11

12   Therefore, the rate of return on equity capital required by investors

13   is the sum of the dividend yield (D_1/P) plus the expected long-term

14   growth rate in dividends (g).

15 **Q.   HOW DID YOU APPLY THE DCF MODEL TO DETERMINE THE**

16   **COST OF EQUITY?**

17 A.   Since Piedmont is a wholly owned subsidiary of Duke Energy, the

18   Company does not have any publicly traded stock. Therefore,

19   explicit market information cannot be obtained to show what

20   investors would pay for the stock. For this reason, I could not apply

21   the DCF method directly to Piedmont. However, the cost of equity

22   capital is not unique to any particular firm. Rather, it is a cost

23   shared by firms whose equity shares are considered by investors to

24   be risk-comparable investments. In order to estimate the required

1   rate of return, I have identified a group of comparable companies

2   that will furnish market information which indicates the required

3   investor return for Piedmont.

4 **Q.** **HOW DID YOU IDENTIFY THE GROUPS OF COMPANIES**

5   **COMPARABLE IN RISK TO PIEDMONT?**

6 A.   I began my analysis by reviewing ten companies that are identified by

7   the Value Line Investment Survey Standard Edition (Value Line) as

8   the natural gas utility industry. From this group of companies, I

9   eliminated Nisource, Inc., due to a dividend cut in 2015.

10 **Q.** **WHAT MEASURES OF RISK DID YOU REVIEW TO**

11   **DETERMINE THE COMPARABILITY OF INVESTING IN**

12   **PIEDMONT TO INVESTING IN OTHER NATURAL GAS**

13   **DISTRIBUTION UTILITIES?**

14 A.   I reviewed standard risk measures that are widely available to

15   investors that are considered by most investors when making

16   investment decisions. The beta coefficient is a measure of the

17   sensitivity of a stock's price to overall fluctuations in the market.

18   The Value Line beta coefficient describes the relationship of a

19   company's stock price with the New York Stock Exchange

20   Composite. A beta value of less than 1.0 means that the stock's

21   price is less volatile than the movement in the market;

1   conversely, a beta value greater than 1.0 indicates that the

2   stock price is more volatile than the market.

3   I reviewed the <u>Value Line</u> Safety Rank, which is defined as a

4   measure of the total risk of a stock. The Safety Rank is

5   calculated by averaging two variables (1) the stock's index of

6   price stability, and (2) the Financial Strength rating of the

7   company.

8   I also reviewed the S&P and Moody's bond ratings, which are

9   assessments of the creditworthiness of a company. Credit rating

10   agencies focus on the creditworthiness of the particular bond

11   issuer, which includes a detailed and thorough review of the

12   potential areas of business risk and financial risk of the

13   company. These and other risk measures I reviewed are shown

14   in Exhibit JRH-3, and are further explained in Appendix B to my

15   testimony.

16   **Q.   HOW   DID   YOU   DETERMINE   THE   DIVIDEND   YIELD**

17   **COMPONENT OF THE DCF?**

18   A.   I calculated the dividend yield by using the <u>Value Line</u> estimate of

19   dividends to be declared over the next 12 months, divided by the

20   price of the stock as reported in the <u>Value Line</u> Summary and Index

21   for each week of the 13-week period from April 12, 2019, through

22   July 7, 2019. A 13-week averaging period tends to smooth out

1   short-term variations in the stock prices. This process resulted in an

2   average dividend yield of 2.5% for the comparable group of LDCs.

3   **Q.**   **HOW DID YOU DETERMINE THE EXPECTED GROWTH RATE**

4   **COMPONENT OF THE DCF?**

5   A.   I employed the growth rates of the comparable group in earnings

6   per share (EPS), dividend per share (DPS), and book value per

7   share (BPS) as reported in Value Line over the past ten and five

8   years. I also employed forecasts of future growth rates as reported

9   in Value Line. The historical and forecasted growth rates are

10   prepared by analysts of an independent advisory service that is

11   widely available to investors and should also provide an estimate of

12   investor expectations. I included both historical, known growth rates

13   and forecast growth rates, because it is reasonable to expect that

14   investors consider both sets of data in deriving their expectations. I

15   should note that, in calculating an average or median growth rate, I

16   did not include negative historical growth rates in EPS, DPS, and

17   BPS. This is because, while negative growth rates are entirely

18   possible, they are generally not the basis for investor expectations

19   with utility investing.

20   Finally, I incorporated the consensus of various analysts' forecasts

21   of five-year EPS growth rate projections as reported in Yahoo

22   Finance. The dividend yields and growth rates for each of the

1   companies and for the average for the comparable group are

2   shown in Exhibit JRH-4.

3 **Q.   WHAT IS YOUR CONCLUSION REGARDING THE COST OF**

4   **COMMON EQUITY TO THE COMPANY BASED ON THE DCF**

5   **METHOD?**

6 A.   Based on my DCF analysis, I determined that a reasonable

7   expected dividend yield is 2.5% with an expected growth rate of

8   5.60% to 6.60%. As such, the analysis produces a cost of common

9   equity for the comparable group of LDCs of 8.1% to 9.1%.

10   **B. REGRESSION ANALYSIS METHOD**

11 **Q.   PLEASE DESCRIBE YOUR REGRESSION ANALYSIS METHOD.**

12 A.   I used a regression analysis to analyze the relationship between

13   approved returns on equity for LDCs and Moody's Bond Yields for A-

14   rated utility bonds, which is a form of the equity risk premium method

15   that examines the risk premium associated with higher-risk

16   investments. The differential between the two rates of return is

17   indicative of the return investors require in order to compensate

18   them for the additional risk. This method considers the return

19   premium associated with an investment in a company's common

20   stock over an investment in a company's bonds.

1   A strength of this approach is that authorized returns on equity are

2   generally arrived at through lengthy investigations by various parties

3   with opposing views on the rate of return required by investors. Thus,

4   it is reasonable to conclude that the approved returns are good

5   estimates for the cost of equity. The next step is to incorporate a

6   contemporaneous cost of debt and the use of an ordinary least-

7   squares regression model[7] that can be performed with spreadsheets

8   that have basic statistical functionality.

9 **Q. PLEASE DESCRIBE HOW YOU APPLIED A REGRESSION**

10   **ANALYSIS TO APPROVED RETURNS ON EQUITY WITH**

11   **NATURAL GAS UTILITY RATE CASES?**

12 A. The method I used relies on approved returns on common equity

13   for natural gas utility companies from various public utility

14   commissions that are published by the Regulatory Research

15   Associates, Inc. (RRA), within SNL Global Market Intelligence and

16   Moody's "A" rated Utility Bond Yields. This method was relied upon

17   by this Commission in Docket No. G-5, Sub 327, a 1994 general rate

18   case of Public Service Company of North Carolina, Inc., and it is the

19   method used in the formula rate plans for LDCs regulated by the

---

[7] The least squares model is a form of mathematical regression analysis that finds the line of best fit that quantifies the relationship between an independent variable(s) and a dependent variable.

1   Mississippi Public Service Commission.[8] The results from the

2   regression analysis in this study and in other studies indicate that

3   there is a high correlation between the cost of equity and utility bond

4   yields.[9]

5 **Q.   WHAT WERE THE RESULTS OF YOUR REGRESSION**

6   **ANALYSIS?**

7 A.   The results of the regression analysis shown on page 2 of 2 of

8   Exhibit JRH-5, indicate that the predicted cost of equity is 9.64%.

9   As noted, a statistical regression was performed in order to quantify

10   the relationship of allowed equity returns and bond costs. The

11   results of the regression analysis indicate a significant statistical

12   relationship of the approved equity returns and bond costs, such

13   that a reduction of 10 basis points in yields corresponds to a

14   decrease of only 4 basis points in ROE.[10] As such, the regression

15   analysis allows one to quantify the historical relationship of

16   approved returns on equity and bond yields up through March 30,

17   2019, and then combine this relationship with current yields up

18   through June 2019 to derive a predicted 9.64% cost rate for

19   common equity.

---

[8] See Mississippi Public Serve Commission, Mississippi Gas Co., Docket No. 18-UN-0139, Atmos Energy Corporation, Docket No. 05-UN-0503.
[9] See Brigham, E., Shome, D., and Vinson, S., 1985. "The Risk Premium Approach to Measuring a Utility's Cost of Equity." <u>Financial Management</u>, Spring 14: 33-45.
[10] The regression equation ROE=0.079857 + 0.40336, indicated a significant statistical relationship of Moody's utility bond yields and approved ROEs with an adjusted R^2=0.90860.

1   **C. COMPARABLE EARNINGS METHOD**

2 **Q.   PLEASE   DESCRIBE   YOUR   COMPARABLE   EARNINGS**

3   **ANALYSIS.**

4 A.   My comparable earnings method analysis involves reviewing

5   earned returns on equity for my comparable group of natural gas

6   utilities.

7   This approach is based on the decision in the Hope case cited earlier

8   in my testimony, which maintains that an investor should be able to

9   earn a return comparable to the returns available on alternative

10   investments with similar risks.

11 **Q.   WHAT ARE SOME OF THE STRENGTHS AND WEAKNESSES**

12   **INHERENT IN THE COMPARABLE EARNINGS METHOD?**

13 A.   A strength of this method is that information on earned returns on

14   common equity is widely available to investors and it is believed that

15   investors use actual earned returns as a guide in determining their

16   expected return on an investment. A weakness is that the earned

17   return on equity may include non-utility income and increased

18   earnings resulting from deferred income taxes. Furthermore, actual

19   earned rates of return on equity can be impacted by factors outside a

20   company's control, such as with weather and inflation. Such

21   unforeseen developments can cause a company's earned rate of

1   return on equity to exceed or fall short of its cost of capital during any

2   certain period, which tends to make this method less reliable than

3   other cost of capital methods. For this reason, I consider the results of

4   this method as a check on the results of my DCF analysis and

5   Regression Method analysis.

6 **Q.   HOW DID YOU APPLY THE COMPARABLE EARNINGS**

7 **METHOD?**

8 A.   I examined the five historical earned returns and near term predicted

9   returns of my comparable group of LDCs as reported in <u>Value Line</u>,

10   as shown in Exhibit JRH-6.

11 **Q.   WHAT DID YOU CONCLUDE FROM YOUR COMPARABLE**

12 **EARNINGS ANALYSIS OF THE GROUP OF COMPARABLE**

13 **NATURAL GAS UTILITIES?**

14 A.   Based on the earned rates of return, I conclude that the cost of

15   equity using the Comparable Earnings analysis provides a

16   reasonable check on my results using the DCF model and the

17   Regression Analysis of Approved ROEs method. However, I believe

18   the historical earned returns are in excess of the Company's cost of

19   equity and the predicted returns are more in line with investors'

20   required returns on equity.

1   **D. <u>CAPM</u>**

2   **Q.   PLEASE DESCRIBE HOW YOU USED THE CAPM.**

3   A.   The CAPM is another version of the Risk Premium method. As with

4   the Comparable Earnings method, I consider the results to provide

5   a check on the results of my DCF and Regression Analysis

6   methods. The CAPM incorporates the relationship between a

7   security's investment risk and its market rate of return. The beta is

8   an indicator of the relative volatility of the stock in question to the

9   volatility of the market. The equation used to estimate the cost of

10   equity is:

11            $K = R_f + \beta(R_m - R_f)$

12   Where,   K = the cost of equity;

13   R_f = the risk free rate;

14   β = the beta coefficient; and

15   R_m = the expected return on the market.

16 **Q.   WHAT ASSUMPTIONS DID YOU USE IN YOUR CAPM**

17   **ANALYSIS?**

18 A.   The CAPM estimate was derived using the following inputs: the

19   most recent six-month average 30-year treasury yield of 2.89% and

20   the <u>Value Line</u> Betas for the comparable group of nine LDCs. For

21   the expected return on the market, I relied on historical returns on

1   the S&P 500 published by Duff and Phelps, LLC,[11] which have

2   continued with the original data series by Ibbotson and Associates.

3   The annual data of large company stock returns from 1926 through

4   2018 generated a 10.0% return using the geometric average, and

5   11.9% using the arithmetic return. These expected market returns

6   produced a cost of equity of 9.10% using the arithmetic mean and

7   7.79% using the geometric mean shown in Exhibit JRH-7.

8   **Q.   WHAT DO YOU CONCLUDE FROM YOUR CAPM?**

9   A.   I conclude that the cost of equity arrived at using the CAPM provides

10   a reasonable check on my results using the DCF model and the

11   Regression Analysis of Approved ROEs. I believe the use of the

12   geometric return, which measures the annualized rate of return

13   compounded over time, is the more appropriate measure of investor

14   expectations. This position is in step with the Security and Exchange

15   Commission's requirements for publishing annualized compound

16   total rates of return for mutual funds over 1, 5, and 10-year periods.

17   However, I believe the 7.79% estimate is at the very low end, if not

18   below, Piedmont's cost of equity. As such, these results provide a

19   limited check on my recommended cost of equity.

20   **Q.   WHAT IS YOUR RECOMMENDED COST OF EQUITY BASED ON**

21   **YOUR STUDY?**

---

[11] 2019 SBBI Yearbook, Stock, Bonds Bills, and Inflation, 1926-2018, Exhibit 2.3.

1   A.   The results of my DCF model indicate a cost of equity ranging from

2   9.25% using historical growth rates, to 8.63% using predicted

3   growth rates, to 9.00% based on an average of all of the growth

4   rates. I combined these results with a Regression Analysis result

5   that indicates a cost of equity of 9.64%. The average of the four

6   estimates produces an average cost of equity of 9.13%, which is

7   central to a range of cost of equity estimates ranging from 8.63% to

8   9.64%. I further conclude that 9.13% is my single best estimate of

9   the Company's cost of common equity, as summarized in Exhibit

10   JRH-8.

11   **Q.   WHAT OTHER EVIDENCE DID YOU CONSIDER IN YOUR**

12   **ASSESMENT OF THE REASONABLENESS OF YOUR**

13   **RECOMMENDED RETURN?**

14   A.   In regard to reasonableness assessment, I considered the pre-tax

15   interest coverage ratio produced by my cost of capital

16   recommendation. Based on the recommended capital structure,

17   cost of debt, and equity return of 9.13%, the pre-tax interest

18   coverage ratio is approximately 3.6 times. These indicators of credit

19   quality suggest that Piedmont has an adequate opportunity to

20   continue to qualify for a single "A" bond rating.

21   My reasonableness assessment acknowledges the continued role

22   that the Integrity Management Rider (IMR) has in reducing

1   regulatory lag which is seen as supportive regulatory policies by

2   investors. The graph below shows the additional monthly revenue

3   associated with the Company's IMR mechanism, which as of

4   December 31, 2018 amounted to approximately $940 million in

5   capital investment from the IMR.

Piedmont's Capital Investment with IMR
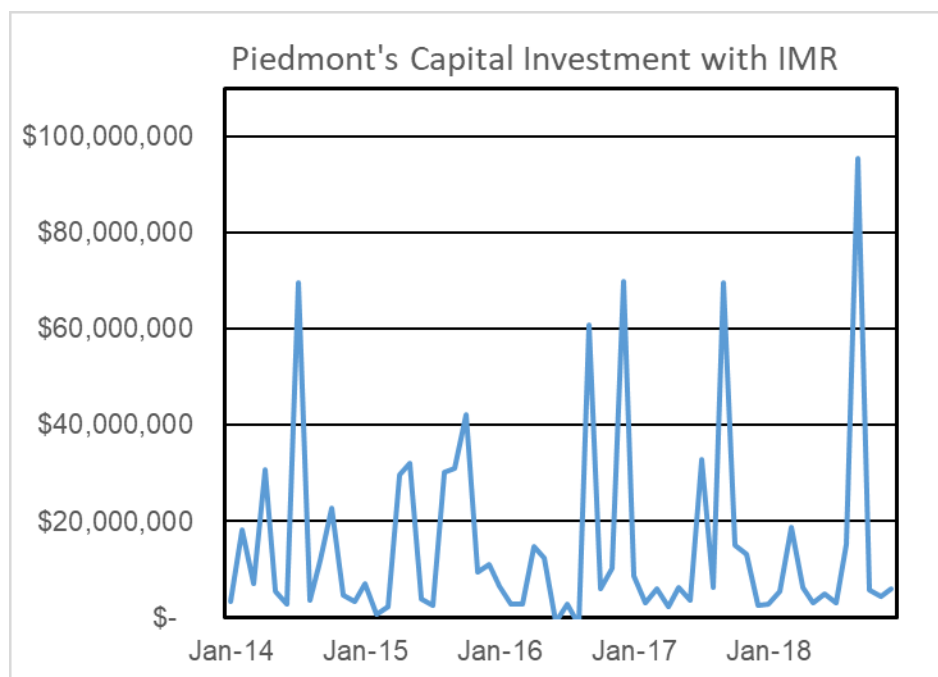
6   I also considered the stabilizing impact on the residential and small

7   commercial customers revenue and on the Company's earnings of

8   the Company's Margin Decoupling Tracker (MDT) that was

9   approved by the Commission in 2008 in Docket No. G-9, Sub

10   550.[12] In large part, the tracker was approved in view of the

11   declining customer usage and to eliminate the Company's

---

[12] The Company had a similar mechanism named the Customer Utilization Tracker (CUT)
that was approved in 2005 general rate case in Docket No. G-9, Sub 499.

1   disincentive to promote conservation. The Commission's Order[13]

2   noted that the MDT would stabilize the Company's margin recovery

3   and reduce the risk to Piedmont and its customers arising from

4   potential variations in usage patterns. The graph below shows the

5   historical impact of the revenue adjustments associated with the

6   MDT.

Margin Decoupling Tracker

Note: The MDT has produced an average annual increase in revenue of $ 5.7 million since 2008.
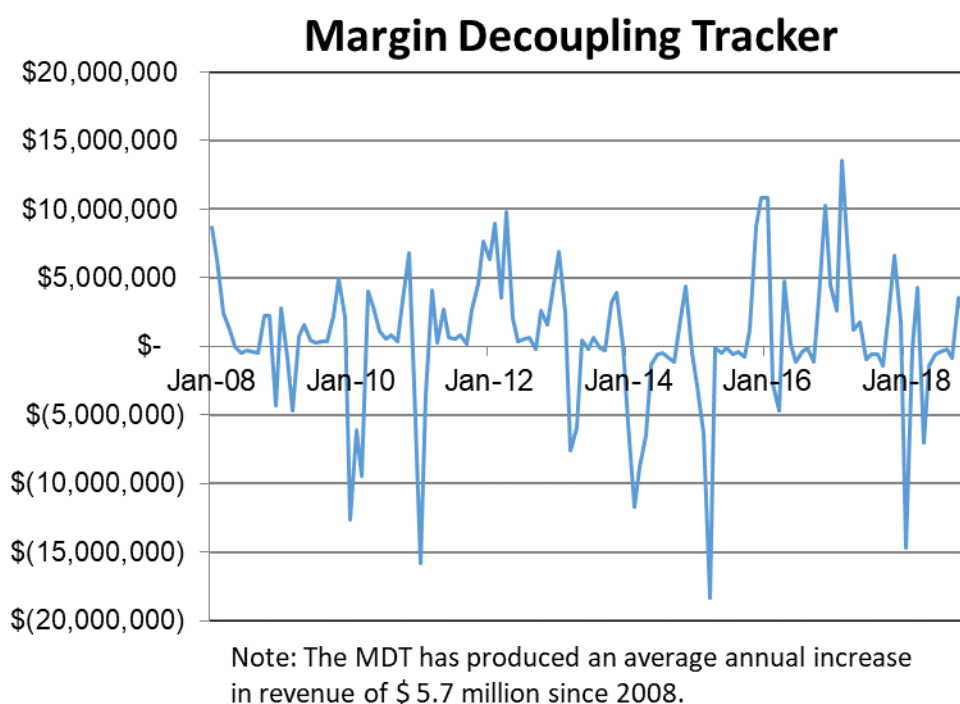
7 **Q.   TO WHAT EXTENT DOES YOUR RECOMMENDED RATE OF**

8 **RETURN ON EQUITY TAKE INTO CONSIDERATION THE**

9 **IMPACT OF CHANGING ECONOMIC CONDITIONS ON**

10 **PIEDMONT'S CUSTOMERS?**

---

[13] See Commission's Order in Docket No. G-9, Sub 550, Finding of Fact No. 24, pages 18 and 19. The MDT affects rate schedules 101, 102, and 152.

1   A.   I am aware of no clear numerical basis for quantifying the impact of

2   changing economic conditions on customers in determining an

3   appropriate return on equity in setting rates for a public utility.

4   Rather, the impact of changing economic conditions nationwide is

5   inherent in the methods and data used in my study to determine the

6   cost of equity for utilities that are comparable to Piedmont. I have

7   reviewed certain information on the economic conditions in the

8   areas served by Piedmont, specifically, the 2016 and 2017 data on

9   the percent change in per capita personal income from the Bureau

10   of Economic Analysis (BEA) and the Development Tier

11   Designations published by the North Carolina Department of

12   Commerce for Piedmont's service territory. The BEA data indicates

13   that from 2016 to 2017, per capita total personal income grew at an

14   annual growth rate of 3.9%, which is slightly higher than 3.5% for

15   the whole state.

16   The North Carolina Department of Commerce annually ranks the

17   State's 100 counties based on economic well-being and assigns

18   each a Tier designation. The most distressed counties are rated a

19   "1" and the most prosperous counties are rated a "3." The rankings

20   examine several economic measures such as, household income,

21   poverty rates, unemployment rates, population growth, and per

22   capita property tax base. For 2019, the average Tier ranking for

23   North Carolina counties in Piedmont's service territory was 1.8.

1   As discussed above, the Commission's duty is to set rates as low

2   as reasonably possible consistent with constitutional constraints.

3   This duty exists regardless of the customers' ability to pay.

4   Moreover, the rate of return on common equity is only one

5   component of the rates established by the Commission. N.C. Gen.

6   Stat. § 62-133 sets out an intricate formula for the Commission to

7   follow in determining a utility's overall revenue requirement. It is the

8   combination of rate base, expenses, capital structure, cost rates for

9   debt and equity capital, and capital structure that determines how

10   much customers pay for utility service and how much investors

11   receive in return for their investment. The Commission must

12   exercise its best judgment in balancing the interests of both groups.

13   My analysis indicates that my recommended rate of return on

14   equity will allow the Company to properly maintain its facilities,

15   provide adequate service to its customers, attract capital on terms

16   that are fair and reasonable to its customers and investors, and will

17   result in rates that are just and reasonable.

18   **V. CONCERNS WITH COMPANY WITNESS HEVERT'S**

19   **TESTIMONY**

20 **Q.   HAVE YOU REVIEWED COMPANY WITNESS HEVERT'S**

21   **TESTIMONY?**

1   A.   Yes. I disagree with his exclusive use of forecasted EPS in the DCF

2   model, his estimate of the expected market return and the market

3   premium used in his CAPM.

4   **Q.   WHY DO YOU DISAGREE WITH COMPANY WITNESS**

5   **HEVERT'S EXCLUSIVE USE OF FORECASTED EARNINGS**

6   **PER SHARE IN HIS DCF ANALYSIS?**

7   A.   Company Witness Hevert has focused entirely on five-year

8   earnings per share (EPS) forecasted growth rates in estimating the

9   long-term expected growth rate in dividends per share (DPS) for

10   purposes of his DCF model. He has not given any weight to

11   historical EPS growth rates. Nor has he given any weight to

12   historical and forecasted DPS and BPS growth rates. While I have

13   given primary weight to forecasted growth rates of EPS, DPS, and

14   BPS, I have also given actual historical performance some weight

15   in my recommendation. Consideration of DPS and BPS, along with

16   EPS, provides a variety of growth measures instead of relying on

17   just one measure. Given that at least one study has found that

18   analysts' long-term earnings growth forecasts are no more accurate

19   at forecasting future earnings than random walk forecasts of future

20   earnings,[14] and that other studies have found that analyst's

21   earnings forecasts tend to have an upward bias in their projections,

---

[14] See Louis K.C. Chan, Jason Karceski, and Josef Lakonishok, "The Level and Persistence of Growth Rates, "Journal of Finance, April 2003.

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1   I find it quite questionable that investors limit their investment

2   decisions to forecasted growth rates in EPS. Company witness

3   Hevert's DCF analysis is flawed because investors do not simply

4   ignore the historical performance of stocks. While forecasts are

5   generally based, in part, on a company's historical performance, it

6   is quite a different argument to state that investors rely solely on

7   forecasts of EPS and ignore past performance of dividends and

8   book value.

9   In prior orders, this Commission has not been persuaded by rate of

10   return witnesses who relied exclusively on forecasted growth rates

11   in their use of the DCF model. The Commission's Order issued on

12   December 30, 2003, in Docket No. P-100, Sub 133d, states on

13   page 73, "The Commission is persuaded that investors consider a

14   company's historical performance along with its forecasts when

15   assessing its long-run growth potential." In that proceeding,

16   BellSouth's witness Billingsley gave exclusive weight to security

17   analysts' earnings per share forecasts compiled by Zacks

18   Investment Research and the Institutional Brokers Estimate

19   System, which is comparable to witness Hevert's use of earnings

20   forecasts. This concern is applied to his DCF model and his

21   CAPM's use of a market risk premium that relies on a results from

22   DCF model on the 500 companies in the S&P500.

1 **Q. PLEASE EXPLAIN YOUR CONCERNS WITH COMPANY**

2 **WITNESS HEVERT'S ESTIMATE OF THE EXPECTED MARKET**

3 **RISK RETURN AND MARKET PREMIUM INCORPORATED IN**

4 **HIS CAPM.**

5 A. Company witness Hevert's CAPM model assumes that investors

6 are currently requiring an expected risk premium of 10.65% that is

7 based on an expected market return of 13.68%, as shown on

8 Exhibit RBH-3, Page 1 of 14. Exhibit RBH-3, Page 8 of 14 shows

9 an expected market return of 16.81% and a risk premium of

10 13.77%. These estimates of the expected market return are derived

11 with earnings forecasts from Bloomberg Professional and Value

12 Line as applied to the 500 firms that comprise the S&P 500.

13 In my opinion, Company witness Hevert's estimates of the expected

14 returns on the S&P 500 of 13.68% and the 16.81% are unrealistic.

15 The average growth rate for the 500 companies shown on Page 1

16 of his Exhibit calculates to a 10.81% growth rate. Similarly, the

17 average growth rate for the 500 companies shown on Page 8 of his

18 Exhibit calculates to a 13.68% growth rate. In my opinion, these

19 growth rates of return are unsustainable within the long-term

20 horizons of most investors. It stands to reason that no individual

21 company within the S&P 500 could grow faster over the long-run

1   than the growth of the general economy.[15] My opinion that Mr.

2   Hevert's expected growth rates of the S&P500 is unsustainable is

3   supported by commentaries from Christine Benz of Morningstar

4   where she has collected forecasts of long-term rate of returns on

5   stocks and bonds by BlackRock Investment Institute, John Bogle

6   and J.P. Morgan: those well-known investment professionals are

7   expecting a departure from history with lower future market returns

8   on equity of 5% to 8%, as shown in Exhibit JRH-9.

9   **VI. <u>SUMMARY AND RECOMENDATION</u>**

10 **Q.   PLEASE   SUMMARIZE   YOUR   RECOMMENDATIONS**

11   **CONCERNING THE COST OF CAPITAL?**

12 A.   Based on the results of my study, it is my recommendation that the

13   appropriate capital structure to employ for rate making purposes in

14   this proceeding consists of 49.94% long-term debt, 0.85% short-

15   term debt, and 49.21% common equity. The recommended cost of

16   long-term debt is 4.41%, the cost of short-term debt is 2.72%, and

17   the recommended cost of common equity of 9.13%. My

18   recommended overall weighted cost of capital produced is 6.71%,

19   as shown on Exhibit JRH-10.

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[15] <u>Id</u>. at p. 649.

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

2 A.   Yes.

QUALIFICATIONS AND EXPERIENCE

JOHN ROBERT HINTON

I received a Bachelor of Science degree in Economics from the University of North Carolina at Wilmington in 1980 and a Master of Economics degree from North Carolina State University in 1983. I joined the Public Staff in May of 1985. I filed testimony on the long-range electrical forecast in Docket No. E-100, Sub 50. In 1986, 1989, and 1992, I developed the long-range forecasts of peak demand for electricity in North Carolina. I filed testimony on electricity weather normalization in Docket Nos. E-7, Sub 620, E-2, Sub 833, and E-7, Sub 989. I filed testimony on customer growth and the level of funding for nuclear decommissioning costs in Docket No. E-2, Sub 1023 and the level of funding for nuclear decommissioning costs in Docket Nos. E-7, Sub 1026 and E-7, Sub 1146. I have filed testimony on the Integrated Resource Plans (IRPs) filed in Docket No. E-100, Subs 114 and 125, and I have reviewed numerous peak demand and energy sales forecasts and the resource expansion plans filed in electric utilities' annual IRPs or IRP updates.

I have been the lead analyst for the Public Staff in numerous avoided cost proceedings, filing testimony in Docket No. E-100, Subs 106, 136, 140, 148, and 158. I have filed a Statement of Position in the arbitration case

involving EPCOR and Progress Energy Carolinas in Docket No. E-2, Sub 966.

I have filed testimony on the issuance of certificates of public convenience and necessity (CPCN) in Docket Nos. E-2, Sub 669, SP-132, Sub 0, E-7, Sub 790, E-7, Sub 791, and E-7, Sub 1134.

I have filed testimony on the issue of fair rate of return for electric utilities in Docket Nos. E-22, Sub 333; E-22, Sub 412; and E-22, Sub 532. I have filed testimony on credit metrics and the risk of a downgrade in Docket No. E-7, Sub 1146. The rate of return for telephone utilities in P-26, Sub 93; P-12, Sub 89; P-100, Sub 133b; and P-100, Sub 133d (1997 and 2002). The rate of return for natural gas utilities in G-21, Sub 293; P-31, Sub 125; G-5, Sub 327; G-5, Sub 386; G-9, Sub 351; and G-21, Sub 442. The rate of return for water utilities in W-778, Sub 31; W-218, Sub 319; W-354, Sub 360, and in several smaller water utility rate cases.

I have filed testimony on the hedging of natural gas prices in Docket No. E-2, Subs 1001 and 1018. I have filed testimony on the expansion of natural gas in Docket No. G-5, Subs 337 and 372. I performed the financial analysis in the two audit reports on Mid-South Water Systems, Inc., Docket No. W-100, Sub 21. I testified in the application to transfer of the CPCN from North Topsail Water and Sewer, Inc. to Utilities, Inc., in Docket No. W-1000, Sub 5. I have filed testimony on weather normalization of water sales in Docket No. W-274, Sub 160.

With regard to the 1996 Safe Drinking Water Act, I was a member of the Small Systems Working Group that reported to the National Drinking Water Advisory Council of the U.S. Environmental Protection Agency. I have published an article in the National Regulatory Research Institute's Quarterly Bulletin entitled Evaluating Water Utility Financial Capacity.

RISK MEASURES

SAFETY RANK[1]

Value Line's Safety Rank is a measure of the total risk of a stock. It includes factors unique to the company's business such as its financial condition, management competence, etc. The Safety Rank is derived by averaging two variables: the stock's Price Stability Index, and the Financial Strength Rating of the company. The Safety Rank ranges from 1 (Highest) to 5 (Lowest).

BETA[1] (ß)

The Value Line Beta is derived from a regression analysis between weekly percent changes in the price of a stock and weekly percent price changes in the New York Stock Exchange Composite Index over a period of five years.

There has been a tendency over the years for high Beta stocks to become lower and for low Beta stocks to become higher. This tendency can be measured by studying Betas of stocks in five consecutive intervals. The Betas published in the Value Line Investment Survey are adjusted for this tendency and hence are likely to be better predictors of future Betas than those based exclusively on the experience of the past five years.

The New York Stock Exchange Composite Index is used as the basis for calculating the Beta because this index is a good proxy for the complete equity portfolio. Since Beta's significance derives primarily from its usefulness in portfolios rather than individual stocks, it is best constructed by relating to an overall market portfolio. The Value Line Index, because it weights all stocks equally, would not serve as well.

The security's return is regressed against the return on the New York Stock Exchange Composite Index over the past five years, so that 259 observations of weekly price changes are used. Value Line adjusts its estimate of Beta ($ß_i$) for regression described by Blume (1971). The estimated Beta is adjusted as follows:

$$\text{Adjusted } ß_i = 0.35 + 0.67ß$$

FINANCIAL STRENGTH RATING[1]

Value Line's Financial Strength Ratings are primarily a measure of the relative financial strength of a company. The rating considers key variables such as coverage of debt, variability of return, stock price stability, and company size. The Financial Strength Ratings range from the highest at A++ to the lowest at C.

PRICE STABILITY INDEX[1]

Value Line's Price Stability Index is based upon a ranking of the standard deviation of weekly percent changes in the price of a stock over the last five years. The top 5% carry a Price Stability Index of 100; the next 5%, 95; and so on down to an Index of 5.

EARNINGS PREDICTABILITY INDEX[1]

Value Line's Earnings Predictability Index is a measure of the reliability of an earnings forecast. The most reliable forecasts tend to be those with the highest rating (100); the least reliable (5).

S&P BETA[2] (ß)

The S&P Beta is derived from a regression analysis between 60 months of price changes in a company's stock price (plus corresponding dividend yield) and the monthly price changes in the S&P 500 Index (plus corresponding dividend yield). Prices and dividends are adjusted for all subsequent stock splits and stock dividends.

S&P BOND RATING[2]

The S&P Bond Ratings is an appraisal of the credit quality based on relevant risk factors. S&P reviews both the company's financial and business profiles. Shown below are the ratings:

AAA   An extremely strong capacity to pay interest and repay principal.
AA+   A very strong capacity to pay interest and repay principal.
AA   There is only a small degree of difference between "AAA" and "AA"
AA-   Debt issues.
A+   A strong capacity to pay interest and repay principal.

These A ratings indicate the obligor is more susceptible to changes in economic conditions than AAA" or "AA" debt issues.

BBB+ An adequate capacity to pay interest and repay principal.
BBB   Economic conditions or changing circumstances are more likely to lead to a weakened capacity to pay interest and repay principal.
BB+   "BB" indicates less near-term vulnerability to default than other BB speculative issues.

However, these bonds face major ongoing BB uncertainties or exposure to adverse conditions that could lead to inadequate capacity to meet timely interest and principal payments.

<u>S&P STOCK RANKING</u>[2]

The S&P Stock Rankings is an appraisal of the growth and stability of the company's earnings and dividends over the past 10 years. The final score for each stock is measured against a scoring matrix determined by an analysis of the scores of a large and representative sample of stocks. Shown below are the rankings:

A+	Highest
A	High
A-	Above average
B+	Average
B	Below Average
B-	Lower
C	Lowest
D	In Reorganization
NR	Not rated

<u>Moody's Bond Rating</u>[3]

Moody's Bond Ratings is an appraisal of the credit quality based on relevant risk factors. Shown below are the ratings:

Aaa   Obligations judged to be the highest quality and are subject to the very lowest level of credit risk

Aa   Obligations judged to be the high quality and are subject to low level credit risk

A   Obligations judged to be the upper medium grade and are subject to low credit risk

Baa   Obligations judged to be the medium grade and are subject to moderate credit risk and may possess certain speculative characteristics

Ba   Obligations judged to be speculative and subject to substantial credit risk

B   Obligations are considered speculative and subject to high credit risk.

Sources:
[1] Value Line Investment Analyzer, Version 3.3, New York, NY.
[2] S&P Net Advantage and S&P Global Market Intelligence, July, 2019
[3] Moody's Investor Service, Rating Symbols and Definitions, February, 2019

LIST OF EXHIBITS

1. Moody's A-Rated Utility Bond Yields

2. Recommended Piedmont Capital Structure

3. Investor Related Risk Measures

4. DCF Analysis

5. Regression Analysis of Approved ROEs

6. Comparable Earnings Analysis

7. CAPM

8. Summary for the Cost of Common Equity

9. Article on Forecasts of Long-Term Stock and Bond Returns

10. Recommended Cost of Capital

Moody's A-Rated Utility Bond Yields
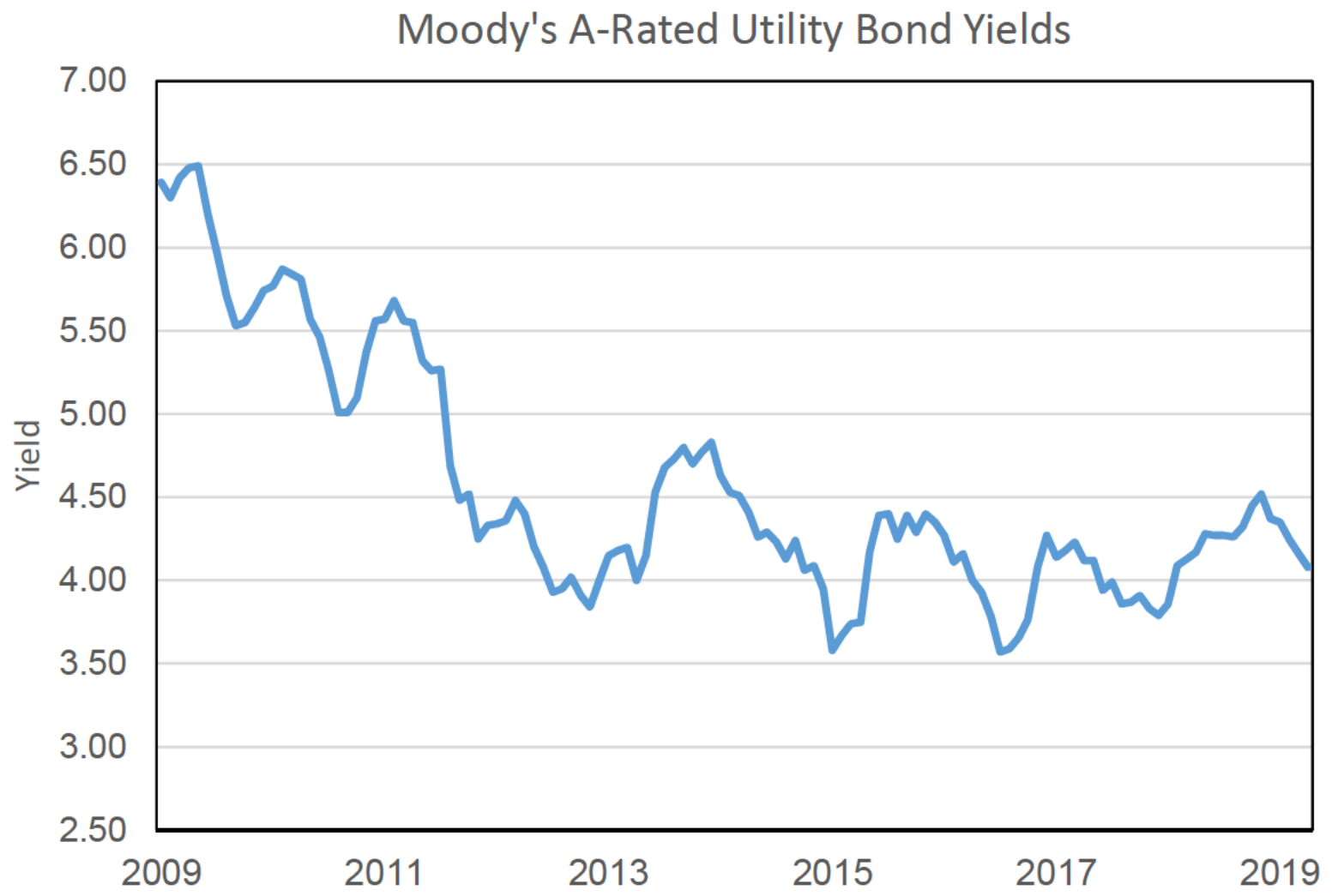
Piedmont Natural Gas
13 Month Average Capital Structure
as of May 31, 2019

	Amount ($)	Ratio
Long-Term Debt	2,121,868,055	49.94%
Short-Term Debt	36,169,890	0.85%
Common Equity	2,090,579,172	49.21%
Total	4,248,617,117	100.00%

	Monthly Balance	Long-Term Debt	Short-Term Debt [1]	Common Equity	Total Capitalization
1	May-18	2,033,352,298	36,169,890	1,774,521,713	3,844,043,901
2	Jun-18	2,033,449,291	36,169,890	2,064,117,125	4,133,736,306
3	Jul-18	2,033,546,277	36,169,890	2,058,471,976	4,128,188,143
4	Aug-18	2,033,643,271	36,169,890	2,050,188,708	4,120,001,869
5	Sep-18	2,133,740,260	36,169,890	2,043,977,639	4,213,887,789
6	Oct-18	2,133,837,253	36,169,890	2,044,531,594	4,214,538,737
7	Nov-18	2,133,934,243	36,169,890	2,066,456,102	4,236,560,235
8	Dec-18	2,133,237,924	36,169,890	2,091,229,833	4,260,637,647
9	Jan-19	2,133,350,623	36,169,890	2,158,859,020	4,328,379,533
10	Feb-19	2,133,463,323	36,169,890	2,182,026,721	4,351,659,934
11	Mar-19	2,133,266,802	36,169,890	2,210,326,342	4,379,763,034
12	Apr-19	2,133,381,530	36,169,890	2,219,574,190	4,389,125,610
13	May-19	2,382,081,620	36,169,890	2,213,248,279	4,631,499,789
	Month Average	2,121,868,055	36,169,890	2,090,579,172	4,248,617,117

[1] Gas Inventory per Public Staff witness Jayasheela, Exhibit I, Schedule 2-2.

Piedmont's Capital Accounts

	[A]=[B+C-D]	[B]	[C]	[D]	[E]	[G]	[H]	[I]	[J]	[K]=[G+H+I+J]
Total Capitalization	Total Long-Term Debt	Long-Term Debt	Current Maturities	Unamortized Debt Expense	Gas Inventory	Common Stock	Retained Earnings	Other Comprensive Income	Equity Indusions from Parent	Total Common Equity
3,826,681,033	2,033,352,298	1,800,000,000	250,000,000	16,647,702	36,169,890	859,846,537	914,338,357	336,819	0	1,774,521,713
4,120,821,697	2,033,449,291	1,800,000,000	250,000,000	16,550,709	36,169,890	859,846,537	903,933,769	336,819	300,000,000	2,064,117,125
4,119,612,547	2,033,546,277	1,800,000,000	250,000,000	16,453,723	36,169,890	859,846,537	898,288,620	336,819	300,000,000	2,058,471,976
4,114,940,422	2,033,643,271	1,800,000,000	250,000,000	16,356,729	36,169,890	859,846,537	889,963,378	378,793	300,000,000	2,050,188,708
4,211,270,922	2,133,740,260	1,800,000,000	350,000,000	16,259,740	36,169,890	859,846,537	883,752,309	378,793	300,000,000	2,043,977,639
4,214,277,761	2,133,837,253	1,800,000,000	350,000,000	16,162,747	36,169,890	859,846,537	884,306,264	378,793	300,000,000	2,044,531,594
4,252,574,642	2,133,934,243	1,800,000,000	350,000,000	16,065,757	36,169,890	859,846,537	906,231,856	377,709	300,000,000	2,066,456,102
4,275,356,567	2,133,237,924	1,800,000,000	350,000,000	16,762,076	36,169,890	859,846,537	931,005,587	377,709	300,000,000	2,091,229,833
4,328,047,533	2,133,350,623	1,800,000,000	350,000,000	16,649,377	36,169,890	859,846,537	998,634,774	377,709	300,000,000	2,158,859,020
4,342,440,092	2,133,463,323	1,800,000,000	350,000,000	16,536,677	36,169,890	859,846,537	1,021,802,475	377,709	300,000,000	2,182,026,721
4,361,724,003	2,133,266,802	1,800,000,000	350,000,000	16,733,198	36,169,890	859,846,537	1,050,196,127	283,678	300,000,000	2,210,326,342
4,375,681,000	2,133,381,530	1,800,000,000	350,000,000	16,618,470	36,169,890	859,846,537	1,059,443,975	283,678	300,000,000	2,219,574,190
4,624,852,295	2,382,081,620	2,400,000,000	0	17,918,380	36,169,890	859,846,537	1,053,272,089	129,653	300,000,000	2,213,248,279

Investment Risk Measures

Company Name	Value Line[1]					S&P[2] Beta	S&P[2] Quality Ranking	S&P[3] Bond Rating	Moody's[3] Bond Rating
	Safety Rank	Beta	Price Stability	Earnings Predict.	Financial Strength				
Duke Energy Corp.	2	0.50	100	85	A	0.14	A-	A-	Baa1
Piedmont Natural Gas	NA	NA	NA	NA	NA	NA	A-	A-	A3
1 Atmos Energy	1	0.65	100	100	A+	0.20	A	A	A2
2 Chesapeake Utilities	2	0.65	75	90	A	0.28	A	B+	B1
3 New Jersey Resources	1	0.70	80	50	A+	0.39	B+	NA	Aa3
4 Northwest Natural	1	0.60	95	10	A	0.31	B	A+	Baa1
5 ONE Gas Inc.	2	0.65	90	95	A	0.35	NR	A	A2
6 South Jersey Inds.	2	0.80	80	65	A	0.77	B+	BBB	NA
7 Southwest Gas	3	0.70	80	90	B++	0.35	A-	BBB+	Baa1
8 Spire Inc.	2	0.65	95	70	B++	0.25	A-	A-	Baa2
9 UGI Corp.	2	0.80	90	85	B++	0.62	A-	NA	Ba2
Average	1.8	0.69	87	73		0.39			

Source:

[1] Value Line Investment Survey, Standard Edition, May 17, 2019 and May 31, 2019.

[2.] S&P Global Market Intelligence, CFRA Stock Report, July 7, 2019.

[3.] S&P Global Market Intelligence, downloaded on July 11, 2019.

DCF Analysis
Group of LDC Utilities

Company Name	Yield[1]	Value Line[2] Historical						Value Line[2] Forecasts			Yahoo Forecast[3]
		EPS 10-Yr	DPS 10-Yr	BPS 10-Yr	EPS 5-Yr	DPS 5-Yr	BPS 5-Yr	EPS 5-Yr	DPS 5-Yr	BPS 5-Yr	EPS 5-Yr
1 Atmos Energy	2.2	6.5	3.5	5.5	10.0	4.8	7.0	5.6	7.0	7.0	6.5
2 Chesapeake Utilities	1.8	9.0	5.0	10.0	8.0	6.7	10.5	5.0	9.0	9.0	6.0
3 New Jersey Resources	2.4	7.0	7.5	6.5	8.5	10.2	8.0	2.5	4.0	7.0	6.0
4 Northwest Natural	2.8	-10.5	2.5	2.0	-18.0	2.1	NA	3.5	2.5	1.0	4.0
5 ONE Gas Inc.	2.3	NA	NA	NA	NA	3.7	NA	4.8	8.5	4.0	5.0
6 South Jersey Inds.	3.8	1.5	8.0	6.5	-2.5	1.7	6.0	2.4	4.0	4.5	5.5
7 Southwest Gas	2.6	7.0	8.5	5.5	4.5	3.6	6.0	5.9	5.0	7.5	6.1
8 Spire Inc.	2.8	4.0	4.0	7.5	7.5	4.7	8.0	5.0	4.0	4.0	3.5
9 UGI Corp.	2.2	7.0	7.5	9.0	11.5	8.4	7.0	3.6	6.5	8.5	6.5
Average	2.5	6.0	5.8	7.2	8.3	5.1	7.5	4.2	5.6	5.8	5.5
Estimated Cost of Equity		8.5	8.3	9.7	10.9	7.6	10.0	6.8	8.1	8.4	8.0

Source:

[1] Value Line Investment Survey, Summary and Index from April 5, 2019 to June 28, 2019, Expected Dividend Yield.

[2] Value Line Investment Survey, Standard Edition, May 31, 2019.

[3] Yahoo Earnings Forecast as of July 8, 2019.

Note: Negative values are excluded from the average calculation.

REGRESSION ANALYSIS OF APPROVED RETURNS ON EQUITY

Year	[A] Gas Utility Approved Returns on Equity[1]	[B] Moody's A-Rated Bond Yields[2]	[C]=[A]-[B] Gas Utility Risk Premium
2000	11.34%	8.24%	3.10%
2001	10.96%	7.80%	3.16%
2002	11.17%	7.37%	3.80%
2003	10.99%	6.58%	4.41%
2004	10.63%	6.16%	4.47%
2005	10.41%	5.65%	4.76%
2006	10.40%	6.07%	4.33%
2007	10.22%	6.05%	4.17%
2008	10.39%	6.51%	3.88%
2009	10.22%	6.04%	4.19%
2010	10.15%	5.47%	4.68%
2011	9.92%	5.04%	4.88%
2012	9.94%	4.13%	5.81%
2013	9.68%	4.48%	5.20%
2014	9.78%	4.28%	5.50%
2015	9.60%	4.12%	5.49%
2016	9.54%	3.93%	5.61%
2017	9.72%	4.00%	5.72%
2018	9.59%	4.13%	5.46%
2019	9.55%	4.25%	5.30%
		Average	4.70%

Sources:

[1] S&P Global Market Intelligence, Regulatory Research Associates, "Major Rate
 Case Decisions: January - March 2019", April 11, 2019.

[2] Moody's Bond Yields with annual data from January 2000 through March 30, 2019.

Regression Analysis of Allowed Returns on Equity

Regression Statistics of 2000-2019 data	
Multiple R	0.95572
R Square	0.91341
Adjusted R Square	0.90860
Standard Error	0.00172
Observations	20

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.000562843	0.000562843	189.8739	5.2864E-11
Residual	18	5.33573E-05	2.9643E-06		
Total	19	0.0006162			

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.079856861	0.00165950	48.12113248	1.8E-20
X Variable 1	0.403360358	0.02927255	13.77947462	5.29E-11

Month	Moody's A-Rated Public Utility Bond Yield
Jan-19	4.35%
Feb-19	4.25%
Mar-19	4.16%
Apr-19	4.08%
May-19	3.98%
Jun-19	3.82%
Average	4.11%

Predicted Cost of Equity   9.64%

Formula for the Predicted Cost of Equity of 9.64% = 0.07986 + 0.40336 x 4.11%.

Comparable Earnings Analysis

		2014	2015	2016	2017	2018	2019	2020
1	Atmos Energy	9.40%	9.90%	10.10%	9.80%	9.30%	9.00%	9.00%
2	Chesapeake Utilities	12.00%	11.12%	10.00%	9.00%	10.90%	9.50%	10.00%
3	New Jersey Resources	18.30%	13.90%	11.80%	12.10%	17.10%	12.00%	12.00%
4	Northwest Natural	7.60%	6.90%	6.90%	NMF	8.80%	9.00%	9.00%
5	ONE Gas Inc.	6.10%	6.50%	7.40%	8.20%	8.40%	8.50%	8.50%
6	South Jersey Inds.	11.20%	9.50%	8.00%	8.20%	9.20%	6.50%	9.00%
7	Southwest Gas	9.50%	8.70%	9.10%	9.60%	8.10%	9.00%	9.50%
8	Spire Inc.	5.60%	8.70%	8.20%	8.10%	9.50%	8.00%	7.50%
9	UGI Corp.	12.70%	13.10%	12.60%	12.90%	13.20%	11.50%	12.50%
	Average	10.27%	9.81%	9.34%	9.74%	10.50%	9.22%	9.67%

	Average	Median
Historical ROEs, 63 observations	9.85%	9.45%
Predicted ROEs, 18 observations	9.44%	9.00%

Source:
[1.] Value Line Investment Survey, Standard Edition, May 31, 2019.

Capital Asset Pricing Model

Expected Return based on the Geometric Mean of Returns of the S&P 500 from 1926-2018

		(R_{fi})	(ß)	(R_m)	(K)
	Company	Risk free Rate[1]	Value Line Beta[2]	Expected Return on Market[3]	CAPM
1	Atmos Energy	2.89%	0.65	10.00%	7.51%
2	Chesapeake Utilities	2.89%	0.65	10.00%	7.51%
3	New Jersey Resources	2.89%	0.70	10.00%	7.87%
4	Northwest Natural	2.89%	0.60	10.00%	7.16%
5	ONE Gas Inc.	2.89%	0.65	10.00%	7.51%
6	South Jersey Inds.	2.89%	0.80	10.00%	8.58%
7	Southwest Gas	2.89%	0.70	10.00%	7.87%
8	Spire Inc.	2.89%	0.65	10.00%	7.51%
9	UGI Corp.	2.89%	0.80	10.00%	8.58%
	Average				7.79%

Note:

CAPM formula, $K = R_{fi} + ß(R_m - R_{fi})$

Sources:

[1] Federal Reserve System, U.S. Long-Term Treasury Yields, 30-year.

[2] Value Line Investment Survey, May 31, 2019.

[3] Duff and Phelps, SBBI Valuation Edition, 2019 Yearbook, Exhhibit 2.3.

Capital Asset Pricing Model

Expected Return based on the Arithmetic Mean of Returns of the S&P 500 from 1926-2018

		(R_{fi})	(β)	(R_m)	(K)
	Company	Risk free Rate[1]	Value Line Beta[2]	Expected Return on Market[3]	CAPM
1	Atmos Energy	2.89%	0.65	11.90%	8.75%
2	Chesapeake Utilities	2.89%	0.65	11.90%	8.75%
3	New Jersey Resources	2.89%	0.70	11.90%	9.20%
4	Northwest Natural	2.89%	0.60	11.90%	8.30%
5	ONE Gas Inc.	2.89%	0.65	11.90%	8.75%
6	South Jersey Inds.	2.89%	0.80	11.90%	10.10%
7	Southwest Gas	2.89%	0.70	11.90%	9.20%
8	Spire Inc.	2.89%	0.65	11.90%	8.75%
9	UGI Corp.	2.89%	0.80	11.90%	10.10%
	Average				9.10%

Note:

CAPM formula, $K = R_{fi} + \beta(R_m - R_{fi})$

Sources:

[1] Federal Reserve System, U.S. Long-Term Treasury Yields, 30-year.

[2] Value Line Investment Survey, May 31, 2019.

[3] Duff and Phelps, SBBI Valuation Edition, 2019 Yearbook, Exhhibit 2.3.

Summary for the Cost of Common Equity

<u>DCF Method</u>	
Based on Historical & Forecasted Growth Rates	9.00%
Based on Historical Growth Rates	9.25%
Based on Predicted Growth Rates	8.63%
Risk Premium Method	9.64%
Average	9.13%

Experts Forecast Long-Term Stock and Bond Returns: 2019 Edition

<u>Christine Benz</u>
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Savvy investors might view market predictions as pure folly. After all, it's next to impossible to predict what the market will return, especially over shorter time periods, so why bother?

It's certainly a mistake to try to predict the market in an effort to determine whether, when, and how much to hold in stocks and other asset classes. Even <u>professional investors have struggled</u> with tactical asset allocation, casting doubt on the ability of individual investors or even financial advisors to outperform strategic asset allocation with the approach.

But the fact is, even long-term, strategically minded investors need some type of market-return forecast to craft a financial plan. Without any view on how much stocks, bonds, and cash are apt to return, it's impossible to know how much you'll need to save and for how long. You can't know whether saving for retirement should be your sole financial preoccupation or whether you can hit other goals, such as college funding, along the way. To help turn your financial goals into reality, it's crucial to make assumptions about what the major asset classes, and in turn your own portfolio, are apt to return. That way you can determine how much of the heavy lifting for your plan will come from market appreciation and how much will have to come from your own contributions.

To help you arrive at an educated guess of how much the market will contribute to the success of your plan, I've been compiling annual looks at return expectations from market experts both inside and outside of Morningstar. Note that the parameters for these return estimates vary a bit; some of the return expectations are inflation-adjusted while others are not (nominal). Some of them are quite recent, while others date to earlier in 2018. In addition, some of the experts forecast returns for the next decade, while others employ slightly shorter time horizons.

Yet there were some commonalities among many of the forecasts. First, starting yields on intermediate-term bonds, historically a good predictor of future returns from bonds, suggest that bonds will give U.S. equities a run for their money over the next decade. In addition, many of the market forecasts suggest higher returns

from non-U.S. stocks, especially emerging markets, than U.S. over the next decade.

Before you take those return forecasts to the bank, however, it's important to bear in mind that these return estimates are more intermediate term than they are long. As such, they're the most relevant to investors whose time horizons are in that ballpark, or to new retirees who face sequence-of-return risk in the next decade. Investors with very long time horizons of 20 to 30 years or longer can reasonably assume that market returns will run in line with their very long-term historic norms: 8% to 10% for stocks and half that amount for bonds.

BlackRock Investment Institute
Highlights: 7% nominal (non-inflation-adjusted) return for U.S. large caps over the next decade; 9% for non-U.S. large caps; 3.3% for the U.S. Aggregate Bond index(December 2018).

Bond index(December 2018).

BlackRock Investment Institute's Capital Markets Assumption report is heavy on the disclaimers, noting that the assumptions are "not intended as a recommendation to invest in any particular asset class or strategy or as a promise--or even estimate--of future performance." For each asset class, the firm provides a median expected return, as well as "uncertainty bands" depicting returns in a range. The firm provides assumptions for conventional asset classes as well as nontraditional ones such as hedge funds and private equity.

BlackRock Investment Institute's 7% median expected return for U.S. stocks put it at the high end of our sampling, but its expectation that foreign stocks would outperform (9% for foreign large caps) was a common theme across many of the firms. Notably, however, BlackRock Investment Institute is less sanguine about the prospects for emerging markets than it is for the broad universe of global non-U.S. equities, making it something of an outlier among many of the firms in our sample.

John C. Bogle, founder of Vanguard Group
Highlights: 4%-5% returns for stocks (nominal); 4% nominal returns for bonds over the next decade (October 2018).

In an interview in October (prior to the recent market volatility), the Vanguard founder was a bit more optimistic about returns from U.S. stocks over the next decade than he had been in previous years. As always, Bogle backs into his

return forecast by looking at the equity market's current dividend yield, then factors in expected earnings growth and P/E multiple expansion or contraction. The S&P 500 currently yields about 2%, and Bogle expected in late October that earnings growth would run in the range of 5%. He then gave that 7% expected return (the 2% dividend yield plus 5% earnings growth) a haircut to account for his expected P/E contraction, bringing his self-described "reasonable expectation" for stocks down to between 4% and 5%. To arrive at his 4% return expectations for bonds over the next decade, Bogle uses a blend of the starting yields for Treasuries and high-quality corporates.

GMO
Highlights: negative 4.1% real (inflation-adjusted) returns for U.S. large caps over the next seven years; negative 0.2% real returns for U.S. bonds; 4.4% real returns for emerging-markets equities; 2.9% real returns for emerging-markets debt (November 2018).

As always, the return expectations from the notoriously pessimistic Grantham Mayo Van Otterloo run toward the gloomy side of our collected prognostications. The firm expects U.S. large caps and hedged international bonds to post the worst performance of all of its major asset classes over the next 7 years: It's forecasting negative 4.1% real returns for the former and negative 2.1% real returns from dollar-hedged international bonds from developed markets. The firm expects U.S. small-cap stocks to perform much better than large, but still believes that U.S. small-cap investors will sink into the red on an inflation-adjusted basis, losing 0.7%.

Consistent with its recent expectations, the firm is most sanguine about the prospects for emerging-markets equities and bonds, forecasting 4.4% real returns for emerging-markets equities and 2.9% gains for emerging-markets bonds. The firm is more optimistic still for the subset of emerging-markets equities it considers emerging markets value stocks, predicting a nearly 8% real return for the asset class.

It's worth noting that the firm's pessimism on U.S. equities and positive outlook for emerging markets has cost it on the return front over the past several years: Wells Fargo Absolute Return (WARAX), which GMO manages, has recently struggled and earns a Neutral rating from Morningstar's analyst team. The fund made up ground during the recent market weakness, however, finishing 2018 in its category's top 10%.

J.P. Morgan Asset Management
Highlights: 5.25% return assumption (nominal) for U.S. equities over a 10- to 15-year horizon; 4.5% nominal return assumption for U.S. investment-grade corporate bonds over 10- to 15-year holding period (October 2018).

J.P. Morgan Asset Management updates its capital return assumptions for major asset classes annually, and notes that its assumptions are little changed from 2018. One of the biggest upward revisions in the firm's return assumptions was in the realm of U.S. high-quality corporate bonds, from 3.5% to 4.5%. As with several of the other firms, J.P. Morgan Asset Management is more sanguine about the prospects for emerging markets equities than developed markets stocks; the firm's assumption is for an 8.5% return from the asset class over the next 10 to 15 years, a function of lower starting valuations.

Note that J.P. Morgan Asset Management expresses its return assumptions in nominal, rather than inflation-adjusted, terms. However, the firm describes its inflation expectations as dovish, meaning that it expects inflation to continue to be mild. Additionally, it's important to note that the firm published its report before markets took a dive at the end of 2018.

Morningstar Investment Management
Highlights: 1.8% 10-year nominal returns for U.S. stocks; 3.3% 10-year nominal returns for U.S. bonds (Sept. 30, 2018).

The headline here is that as of Sept. 30, 2018, Morningstar Investment Management expected higher gains from U.S. bonds than U.S. stocks over the next decade. As with GMO, however, the outlook is more optimistic for foreign equities: MIM expects U.S. holders of international developed equities to earn nearly 6% on a nominal (noninflation-adjusted) basis, and U.S. holders of emerging-markets equities to earn nearly 7% nominally. Morningstar Investment Management provides its latest return expectations in Morningstar Markets Observer; the latest issue will be out this month.

Research Affiliates
Highlights: 0.7% real returns for U.S. large caps during the next 10 years; 0.5% real returns for the Barclays U.S. Aggregate Bond Index (Dec. 31, 2018; valuation-dependent model).

Research Affiliates deserves plaudits for its intuitive and user-friendly scatter plot depicting the firm's expectations for 10-year returns and volatility from the major asset classes as well as portfolios. Users can see the firm's return/volatility expectations for numerous asset classes, as well as backward-looking data; they

can also adjust to see return expectations based on a valuation-focused model and one focused on dividends and growth.

The firm's recent 10-year risk/return expectations suggest that U.S. investors relying strictly on U.S. stocks and bonds could be disappointed over the next decade: The firm's valuation-dependent model calls for a 0.7% real return for U.S. large-cap stocks and 0.5% inflation-adjusted gains for the U.S. Aggregate Bond Index. Real return expectations are more encouraging for those two asset classes using the firm's "yield and growth" model--3.3% for U.S. large caps and 0.6% for the U.S. Aggregate Bond Index.

Like GMO and Morningstar, the firm has higher return expectations from foreign stocks and especially emerging markets. Its valuation-dependent model suggests a nearly 6% real return over the next decade from the MSCI EAFE index (developed markets foreign stocks) and a nearly 8% return from emerging markets equities.

Vanguard
Highlights: Nominal U.S. equity-market returns in the 3% to 5% range during the next decade; 6% to 8% returns for non-U.S. equities; 2.5% to 4.5% expected returns for global fixed-income markets (December 2018).

In its 2019 Economic and Market Outlook, Vanguard's Investment Strategy Group wrote that its 10-year return assumptions for global stocks and bonds are modestly higher than this time last year. But the firm isn't forecasting blockbuster gains from any of the major asset classes. It's expecting U.S. equities to post gains in the 3% to 5% range, lower than its forecast for non-U.S. equities (6% to 8%). Thus, like other firms, it's emphasizing the importance of geographic diversification. In contrast with several of the aforementioned firms, however, Vanguard calls valuations in emerging markets "stretched." Ditto for valuations in the U.S., which Vanguard's economists expect to contract as yields rise over the next decade.

Note that Vanguard expresses its capital markets return assumptions in nominal rather than inflation-adjusted terms. However, the report's authors don't see any reason for investors to expect runaway inflation.

Source:
https://www.morningstar.com/articles/907378/experts-forecast-longterm-stock-and-bond-returns-2

Piedmont Natural Gas
Cost of Capital and Capital Structure
as of May 31, 2019

	Amount ($)	Ratio	Cost Rate	Weighted Cost Rate	Tax Retention Factors[1]	Pre-Tax Cost of Capital
Long-Term Debt	2,121,868,055	49.94%	4.41%	2.20%	0.9880	2.23%
Short-Term Debt	36,169,890	0.85%	2.72%	0.02%	0.9880	0.02%
Common Equity	2,090,579,172	49.21%	9.13%	4.49%	0.7610	5.90%
Total	4,248,617,117	100.00%		6.71%		8.15%

Pre-Tax Interest Coverage[2]   3.6

Note:

[1] The pre-tax cost of debt and equity is grossed up by tax retention factors.

[2] Pre-Tax Interest Coverage: 3.6 times = 8.15% / 2.22%.