

Direct Testimony and Schedules  
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Before the Minnesota Public Utilities Commission  
State of Minnesota

In the Matter of the Application of Minnesota Energy Resources Corporation for Authority to  
Increase Rates for Natural Gas Service in Minnesota

Docket No. G007,011/GR-10-977

Exhibit \_\_\_\_\_

**Return on Common Equity**

November 30, 2010

## Table of Contents

I.	INTRODUCTION AND SUMMARY OF RECOMMENDATIONS .....	1
II.	NATURAL GAS RISK FACTORS .....	7
III.	FUNDAMENTAL RISK ANALYSIS .....	10
IV.	COST OF EQUITY – GENERAL APPROACH .....	17
V.	DISCOUNTED CASH FLOW ANALYSIS .....	18
VI.	RISK PREMIUM ANALYSIS .....	35
VII.	CAPITAL ASSET PRICING MODEL .....	41
VIII.	COMPARABLE EARNINGS APPROACH.....	46
IX.	CONCLUSION ON COST OF EQUITY.....	50

## GLOSSARY OF ACRONYMS AND DEFINED TERMS

ACRONYM	DEFINED TERM
AFUDC	Allowance for Funds Used During Construction
$\beta$	Beta
b	represents the retention rate that consists of the fraction of earnings that are not paid out as dividends
b x r	Represents internal growth
CAPM	Capital Asset Pricing Model
CE	Comparable Earnings
DCF	Discounted Cash Flow
FERC	Federal Energy Regulatory Commission
FOMC	Federal Open Market Committee
g	Growth rate
IGF	Internally Generated Funds
Lev	Leverage modification
LDC	Local Distribution Companies
LT	Long Term
M&A	Merger and Acquisition
MERC	Minnesota Energy Resources Corporation
MPUC	Minnesota Public Utilities Commission
P-E	Price-earnings
PUC	Public Utility Commission
PUHCA	Public Utility Holding Company Act
r	represents the expected rate of return on common equity
RDM	Revenue Decoupling Mechanism
Rf	Risk-free rate of return
Rm	Market risk premium
RP	Risk Premium
s x v	Represents external growth
S&P	Standard & Poor's

**GLOSSARY OF ACRONYMS AND DEFINED TERMS**

<b>ACRONYM</b>	<b>DEFINED TERM</b>
v	represents the value that accrues to existing shareholders from selling stock at a price different from book value
s	Represents the new common shares expected to be issued by a firm
WPSR	WPS Resources Corporation



1 this case is 11.25%. The resulting overall cost of capital that MERC has proposed,  
2 which is the product of weighting the individual capital costs including my proposed  
3 cost of equity by the proportion of each respective type of capital, should establish a  
4 just and reasonable level of return for the use of capital and provide MERC with the  
5 ability to attract capital on reasonable terms. Details of MERC's proposed cost of  
6 debt capital and weighted average cost of capital are contained in the testimony of  
7 Ms. Lisa Gast, Manager--Financial Planning and Analysis.

8  
9 Q. WHAT BACKGROUND INFORMATION HAVE YOU CONSIDERED IN  
10 REACHING A CONCLUSION CONCERNING MERC'S COST OF CAPITAL?

11 A. The Company is a wholly-owned subsidiary of Integrys Energy Group, Inc.  
12 ("Integrys"). MERC was acquired by Integrys on July 1, 2006 from Aquila, Inc. d/b/a  
13 Aquila Networks-NMU and -PNG. Integrys was formerly named WPS Resources  
14 Corporation ("WPSR") prior to the merger of WPSR and Peoples Energy  
15 Corporation. The merger with Peoples Energy Corporation was completed on  
16 February 21, 2007. Integrys is a holding company and owns, in addition to MERC,  
17 The Peoples Gas Light and Coke Company, North Shore Gas Company, Upper  
18 Peninsula Power Company, Wisconsin Public Service Corporation, Michigan Gas  
19 Utilities and other energy investments.

20 In 2009, MERC distributed natural gas to approximately 210,000 customers in  
21 165 communities throughout Minnesota. The Northern Minnesota Utilities division  
22 served approximately 41,000 customers and the Peoples Natural Gas division served  
23 approximately 169,000 customers. Throughput to its customers in 2009 was  
24 represented by approximately 28% to residential customers, 16% to commercial and

1 industrial customers, and 56% to interruptible, joint, and transportation customers,  
2 based on throughput displayed on Exhibit \_\_\_\_\_ (HWJ-1), page 1 of Schedule E-1.  
3 Approximately 99% of MERC's residential customers use natural gas for space  
4 heating purposes. This means that MERC's throughput is sensitive to temperature  
5 conditions over which MERC has absolutely no control. The Company's throughput  
6 is also significantly influenced by commercial and industrial, interruptible, and  
7 transportation customers, which represent 72% of total throughput, but comprise just  
8 10% of total customers, based on customers displayed on Exhibit \_\_\_\_\_ (HWJ-1),  
9 page 3 of Schedule E-1. As such, the energy needs of a minority of the Company's  
10 customers can have a significant impact on MERC's operations.

11  
12 Q. HOW HAVE YOU DETERMINED THE COST OF COMMON EQUITY IN THIS  
13 CASE?

14 A. The cost of common equity is established using capital market and financial data  
15 relied upon by investors to assess the relative risk, and hence the cost of equity, for a  
16 gas distribution utility, such as MERC. In this regard, I have considered three (3)  
17 well-recognized measures of the cost of equity: the Discounted Cash Flow ("DCF")  
18 model, the Risk Premium ("RP") analysis, and the Capital Asset Pricing Model  
19 ("CAPM"). I also considered as a check on the results of these models the  
20 Comparable Earnings ("CE") approach.

21  
22 Q. IN YOUR OPINION, WHAT FACTORS SHOULD THE COMMISSION  
23 CONSIDER WHEN DETERMINING MERC'S COST OF CAPITAL IN THIS  
24 PROCEEDING?

1 A. The Commission should consider the ratesetting principles that I have set forth in  
2 Appendix B. In this regard, the Commission's rate of return allowance must be set to  
3 cover MERC's interest and dividend payments, provide a reasonable level of earnings  
4 retention, produce an adequate level of internally generated funds to meet capital  
5 requirements, be commensurate with the risk to which MERC's capital is exposed,  
6 support reasonable credit quality, and allow MERC to raise capital on reasonable  
7 terms.

8

9 Q. HOW HAVE YOU MEASURED THE COST OF EQUITY IN THIS CASE?

10 A. The models that I used to measure the cost of common equity for MERC were  
11 applied with market and financial data developed from a proxy group of seven gas  
12 companies. The companies are identified on page 2 of Schedule 2. I will refer to  
13 these companies as the "Gas Group" throughout my testimony.

14

15 Q. HOW DID YOUR SELECTION PROCESS PROVIDE THE COMPANIES THAT  
16 YOU INCLUDED IN THE GAS GROUP?

17 A. The universe of gas utilities contained in the basic service of Value Line consists of  
18 twelve companies. Value Line is an investment advisory service that is a widely used  
19 source in public utility rate cases. Through the application of my screening process,  
20 I eliminated five companies, which were NiSource due to its electric and natural gas  
21 pipeline and storage operations, Southwest Gas due to its location where service is  
22 provided in an arid region of the U.S. and it has only a small part of its operations  
23 with decoupling, UGI Corporation due to its highly diversified businesses, and  
24 Laclede Group and NICOR because they lack a decoupling feature in their tariffs.

1 Q. HOW HAVE YOU PERFORMED YOUR COST OF EQUITY ANALYSIS WITH  
2 THE MARKET DATA FOR THE GAS GROUP?

3 A. I have applied the models/methods for estimating the cost of equity using the average  
4 data for the Gas Group. I have not measured separately the cost of equity for the  
5 individual companies within the Gas Group. By employing group average data,  
6 rather than an individual company's analysis, I have helped to minimize the effect of  
7 extraneous influences on the market data for an individual company.

8  
9 Q. PLEASE SUMMARIZE YOUR COST OF EQUITY ANALYSIS.

10 A. My cost of equity determination was derived from the results of the methods/models  
11 identified above. In general, the use of more than one method provides a superior  
12 foundation to arrive at the cost of equity. At any point in time, any single method can  
13 provide an incomplete measure of the cost of equity depending upon extraneous  
14 factors that may influence market sentiment. The specific application of these  
15 methods/models will be described later in my testimony. The following table  
16 provides a summary of the indicated costs of equity using each of these approaches.

	<u>Gas Group</u>
DCF	10.52%
RP	11.71%
CAPM	11.61%
Average	11.28%
Median	11.61%
Mid-point	11.12%

17 An 11.25% rate of return on common equity is a reasonable representation of these

1 results. As such, I recommend that the Commission set MERC's rate of return on  
2 common equity at 11.25%. It should be noted that the results of the market-based  
3 models of the cost of equity apply to the Gas Group. As I will discuss below, the  
4 Company is more risky due to its very small size, its highly variable earned returns,  
5 and high proportion of its throughput to large volume customers. As such, to  
6 recognize these high risk traits, the Company would need to receive a return above  
7 that indicated for the Gas Group in order to compensate it for its higher risk. As I  
8 indicated previously, I have used the Comparable Earnings approach to confirm the  
9 results of the market-based models. Indeed, the result of Comparable Earnings,  
10 which is 14.55%, shows that the market-based models (i.e., DCF, Risk Premium, and  
11 CAPM) provide a reasonable measure of the cost of equity. My recommended rate of  
12 return on common equity of 11.25% makes no provision for the prospect that the rate  
13 of return may not be achieved due to unforeseen events, such as unexpected spikes in  
14 expenses, abrupt changes in customer usage, and abnormal weather events. In  
15 addition, my recommendation is conservative due to the higher risk characteristics of  
16 the Company. As I will later explain, the Company is very small, its earnings  
17 variability is high, it has a higher operating ratio, and its interest coverages are low.  
18 These factors add to the Company's risk profile, and by using the results taken from  
19 the Gas Group, my proposed cost of equity is conservative for the Company in this  
20 case.

21

1 **II. NATURAL GAS RISK FACTORS**

2 Q. WHAT FACTORS CURRENTLY AFFECT THE BUSINESS RISK OF NATURAL  
3 GAS UTILITIES?

4 A. Gas utilities face risks arising from competition, economic regulation, the business  
5 cycle, and customer usage patterns. Today, they operate in a more complex  
6 environment with time frames for decision-making considerably shortened. Their  
7 business profile is influenced by market-oriented pricing for the commodity  
8 distributed to customers and open access for the transportation of natural gas for large  
9 volume customers.

10 Natural gas utilities have focused increased attention on safety and reliability  
11 issues. In order to address these issues and to comply with new and pending pipeline  
12 safety regulations, natural gas companies are now allocating more of their resources  
13 to addressing aging infrastructure issues.

14  
15 Q. PLEASE INDICATE HOW ITS CONSTRUCTION PROGRAM AFFECTS  
16 MERC'S RISK PROFILE.

17 A. The Company is required to undertake investments to maintain and upgrade existing  
18 facilities in its service territory. To maintain safe and reliable service to existing  
19 customers, MERC must invest to upgrade its infrastructure. The Company projects  
20 its construction expenditures will be approximately \$82 million during the period  
21 2010-2014. These expenditures represent approximately 42% (\$82 million ÷ \$196  
22 million) of MERC's net utility plant at December 31, 2009.

23  
24 Q. HOW DOES MERC'S THROUGHPUT TO ITS LARGE VOLUME USERS

1           AFFECT ITS RISK PROFILE?

2    A.    The Company’s risk profile is influenced by natural gas sold/delivered to large  
3           volume customers (including customers engaged in food processing, chemicals, and  
4           taconite mining), which represent approximately 72% of throughput, based on  
5           volumes displayed on Exhibit \_\_\_\_\_ (HWJ-1), page 1 of Schedule E-1. Large  
6           volume users, which have traditionally used transportation service, have the ability to  
7           bypass the Local Distribution Company (LDC) system. To date, MERC has been  
8           proactive in its effort to avoid bypass. Success in this aspect of MERC’s market is  
9           subject to the business cycle, the price of alternative energy sources, and pressures  
10          from competitors. Moreover, external factors can also influence MERC’s throughput  
11          to these customers because cost factors can impact their operations relative to  
12          alternative facilities located outside MERC’s service territory.

13  
14    Q.    DOES YOUR COST OF EQUITY ANALYSIS AND RECOMMENDATION TAKE  
15           INTO ACCOUNT THE REVENUE DECOUPLING MECHANISM (‘RDM’) THAT  
16           IS PROPOSED BY THE COMPANY IN THIS CASE?

17    A.    Yes. The Company proposes to implement a rate structure that is designed to  
18           essentially decouple revenues from variations in sales related to usage due to weather,  
19           energy efficiency efforts, and other factors. The RDM proposal is symmetrical in that  
20           it operates to provide protection to the customer if usage is higher than normal and to  
21           establish charges if usage is lower than normal.

22                   All companies in my Gas Group have some form of a revenue stabilization  
23                   mechanism. Therefore, the market prices of these companies’ common equity and  
24                   estimates of their future growth potential already reflect the value that investors place

1 on revenue stabilization mechanisms. Since I utilized market based models to  
2 determine the Company's cost of equity, my recommendation already reflects any  
3 impacts that revenue stabilization may have on the cost of equity and, thus, no  
4 separate adjustment is warranted to capture any perceived impacts.

5 There are, however, many items that affect earnings variability in addition to  
6 the variability of revenues. So, while the RDM is intended to add stability to  
7 revenues, the Company continues to face variability in operating and capital costs that  
8 will contribute to earnings variability. This is not to say that there are no financial  
9 benefits from decoupling, which does reduce the volatility in utility revenues which  
10 in turn can support utility credit quality. While the RDM proposed in this case will  
11 mitigate some of the risks described above, it will not eliminate the lag in the  
12 recovery of its revenue requirements associated with new capital investment.

13

14 Q. HOW SHOULD THE COMMISSION RESPOND TO THE ISSUES FACING THE  
15 NATURAL GAS UTILITIES AND, IN PARTICULAR, MERC?

16 A. The Commission should recognize and take into account the heightened competitive  
17 environment and the risk it poses to the natural gas business in determining the cost  
18 of capital for MERC, and provide a reasonable opportunity for MERC to actually  
19 achieve its cost of capital. It should also recognize that MERC is subject to risk  
20 related to earnings attrition and regulatory lag since its costs are rising each year.

21



1 each type of capital is directly related to the associated risk of the firm. So while a  
2 company's credit quality risk is shown directly by the rating and yield on its bonds,  
3 these relative risk assessments also bear upon the cost of equity. This is because a  
4 firm's cost of equity is represented by its borrowing cost plus compensation to  
5 recognize the higher risk of an equity investment compared to debt.

6  
7 Q. HOW DO THE BOND RATINGS COMPARE FOR MERC, THE GAS GROUP,  
8 AND THE S&P PUBLIC UTILITIES?

9 A. MERC does not have a credit quality rating from Standard and Poor's Corporation  
10 ("S&P") or from Moody's Investors Services ("Moody's"). Presently, the corporate  
11 credit rating ("CCR") for MERC's parent, Integrys is "BBB+" from S&P and the  
12 Long Term ("LT") issuer rating is "Baa1" from Moody's. The CCR designation by  
13 S&P and LT issuer rating by Moody's focuses upon the credit quality of the issuer of  
14 the debt, rather than upon the debt obligation itself. The average CCR of the Gas  
15 Group is A from S&P and the average LT issuer rating is A3 from Moody's, as  
16 displayed on Schedule 2, page 2. For the S&P Public Utilities, the average composite  
17 rating is BBB+ by S&P and Baa1 by Moody's, as displayed on Schedule 3, page 3.  
18 Many of the financial indicators that I will subsequently discuss are considered during  
19 the rating process.

20  
21 Q. HOW DO THE FINANCIAL DATA COMPARE FOR MERC, THE GAS GROUP,  
22 AND THE S&P PUBLIC UTILITIES?

23 A. The broad categories of financial data that I will discuss are shown on Schedules 1, 2,  
24 and 3. The data covers the five-year period 2005-2009. I have utilized jurisdictional

1 financial reports for the years 2005 through 2006, which represent the sum of the data  
2 provided in Aquila Networks - NMU and PNG Gas Company reports and the July  
3 through December 2006 MERC reports. Data for 2007 through 2009 is drawn from  
4 internal MERC reports. Total capital for the year 2005 was materially higher than  
5 later years due to rate base items allocated from Aquila. The important categories of  
6 relative risk may be summarized as follows:

7 Size. In terms of capitalization, MERC is several orders of magnitude smaller  
8 than the average size of the Gas Group and the S&P Public Utilities. Indeed the  
9 Company's capitalization is less than one-tenth the average of the Gas Group, and is  
10 very much smaller than the average size of the S&P Public Utilities. All other things  
11 being equal, a smaller company is riskier than a larger company because a given  
12 change in revenue and expense has a proportionately greater impact on a small firm.  
13 As I will demonstrate later, the size of a firm can impact its cost of equity. This is the  
14 case for MERC. Such small size significantly elevates the Company's risk profile  
15 and increases its required return.

16 Market Ratios. Market-based financial ratios, such as earnings/price ratios  
17 and dividend yields, provide a partial measure of the investor-required cost of equity.  
18 If all other factors are equal, investors will require a higher rate of return for  
19 companies that exhibit greater risk, in order to compensate for that risk. That is to  
20 say, a firm that investors perceive to have higher risks will experience a lower price  
21 per share in relation to expected earnings.<sup>1</sup>

22 There are no market ratios available for MERC because Integrys owns its

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<sup>1</sup>For example, two otherwise similarly situated firms each reporting \$1.00 in earnings per share would have different market prices at varying levels of risk (i.e., the firm with a higher level of risk will have a lower share value, while the firm with a lower risk profile will have a higher share value).

1 stock. The five-year average price-earnings multiple was somewhat higher for the  
2 Gas Group as compared to the S&P Public Utilities. In 2009, the price-earnings  
3 multiple increased significantly for the Gas Group. The five-year average dividend  
4 yield was fairly similar for the Gas Group and the S&P Public Utilities. The five-year  
5 average market-to-book ratio was fairly similar for the Gas Group and the S&P  
6 Public Utilities.

7 Common Equity Ratio. The level of financial risk is measured by the  
8 proportion of long-term debt and other senior capital that is contained in a company's  
9 capitalization. Financial risk is also analyzed by comparing common equity ratios  
10 (the complement of the ratio of debt and other senior capital). That is to say, a firm  
11 with a high common equity ratio has lower financial risk, while a firm with a low  
12 common equity ratio has higher financial risk. The five-year average common equity  
13 ratios, based on total capital, were 48.0% for MERC, 47.5% for the Gas Group, and  
14 43.5% for the S&P Public Utilities. From a financial risk perspective, MERC has  
15 about the same risk as the Gas Group.

16 Return on Book Equity. Greater variability (i.e., uncertainty) of a firm's  
17 earned returns signifies relatively greater levels of risk, as shown by the coefficient of  
18 variation (standard deviation ÷ mean) of the rate of return on book common equity.  
19 The higher the coefficients of variation, the greater degree of variability. For the five-  
20 year period, the coefficients of variation were 0.780 (3.2% ÷ 4.1%) for MERC, 0.085  
21 (1.0% ÷ 11.8%) for the Gas Group and 0.103 (1.2% ÷ 11.7%) for the S&P Public  
22 Utilities. Throughout the five year period, MERC experienced very poor earned  
23 returns. Not only were the returns poor, the extremely high variability signifies much  
24 higher risk for the Company.

1           Operating Ratios. I have also compared operating ratios (the percentage of  
2 revenues consumed by operating expense, depreciation, and taxes other than  
3 income).<sup>2</sup> The five-year average operating ratios were 94.0% for MERC, 88.8% for  
4 the Gas Group, and 84.4% for the S&P Public Utilities. The Company's higher  
5 operating ratio indicates higher risk for MERC.

6           Coverage. The level of fixed charge coverage (i.e., the multiple by which  
7 available earnings cover fixed charges, such as interest expense) provides an  
8 indication of the earnings protection for creditors. Higher levels of coverage, and  
9 hence earnings protection for fixed charges, are usually associated with superior  
10 grades of creditworthiness. The five-year average interest coverage (excluding  
11 Allowance for Funds Used During Construction ("AFUDC")) was 2.55 times for  
12 MERC, 4.33 times for the Gas Group, and 3.42 times for the S&P Public Utilities.  
13 The Company's low interest coverage signifies higher credit risk for the Company.

14           Quality of Earnings. Measures of earnings quality usually are revealed by the  
15 percentage of AFUDC related to income available for common equity, the effective  
16 income tax rate, and other cost deferrals. These measures of earnings quality usually  
17 influence a firm's internally generated funds because poor quality of earnings would  
18 not generate high levels of cash flow. Quality of earnings has not been a significant  
19 concern for the Gas Group and the S&P Public Utilities.

20           Internally Generated Funds. Internally generated funds ("IGF") provide an  
21 important source of new investment capital for a utility and represent a key measure  
22 of credit strength. Historically, the five-year average percentage of IGF to capital  
23 expenditures was 96.3% for the Gas Group and 88.4% for the S&P Public Utilities.

---

<sup>2</sup>The complement of the operating ratio is the operating margin which provides a measure of profitability. The higher the operating ratio, the lower the operating margin.

1 The 2007-2009 average IGF for MERC was 95.4%.

2 Betas. The financial data that I have been discussing relate primarily to  
3 company-specific risks. Market risk for firms with publicly-traded stock is measured  
4 by beta coefficients. Beta coefficients attempt to identify systematic risk, i.e., the risk  
5 associated with changes in the overall market for common equities.<sup>3</sup> Value Line  
6 publishes such a statistical measure of a stock's relative historical volatility to the rest  
7 of the market. A comparison of market risk is shown by the Value Line beta of 0.65  
8 as the average for the Gas Group (see page 2 of Schedule 2), and 0.77 as the average  
9 for the S&P Public Utilities (see page 3 of Schedule 3).

10

11 Q. PLEASE SUMMARIZE YOUR RISK EVALUATION.

12 A. On a number of counts, MERC's risk is much higher than the Gas Group. In this  
13 regard, the Company's higher risk is revealed by its much smaller size, its much  
14 higher earnings variability as revealed by the coefficient of variation in the Return on  
15 Book Equity category, its higher operating ratio, and its lower interest coverage. In  
16 two instances, the Company's financial risk approximates the Gas Group as shown by  
17 its common equity ratio and its IGF to construction was fairly similar to that of the  
18 Gas Group. On balance, the Gas Group provides a very conservative basis for  
19 measuring MERC's cost of equity for this case, especially in light of several  
20 significant differences that contribute to the Company's higher risk. The factors that  
21 contribute to the Company's higher risk should be recognized when selecting a point  
22 in the range for the cost of equity for MERC. Even though the Company lacks a bond

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<sup>3</sup>The procedure used to calculate the beta coefficient published by Value Line is described in Appendix I. A common stock that has a beta less than 1.0 is considered to have less systematic risk than the market as a whole and would be expected to rise and fall more slowly than the rest of the market. A stock with a beta above 1.0 would have more systematic risk.

1 rating, the fundamental risk analysis that I performed considers many of the elements  
2 that go into the credit rating process used by the bond rating agencies. Hence, my  
3 risk assessments for the Company are useful in establishing the rate of return required  
4 for the Company.

5

1                                    **IV.    COST OF EQUITY – GENERAL APPROACH**

2    Q.    PLEASE DESCRIBE THE PROCESS YOU EMPLOYED TO DETERMINE THE  
3            COST OF EQUITY FOR MERC.

4    A.    Although my fundamental financial analysis provides the required framework to  
5            establish the risk relationships between MERC, the Gas Group and the S&P Public  
6            Utilities, the cost of equity must be measured by standard financial models that I  
7            describe in Appendix D. Differences in risk traits, such as size, business  
8            diversification, geographical diversity, regulatory policy, financial leverage, and bond  
9            ratings must be considered when analyzing the cost of equity indicated by the models.

10                    It also is important to reiterate that no one method or model of the cost of  
11            equity can be applied in an isolated manner. As noted in Appendix D, and  
12            elsewhere in my direct testimony, each of the methods used to measure the cost of  
13            equity contains certain incomplete and/or overly restrictive assumptions and  
14            constraints that are not optimal. Therefore, I favor considering the results from a  
15            variety of methods. In this regard, I applied each of the methods with data taken from  
16            the Gas Group and have arrived at a cost of equity of 11.25% for MERC.

17



1 A. The DCF methodology requires the use of an expected dividend yield to establish the  
2 investor-required cost of equity. For the twelve months ended June 2010, the  
3 monthly dividend yields of the Gas Group are shown graphically on Schedule 4. The  
4 monthly dividend yields shown on Schedule 4 reflect an adjustment to the month-end  
5 prices to reflect the build up of the dividend in the price that has occurred since the  
6 last ex-dividend date (i.e., the date by which a shareholder must own the shares to be  
7 entitled to the dividend payment – usually about two to three weeks prior to the actual  
8 payment). An explanation of this adjustment is provided in Appendix E.

9 For the twelve months ending June 2010, the average dividend yield was  
10 4.19% for the Gas Group based upon a calculation using annualized dividend  
11 payments and adjusted month-end stock prices. The dividend yields for the more  
12 recent six- and three- month periods were 4.14% and 4.12%, respectively. I have  
13 used, for the purpose of my direct testimony, a dividend yield of 4.14% for the Gas  
14 Group, which represents the six-month average yield. The use of this dividend yield  
15 will reflect current capital costs while avoiding spot yields.

16 For the purpose of a DCF calculation, the average dividend yield must be  
17 adjusted to reflect the prospective nature of the dividend payments i.e., the higher  
18 expected dividends for the future. Recall that the DCF is an expectational model that  
19 must reflect investor anticipated cash flows for the Gas Group. I have adjusted the  
20 six-month average dividend yield in three different, but generally accepted manners,  
21 and used the average of the three adjusted values as calculated in Appendix E. That  
22 adjusted dividend yield is 4.26% for the Gas Group.

23

24 Q. PLEASE EXPLAIN THE UNDERLYING FACTORS THAT INFLUENCE

1 INVESTOR'S GROWTH EXPECTATIONS.

2 A. As noted previously, investors are interested principally in the future growth of their  
3 investment (i.e., the price per share of the stock). As I explain in Appendix E, future  
4 earnings per share growth represents the DCF models primary focus because under  
5 the constant price-earnings multiple assumption of the model, the price per share of  
6 stock will grow at the same rate as earnings per share. In conducting a growth rate  
7 analysis, a wide variety of variables can be considered when reaching a consensus of  
8 prospective growth. The variables that can be considered include: earnings,  
9 dividends, book value, and cash flow stated on a per share basis. Historical values for  
10 these variables can be considered, as well as analysts' forecasts that are widely  
11 available to investors. A fundamental growth rate analysis also can be formulated,  
12 which consists of internal growth (" $b \times r$ "), where " $r$ " represents the expected rate of  
13 return on common equity and " $b$ " is the retention rate that consists of the fraction of  
14 earnings that are not paid out as dividends. The internal growth rate can be modified  
15 to account for sales of new common stock -- this is called external growth (" $s \times v$ "),  
16 where " $s$ " represents the new common shares expected to be issued by a firm and " $v$ "  
17 represents the value that accrues to existing shareholders from selling stock at a price  
18 different from book value. Fundamental growth, which combines internal and  
19 external growth, provides an explanation of the factors that cause book value per  
20 share to grow over time. Hence, a fundamental growth rate analysis is duplicative of  
21 expected book value per share growth.

22 Growth also can be expressed in multiple stages. This expression of growth  
23 consists of an initial "growth" stage where a firm enjoys rapidly expanding markets,  
24 high profit margins, and abnormally high growth in earnings per share. Thereafter, a

1 firm enters a “transition” stage where fewer technological advances and increased  
2 product saturation begin to reduce the growth rate and profit margins come under  
3 pressure. During the “transition” phase, investment opportunities begin to mature,  
4 capital requirements decline, and a firm begins to pay out a larger percentage of  
5 earnings to shareholders. Finally, the mature or “steady-state” stage is reached when  
6 a firm’s earnings growth, payout ratio, and return on equity stabilizes at levels where  
7 they remain for the life of a firm. The three stages of growth assume a step-down of  
8 high initial growth to lower sustainable growth. Even if these three stages of growth  
9 can be envisioned for a firm, the third “steady-state” growth stage, which is assumed  
10 to remain fixed in perpetuity, represents an unrealistic expectation because the three  
11 stages of growth can be repeated. That is to say, the stages can be repeated where  
12 growth for a firm ramps-up and ramps-down in cycles over time.

13  
14 Q. WHAT INVESTOR-EXPECTED GROWTH RATE IS APPROPRIATE IN A DCF  
15 CALCULATION?

16 A. Investors consider both company-specific variables and overall market sentiment (i.e.,  
17 level of inflation rates, interest rates, economic conditions, etc.) when balancing their  
18 capital gains expectations with their dividend yield requirements. I follow an  
19 approach that is not rigidly formatted because investors are not influenced by a single  
20 set of company-specific variables weighted in a formulaic manner. Therefore, in my  
21 opinion, all relevant growth rate indicators using a variety of techniques must be  
22 evaluated when formulating a judgment of investor expected growth.

23  
24 Q. WHAT COMPANY-SPECIFIC DATA HAVE YOU CONSIDERED IN YOUR

1 GROWTH RATE ANALYSIS?

2 A. I have considered the growth in the financial variables shown on Schedule 5 and  
3 Schedule 6. The bar graph provided on Schedule 5 shows the historical growth rates  
4 in earnings per share, dividends per share, book value per share, and cash flow per  
5 share for the Gas Group. The historical growth rates were taken from the Value Line  
6 publication that provides these data. As shown on Schedule 5, the historical growth  
7 of earnings per share was in the range of 6.71% (10 year) to 7.50% (5 year) for the  
8 Gas Group.

9 Schedule 6 provides projected earnings per share growth rates taken from  
10 analysts' forecasts compiled by IBES/First Call, Zacks, Morningstar, and from the  
11 Value Line publication. IBES/First Call, Zacks, and Morningstar represent reliable  
12 authorities of projected growth upon which investors rely. The IBES/First Call,  
13 Zacks, and Morningstar forecasts are limited to earnings per share growth, while  
14 Value Line makes projections of other financial variables. The Value Line forecasts  
15 of dividends per share, book value per share, and cash flow per share have also been  
16 included on Schedule 6 for the Gas Group.

17 Although five-year forecasts usually receive the most attention in the growth  
18 analysis for DCF purposes, present market performance has been strongly influenced  
19 by short-term earnings forecasts. Each of the major publications provides earnings  
20 forecasts for the current and subsequent year. These short-term earnings forecasts  
21 receive prominent coverage, and indeed they dominate these publications.

22

23 Q. IS A FIVE-YEAR INVESTMENT HORIZON ASSOCIATED WITH THE  
24 ANALYSTS' FORECASTS CONSISTENT WITH THE DCF MODEL?

1 A. Yes. In fact, it illustrates that the infinite form of the model contains an unrealistic  
2 assumption. Rather than viewing the DCF in the context of an endless stream of  
3 growing dividends (e.g., a century of cash flows), the growth in the share value (i.e.,  
4 capital appreciation, or capital gains yield) is most relevant to investors' total return  
5 expectations. Hence, the sale price of a stock can be viewed as a liquidating dividend  
6 that can be discounted along with the annual dividend receipts during the investment-  
7 holding period to arrive at the investor expected return. The growth in the price per  
8 share will equal the growth in earnings per share absent any change in price-earnings  
9 ("P-E") multiple -- a necessary assumption of the DCF. As such, my company-  
10 specific growth analysis, which focuses principally upon five-year forecasts of  
11 earnings per share growth, conforms with the type of analysis that influences the total  
12 return expectation of investors. Moreover, academic research focuses on five-year  
13 growth rates as they influence stock prices. Indeed, if investors really required  
14 forecasts which extended beyond five years in order to properly value common  
15 stocks, then I am sure that some investment advisory service would begin publishing  
16 that information for individual stocks in order to meet the demands of investors. The  
17 absence of such a publication signals that investors do not require infinite forecasts in  
18 order to purchase and sell stocks in the marketplace.

19  
20 Q. WHAT SPECIFIC EVIDENCE HAVE YOU CONSIDERED IN THE DCF  
21 GROWTH ANALYSIS?

22 A. As to the five-year forecast growth rates, Schedule 6 indicates that the projected  
23 earnings per share growth rates for the Gas Group are 4.78% by IBES/First Call,  
24 5.55% by Zacks, 6.06% by Morningstar, and 4.71% by Value Line. The Value Line

1 projections indicate that earnings per share for the Gas Group will grow prospectively  
2 at a more rapid rate (i.e., 4.71%) than the dividends per share (i.e., 4.00%), which  
3 indicates a declining dividend payout ratio for the future. As indicated earlier, and in  
4 Appendix E, with the constant price-earnings multiple assumption of the DCF model,  
5 growth for these companies will occur at the higher earnings per share growth rate,  
6 thus producing the capital gains yield expected by investors.

7  
8 Q. WHAT CONCLUSION HAVE YOU DRAWN FROM THESE DATA  
9 REGARDING THE APPLICABLE GROWTH RATE TO BE USED IN THE DCF  
10 MODEL?

11 A. Although ideally historical and projected earnings per share and dividends per share  
12 growth indicators would be used to provide an assessment of investor growth  
13 expectations for a firm, the circumstances of the Gas Group mandate that the greater  
14 emphasis be placed upon projected earnings per share growth. In this regard, it is  
15 worthwhile to note that Professor Myron Gordon, the foremost proponent of the DCF  
16 model in rate cases, concluded that the best measure of growth in the DCF model is  
17 forecasts of earnings per share growth. Hence, to follow Professor Gordon's  
18 findings, projections of earnings per share growth, such as those published by  
19 IBES/First Call, Zacks, Morningstar, and Value Line, represents a reasonable  
20 assessment of investor expectations.

21 It is appropriate to consider all forecasts of earnings growth rates that are  
22 available to investors. In this regard, I have considered the forecasts from IBES/First  
23 Call, Zacks, Morningstar, and Value Line. The IBES/First Call and Zacks growth  
24 rates are consensus forecasts taken from a survey of analysts that make projections of

1 growth for these companies. The IBES/First Call, Zacks, and Morningstar estimates  
2 are obtained from the Internet and are widely available to investors free-of-charge.  
3 First Call is probably quoted most frequently in the financial press when reporting on  
4 earnings forecasts. The Value Line forecasts are also widely available to investors  
5 and can be obtained by subscription or free-of-charge at most public and collegiate  
6 libraries.

7 The forecasts of earnings per share growth as shown on Schedule 6 provide a  
8 range of growth rates of 4.71% to 6.06%. While the DCF growth rates cannot be  
9 established solely with a mathematical formulation, it is my opinion that an investor-  
10 expected growth rate of 5.50% is within the array of earnings per share growth rates  
11 shown by the analysts' forecasts. The Value Line forecast of dividend per share  
12 growth is inadequate in this regard due to the forecast decline in the dividend payout  
13 that I previously described. As previously indicated, the restructuring and  
14 consolidation now taking place in the utility industry will provide additional risks and  
15 opportunities as the utility industry successfully adapts to the new business  
16 environment. These changes in growth fundamentals will undoubtedly develop  
17 beyond the next five years typically considered in the analysts' forecasts that will  
18 enhance the growth prospects for the future. As such, a 5.50% growth rate will  
19 accommodate all these factors.

20  
21 Q. ARE THE DIVIDEND YIELD AND GROWTH COMPONENTS OF THE DCF  
22 ADEQUATE TO EXPLAIN THE RATE OF RETURN ON COMMON EQUITY  
23 WHEN IT IS USED IN THE CALCULATION OF THE WEIGHTED AVERAGE  
24 COST OF CAPITAL?

1 A. Only if the capital structure ratios are measured with the market value of debt and  
2 equity. If book values are used to compute the capital structure ratios, then an  
3 adjustment is required.  
4

5 Q. PLEASE EXPLAIN WHY.

6 A. If regulators use the results of the DCF (which are based on the market price of the  
7 stock of the companies analyzed) to compute the weighted average cost of capital  
8 based on a book value capital structure used for ratesetting purposes, the utility will  
9 not, by definition, recover its risk-adjusted capital cost. This is because market  
10 valuations of equity are based on market value capital structures, which in general  
11 have more equity and less debt and therefore reflect less risk than book value capital  
12 structures. The utility's risk-adjusted cost of equity will necessarily be lower with the  
13 market value capital structure than it is relative to the book value capital structure.  
14 The difference represents that portion of the utility's cost of equity that it will not  
15 recover unless either the market value cost of equity is applied to the utility's market  
16 value capital structure or it is adjusted to reflect the higher risk associated with the  
17 book value capital structure. By the same token, if the utility's market value capital  
18 structure is less than its book value structure, then the utility's market cost of equity  
19 should be adjusted downward to reflect the lower risk associated with the book value  
20 capital structure, or else the utility will over-recover its total cost of equity.  
21 This shortcoming of the DCF has persuaded the Pennsylvania Public Utility  
22 Commission to adjust the DCF determined cost of equity upward to make the return  
23 consistent with the book value capital structure. Specific adjustments to recognize  
24 this risk difference were made in the following cases:

- 1 • January 10, 2002 for Pennsylvania-American Water Company in Docket No. R-  
2 00016339 -- 60 basis points adjustment.
- 3 • August 1, 2002 for Philadelphia Suburban Water Company in Docket No. R-  
4 00016750 -- 80 basis points adjustment.
- 5 • January 29, 2004 for Pennsylvania-American Water Company in Docket No. R-  
6 00038304 (affirmed by the Commonwealth Court on November 8, 2004) -- 60  
7 basis points adjustment.
- 8 • August 5, 2004 for Aqua Pennsylvania, Inc. in Docket No. R-00038805 -- 60  
9 basis points adjustment.
- 10 • December 22, 2004 for PPL Electric Utilities Corporation in Docket No. R-  
11 00049255 -- 45 basis points adjustment.
- 12 • February 8, 2007 for PPL Gas Utilities Corporation in Docket No. R-00061398 --  
13 70 basis points adjustment.
- 14

15 In order to make the DCF results relevant to the capitalization measured at book value  
16 (as is done for rate setting purposes), the market-derived cost rate cannot be used  
17 without modification.

18

19 Q. IS YOUR LEVERAGE ADJUSTMENT DEPENDENT UPON THE MARKET  
20 VALUATION OR BOOK VALUATION FROM AN INVESTOR'S  
21 PERSPECTIVE?

22 A. The only perspective that is important to investors is the return that they can realize  
23 on the market value of their investment. As I have measured the DCF, the simple  
24 yield (D/P) plus growth (g) provides a return applicable strictly to the price (P) that an  
25 investor is willing to pay for a share of stock. The DCF formula is derived from the  
26 standard valuation model:  $P = D/(k-g)$ , where P = price, D = dividend, k = the cost of  
27 equity, and g = growth in cash flows. By rearranging the terms, we obtain the  
28 familiar DCF equation:  $k = D/P + g$ . All of the terms in the DCF equation represent  
29 investors' assessment of expected future cash flows that they will receive in relation  
30 to the value that they set for a share of stock (P). The need for the leverage  
31 adjustment arises when the results of the DCF model (k) are to be applied to a capital

1 structure that is different than that which underlies the market price (P). From the  
2 market perspective, the financial risk of the Gas Group is accurately measured by the  
3 capital structure ratios calculated from the firms' market capitalizations. If the  
4 ratesetting process utilized the market capitalization ratios, then no additional analysis  
5 or adjustment would be required, and the simple yield (D/P) plus growth (g)  
6 components of the DCF would satisfy the financial risk associated with the market  
7 value of the equity capitalization. Since the ratesetting process uses a different set of  
8 ratios calculated from the book value capitalization, then further analysis is required  
9 to synchronize the financial risk of the book capitalization with the required return on  
10 the book value of the equity, and to ensure that the utility recovers its total cost of  
11 equity. This adjustment is developed through precise mathematical calculations,  
12 using well recognized analytical procedures that are widely accepted in the financial  
13 literature. To arrive at that return, the rate of return on common equity is the  
14 unleveraged cost of capital (or equity return at 100% equity) plus one or more terms  
15 reflecting the increase in financial risk resulting from the use of leverage in the capital  
16 structure. Multiple terms are used in the case of debt and preferred stock.

17

18 Q. ARE THERE SPECIFIC FACTORS THAT INFLUENCE MARKET-TO-BOOK  
19 RATIOS THAT DETERMINE WHETHER THE LEVERAGE ADJUSTMENT  
20 SHOULD BE MADE?

21 A. No, there are not. The leverage adjustment is not intended, nor was it designed, to  
22 address the reasons that stock prices vary from book value. Hence, any observations  
23 concerning market prices relative to book are not on point. The leverage adjustment  
24 deals with the issue of financial risk and is not intended to transform the DCF result

1 to a book value return through a market-to-book adjustment. Again, the leverage  
2 adjustment that I propose is based on the fundamental financial precept that the cost  
3 of equity is equal to the rate of return for an unleveraged firm (i.e., where the overall  
4 rate of return equates to the cost of equity with a capital structure that contains 100%  
5 equity) plus the additional return required for introducing debt and/or preferred stock  
6 leverage into the capital structure.

7 Further, as noted previously, the high market prices of utility stocks cannot be  
8 attributed solely to the notion that these companies are expected to earn a return on  
9 equity that differs from their cost of equity. Stock prices above book value are  
10 common for utility stocks, and indeed the stock prices of non-regulated companies  
11 exceed book values by even greater margins. In this regard, according to the Barron's  
12 issue of July 12, 2010, the major market indices' market-to-book ratios are well  
13 above unity. The Dow Jones Utility index traded at a multiple of 1.58 times book  
14 value, which is below the market multiple of other indices. For example, the S&P  
15 Industrial index was at 2.97 times book value, and the Dow Jones Industrial index  
16 was at 4.52 times book value. It is difficult to accept that the vast majority of all  
17 firms operating in our economy are generating returns far in excess of their cost of  
18 capital. Certainly, in our free-market economy, competition should contain such  
19 "excesses" if they indeed exist.

20 Finally, the leverage adjustment adds stability to the final DCF cost rate. That  
21 is to say, as the market capitalization increases relative to its book value, the leverage  
22 adjustment increases while the simple yield (D/P) plus growth (g) result declines.  
23 The reverse is also true that when the market capitalization declines, the leverage  
24 adjustment also declines as the simple yield (D/P) plus growth (g) result increases.

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Q. HOW IS THE DCF-DETERMINED COST OF EQUITY ADJUSTED FOR THE FINANCIAL RISK ASSOCIATED WITH THE BOOK VALUE OF THE CAPITALIZATION?

A. In pioneering work, Nobel laureates Modigliani and Miller developed several theories about the role of leverage in a firm's capital structure. As part of that work, Modigliani and Miller established that, as the borrowing of a firm increases, the expected return on stockholders' equity also increases. This principle is incorporated into my leverage adjustment which recognizes that the expected return on equity increases to reflect the increased risk associated with the higher financial leverage shown by the book value capital structure, as compared to the market value capital structure that contains lower financial risk. Modigliani and Miller proposed several approaches to quantify the equity return associated with various degrees of debt leverage in a firm's capital structure. These formulas point toward an increase in the equity return associated with the higher financial risk of the book value capital structure. The leverage adjustment expresses the cost of equity as the unleveraged return plus compensation for the additional risk of introducing debt and/or preferred stock into the capital structure. There can be no dispute that a firm's financial risk varies with the relative amount of leverage contained in its capital structure. As detailed in Appendix E, the Modigliani and Miller theory when applied to the Gas Group shows that the cost of equity increases by 0.55% (10.31% - 9.76%) when the book value of equity, rather than the market value of equity, is used for ratesetting purposes.

1 Q. PLEASE PROVIDE THE DCF RETURN BASED UPON YOUR PRECEDING  
2 DISCUSSION OF DIVIDEND YIELD, GROWTH, AND LEVERAGE.

3 A. As explained previously, I have utilized a six-month average dividend yield (" $D_1$   
4  $/P_0$ ") adjusted in a forward-looking manner for my DCF calculation. This dividend  
5 yield is used in conjunction with the growth rate (" $g$ ") previously developed. The  
6 DCF also includes the leverage modification (" $lev.$ ") required when the book value  
7 equity ratio is used in determining the weighted average cost of capital in the  
8 ratesetting process rather than the market value equity ratio related to the price of  
9 stock.

10

11 Q. ARE ANY OTHER ADJUSTMENTS REQUIRED TO ESTABLISH THE DCF  
12 RETURN?

13 A. Yes. The cost of equity must also include an adjustment to cover flotation costs  
14 ("flot."). The factor used to develop the modification that would account for the  
15 flotation costs adjustment is provided in Schedule 7 and Appendix F. Therefore, a  
16 flotation costs adjustment must be applied to the DCF result (i.e., " $k$ ") that provides  
17 an additional increment to the rate of return on equity (i.e., " $K$ "). The factor used to  
18 develop the modification that would account for the flotation costs adjustment is  
19 provided in Schedule 70 and Appendix F. The resulting DCF cost rate is:

$$D/P + g + lev. = k \times flot. = K$$
$$4.26\% + 5.50\% + 0.55\% = 10.31\% \times 1.02 = 10.52\%$$

20 As indicated by the DCF result shown above, the flotation cost adjustment adds  
21 0.21% (10.52% - 10.31%) to the rate of return on common equity for the Gas Group.  
22 In my opinion, this adjustment is reasonable for reasons explained in Appendix F.

1 Q. DO YOU HAVE OTHER COMMENTS ON THE RESULTS OF THE DCF  
2 RETURN?

3 A. Yes. The DCF result shown above represents the simplified (i.e., Gordon) form of  
4 the model that contains a constant growth assumption. I should reiterate, however,  
5 that the DCF indicated cost rate provides an explanation of the rate of return on  
6 common stock market prices without regard to the prospect of a change in the price-  
7 earnings multiple. An assumption that there will be no change in the price-earnings  
8 multiple is not supported by the realities of the equity market, because price-earnings  
9 multiples do not remain constant. This is one of the constraints of this model that  
10 makes it important to consider other model results when determining a company's  
11 cost of equity. As I noted previously in my testimony, there are a number of factors  
12 that add to the Company's risk. Hence, use of the DCF results from the Gas Group  
13 provide a very conservative measure of the Company's cost of equity due to its higher  
14 risk profile. The significantly higher risk profile of MERC in comparison to the Gas  
15 Group, shown qualitatively and quantitatively in my fundamental risk analysis,  
16 establish the need to select a higher point in the range of my return on equity analyses  
17 than the DCF result.

18  
19 Q. IS YOUR LEVERAGE ADJUSTMENT DESIGNED TO TRANSFORM THE  
20 MARKET RETURN INTO ONE THAT IS DESIGNED TO PRODUCE A  
21 PARTICULAR MARKET-TO-BOOK RATIO?

22 A. No, it is not. The adjustment that I label as a "leverage adjustment" is merely a  
23 convenient way of showing the amount that must be added to (or subtracted from) the  
24 result of the simple DCF model (i.e.,  $D/P + g$ ), in the context of a return that applies

1 to the capital structure used in ratemaking, which is computed with book value  
2 weights rather than market value weights, in order to arrive at the utility's total cost of  
3 equity. I specify a separate factor, which I call the leverage adjustment, but there is  
4 no need to do so other than providing identification for this factor. If I expressed my  
5 return solely in the context of the book value weights that we use to calculate the  
6 weighted average cost of capital, and ignore the familiar  $D/P + g$  expression entirely,  
7 then there would be no separate element to reflect the financial leverage change from  
8 market value to book value capitalization. This is because the equity return  
9 applicable to the book value common equity ratio is equal to 8.75%, which is the  
10 return for the Gas Group applicable to its equity with no debt in its capital structure  
11 (i.e., the cost of capital is equal to the cost of equity with a 100% equity ratio) plus  
12 1.55% compensation for having a 43.81% debt ratio, plus 0.01% for having a 0.24%  
13 preferred stock ratio (see pages E-12 and E-13 of Appendix E). The sum of the parts  
14 is 10.31% ( $8.75\% + 1.55\% + 0.01\%$ ) and there is no need to even address the cost of  
15 equity in terms of  $D/P + g$ . To express this same return in the context of the familiar  
16 DCF model, I summed the 4.26% dividend yield, the 5.50% growth rate, and the  
17 0.55% for the leverage adjustment in order to arrive at the same 10.31% ( $4.26\% +$   
18  $5.50\% + 0.55\%$ ) return. I know of no means to mathematically solve for the 0.55%  
19 leverage adjustment by expressing it in the terms of any particular relationship of  
20 market price to book value. The 0.55% adjustment is merely a convenient way to  
21 compare the 10.31% return computed directly with the Modigliani & Miller formulas  
22 to the 9.76% return generated by the DCF model based on a market value capital  
23 structure. My point is that when we use a market-determined cost of equity  
24 developed from the DCF model, it reflects a level of financial risk that is different (in

1           this case, lower) from the capital structure stated at book value. This process has  
2           nothing to do with targeting any particular market-to-book ratio.

3

1 **VI. RISK PREMIUM ANALYSIS**

2 Q. PLEASE DESCRIBE YOUR USE OF THE RISK PREMIUM APPROACH TO  
3 DETERMINE THE COST OF EQUITY.

4 A. The details of my use of the Risk Premium approach and the evidence in support of  
5 my conclusions are set forth in Appendices G and H. I will summarize them here.  
6 With this method, the cost of equity capital is determined by corporate bond yields  
7 plus a premium to account for the fact that common equity is exposed to greater  
8 investment risk than debt capital. As with other models of the cost of equity, the Risk  
9 Premium approach has its limitations, including potential imprecision in the  
10 assessment of the future cost of corporate debt and the measurement of the risk-  
11 adjusted common equity premium.

12  
13 Q. WHAT LONG-TERM PUBLIC UTILITY DEBT COST RATE DID YOU USE IN  
14 YOUR RISK PREMIUM ANALYSIS?

15 A. In my opinion, a 6.00% yield represents a reasonable estimate of the prospective yield  
16 on long-term A-rated public utility bonds. The Moody's index and the Blue Chip  
17 forecasts support this figure.

18 The historical yields for long-term public utility debt are shown graphically on  
19 page 1 of Schedule 8. For the twelve months ended June 2010, the average monthly  
20 yield on Moody's A-rated index of public utility bonds was 5.70%. For the six and  
21 three-month periods ending June 2010, the yields were 5.71% and 5.59%,  
22 respectively.

23  
24 Q. WHAT FORECASTS OF INTEREST RATES HAVE YOU CONSIDERED IN

1 YOUR ANALYSIS?

2 A. I have determined the prospective yield on A-rated public utility debt by using the Blue  
3 Chip Financial Forecasts (“Blue Chip”) along with the spread in the yields that I  
4 describe above and in Appendix G. The Blue Chip is a reliable authority and contains  
5 consensus forecasts of a variety of interest rates compiled from a panel of banking,  
6 brokerage, and investment advisory services. In early 1999, Blue Chip stopped  
7 publishing forecasts of yields on A-rated public utility bonds because the Federal  
8 Reserve deleted these yields from its Statistical Release H.15. To independently  
9 project a forecast of the yields on A-rated public utility bonds, I have combined the  
10 forecast yields on long-term Treasury bonds published on July 1, 2010, and the yield  
11 spread of 1.25% that I describe in Appendix G and Schedule 8. For comparative  
12 purposes, I have also shown the Blue Chip of Aaa-rated and Baa-rated corporate bonds.

13 These forecasts are:

<u>Year</u>	<u>Quarter</u>	<u>Corporate</u>		<u>30-Year Treasury</u>	<u>A-rated Public Utility</u>	
		<u>Aaa-rated</u>	<u>Baa-rated</u>		<u>Spread</u>	<u>Yield</u>
2010	Third	5.0%	6.2%	4.3%	1.25%	5.55%
2010	Fourth	5.1%	6.2%	4.5%	1.25%	5.75%
2011	First	5.3%	6.4%	4.7%	1.25%	5.95%
2011	Second	5.5%	6.6%	4.8%	1.25%	6.05%
2011	Third	5.6%	6.8%	5.0%	1.25%	6.25%
2011	Fourth	5.8%	6.9%	5.1%	1.25%	6.35%

14 Q. ARE THERE ADDITIONAL FORECASTS OF INTEREST RATES THAT EXTEND  
15 BEYOND THOSE SHOWN ABOVE?

16 A. Yes. Twice yearly, Blue Chip provides long-term forecasts of interest rates. In its June  
17 1, 2010 publication, the Blue Chip published longer-term forecasts of interest rates,  
18 which were reported to be:

Blue Chip Financial Forecasts			
Averages	Corporate		30-Year
	Aaa-rated	Baa-rated	Treasury
2012-16	6.5%	7.6%	5.8%
2017-21	6.6%	7.6%	5.8%

1           Given these forecast interest rates, a 6.00% yield on A-rated public utility bonds  
2           represents a reasonable expectation.

3

4   Q.    WHAT EQUITY RISK PREMIUM HAVE YOU DETERMINED FOR PUBLIC  
5           UTILITIES?

6   A.    Appendix H provides a discussion of the financial returns that I relied upon to  
7           develop the appropriate equity risk premium for the S&P Public Utilities. I have  
8           calculated the equity risk premium by comparing the market returns on utility stocks  
9           and the market returns on utility bonds. I chose the S&P Public Utility index for the  
10          purpose of measuring the market returns for utility stocks. The S&P Public Utility  
11          index is reflective of the risk associated with regulated utilities, rather than some  
12          broader market indexes, such as the S&P 500 Composite index. The S&P Public  
13          Utility index is a subset of the overall S&P 500 Composite index. Use of the S&P  
14          Public Utility index reduces the role of judgment in establishing the risk premium for  
15          public utilities. With the equity risk premiums developed for the S&P Public Utilities  
16          as a base, I derived the equity risk premium for the Gas Group.

17

18   Q.    WHAT EQUITY RISK PREMIUM FOR THE S&P PUBLIC UTILITIES HAVE  
19           YOU DETERMINED FOR THIS CASE?

20   A.    To develop an appropriate risk premium, I analyzed the results for the S&P Public  
21           Utilities by averaging (i) the midpoint of the range shown by the geometric mean and

1 median and (ii) the arithmetic mean. This procedure has been employed to provide a  
2 comprehensive way of measuring the central tendency of the historical returns. As  
3 shown by the values set forth on page 2 of Schedule 9, the indicated risk premiums  
4 for the various time periods analyzed are 5.51% (1928-2007), 6.58% (1952-2007),  
5 6.08% (1974-2007), and 6.37% (1979-2007). The selection of the shorter periods  
6 taken from the entire historical series is designed to provide a risk premium that  
7 conforms more nearly to present investment fundamentals, and removes some of the  
8 more distant data from the analysis.

9

10 Q. DO YOU HAVE FURTHER SUPPORT FOR THE SELECTION OF THE TIME  
11 PERIODS USED IN YOUR EQUITY RISK PREMIUM DETERMINATION?

12 A. Yes. First, the terminal year of my analysis presented in Schedule 9 represents the  
13 returns realized through 2007. An update to 2009 has not been prepared because of  
14 the difficulty in obtaining the return on public utility bonds from Lehman brothers,  
15 which is in bankruptcy. Second, the selection of the initial year of each period was  
16 based upon the financial market defining events that I note here and described in  
17 Appendix H. These events were fixed in history and cannot be manipulated as later  
18 financial data becomes available. That is to say, using the Treasury-Federal Reserve  
19 Accord as a defining event, the year 1952 is fixed as the beginning point for the  
20 measurement period regardless of the financial results that subsequently occurred.  
21 Likewise, 1974 represented a benchmark year because it followed the 1973 Arab Oil  
22 embargo. Also, the year 1979 was chosen because it began the deregulation of the  
23 financial markets. I consistently use these periods in my work, and additional data  
24 are merely added to the earlier results when they become available. The periods

1 chosen are therefore not driven by the desired results of the study.

2

3 Q. WHAT CONCLUSIONS HAVE YOU DRAWN FROM THESE DATA?

4 A. Using the summary values provided on page 2 of Schedule 9, the 1928-2007 period  
5 provides the lowest indicated risk premium, while the 1952-2007 period provides the  
6 highest risk premium for the S&P Public Utilities. Within these bounds, a common  
7 equity risk premium of 6.23% ( $6.08\% + 6.37\% = 12.45\% \div 2$ ) is shown from data  
8 covering the periods 1974-2007 and 1979-2007. Therefore, 6.23% represents a  
9 reasonable risk premium for the S&P Public Utilities in this case.

10 As noted earlier in my fundamental risk analysis, differences in risk  
11 characteristics must be taken into account when applying the results for the S&P  
12 Public Utilities to the Gas Group. I recognized these differences in the development  
13 of the equity risk premium in this case. I previously enumerated various differences  
14 in fundamentals between the Gas Group and the S&P Public Utilities, including size,  
15 market ratios, common equity ratio, return on book equity, operating ratios, coverage,  
16 quality of earnings, internally generated funds, and betas. In my opinion, these  
17 differences indicate that 5.50% represents a reasonable common equity risk premium  
18 in this case. This represents approximately 88% ( $5.50\% \div 6.23\% = 0.88$ ) of the risk  
19 premium of the S&P Public Utilities and is reflective of the risk of the Gas Group  
20 compared to the S&P Public Utilities.

21

22 Q. WHAT COMMON EQUITY COST RATE DID YOU DETERMINE USING THIS  
23 RISK PREMIUM ANALYSIS?

24 A. The cost of equity (i.e., “k”) is represented by the sum of the prospective yield for

1 long-term public utility debt (i.e., “i”) and the equity risk premium (i.e., “RP”). To  
2 that cost must be added an adjustment for common stock financing costs (“flot.”).

3 The Risk Premium approach provides a cost of equity of:

$$i + RP = k + flot. = K$$

4 Gas Group 6.00% + 5.50% = 11.50% + 0.21% = 11.71%

5

1 **VII. CAPITAL ASSET PRICING MODEL**

2 Q. HAVE YOU USED THE CAPITAL ASSET PRICING MODEL TO MEASURE  
3 THE COST OF EQUITY IN THIS CASE?

4 A. Yes, I have used the Capital Asset Pricing Model (“CAPM”) in addition to my other  
5 methods. As with other models of the cost of equity, the CAPM contains a variety of  
6 assumptions and shortcomings that I discuss in Appendix I. Therefore, this method  
7 should be used with other methods to measure the cost of equity, as each will  
8 complement the other and will provide a result that will alleviate the unavoidable  
9 shortcomings found in each method.

10  
11 Q. WHAT ARE THE FEATURES OF THE CAPM AS YOU HAVE USED IT?

12 A. The CAPM uses the yield on a risk-free interest bearing obligation plus a rate of  
13 return premium that is proportional to the systematic risk of an investment. The  
14 details of my use of the CAPM and evidence in support of my conclusions are set  
15 forth in Appendix I. To compute the cost of equity with the CAPM, three  
16 components are necessary: a risk-free rate of return (“Rf”), the beta measure of  
17 systematic risk (“β”), and the market risk premium (“Rm-Rf”) derived from the total  
18 return on the market of equities reduced by the risk-free rate of return. The CAPM  
19 specifically accounts for differences in systematic risk (i.e., market risk as measured  
20 by the beta) between an individual firm or group of firms and the entire market of  
21 equities. As such, to calculate the CAPM it is necessary to employ firms with traded  
22 stocks. In this regard, I performed a CAPM calculation for the Gas Group. In  
23 contrast, my Risk Premium approach also considers industry- and company-specific  
24 factors because it is not limited to measuring just systematic risk. As a consequence,

1 the Risk Premium approach is more comprehensive than the CAPM. In addition, the  
2 Risk Premium approach provides a better measure of the cost of equity because it is  
3 founded upon the yields on corporate bonds rather than Treasury bonds.

4  
5 Q. WHAT BETAS HAVE YOU CONSIDERED IN THE CAPM?

6 A. For my CAPM analysis, I initially considered the Value Line betas. As shown on  
7 page 1 of Schedule 10, the average beta is 0.65 for the Gas Group.

8  
9 Q. WHAT BETAS HAVE YOU USED IN THE CAPM DETERMINED COST OF  
10 EQUITY?

11 A. The betas must be reflective of the financial risk associated with the ratesetting  
12 capital structure that is measured at book value. Therefore, Value Line betas cannot  
13 be used directly in the CAPM, unless those betas are applied to a capital structure  
14 measured with market values. To develop a CAPM cost rate applicable to a book  
15 value capital structure, the Value Line (market value) betas have been unleveraged  
16 and releveraged for the book value common equity ratios using the Hamada formula.<sup>4</sup>  
17 This adjustment has been made with the formula:

18 
$$\beta_l = \beta_u [1 + (1 - t) D/E + P/E]$$

19 where  $\beta_l$  = the leveraged beta,  $\beta_u$  = the unleveraged beta,  $t$  = income tax rate,  $D$  =  
20 debt ratio,  $P$  = preferred stock ratio, and  $E$  = common equity ratio. The betas  
21 published by Value Line have been calculated with the market price of stock and  
22 therefore are related to the market value capitalization. By using the formula shown

---

<sup>4</sup> Robert S. Hamada, "The Effects of the Firm's Capital Structure on the Systematic Risk of Common Stocks" *The Journal of Finance* Vol. 27, No. 2, Papers and Proceedings of the Thirtieth Annual Meeting of the American Finance Association, New Orleans, Louisiana, December 27-29, 1971. (May 1972), pp.435-452

1 above and the capital structure ratios measured at market value, the beta would  
 2 become 0.49 for the Gas Group if it employed no leverage and was 100% equity  
 3 financed. With the unleveraged beta as a base, I calculated the leveraged beta of 0.74  
 4 for the book value capital structure of the Gas Group. The betas and their  
 5 corresponding common equity ratios are:

Market Values		Book Values	
Beta	Common Equity Ratio	Beta	Common Equity Ratio
0.65	66.16%	0.74	55.95%

6  
 7 The book value leveraged beta that I will employ in the CAPM cost of equity is 0.74  
 8 for the Gas Group.

9

10 Q. WHAT RISK-FREE RATE HAVE YOU USED IN THE CAPM?

11 A. For reasons explained in Appendix G, I have employed the yields on 20-year  
 12 Treasury bonds using both historical and forecast data to match the longer-term  
 13 horizon associated with the ratesetting process. As shown on pages 2 and 3 of  
 14 Schedule 10, I provided the historical yields on Treasury notes and bonds. For the  
 15 twelve months ended June 2010, the average yield was 4.31%, as shown on page 3 of  
 16 that schedule. For the six- and three-months ended June 2010, the yields on 20-year  
 17 Treasury bonds were 4.34% and 4.20%, respectively. As shown on page 4 of  
 18 Schedule 10, forecasts published by Blue Chip on July 1, 2010 indicate that the yields  
 19 on long-term Treasury bonds are expected to be in the range of 4.3% to 5.1% during  
 20 the next six quarters. The longer term forecasts described previously show that the  
 21 yields on Treasury bonds will average 5.8% from 2012 through 2016 and from 2017  
 22 to 2021. For reasons explained previously, forecasts of interest rates should be

1 emphasized at this time. Hence, I have used a 4.75% risk-free rate of return for  
2 CAPM purposes.

3

4 Q. WHAT MARKET PREMIUM HAVE YOU USED IN THE CAPM?

5 A. As shown in Appendix I, the market premium is developed by averaging historical  
6 market performance (i.e., 6.05%) and the forecasts (i.e., 9.37%). For the historically  
7 based market premium, I have used the arithmetic mean. The resulting market  
8 premium is 7.71% ( $6.05\% + 9.37\% = 15.42\% \div 2$ ), which represents the average  
9 market premium using historical and forecast data.

10

11 Q. ARE THERE ADJUSTMENTS TO THE CAPM RESULTS THAT ARE  
12 NECESSARY TO FULLY REFLECT THE RATE OF RETURN ON COMMON  
13 EQUITY?

14 A. Yes. The technical literature supports an adjustment relating to the size of the  
15 company or portfolio for which the calculation is performed. As the size of a firm  
16 decreases, its risk and, hence, its required return increases. Moreover, in his  
17 discussion of the cost of capital, Professor Brigham has indicated that smaller firms  
18 have higher capital costs than otherwise similar larger firms (see Fundamentals of  
19 Financial Management, fifth edition, page 623). Also, the Fama/French study (see  
20 "The Cross-Section of Expected Stock Returns"; The Journal of Finance, June 1992)  
21 established that size of a firm helps explain stock returns. In an October 15, 1995  
22 article in Public Utility Fortnightly, entitled "Equity and the Small-Stock Effect," it  
23 was demonstrated that the CAPM could understate the cost of equity significantly  
24 according to a company's size. Indeed, it was demonstrated in the SBBI Yearbook

1 that the returns for stocks in lower deciles (i.e., smaller stocks) had returns in excess  
2 of those shown by the simple CAPM. In this regard, the Gas Group has an average  
3 market capitalization of its equity of \$1,806 million, which would make them a low-  
4 cap portfolio. The low-cap market capitalization would indicate a size premium of  
5 1.74%. However, for my CAPM analysis, I have adopted a more conservative size  
6 adjustment of 0.94%, which represents the mid-cap adjustment. Absent such an  
7 adjustment, the CAPM would understate the required return.

8

9 Q. WHAT CAPM RESULT HAVE YOU DETERMINED USING THE CAPM?

10 A. Using the 4.75% risk-free rate of return, the leverage adjusted beta of 0.74 for the Gas  
11 Group, the 7.71% market premium, the size adjustment, and the flotation cost  
12 adjustment developed previously, the following result is indicated.

$$\begin{array}{l} R_f + \beta \times ( R_m - R_f ) = k + size = K + flot. = K \\ \text{Gas Group } 4.75\% + 0.74 \times ( 7.71\% ) = 10.46\% + 0.94\% = 11.40\% + 0.21\% = 11.61\% \end{array}$$

13

1                                   **VIII.                   COMPARABLE EARNINGS APPROACH**

2    Q.    HOW HAVE YOU APPLIED THE COMPARABLE EARNINGS APPROACH IN  
3           THIS CASE?

4    A.    The technical aspects of the Comparable Earnings approach are set forth in Appendix  
5           J. Because regulation is a substitute for competitively-determined prices, the returns  
6           realized by non-regulated firms with comparable risks to a public utility provide  
7           useful insight into a fair rate of return. In order to identify the appropriate return, it is  
8           necessary to analyze returns earned (or realized) by other firms within the context of  
9           the Comparable Earnings standard. The firms selected for the Comparable Earnings  
10          approach should be companies whose prices are not subject to cost-based price  
11          ceilings (i.e., non-regulated firms) so that circularity is avoided. There are two  
12          avenues available to implement the Comparable Earnings approach. One method  
13          would involve the selection of another industry (or industries) with comparable risks  
14          to the public utility in question, and the results for all companies within that industry  
15          would serve as a benchmark. The second approach requires the selection of  
16          parameters that represent similar risk traits for the public utility and the comparable  
17          risk companies. Using this approach, the business lines of the comparable companies  
18          become unimportant. The latter approach is preferable with the further qualification  
19          that the comparable risk companies exclude regulated firms in order to avoid the  
20          circular reasoning implicit in the use of the achieved earnings/book ratios of other  
21          regulated firms. The United States Supreme Court has held that:

22                                   A public utility is entitled to such rates as will permit it to  
23                                   earn a return on the value of the property which it employs  
24                                   for the convenience of the public equal to that generally  
25                                   being made at the same time and in the same general part of  
26                                   the country on investments in other business undertakings  
27                                   which are attended by corresponding risks and

1                   uncertainties.... The return should be reasonably sufficient  
2                   to assure confidence in the financial soundness of the utility  
3                   and should be adequate, under efficient and economical  
4                   management, to maintain and support its credit and enable  
5                   it to raise the money necessary for the proper discharge of  
6                   its public duties. Bluefield Water Works vs. Public Service  
7                   Commission, 262 U.S. 668 (1923).  
8

9                   Therefore, it is important to identify the returns earned by firms that compete for  
10                  capital with a public utility. This can be accomplished by analyzing the returns of  
11                  non-regulated firms that are subject to the competitive forces of the marketplace.  
12

13    Q.    HOW HAVE YOU IMPLEMENTED THE COMPARABLE EARNINGS  
14    APPROACH?

15    A.    In order to implement the Comparable Earnings approach, non-regulated companies  
16    were selected from the Value Line Investment Survey for Windows that have six  
17    categories (see Appendix J for definitions) of comparability designed to reflect the  
18    risk of the Gas Group. These screening criteria were based upon the range as defined  
19    by the rankings of the companies in the Gas Group. The items considered were:  
20    Timeliness Rank, Safety Rank, Financial Strength, Price Stability, Value Line betas,  
21    and Technical Rank. The identities of the companies comprising the Comparable  
22    Earnings group and its associated rankings within the ranges are identified on page 1  
23    of Schedule 11.

24                  Value Line data was relied upon because it provides a comprehensive basis  
25    for evaluating the risks of the comparable firms. As to the returns calculated by  
26    Value Line for these companies, there is some downward bias in the figures shown on  
27    page 2 of Schedule 11, because Value Line computes the returns on year-end rather  
28    than average book value. If average book values had been employed, the rates of

1 return would have been slightly higher. Nevertheless, these are the returns considered  
2 by investors when taking positions in these stocks. Because many of the  
3 comparability factors, as well as the published returns, are used by investors for  
4 selecting stocks, and to the extent that investors rely on the Value Line service to  
5 gauge its returns, it is, therefore, an appropriate database for measuring comparable  
6 return opportunities.

7  
8 Q. WHAT DATA HAVE YOU USED IN YOUR COMPARABLE EARNINGS  
9 ANALYSIS?

10 A. I have used both historical realized returns and forecasted returns for non-utility  
11 companies. As noted previously, I have not used returns for utility companies in  
12 order to avoid the circularity that arises from using regulatory-influenced returns to  
13 determine a regulated return. It is appropriate to consider a relatively long  
14 measurement period in the Comparable Earnings approach in order to cover  
15 conditions over an entire business cycle. A ten-year period (5 historical years and 5  
16 projected years) is sufficient to cover an average business cycle. Unlike the DCF and  
17 CAPM, the results of the Comparable Earnings method can be applied directly to the  
18 book value capitalization because, the nature of the analysis relates to book value.  
19 Hence, Comparable Earnings does not contain the potential misspecification  
20 contained in market models when the market capitalization and book value  
21 capitalization diverge significantly. The historical rate of return on book common  
22 equity was 14.2% using only the returns that were less than 20% as shown on page 2  
23 of Schedule 11. The forecast rates of return as published by Value Line are shown by  
24 the 14.9% also using values less than 20%, as provided on page 2 of Schedule 11.

1

2 Q. WHAT RATE OF RETURN ON COMMON EQUITY HAVE YOU DETERMINED  
3 IN THIS CASE USING THE COMPARABLE EARNINGS APPROACH?

4 A. The average of the historical and forecast median rates of return is:

	<u>Historical</u>	<u>Forecast</u>	<u>Average</u>
5 Comparable Earnings Group	14.20%	14.90%	14.55%

6 As noted previously, I have used the results from the Comparable Earnings method to  
7 confirm the results of the market based models.

8

1 **IX. CONCLUSION ON COST OF EQUITY**

2 Q. WHAT IS YOUR CONCLUSION CONCERNING MERC'S COST OF COMMON  
3 EQUITY?

4 A. Based upon the application of a variety of methods and models described previously,  
5 it is my opinion that the reasonable cost of common equity is 11.25% for MERC. It  
6 is essential that the Commission employ a variety of techniques to measure MERC's  
7 cost of equity because of the limitations/infirmities that are inherent in each method.  
8 My recommendation of an 11.25% cost of equity is conservative due to the higher  
9 risk characteristics of the Company. In this regard, the Company is relatively small,  
10 its earnings variability is high, it has a higher operating ratio, and its interest  
11 coverages are low. These factors add to the Company's risk profile, and by using the  
12 results taken from the Gas Group, my proposed cost of equity is conservative for the  
13 Company in this case.

14  
15 Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY AT THIS TIME?

16 A. Yes, it does.

Before the Minnesota Public Utilities Commission  
State of Minnesota

In the Matter of the Application of Minnesota Energy Resources Corporation for Authority to  
Increase Rates for Natural Gas Service in Minnesota

Docket No. G007,011/GR-10-977

Exhibit \_\_\_\_\_

**Appendices**

November 30, 2010

**APPENDIX A TO DIRECT TESTIMONY OF PAUL R. MOUL**

**EDUCATIONAL BACKGROUND, BUSINESS EXPERIENCE  
AND QUALIFICATIONS**

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I was awarded a degree of Bachelor of Science in Business Administration by Drexel University in 1971. While at Drexel, I participated in the Cooperative Education Program which included employment, for one year, with American Water Works Service Company, Inc., as an internal auditor, where I was involved in the audits of several operating water companies of the American Water Works System and participated in the preparation of annual reports to regulatory agencies and assisted in other general accounting matters.

Upon graduation from Drexel University, I was employed by American Water Works Service Company, Inc., in the Eastern Regional Treasury Department where my duties included preparation of rate case exhibits for submission to regulatory agencies, as well as responsibility for various treasury functions of the thirteen New England operating subsidiaries.

In 1973, I joined the Municipal Financial Services Department of Betz Environmental Engineers, a consulting engineering firm, where I specialized in financial studies for municipal water and wastewater systems.

In 1974, I joined Associated Utility Services, Inc., now known as AUS Consultants. I held various positions with the Utility Services Group of AUS Consultants, concluding my employment there as a Senior Vice President.

In 1994, I formed P. Moul & Associates, an independent financial and regulatory consulting firm. In my capacity as Managing Consultant and for the past twenty-nine years, I have continuously studied the rate of return requirements for cost of service-regulated firms. In this regard, I have supervised the preparation of rate of return studies, which were employed, in connection with my testimony and in the past for other individuals. I have

## APPENDIX A TO DIRECT TESTIMONY OF PAUL R. MOUL

1 presented direct testimony on the subject of fair rate of return, evaluated rate of return  
2 testimony of other witnesses, and presented rebuttal testimony.

3 My studies and prepared direct testimony have been presented before thirty-six (36)  
4 federal, state and municipal regulatory commissions, consisting of: the Federal Energy  
5 Regulatory Commission; state public utility commissions in Alabama, Alaska, California,  
6 Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Illinois, Indiana, Iowa,  
7 Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri,  
8 New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania,  
9 Rhode Island, South Carolina, Tennessee, Texas, Virginia, West Virginia, Wisconsin, and the  
10 Philadelphia Gas Commission. My testimony has been offered in over 200 rate cases  
11 involving electric power, natural gas distribution and transmission, resource recovery, solid  
12 waste collection and disposal, telephone, wastewater, and water service utility companies.  
13 While my testimony has involved principally fair rate of return and financial matters, I have  
14 also testified on capital allocations, capital recovery, cash working capital, income taxes,  
15 factoring of accounts receivable, and take-or-pay expense recovery. My testimony has been  
16 offered on behalf of municipal and investor-owned public utilities and for the staff of a  
17 regulatory commission. I have also testified at an Executive Session of the State of New  
18 Jersey Commission of Investigation concerning the BPU regulation of solid waste collection  
19 and disposal.

20 I was a co-author of a verified statement submitted to the Interstate Commerce  
21 Commission concerning the 1983 Railroad Cost of Capital (Ex Parte No. 452). I was also  
22 co-author of comments submitted to the Federal Energy Regulatory Commission regarding  
23 the Generic Determination of Rate of Return on Common Equity for Public Utilities in 1985,

## APPENDIX A TO DIRECT TESTIMONY OF PAUL R. MOUL

1 1986 and 1987 (Docket Nos. RM85-19-000, RM86-12-000, RM87-35-000 and RM88-25-  
2 000). Further, I have been the consultant to the New York Chapter of the National  
3 Association of Water Companies, which represented the water utility group in the Proceeding  
4 on Motion of the Commission to Consider Financial Regulatory Policies for New York  
5 Utilities (Case 91-M-0509). I have also submitted comments to the Federal Energy  
6 Regulatory Commission in its Notice of Proposed Rulemaking (Docket No. RM99-2-000)  
7 concerning Regional Transmission Organizations and on behalf of the Edison Electric  
8 Institute in its intervention in the case of Southern California Edison Company (Docket No.  
9 ER97-2355-000).

10 In late 1978, I arranged for the private placement of bonds on behalf of an investor-  
11 owned public utility. I have assisted in the preparation of a report to the Delaware Public  
12 Service Commission relative to the operations of the Lincoln and Ellendale Electric  
13 Company. I was also engaged by the Delaware P.S.C. to review and report on the proposed  
14 financing and disposition of certain assets of Sussex Shores Water Company (P.S.C. Docket  
15 Nos. 24-79 and 47-79). I was a co-author of a Report on Proposed Mandatory Solid Waste  
16 Collection Ordinance prepared for the Board of County Commissioners of Collier County,  
17 Florida.

18 I have been a consultant to the Bucks County Water and Sewer Authority concerning  
19 rates and charges for wholesale contract service with the City of Philadelphia. My municipal  
20 consulting experience also included an assignment for Baltimore County, Maryland,  
21 regarding the City/County Water Agreement for Metropolitan District customers (Circuit  
22 Court for Baltimore County in Case 34/153/87-CSP-2636).

## APPENDIX A TO DIRECT TESTIMONY OF PAUL R. MOUL

1 I am a member of the Society of Utility and Regulatory Financial Analysis (formerly  
2 the National Society of Rate of Return Analysts) and have attended several Financial Forums  
3 sponsored by the Society. I attended the first National Regulatory Conference at the  
4 Marshall-Wythe School of Law, College of William and Mary. I also attended an Executive  
5 Seminar sponsored by the Colgate Darden Graduate Business School of the University of  
6 Virginia concerning Regulated Utility Cost of Equity and the Capital Asset Pricing Model.  
7 In October 1984, I attended a Standard & Poor's Seminar on the Approach to Municipal  
8 Utility Ratings, and in May 1985, I attended an S&P Seminar on Telecommunications  
9 Ratings.

10 My lecture and speaking engagements include:

<u>Date</u>	<u>Occasion</u>	<u>Sponsor</u>
April 2006	Thirty-eighth Financial Forum	Society of Utility & Regulatory Financial Analysts
April 2001	Thirty-third Financial Forum	Society of Utility & Regulatory Financial Analysts
December 2000	Pennsylvania Public Utility Law Conference: Non-traditional Players in the Water Industry	Pennsylvania Bar Institute
July 2000	EEI Member Workshop Developing Incentives Rates: Application and Problems	Edison Electric Institute
February 2000	The Sixth Annual FERC Briefing	Exnet and Bruder, Gentile & Marcoux, LLP
March 1994	Seventh Annual Proceeding	Electric Utility Business Environment Conf.
May 1993	Financial School	New England Gas Assoc.
April 1993	Twenty-Fifth Financial Forum	National Society of Rate of Return Analysts
June 1992	Rate and Charges Subcommittee Annual Conference	American Water Works Association
May 1992	Rates School	New England Gas Assoc.
October 1989	Seventeenth Annual Eastern Utility	Water Committee of the National Association

**APPENDIX A TO DIRECT TESTIMONY OF PAUL R. MOUL**

1		Rate Seminar	of Regulatory Utility
2			Commissioners Florida
3			Public Service Commission
4			and University of Utah
5	October 1988	Sixteenth Annual	Water Committee of the
6		Eastern Utility	National Association
7		Rate Seminar	of Regulatory Utility
8			Commissioners, Florida
9			Public Service
10			Commission and University
11			of Utah
12	May 1988	Twentieth Financial	National Society of
13		Forum	Rate of Return Analysts
14	October 1987	Fifteenth Annual	Water Committee of the
15		Eastern Utility	National Association
16		Rate Seminar	of Regulatory Utility
17			Commissioners, Florida
18			Public Service Commis-
19			sion and University of
20			Utah
21	September 1987	Rate Committee	American Gas Association
22		Meeting	
23	May 1987	Pennsylvania	National Association of
24		Chapter	Water Companies
25		annual meeting	
26	October 1986	Eighteenth	National Society of Rate
27		Financial	of Return
28		Forum	
29	October 1984	Fifth National	American Bar Association
30		on Utility	
31		Ratemaking	
32		Fundamentals	
33	March 1984	Management Seminar	New York State Telephone
34			Association
35	February 1983	The Cost of Capital	Temple University, School
36		Seminar	of Business Admin.
37	May 1982	A Seminar on	New Mexico State
38		Regulation	University, Center for
39		and The Cost of	Business Research
40		Capital	and Services
41	October 1979	Economics of	Brown University
42		Regulation	
43			
44			

**APPENDIX B TO DIRECT TESTIMONY OF PAUL R. MOUL**

**RATESETTING PRINCIPLES**

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Traditional cost of service regulation, as implemented by a regulatory agency engaged in ratesetting, such as the Commission, serves as a substitute for competition. In setting rates, a regulatory agency must carefully consider the public's interest in reasonably priced, as well as safe and reliable, service. The level of rates must also provide the public utility and its investors with an opportunity to earn a rate of return for the public utility and its investors that is commensurate with the risk to which the invested capital is exposed so that the public utility has access to the capital required to meet its service responsibilities to its customers. Without an opportunity to earn a fair rate of return, a public utility will be unable to attract sufficient capital required to meet its responsibilities over time.

It is important to remember that regulated firms must compete for capital in a global market with non-regulated firms, as well as municipal, state and federal governments. Traditionally, a public utility has been responsible for providing a particular type of service to its customers within a specific market area. Although this relationship with customers has been changing, a regulated utility remains quite different from a non-regulated firm, which is free to enter and exit competitive markets in accordance with available business opportunities.

As established by the landmark Bluefield and Hope cases,<sup>1</sup> several tests have been articulated through which the regulator can determine the fairness or reasonableness of the rate of return. These tests include a determination of whether the rate of return is (i) similar to that of other financially sound businesses having similar or comparable risks, (ii) sufficient

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<sup>1</sup>Bluefield Water Works & Improvement Co. v. P.S.C. of West Virginia, 262 U.S. 679 (1923) and F.P.C. v. Hope Natural Gas Co., 320 U.S. 591 (1944).

**APPENDIX B TO DIRECT TESTIMONY OF PAUL R. MOUL**

1 to ensure confidence in the financial integrity of the public utility, and (iii) adequate to  
2 maintain and support the credit of the utility, thereby enabling it to attract, on a reasonable  
3 cost basis, the funds necessary to satisfy its capital requirements so that it can meet the  
4 obligation to provide adequate and reliable service to the public.

5 A fair rate of return must not only provide the utility with the ability to attract new  
6 capital it must also be fair to existing investors. An appropriate rate of return which may  
7 have been reasonable at one point in time may become too high or too low at a subsequent  
8 point in time, based upon changing business risks, economic conditions and alternative  
9 investment opportunities. When applying the standards of a fair rate of return, it must be  
10 recognized that the end result must provide for the payment of interest on the company's  
11 debt, the payment of dividends on the company's stock, the recovery of costs associated with  
12 securing capital, the maintenance of reasonable credit quality for the company, and support  
13 of the company's financial condition, which today would include those measures of financial  
14 performance in the areas of interest coverage and adequate cash flow derived from a  
15 reasonable level of earnings.

**APPENDIX C TO DIRECT TESTIMONY OF PAUL R. MOUL**

**EVALUATION OF RISK**

1  
2           The rate of return required by investors is directly linked to the perceived level of  
3 risk. The greater the risk of an investment, the higher is the required rate of return necessary  
4 to compensate for that risk all else being equal. Because investors will seek the highest rate  
5 of return available, considering the risk involved, the rate of return must at least equal the  
6 investor-required, market-determined cost of capital if public utilities are to attract the  
7 necessary investment capital on reasonable terms.

8           In the measurement of the cost of capital, it is necessary to assess the risk of a firm.  
9 The level of risk for a firm is often defined as the uncertainty of achieving expected  
10 performance, and is sometimes viewed as a probability distribution of possible outcomes.  
11 Hence, if the uncertainty of achieving an expected outcome is high, the risk is also high. As  
12 a consequence, high risk firms must offer investors higher returns than low risk firms, which  
13 pay less to attract capital from investors. This is because the level of uncertainty, or risk of  
14 not realizing expected returns, establishes the compensation required by investors in the  
15 capital markets. Of course, the risk of a firm must also be considered in the context of its  
16 ability to actually experience adequate earnings, which conform with a fair rate of return.  
17 Thus, if there is a high probability that a firm will not perform well due to fundamentally  
18 poor market conditions, investors will demand a higher return.

19           The investment risk of a firm is comprised of its business risk and financial risk.  
20 Business risk is all risk other than financial risk, and is sometimes defined as the staying  
21 power of the market demand for a firm's product or service and the resulting inherent  
22 uncertainty of realizing expected pre-tax returns on the firm's assets. Business risk  
23 encompasses all operating factors, e.g., productivity, competition, management ability, etc.

## APPENDIX C TO DIRECT TESTIMONY OF PAUL R. MOUL

1 that bear upon the expected pre-tax operating income attributed to the fundamental nature of  
2 a firm's business. Financial risk results from a firm's use of borrowed funds (or similar  
3 sources of capital with fixed payments) in its capital structure, i.e., financial leverage. Thus,  
4 if a firm did not employ financial leverage by borrowing any capital, its investment risk  
5 would be represented by its business risk.

6         It is important to note that in evaluating the risk of regulated companies, financial  
7 leverage cannot be considered in the same context as it is for non-regulated companies.  
8 Financial leverage has a different meaning for regulated firms than for non-regulated  
9 companies. For regulated public utilities, the cost of service formula gives the benefits of  
10 financial leverage to consumers in the form of lower revenue requirements. For non-  
11 regulated companies, all benefits of financial leverage are retained by the common  
12 stockholder. Although retaining none of the benefits, regulated firms bear the risk of  
13 financial leverage. Therefore, a regulated firm's rate of return on common equity must  
14 recognize the greater financial risk shown by the higher leverage typically employed by  
15 public utilities.

16         Although no single index or group of indices can precisely quantify the relative  
17 investment risk of a firm, financial analysts use a variety of indicators to assess that risk. For  
18 example, the creditworthiness of a firm is revealed by its bond ratings. If the stock is traded,  
19 the price-earnings multiple, dividend yield, and beta coefficients (a statistical measure of a  
20 stock's relative volatility to the rest of the market) provide some gauge of overall risk. Other  
21 indicators, which are reflective of business risk, include the variability of the rate of return on  
22 equity, which is indicative of the uncertainty of actually achieving the expected earnings;  
23 operating ratios (the percentage of revenues consumed by operating expenses, depreciation,

**APPENDIX C TO DIRECT TESTIMONY OF PAUL R. MOUL**

1 and taxes other than income tax), which are indicative of profitability; the quality of earnings,  
2 which considers the degree to which earnings are the product of accounting principles or cost  
3 deferrals; and the level of internally generated funds. Similarly, the proportion of senior  
4 capital in a company's capitalization is the measure of financial risk, which is often analyzed  
5 in the context of the equity ratio (i.e., the complement of the debt ratio).

**APPENDIX D TO DIRECT TESTIMONY OF PAUL R. MOUL**

**COST OF EQUITY--GENERAL APPROACH**

1  
2           Through a fundamental financial analysis, the relative risk of a firm must be  
3 established prior to the determination of its cost of equity. Any rate of return  
4 recommendation, which lacks such a basis, will inevitably fail to provide a utility with a fair  
5 rate of return except by coincidence. With a fundamental risk analysis as a foundation,  
6 standard financial models can be employed by using informed judgment. The methods,  
7 which have been employed to measure the cost of equity, include: the Discounted Cash Flow  
8 ("DCF") model, the Risk Premium ("RP") approach, the Capital Asset Pricing Model  
9 ("CAPM") and the Comparable Earnings ("CE") approach.

10           The traditional DCF model, while useful in providing some insight into the cost of  
11 equity, is not an approach that should be used exclusively. The divergence of stock prices  
12 from company-specific fundamentals can provide a misleading cost of equity calculation. As  
13 reported in The Wall Street Journal on June 6, 1991, a statistical study published by Goldman  
14 Sachs indicated that only 35% of stock price growth in the 1980's could be attributed to  
15 earnings and interest rates. Further, 38% of the rise in stock prices during the 1980's was  
16 attributed to unknown factors. The Goldman Sachs study highlights the serious limitations of  
17 a model, such as DCF, which is founded upon identification of specific variables to explain  
18 stock price growth. That is to say, when stock price growth exceeds growth in a company's  
19 earnings per share, models such as DCF will misspecify investor expected returns, which are  
20 comprised of capital gains, as well as dividend receipts. As such, a combination of methods  
21 should be used to measure the cost of equity.

22           The Risk Premium analysis is founded upon the prospective cost of long-term debt,  
23 i.e., the yield that the public utility must offer to raise long-term debt capital directly from

## APPENDIX D TO DIRECT TESTIMONY OF PAUL R. MOUL

1 investors. To that yield must be added a risk premium in recognition of the greater risk of  
2 common equity over debt. This additional risk is, of course, attributable to the fact that the  
3 payment of interest and principal to creditors has priority over the payment of dividends and  
4 return of capital to equity investors. Hence, equity investors require a higher rate of return  
5 than the yield on long-term corporate bonds.

6         The CAPM is a model not unlike the traditional Risk Premium. The CAPM employs  
7 the yield on a risk-free interest-bearing obligation plus a premium as compensation for risk.  
8 Aside from the reliance on the risk-free rate of return, the CAPM gives specific  
9 quantification to systematic (or market) risk as measured by beta.

10         The Comparable Earnings approach measures the returns expected/experienced by  
11 other non-regulated firms and has been used extensively in rate of return analysis for over a  
12 half century. However, its popularity diminished in the 1970s and 1980s with the  
13 popularization of market-based models. Recently, there has been renewed interest in this  
14 approach. Indeed, the financial community has expressed the view that the regulatory  
15 process must consider the returns, which are being achieved in the non-regulated sector so  
16 that public utilities can compete effectively in the capital markets. Indeed, with additional  
17 competition being introduced throughout the traditionally regulated public utility industry,  
18 returns expected to be realized by non-regulated firms have become increasingly relevant in the  
19 ratesetting process. The Comparable Earnings approach considers directly those  
20 requirements and it fits the established standards for a fair rate of return set forth in the  
21 landmark decisions on the issue of rate of return. These decisions require that a fair return  
22 for a utility must be equal to that earned by firms of comparable risk.

APPENDIX E TO DIRECT TESTIMONY OF PAUL R. MOUL

DISCOUNTED CASH FLOW ANALYSIS

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Discounted Cash Flow ("DCF") theory seeks to explain the value of an economic or financial asset as the present value of future expected cash flows discounted at the appropriate risk-adjusted rate of return. Thus, if \$100 is to be received in a single payment 10 years subsequent to the acquisition of an asset, and the appropriate risk-related interest rate is 8%, the present value of the asset would be \$46.32 (Value =  $\$100 \div (1.08)^{10}$ ) arising from the discounted future cash flow. Conversely, knowing the present \$46.32 price of an asset (where price = value), the \$100 future expected cash flow to be received 10 years hence shows an 8% annual rate of return implicit in the price and future cash flows expected to be received.

In its simplest form, the DCF theory considers the number of years from which the cash flow will be derived and the annual compound interest rate, which reflects the risk or uncertainty, associated with the cash flows. It is appropriate to reiterate that the dollar values to be discounted are future cash flows.

DCF theory is flexible and can be used to estimate value (or price) or the annual required rate of return under a wide variety of conditions. The theory underlying the DCF methodology can be easily illustrated by utilizing the investment horizon associated with a preferred stock not having an annual sinking fund provision. In this case, the investment horizon is infinite, which reflects the perpetuity of a preferred stock. If  $P$  represents price,  $Kp$  is the required rate of return on a preferred stock, and  $D$  is the annual dividend ( $P$  and  $D$  with time subscripts), the value of a preferred share is equal to the present value of the dividends to be received in the future discounted at the appropriate risk-adjusted interest rate,  $Kp$ . In this circumstance:

APPENDIX E TO DIRECT TESTIMONY OF PAUL R. MOUL

1 
$$P_0 = \frac{D_1}{(1 + Kp)} + \frac{D_2}{(1 + Kp)^2} + \frac{D_3}{(1 + Kp)^3} + \dots + \frac{D_n}{(1 + Kp)^n}$$

2 If  $D_1 = D_2 = D_3 = \dots D_n$  as is the case for preferred stock, and  $n$  approaches infinity, as is the  
3 case for non-callable preferred stock without a sinking fund, then this equation reduces to:

4 
$$P_0 = \frac{D_1}{Kp}$$

5 This equation can be used to solve for the annual rate of return on a preferred stock when the  
6 current price and subsequent annual dividends are known. For example, with  $D_1 = \$1.00$ ,  
7 and  $P_0 = \$10$ , then  $Kp = \$1.00 \div \$10$ , or 10%.

8 The dividend discount equation, first shown, is the generic DCF valuation model for  
9 all equities, both preferred and common. While preferred stock generally pays a constant  
10 dividend, permitting the simplification subsequently noted, common stock dividends are not  
11 constant. Therefore, absent some other simplifying condition, it is necessary to rely upon the  
12 generic form of the DCF. If, however, it is assumed that  $D_1, D_2, D_3, \dots D_n$  are systematically  
13 related to one another by a constant growth rate ( $g$ ), so that  $D_0 (1 + g) = D_1, D_1 (1 + g) = D_2,$   
14  $D_2 (1 + g) = D_3$  and so on approaching infinity, and if  $Ks$  (the required rate of return on a  
15 common stock) is greater than  $g$ , then the DCF equation can be reduced to:

$$P_0 = \frac{D_1}{Ks - g} \text{ or } P_0 = \frac{D_0(1 + g)}{Ks - g}$$

16 which is the periodic form of the "Gordon" model.<sup>1</sup> Proof of the DCF equation is found in

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<sup>1</sup>Although the popular application of the DCF model is often attributed to the work of Myron J.

## APPENDIX E TO DIRECT TESTIMONY OF PAUL R. MOUL

1 all modern basic finance textbooks. This DCF equation can be easily solved as:

$$Ks = \frac{D_0(1+g)}{P_0} + g$$

3 which is the periodic form of the Gordon Model commonly applied in estimating equity rates  
4 of return in rate cases. When used for this purpose,  $Ks$  is the annual rate of return on  
5 common equity demanded by investors to induce them to hold a firm's common stock.  
6 Therefore, the variables  $D_0$ ,  $P_0$  and  $g$  must be estimated in the context of the market for  
7 equities, so that the rate of return, which a public utility is permitted the opportunity to earn,  
8 has meaning and reflects the investor-required cost rate.

9       Application of the Gordon model with market derived variables is straightforward.  
10 For example, using the most recent prior annualized dividend ( $D_0$ ) of \$0.80, the current price  
11 ( $P_0$ ) of \$10.00, and the investor expected dividend growth rate ( $g$ ) of 5%, the solution of the  
12 DCF formula provides a 13.4% rate of return. The dividend yield component in this instance  
13 is 8.4%, and the capital gain component is 5%, which together represent the total 13.4%  
14 annual rate of return required by investors. The capital gain component of the total return  
15 may be calculated with two adjacent future year prices. For example, in the eleventh year of  
16 the holding period, the price per share would be \$17.10 as compared with the price per share  
17 of \$16.29 in the tenth year which demonstrates the 5% annual capital gain yield.

18       Some DCF devotees believe that it is more appropriate to estimate the required return  
19 on equity with a model which permits the use of multiple growth rates. This may be a

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Gordon in the mid-1950's, J. B. Williams exposted the DCF model in its present form nearly two decades earlier.

## APPENDIX E TO DIRECT TESTIMONY OF PAUL R. MOUL

1 plausible approach to DCF, where investors expect different dividend growth rates in the  
2 near term and long run. If two growth rates, one near term and one long-run, are to be used  
3 in the context of a price ( $P_0$ ) of \$10.00, a dividend ( $D_0$ ) of \$0.80, a near-term growth rate of  
4 5.5%, and a long-run expected growth rate of 5.0% beginning at year 6, the required rate of  
5 return is 13.57% solved with a computer by iteration.

### 6 Dividend Yield

7 The historical annual dividend yield for the Gas Group is shown on Schedule 2. The  
8 2005-2009 five-year average dividend yield was 3.9% for the Gas Group. The monthly  
9 dividend yields for the past twelve months are shown graphically on Schedule 4. These  
10 dividend yields reflect an adjustment to the month-end closing prices to remove the pro rata  
11 accumulation of the quarterly dividend amount since the last ex-dividend date.

12 The ex-dividend date usually occurs two business days before the record date of the  
13 dividend (i.e., the date by which a shareholder must own the shares to be entitled to the  
14 dividend payment--usually about two to three weeks prior to the actual payment). During a  
15 quarter (here defined as 91 days), the price of a stock moves up ratably by the dividend  
16 amount as the ex-dividend date approaches. The stock's price then falls by the amount of the  
17 dividend on the ex-dividend date. Therefore, it is necessary to calculate the fraction of the  
18 quarterly dividend since the time of the last ex-dividend date and to remove that amount from  
19 the price. This adjustment reflects normal recurring pricing of stocks in the market, and  
20 establishes a price which will reflect the true yield on a stock.

21 A six-month average dividend yield has been used to recognize the prospective  
22 orientation of the ratesetting process as explained in the direct testimony. For the purpose of  
23 a DCF calculation, the average dividend yields must be adjusted to reflect the prospective

**APPENDIX E TO DIRECT TESTIMONY OF PAUL R. MOUL**

1 nature of the dividend payments, i.e., the higher expected dividends for the future rather than  
2 the recent dividend payment annualized. An adjustment to the dividend yield component,  
3 when computed with annualized dividends, is required based upon investor expectation of  
4 quarterly dividend increases.

5 The procedure to adjust the average dividend yield for the expectation of a dividend  
6 increase during the initial investment period will be at a rate of one-half the growth  
7 component, developed below. The DCF equation, showing the quarterly dividend payments  
8 as  $D_0$ , may be stated in this fashion:

$$K = \frac{D_0(I + g)^0 + D_0(I + g)^0 + D_0(I + g)^1 + D_0(I + g)^1}{P_0} + g$$

9 The adjustment factor, based upon one-half the expected growth rate developed in my direct  
10 testimony, will be 2.750% (5.50% x .5) for the Gas Group, which assumes that two dividend  
11 payments will be at the expected higher rate during the initial investment period. Using the  
12 six-month average dividend yield as a base, the prospective (forward) dividend yield would  
13 be 4.25% (4.14% x 1.02750) for the Gas Group.

14 Another DCF model that reflects the discrete growth in the quarterly dividend ( $D_0$ ) is  
15 as follows:

$$K = \frac{D_0(I + g)^{25} + D_0(I + g)^{50} + D_0(I + g)^{75} + D_0(I + g)^{1.00}}{P_0} + g$$

16 This procedure confirms the reasonableness of the forward dividend yield previously  
17 calculated. The quarterly discrete adjustment provides a dividend yield of 4.28% (4.14% x

## APPENDIX E TO DIRECT TESTIMONY OF PAUL R. MOUL

1 1.03415) for the Gas Group. The use of an adjustment is required for the periodic form of  
2 the DCF in order to properly recognize that dividends grow on a discrete basis.

3 In either of the preceding DCF dividend yield adjustments, there is no recognition for  
4 the compound returns attributed to the quarterly dividend payments. Investors have the  
5 opportunity to reinvest quarterly dividend receipts. Recognizing the compounding of the  
6 periodic quarterly dividend payments ( $D_0$ ), results in a third DCF formulation:

$$k = \left[ \left( 1 + \frac{D_0}{P_0} \right)^4 - 1 \right] + g$$

7 This DCF equation provides no further recognition of growth in the quarterly dividend.

8 Combining discrete quarterly dividend growth with quarterly compounding would provide  
9 the following DCF formulation, stating the quarterly dividend payments ( $D_0$ ):

$$k = \left[ \left( 1 + \frac{D_0(1+g)^{25}}{P_0} \right)^4 - 1 \right] + g$$

10 A compounding of the quarterly dividend yield provides another procedure to recognize the  
11 necessity for an adjusted dividend yield. The unadjusted average quarterly dividend yield  
12 was 1.0350% ( $4.14\% \div 4$ ) for the gas Group. The compound dividend yield would be 4.26%  
13 ( $1.010489^4 - 1$ ) for the Gas Group, recognizing quarterly dividend payments in a forward-

## APPENDIX E TO DIRECT TESTIMONY OF PAUL R. MOUL

1 looking manner. These dividend yields conform with investors' expectations in the context  
2 of reinvestment of their cash dividend.

3 For the Gas Group, a 4.26% forward-looking dividend yield is the average (4.25% +  
4 4.28% + 4.26% = 12.79% ÷ 3) of the adjusted dividend yield using the form  $D_0/P_0 (1+.5g)$ ,  
5 the dividend yield recognizing discrete quarterly growth, and the quarterly compound  
6 dividend yield with discrete quarterly growth.

### 7 Growth Rate

8 If viewed in its infinite form, the DCF model is represented by the discounted value  
9 of an endless stream of growing dividends. It would, however, require 100 years of future  
10 dividend payments so that the discounted value of those payments would equate to the  
11 present price so that the discount rate and the rate of return shown by the simplified Gordon  
12 form of the DCF model would be about the same. A century of dividend receipts represents  
13 an unrealistic investment horizon from almost any perspective. Because stocks are not held  
14 by investors forever, the growth in the share value (i.e., capital appreciation, or capital gains  
15 yield) is most relevant to investors' total return expectations. Hence, investor expected  
16 returns in the equity market are provided by capital appreciation of the investment as well as  
17 receipt of dividends. As such, the sale price of a stock can be viewed as a liquidating  
18 dividend which can be discounted along with the annual dividend receipts during the  
19 investment holding period to arrive at the investor expected return.

20 In its constant growth form, the DCF assumes that with a constant return on book  
21 common equity and constant dividend payout ratio, a firm's earnings per share, dividends per  
22 share and book value per share will grow at the same constant rate, absent any external  
23 financing by a firm. Because these constant growth assumptions do not actually prevail in

## APPENDIX E TO DIRECT TESTIMONY OF PAUL R. MOUL

1 the capital markets, the capital appreciation potential of an equity investment is best  
2 measured by the expected growth in earnings per share. Since the traditional form of the  
3 DCF assumes no change in the price-earnings multiple, the value of a firm's equity will grow  
4 at the same rate as earnings per share. Hence, the capital gains yield is best measured by  
5 earnings per share growth using company-specific variables.

6 Investors consider both historical and projected data in the context of the expected  
7 growth rate for a firm. An investor can compute historical growth rates using compound  
8 growth rates or growth rate trend lines. Otherwise, an investor can rely upon published  
9 growth rates as provided in widely-circulated, influential publications. However, a  
10 traditional constant growth DCF analysis that is limited to such inputs suffers from the  
11 assumption of no change in the price-earnings multiple, i.e., that the value of a firm's equity  
12 will grow at the same rate as earnings. Some of the factors which actually contribute to  
13 investors' expectations of earnings growth and which should be considered in assessing those  
14 expectations, are: (i) the earnings rate on existing equity, (ii) the portion of earnings not paid  
15 out in dividends, (iii) sales of additional common equity, (iv) reacquisition of common stock  
16 previously issued, (v) changes in financial leverage, (vi) acquisitions of new business  
17 opportunities, (vii) profitable liquidation of assets, and (viii) repositioning of existing assets.  
18 The realities of the equity market regarding total return expectations, however, also reflect  
19 factors other than these inputs. Therefore, the DCF model contains overly restrictive  
20 limitations when the growth component is stated in terms of earnings per share (the basis for  
21 the capital gains yield) or dividends per share (the basis for the infinite dividend discount  
22 model). In these situations, there is inadequate recognition of the capital gains yields arising  
23 from stock price growth which could exceed earnings or dividends growth.

## APPENDIX E TO DIRECT TESTIMONY OF PAUL R. MOUL

1           To assess the growth component of the DCF, analysts' projections of future growth  
2 influence investor expectations as explained above. One influential publication is The Value  
3 Line Investment Survey which contains estimated future projections of growth. The Value  
4 Line Investment Survey provides growth estimates which are stated within a common  
5 economic environment for the purpose of measuring relative growth potential. The basis for  
6 these projections is the Value Line 3 to 5 year hypothetical economy. The Value Line  
7 hypothetical economic environment is represented by components and subcomponents of the  
8 National Income Accounts which reflect in the aggregate assumptions concerning the  
9 unemployment rate, manpower productivity, price inflation, corporate income tax rate, high-  
10 grade corporate bond interest rates, and Fed policies. Individual estimates begin with the  
11 correlation of sales, earnings and dividends of a company to appropriate components or  
12 subcomponents of the future National Income Accounts. These calculations provide a  
13 consistent basis for the published forecasts. Value Line's evaluation of a specific company's  
14 future prospects are considered in the context of specific operating characteristics that  
15 influence the published projections. Of particular importance for regulated firms, Value Line  
16 considers the regulatory quality, rates of return recently authorized, the historic ability of the  
17 firm to actually experience the authorized rates of return, the firm's budgeted capital  
18 spending, the firm's financing forecast, and the dividend payout ratio. The wide circulation  
19 of this source and frequent reference to Value Line in financial circles indicate that this  
20 publication has an influence on investor judgment with regard to expectations for the future.

21           There are other sources of earnings growth forecasts. One of these sources is the  
22 Institutional Brokers Estimate System ("IBES"). The IBES service provides data on  
23 consensus earnings per share forecasts and five-year earnings growth rate estimates. The

## APPENDIX E TO DIRECT TESTIMONY OF PAUL R. MOUL

1 publisher of IBES has been purchased by Thomson/First Call. The IBES forecasts have been  
2 integrated into the First Call consensus growth forecasts. In 2008, Thomson acquired  
3 Reuters, which formerly published the Market Guide forecasts. The earnings estimates are  
4 obtained from financial analysts at brokerage research departments and from institutions  
5 whose securities analysts are projecting earnings for companies in the First Call universe of  
6 companies. Another service that tabulates earnings forecasts and publishes them are Zacks  
7 Investment Research. As with the IBES/First Call forecasts and Zacks provides consensus  
8 forecasts collected from analysts for most publically traded companies.

9 In each of these publications, forecasts of earnings per share for the current and  
10 subsequent year receive prominent coverage. That is to say, IBES/First Call, Zacks, and  
11 Value Line show estimates of current-year earnings and projections for the next year. While  
12 the DCF model typically focusses upon long-run estimates of growth, stock prices are clearly  
13 influenced by current and near-term earnings prospects. Therefore, the near-term earnings  
14 per share growth rates should also be factored into a growth rate determination.

15 Although forecasts of future performance are investor influencing<sup>2</sup>, equity investors  
16 may also rely upon the observations of past performance. Investors' expectations of future  
17 growth rates may be determined, in part, by an analysis of historical growth rates. It is  
18 apparent that any serious investor would advise himself/herself of historical performance  
19 prior to taking an investment position in a firm. Earnings per share and dividends per share  
20 represent the principal financial variables which influence investor growth expectations.

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<sup>2</sup>As shown in a National Bureau of Economic Research monograph by John G. Cragg and Burton G. Malkiel, Expectations and the Structure of Share Prices, University of Chicago Press 1982.



**APPENDIX E TO DIRECT TESTIMONY OF PAUL R. MOUL**

1 Instruments" (Disclosures about Fair Value of Financial Instruments -- Statement of  
 2 Financial Accounting Standards ("FAS") No. 107) as shown in the annual report for these  
 3 companies and the market value of the common equity using the price of stock. The  
 4 comparison of capital structure ratios is:

5		Capitalization at Market Value	Capitalization at Book Value
6	<u>Gas Group</u>	<u>(Fair Value)</u>	<u>(Carrying Amounts)</u>
7			
8	Long-term Debt	33.66%	43.81%
9	Preferred Stock	0.17	0.24
10	Common Equity	<u>66.16</u>	<u>55.95</u>
11			
12	Total	<u>100.00%</u>	<u>100.00%</u>

13 With regard to the capital structure ratios represented by the carrying amounts shown above,  
 14 there are some variances from the ratios shown on Schedule 2. These variances arise from  
 15 the use of balance sheet values in computing the capital structure ratios shown on Schedule 2  
 16 and the use of the Carrying Amounts of the Financial Instruments according to FAS 107 (the  
 17 Carrying Amounts were used in the table shown above to be comparable to the Fair Value  
 18 amounts used in the comparison calculations).

19 With the capital ratios calculated above, it is necessary to first calculate the cost of  
 20 equity for a firm without any leverage. The cost of equity for an unleveraged firm using the  
 21 capital structure ratios calculated with market values is:

$$22 \quad k_u = k_e - (((k_u - i) (1-t) D / E) - (k_u - d) P / E)$$

$$23 \quad 8.75\% = 9.76\% - (((8.75\% - 5.71\%) .65) 33.66\%/66.16\%) - (8.75\% - 6.04\%) 0.17\%/66.16\%$$

24 where  $k_u$  = cost of equity for an all-equity firm,  $k_e$  = market determined cost equity,  $i$  = cost  
 25 of debt<sup>3</sup>,  $d$  = dividend rate on preferred stock<sup>4</sup>,  $D$  = debt ratio,  $P$  = preferred stock ratio, and  $E$

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<sup>3</sup>The cost of debt is the six-month average yield on Moody's A rated public utility bonds.

**APPENDIX E TO DIRECT TESTIMONY OF PAUL R. MOUL**

1 = common equity ratio. The formula shown above indicates that the cost of equity for a firm  
2 with 100% equity is 8.75% using the market value of the Gas Group's capitalization. Having  
3 determined that the cost of equity is 8.75% for a firm with 100% equity, the rate of return on  
4 common equity associated with the book value capital structure is:

$$5 \quad k_e = k_u + ((k_u - i) (1-t) \frac{D}{E}) + (k_u - d) \frac{P}{E}$$

$$6 \quad 10.31\% = 8.75\% + ((8.75\% - 5.71\%) \cdot 65\% \cdot 43.81\% / 55.95\%) + (8.75\% - 6.04\%) \cdot 0.24\% / 55.95\%$$

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<sup>4</sup>The cost of preferred is the six-month average yield on Moody's "a" rated preferred stock.

APPENDIX F TO DIRECT TESTIMONY OF PAUL R. MOUL

FLOTATION COST ADJUSTMENT

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The rate of return on common equity must be high enough to avoid dilution when additional common equity is issued. In this regard, the rate of return on book common equity for public utilities requires recognition of specific factors other than just the market-determined cost of equity. A market price of common stock above book value is necessary to attract future capital on reasonable terms in competition with other seekers of equity capital. Non-regulated companies traditionally have experienced common stock prices consistently above book value. For a public utility to be competitive in the capital markets, similar recognition should be provided, given the understated value of net plant investment which is represented by historical costs much lower than current cost. Moreover, the market value of a public utility stock must be above book value to provide recognition of market pressure, issuance and selling expenses which reduce the net proceeds realized from the sale of new shares of common stock. A market price of stock above book value will maintain the financial integrity of shares previously issued and is necessary to avoid dilution when new shares are offered.

The rate of return on common equity should provide for the underwriting discount and company issuance expenses associated with the sale of new common stock. It is the net proceeds, after payment of these costs that are available to the company, because the issuance costs are paid from the initial offering price to the public. Market pressure occurs when the news of an impending issue of new common shares impacts the pre-offering price of stock. The stock price often declines because of the prospect of an increase in the supply of shares. The difficulty encountered in measuring market pressure relates to the time frame considered, general market conditions, and management action during the offering period.

## APPENDIX F TO DIRECT TESTIMONY OF PAUL R. MOUL

1 An indication of negative market pressure could be the product of the techniques employed  
2 to measure pressure and not the prospect of an additional supply of shares related to the new  
3 issue.

4 Even in the situation where a company will not issue common stock during the near  
5 term, the flotation cost adjustment factor should be applied to the common equity cost rate.  
6 A public utility must be in a competitive capital attraction posture at all times. To deny  
7 recognition of a market value of equity above book value would be discriminatory when  
8 other comparable companies receive an allowance in this regard. Moreover, to reduce the  
9 return rate on common equity by failing to recognize this factor would likewise result in a  
10 company being less competitive in the bond market, because a lower resulting overall rate of  
11 return would provide less competitive fixed-charge coverage. It cannot be said that a public  
12 utility's stock price already considers an allowance for flotation costs. This is because  
13 investors in either fixed- income bonds or common stocks seek their required rate of return  
14 by reference to alternative investment opportunities, and are not concerned with the issuance  
15 costs incurred by a firm borrowing long-term debt or issuing common equity.  
16 Historical data concerning issuance and selling expenses (excluding market pressure) is  
17 shown on Schedule 7. To adjust for the cost of raising new common equity capital, the rate  
18 of return on common equity should recognize an appropriate multiple in order to allow for a  
19 market price of stock above book value. This would provide recognition for flotation costs,  
20 which are shown to be 4.0% for public offerings of common stocks by gas companies from  
21 2003 to 2008. Because these costs are not recovered elsewhere, they must be recognized in  
22 the rate of return. Since I apply the flotation cost to the entire cost of equity, I have only used  
23 a modification factor of 1.02 which is applied to the unadjusted DCF-measure of the cost of

**APPENDIX F TO DIRECT TESTIMONY OF PAUL R. MOUL**

- 1 equity to cover issuance expense. If the modification factor were applied to only a portion of
- 2 the cost of equity, such as just the dividend yield, then a higher factor would be necessary.

## APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL

### INTEREST RATES

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Interest rates can be viewed in their traditional nominal terms (i.e., the stated rate of interest) and in real terms (i.e., the stated rate of interest less the expected rate of inflation). Absent consideration of inflation, the real rate of interest is determined generally by supply factors which are influenced by investors willingness to forego current consumption (i.e., to save) and demand factors that are influenced by the opportunities to derive income from productive investments. Added to the real rate of interest is compensation required by investors for the inflationary impact of the declining purchasing power of their income received in the future. While interest rates are clearly influenced by the changing annual rate of inflation, it is important to note that the expected rate of inflation that is reflected in current interest rates may be quite different from the prevailing rate of inflation.

Rates of interest also vary by the type of interest bearing instrument. Investors require compensation for the risk associated with the term of the investment and the risk of default. The risk associated with the term of the investment is usually shown by the yield curve, i.e., the difference in rates across maturities. The typical structure is represented by a positive yield curve, which provides progressively higher interest rates as the maturities are lengthened. Flat (i.e., relatively level rates across maturities) or inverted (i.e., higher short-term rates than long-term rates) yield curves occur less frequently.

The risk of default is typically associated with the creditworthiness of the borrower. Differences in interest rates can be traced to the credit quality ratings assigned by the bond rating agencies, such as Moody's Investors Service, Inc. and Standard & Poor's Corporation. Obligations of the United States Treasury are usually considered to be free of default risk, and hence reflect only the real rate of interest, compensation for expected inflation, and

## APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL

1 maturity risk. The Treasury has been issuing inflation-indexed notes, which automatically  
2 provide compensation to investors for future inflation, thereby providing a lower current  
3 yield on these issues.

### Interest Rate Environment

4  
5 Federal Reserve Board ("Fed") policy actions, which impact directly short-term  
6 interest rates also substantially, affect investor sentiment in long-term fixed-income securities  
7 markets. In this regard, the Fed has often pursued policies designed to build investor  
8 confidence in the fixed-income securities market. Formative Fed policy has had a long  
9 history, as exemplified by the historic 1951 Treasury-Federal Reserve Accord, and more  
10 recently, deregulation within the financial system, which increased the level and volatility of  
11 interest rates. The Fed has indicated that it will follow a monetary policy designed to  
12 promote non-inflationary economic growth.

13 As background to the recent levels of interest rates, history shows that the Open  
14 Market Committee of the Federal Reserve board ("FOMC") began a series of moves toward  
15 lower short-term interest rates in mid-1990 -- at the outset of the previous recession.  
16 Monetary policy was influenced at that time by (i) steps taken to reduce the federal budget  
17 deficit, (ii) slowing economic growth, (iii) rising unemployment, and (iv) measures intended  
18 to avoid a credit crunch. Thereafter, the Federal government initiated several bold proposals  
19 to deal with future borrowings by the Treasury. With lower expected federal budget deficits  
20 and reduced Treasury borrowings, together with limitations on the supply of new 30-year  
21 Treasury bonds, long-term interest rates declined to a twenty-year low, reaching a trough of  
22 5.78% in October 1993.

23 On February 4, 1994, the FOMC began a series of increases in the Fed Funds rate

## APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL

1 (i.e., the interest rate on excess overnight bank reserves). The initial increase represented the  
2 first rise in short-term interest rates in five years. The series of seven increases doubled the  
3 Fed Funds rate to 6%. The increases in short-term interest rates also caused long-term rates  
4 to move up, continuing a trend, which began in the fourth quarter of 1993. The cyclical peak  
5 in long-term interest rates was reached on November 7 and 14, 1994 when 30-year Treasury  
6 bonds attained an 8.16% yield. Thereafter, long-term Treasury bond yields generally  
7 declined.

8           Beginning in mid-February 1996, long-term interest rates moved upward from their  
9 previous lows. After initially reaching a level of 6.75% on March 15, 1996, long-term  
10 interest rates continued to climb and reached a peak of 7.19% on July 5 and 8, 1996. For the  
11 period leading up to the 1996 Presidential election, long-term Treasury bonds generally  
12 traded within this range. After the election, interest rates moderated, returning to a level  
13 somewhat below the previous trading range. Thereafter, in December 1996, interest rates  
14 returned to a range of 6.5% to 7.0%, which existed for much of 1996.

15           On March 25, 1997, the FOMC decided to tighten monetary conditions through a  
16 one-quarter percentage point increase in the Fed Funds rate. This tightening increased the  
17 Fed Funds rate to 5.5%. In making this move, the FOMC stated that it was concerned by  
18 persistent strength of demand in the economy, which it feared would increase the risk of  
19 inflationary imbalances that could eventually interfere with the long economic expansion.

20           In the fourth quarter of 1997, the yields on Treasury bonds began to decline rapidly in  
21 response to an increase in demand for Treasury securities caused by a flight to safety  
22 triggered by the currency and stock market crisis in Asia. Liquidity provided by the Treasury  
23 market makes these bonds an attractive investment in times of crisis. This is because

## APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL

1 Treasury securities encompass a very large market, which provides ease of trading, and carry  
2 a premium for safety. During the fourth quarter of 1997, Treasury bond yields pierced the  
3 psychologically important 6% level for the first time since 1993.

4 Through the first half of 1998, the yields on long-term Treasury bonds fluctuated  
5 within a range of about 5.6% to 6.1% reflecting their attractiveness and safety. In the third  
6 quarter of 1998, there was further deterioration of investor confidence in global financial  
7 markets. This loss of confidence followed the moratorium (i.e., default) by Russia on its  
8 sovereign debt and fears associated with problems in Latin America. While not significant to  
9 the global economy in the aggregate, the August 17 default by Russia had a significant  
10 negative impact on investor confidence, following earlier discontent surrounding the crisis in  
11 Asia. These events subsequently led to a general pull back of risk-taking as displayed by  
12 banks growing reluctance to lend, worries of an expanding credit crunch, lower stock prices,  
13 and higher yields on bonds of riskier companies. These events contributed to the failure of  
14 the hedge fund, Long-Term Capital Management.

15 In response to these events, the FOMC cut the Fed Funds rate just prior to the mid-  
16 term Congressional elections. The FOMC's action was based upon concerns over how  
17 increasing weakness in foreign economies would affect the U.S. economy. As recently as  
18 July 1998, the FOMC had been more concerned about fighting inflation than the state of the  
19 economy. The initial rate cut was the first of three reductions by the FOMC. Thereafter, the  
20 yield on long-term Treasury bonds reached a 30-year low of 4.70% on October 5, 1998.  
21 Long-term Treasury yields below 5% had not been seen since 1967. Unlike the first rate cut  
22 that was widely anticipated, the second rate reduction by the FOMC was a surprise to the  
23 markets. A third reduction in short-term interest rates occurred in November 1998 when the

## APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL

1 FOMC reduced the Fed Funds rate to 4.75%.

2 All of these events prompted an increase in the prices for Treasury bonds, which lead  
3 to the low yields described above. Another factor that contributed to the decline in yields on  
4 long-term Treasury bonds was a reduction in the supply of new Treasury issues coming to  
5 market due to the Federal budget surplus -- the first in nearly 30 years. The dollar amount of  
6 Treasury bonds being issued declined by 30% in two years thus resulting in higher prices and  
7 lower yields. In addition, rumors of some struggling hedge funds unwinding their positions  
8 further added to the gains in Treasury bond prices.

9 The financial crisis that spread from Asia to Russia and to Latin America pushed  
10 nervous investors from stocks into Treasury bonds, thus increasing demand for bonds, just  
11 when supply was shrinking. There was also a move from corporate bonds to Treasury bonds  
12 to take advantage of appreciation in the Treasury market. This resulted in a certain amount  
13 of exuberance for Treasury bond investments that formerly was reserved for the stock  
14 market. Moreover, yields in the fourth quarter of 1998 became extremely volatile as shown  
15 by Treasury yields that fell from 5.10% on September 29 to 4.70% on October 5, and  
16 thereafter returned to 5.10% on October 13. A decline and rebound of 40 basis points in  
17 Treasury yields in a two-week time frame is remarkable.

18 Beginning in mid-1999, the FOMC raised interest rates on six occasions reversing its  
19 actions in the fall of 1998. On June 30, 1999, August 24, 1999, November 16, 1999,  
20 February 2, 2000, March 21, 2000, and May 16, 2000, the FOMC raised the Fed Funds rate  
21 to 6.50%. This brought the Fed Funds rate to its highest level since 1991, and was 175 basis  
22 points higher than the level that occurred at the height of the Asian currency and stock  
23 market crisis. At the time, these actions were taken in response to more normally functioning

## APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL

1 financial markets, tight labor markets, and a reversal of the monetary ease that was required  
2 earlier in response to the global financial market turmoil.

3 As the year 2000 drew to a close, economic activity slowed and consumer confidence  
4 began to weaken. In two steps at the beginning and at the end of January 2001, the FOMC  
5 reduced the Fed Funds rate by one percentage point. These actions brought the Fed Funds  
6 rate to 5.50%. The FOMC described its actions as “a rapid and forceful response of  
7 monetary policy” to eroding consumer and business confidence exemplified by weaker retail  
8 sales and business spending on capital equipment and cut backs in manufacturing production.  
9 Subsequently, on March 20, 2001, April 18, 2001, May 15, 2001, June 27, 2001, and August  
10 21, 2001, the FOMC lowered the Fed Funds in steps consisting of three 50 basis points  
11 decrements followed by two 25 basis points decrements. These actions took the Fed Funds  
12 rate to 3.50%. The FOMC observed on August 21, 2001:

13 “Household demand has been sustained, but business profits  
14 and capital spending continue to weaken and growth abroad is  
15 slowing, weighing on the U.S. economy. The associated  
16 easing of pressures on labor and product markets is expected  
17 to keep inflation contained.  
18

19 Although long-term prospects for productivity growth and the  
20 economy remain favorable, the Committee continues to  
21 believe that against the background of its long-run goals of  
22 price stability and sustainable economic growth and of the  
23 information currently available, the risks are weighted mainly  
24 toward conditions that may generate economic weakness in  
25 the foreseeable future.”  
26

27 After the terrorist attack on September 11, 2001, the FOMC made two additional 50 basis  
28 points reductions in the Fed Funds rate. The first reduction occurred on September 17, 2001  
29 and followed the four-day closure of the financial markets following the terrorist attacks. The  
30 second reduction occurred at the October 2 meeting of the FOMC where it observed:

## APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL

1           “The terrorist attacks have significantly heightened  
2           uncertainty in an economy that was already weak. Business  
3           and household spending as a consequence are being further  
4           damped. Nonetheless, the long-term prospects for  
5           productivity growth and the economy remain favorable and  
6           should become evident once the unusual forces restraining  
7           demand abate.”

8  
9           Afterward, the FOMC reduced the Fed Funds rate by 50 basis points on November 6, 2001  
10          and by 25 basis points on December 11, 2001. In total, short-term interest rates were reduced  
11          by the FOMC eleven (11) times during the year 2001. These actions cut the Fed Funds rate  
12          by 4.75% and resulted in 1.75% for the Fed Funds rate.

13                 In an attempt to deal with weakening fundamentals in the economy recovering from  
14          the recession that began in March 2001, the FOMC provided a psychologically important  
15          one-half percentage point reduction in the federal funds rate. The rate cut was twice as large  
16          as the market expected, and brought the fed funds rate to 1.25% on November 6, 2002. The  
17          FOMC stated that:

18                 “The Committee continues to believe that an accommodative  
19                 stance of monetary policy, coupled with still-robust  
20                 underlying growth in productivity, is providing important  
21                 ongoing support to economic activity. However, incoming  
22                 economic data have tended to confirm that greater  
23                 uncertainty, in part attributable to  
24                 heightened geopolitical risks, is currently inhibiting spending,  
25                 production, and employment. Inflation and inflation  
26                 expectations remain well contained.

27  
28                 In these circumstances, the Committee believes that today’s  
29                 additional monetary easing should prove helpful as the  
30                 economy works its way through this current soft spot. With  
31                 this action, the Committee believes that, against the  
32                 background of its long-run goals of price stability and  
33                 sustainable economic growth and  
34                 of the information currently available, the risks are balanced  
35                 with respect to the prospects for both goals in the foreseeable  
36                 future.”

37

## APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL

1 As 2003 unfolded, there was a continuing expectation of lower yields on Treasury  
2 securities. In fact, the yield on ten-year Treasury notes reached a 45-year low near the end  
3 of the second quarter of 2003. For long-term Treasury bonds, those yields culminated with a  
4 4.24% yield on June 13, 2003. Soon thereafter, the FOMC reduced the Fed Funds rate by 25  
5 basis points on June 25, 2003. In announcing its action, the FOMC stated:

6 “The Committee continues to believe that an accommodative  
7 stance of monetary policy, coupled with still robust underlying  
8 growth in productivity, is providing important ongoing support  
9 to economic activity. Recent signs point to a firming in  
10 spending, markedly improved financial conditions, and labor  
11 and product markets that are stabilizing. The economy,  
12 nonetheless, has yet to exhibit sustainable growth. With  
13 inflationary expectations subdued, the Committee judged that  
14 a slightly more expansive monetary policy would add further  
15 support for an economy which it expects to improve over  
16 time.”

17  
18 Thereafter, intermediate and long-term Treasury yields moved marketedly higher. Higher  
19 yields on long-term Treasury bonds, which exceeded 5.00% can be traced to: (i) the market’s  
20 disappointment that the Fed Funds rate was not reduced below 1.00%, (ii) an indication that  
21 the Fed will not use unconventional methods for implementing monetary policy, (iii)  
22 growing confidence in a strengthening economy, and (iv) a Federal budget deficit that is  
23 projected to be \$455 billion in 2003 (reported, subsequently, the actual deficit was \$374  
24 billion) and \$475 billion in 2004 (revised subsequently, the estimated deficit was \$500  
25 billion in 2004). All these factors significantly changed the sentiment in the bond market.

26 For the remainder of 2003, the FOMC continued with its balanced monetary policy,  
27 thereby retaining the 1% Fed Funds rate. However, in 2004, the FOMC initiated a policy of  
28 moving toward a more neutral Fed Funds rate (i.e., removing the bias of abnormal low rates).  
29 On June 30, 2004, August 10, 2004, September 21, 2004, November 10, 2004, December 14,

## APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL

1 2004, February 2, 2005, March 22, 2005, May 3, 2005, June 30, 2005, August 9, 2005,  
2 September 20, 2005, November 1, 2005, December 13, 2005, January 31, 2006, March 28,  
3 2006, May 10, 2006, and June 29, 2006, the FOMC increased the Fed Funds rate in  
4 seventeen 25 basis point increments. These policy actions are widely interpreted as part of  
5 the process of moving toward a more neutral range for the Fed Funds rate.

6 Just after the FOMC meeting on August 7, 2007, where the FOMC decided to retain a  
7 5.25% Fed Funds rate, turmoil in the credit markets prompted central banks throughout the  
8 world to inject over \$325 billion of reserves into the banking system over a three-day period  
9 in reaction to a credit crunch. Problems had been developing earlier in 2007, beginning in  
10 the market for asset-backed securities linked to subprime mortgages. Valuation uncertainties  
11 for these securities caused liquidity concerns for hedge funds, investment banks, and  
12 financial institutions. The market for commercial paper, the most liquid part of the credit  
13 markets for non-Treasury securities, was also affected. In response to the market turmoil, the  
14 FOMC issued the following statement, the first of its type since after the September 11, 2001  
15 terrorists' attack.

16 "The Federal Reserve is providing liquidity to facilitate the  
17 orderly functioning of financial markets.  
18

19 The Federal Reserve will provide reserves as necessary through  
20 open market operations to promote trading in the federal funds  
21 market at rates close to the Federal Open Market Committee's  
22 target rate of 5-1/4 percent. In current circumstances, depository  
23 institutions may experience unusual funding needs because of  
24 dislocations in money and credit markets. As always, the  
25 discount window is available as a source of funding."  
26

27 Then, one week after its initial announcement, the FOMC made a surprise reduction of 50  
28 basis points in the discount rate to narrow the spread between this rate and the target Fed

## APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL

1 Funds rate. At the same time, the FOMC made the following statement:

2 “Financial market conditions have deteriorated, and tighter  
3 credit conditions and increased uncertainty have the potential to  
4 restrain economic growth going forward. In these  
5 circumstances, although recent data suggest that the economy  
6 has continued to expand at a moderate pace, the Federal Open  
7 Market Committee judges that the downside risks to growth  
8 have increased appreciably. The Committee is monitoring the  
9 situation and is prepared to act as needed to mitigate the adverse  
10 effects on the economy arising from the disruptions in financial  
11 markets.”

12  
13 Thereafter, at its regularly scheduled meeting on September 18, 2007, the FOMC reduced the  
14 target Fed Funds rate to 4.75% and the discount rate was reduced to 5.25% in an effort to  
15 forestall the adverse effects of the financial market turmoil on the economy generally.

16 Further reductions of 25 basis points occurred at the next two FOMC meetings on October  
17 31, 2007 and on December 11, 2007. The December 11, 2007 FOMC statement indicated  
18 that:

19 Incoming information suggests that economic growth is  
20 slowing, reflecting the intensification of the housing correction  
21 and some softening in business and consumer spending.  
22 Moreover, strains in financial markets have increased in recent  
23 weeks. Today’s action, combined with the policy actions taken  
24 earlier, should help promote moderate growth over time.

25  
26 Readings on core inflation have improved modestly this year,  
27 but elevated energy and commodity prices, among other  
28 factors, may put upward pressure on inflation. In this context,  
29 the Committee judges that some inflation risks remain, and it  
30 will continue to monitor inflation developments carefully.

31  
32 Recent developments, including the deterioration in financial  
33 market conditions, have increased the uncertainty surrounding  
34 the outlook for economic growth and inflation. The Committee  
35 will continue to assess the effects of financial and other  
36 developments on economic prospects and will act as needed to  
37 foster price stability and sustainable economic growth.

38

## APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL

1 With these actions, the Fed Funds rate and the discount rate closed the calendar year 2007 at  
2 4.25% and 4.75%, respectively.

3 During 2008, many critical events occurred that influenced the capital markets, and  
4 hence interest rates. They include: (i) the collapse of The Bear Stearns Company and its  
5 acquisition by JPMorgan Chase & Co. with the aid of the Federal Reserve Bank of New  
6 York announced on March 16, 2008; (ii) the failure of IndyMac on July 11, 2008, which was  
7 at the time the third-largest banking failure in U.S. history, after a “run on the bank” by  
8 depositors; (iii) the placement of the government-sponsored enterprises (“GSE”) Federal  
9 National Mortgage Association (Fannie Mae) and Freddie Mac into conservatorship on  
10 September 7, 2008 by the Federal Housing Finance Agency; (iv) the largest bankruptcy filing  
11 in history by Lehman Brothers Holding, Inc. on September 15, 2008; (v) the acquisition of  
12 the banking operations of Washington Mutual, then the largest U.S. savings bank, by  
13 JPMorgan Chase on September 24, 2008, (Washington Mutual’s holding company  
14 subsequently filed for bankruptcy protection); (vi) the rescue of Merrill Lynch & Co., Inc. by  
15 Bank of America on September 15, 2008, with assistance of the Federal government; (vii) the  
16 effective nationalization on September 23, 2008, of American International Group, then the  
17 world’s largest insurance company, through the acquisition of 79.9% of its equity by the U.S.  
18 Treasury and (viii) other significant events affecting financial markets globally. The FOMC  
19 acted decisively in response to the events described above. Acting prior to its first regularly  
20 scheduled meeting in 2008, on January 22, 2008, the FOMC reduced the fed funds target by  
21 75 basis points to 3.50% and the discount rate was reduced by a corresponding amount to  
22 4.00%. Actions by the FOMC between meetings are unusual occurrences in recent years,  
23 thereby signifying the urgency that the FOMC saw in taking immediate action on monetary

**APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL**

1 policy in response to the financial crisis. Then on January 30, 2008, the fed funds target rate  
2 and discount rate were further reduced by 50 basis points, bringing those rates to 3.00% and  
3 3.50%, respectively. Credit market turmoil continued, and after the collapse of The Bear  
4 Stearn Companies noted above, the FOMC stated:

5 The Federal Reserve on Sunday announced two initiatives  
6 designed to bolster market liquidity and promote orderly  
7 market functioning. Liquid, well-functioning markets are  
8 essential for the promotion of economic growth.  
9

10 First, the Federal Reserve Board voted unanimously to  
11 authorize the Federal Reserve Bank of New York to create a  
12 lending facility to improve the ability of primary dealers to  
13 provide financing to participants in securitization markets. This  
14 facility will be available for business on Monday, March 17. It  
15 will be in place for at least six months and may be extended as  
16 conditions warrant. Credit extended to primary dealers under  
17 this facility may be collateralized by a broad range of  
18 investment-grade debt securities. The interest rate charged on  
19 such credit will be the same as the primary credit rate, or  
20 discount rate, at the Federal Reserve Bank of New York.  
21

22 Second, the Federal Reserve Board unanimously approved a  
23 request by the Federal Reserve Bank of New York to decrease  
24 the primary credit rate from 3-1/2 percent to 3-1/4 percent,  
25 effective immediately. This step lowers the spread of the  
26 primary credit rate over the Federal Open Market Committee's  
27 target federal funds rate to 1/4 percentage point. The Board  
28 also approved an increase in the maximum maturity of primary  
29 credit loans to 90 days from 30 days.  
30

31 The Board also approved the financing arrangement announced  
32 by JPMorgan Chase & Co. and The Bear Stearns Companies  
33 Inc.  
34

35 Then on March 18, 2008, the FOMC reduced the fed funds rate to 2.25% and the discount  
36 rate to 2.50%. Afterward on April 30, 2008, the FOMC further reduces the fed funds rate to  
37 2.00% and the discount rate to 2.25%. At subsequent meetings the FOMC held the fed funds  
38 rate steady. Then on October 8, 2008, the FOMC took another unusual unscheduled action

## APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL

1 by reducing the Fed Funds rate to 1.50% and the discount rate to 1.75%. Then, on October  
2 29, the FOMC lowered the Fed Funds rate to 1.00% and the discount rate to 1.25%. As 2008  
3 ended, the FOMC lowered the Fed Funds rate to a target range of 0.00% to 0.25%, its lowest  
4 rate ever. As a further response to the financial crisis, Congress passed and the President  
5 signed on October 3, 2008, the Emergency Economic Stabilization Act of 2008, which,  
6 among other provisions, provides the mechanism to deploy up to \$700 billion through the  
7 Troubled Asset Relief Program (“TARP”) to address urgent needs created by the credit crisis  
8 the country has experienced. Then, the Federal Reserve Board instituted its Commercial  
9 Paper Funding Facility (“CPFF”), which was authorized on October 7, 2008, and it  
10 participated in coordinated efforts by major central banks to support financial stability and to  
11 maintain flows of credit in the banking system. These programs included a \$75 billion Term  
12 Auction Facility (“TAF”), a future TAF auction totaling \$150 billion, and an increase to \$620  
13 billion of swap authorizations with central banks in Canada, England, Japan, Denmark, the  
14 European Union, Norway, Australia, Sweden, and Switzerland. Further, on February 17,  
15 2009, the President signed the American Recovery and Reinvestment Act that committed  
16 \$789 billion by the Federal government in an effort to create jobs, jumpstart growth and to  
17 transform the economy in reaction to the recession that began in December 2007.

18 The FOMC maintained its target range of 0.00% to 0.25% throughout the remainder  
19 of 2009. At its June 23, 2010 meeting, the FOMC stated:

20 Information received since the Federal Open Market  
21 Committee met in April suggests that the economic  
22 recovery is proceeding and that the labor market is  
23 improving gradually. Household spending is increasing but  
24 remains constrained by high unemployment, modest  
25 income growth, lower housing wealth, and tight credit.  
26 Business spending on equipment and software has risen  
27 significantly; however, investment in nonresidential

## APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL

1 structures continues to be weak and employers remain  
2 reluctant to add to payrolls. Housing starts remain at a  
3 depressed level. Financial conditions have become less  
4 supportive of economic growth on balance, largely  
5 reflecting developments abroad. Bank lending has  
6 continued to contract in recent months. Nonetheless, the  
7 Committee anticipates a gradual return to higher levels of  
8 resource utilization in a context of price stability, although  
9 the pace of economic recovery is likely to be moderate for  
10 a time.

11  
12

### **Public Utility Bond Yields**

13 The Risk Premium analysis of the cost of equity is represented by the combination of  
14 a firm's borrowing rate for long-term debt capital plus a premium that is required to reflect  
15 the additional risk associated with the equity of a firm as explained in Appendix H. Due to  
16 the senior nature of the long-term debt of a firm, its cost is lower than the cost of equity due  
17 to the prior claim, which lenders have on the earnings, and assets of a corporation.

18 As a generalization, all interest rates track to varying degrees of the benchmark yields  
19 established by the market for Treasury securities. Public utility bond yields usually reflect  
20 the underlying Treasury yield associated with a given maturity plus a spread to reflect the  
21 specific credit quality of the issuing public utility. Market sentiment can also have an  
22 influence on the spreads as described below. The spread in the yields on public utility bonds  
23 and Treasury bonds varies with market conditions, as does the relative level of interest rates  
24 at varying maturities shown by the yield curve.

25 Pages 1 and 2 of Schedule 8 provide the recent history of long-term public utility  
26 bond yields for the rating categories of Aa, A and Baa (no yields are shown for Aaa rated  
27 public utility bonds because this index has been discontinued). The top four rating categories  
28 of Aaa, Aa, A, and Baa are known as "investment grades" and are generally regarded as

## APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL

1 eligible for bank investments under commercial banking regulations. These investment  
2 grades are distinguished from "junk" bonds, which have ratings of Ba and below.

3 A relatively long history of the spread between the yields on long-term A-rated public  
4 utility bonds and 20-year Treasury bonds is shown on page 3 of Schedule 8. There, it is  
5 shown that those spreads were about one percent during the years 1994 through 1997. With  
6 the aversion to risk and flight to quality described earlier, a significant widening of the spread  
7 in the yields between corporate (e.g., public utility) and Treasury bonds developed in 1998,  
8 after an initial widening of the spread that began in the fourth quarter of 1997. The  
9 significant widening of spreads in 1998 was unexpected by some technically savvy investors,  
10 as shown by the debacle at the Long-Term Capital Management hedge fund. When Russia  
11 defaulted its debt on August 17, some investors had to cover short positions when Treasury  
12 prices spiked upward. Short covering by investors that guessed wrong on the relationship  
13 between corporate and Treasury bonds also contributed to the run-up in Treasury bond prices  
14 by increasing the demand for them. This helped to contribute to a widening of the spreads  
15 between corporate and Treasury bonds.

16 As shown on page 3 of Schedule 8, the spread in yields between A-rated public utility  
17 bonds and 20-year Treasury bonds was about one percentage point prior to 1998, 1.32% in  
18 1998, 1.42% in 1999, 2.01% in 2000, 2.13% in 2001, 1.94% in 2002, 1.62% in 2003, 1.12%  
19 in 2004, 1.01% in 2005, 1.08% in 2006, 1.16% in 2007, 2.17% in 2008, and 1.93% in 2009.  
20 As shown by the monthly data presented on pages 4 and 5 of Schedule 8, the interest rate  
21 spread between the yields on 20-year Treasury bonds and A-rated public utility bonds was  
22 1.39 percentage points for the twelve-months ended June 2010. For the six- and three-month  
23 periods ending June 2010, the yield spread was 1.37% and 1.39%, respectively.

## APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL

1 Beginning in August 2007, spreads widened significantly with the development of the  
2 credit crisis. As the credit crisis developed, there was a flight to quality, thereby increasing  
3 demand and reducing the yields on Treasury obligations. While this situation is most  
4 pronounced at the shortest end of the yield curve (i.e., obligations with the shortest duration),  
5 all Treasury yields display relatively low yields by reference to other credit obligations. By  
6 the third quarter of 2009, the spread in yields on A-rated public utility bonds and 20-year  
7 Treasury bonds declined significantly from the peak of the credit crisis.

### Risk-Free Rate of Return in the CAPM

8  
9 Regarding the risk-free rate of return (see Appendix I), pages 2 and 3 of Schedule 10  
10 provides the yields on the broad spectrum of Treasury Notes and Bonds. Some practitioners  
11 of the CAPM would advocate the use of short-term treasury yields (and some would argue  
12 for the yields on 91-day Treasury Bills). Other advocates of the CAPM would advocate the  
13 use of longer-term treasury yields as the best measure of a risk-free rate of return. As  
14 Ibbotson has indicated:

15 The Cost of Capital in a Regulatory Environment. When  
16 discounting cash flows projected over a long period, it is necessary  
17 to discount them by a long-term cost of capital. Additionally,  
18 regulatory processes for setting rates often specify or suggest that  
19 the desired rate of return for a regulated firm is that which would  
20 allow the firm to attract and retain debt and equity capital over the  
21 long term. Thus, the long-term cost of capital is typically the  
22 appropriate cost of capital to use in regulated ratesetting. (Stocks,  
23 Bonds, Bills and Inflation - 1992 Yearbook, pages 118-119)  
24

25 As indicated above, long-term Treasury bond yields represent the correct measure of the risk-  
26 free rate of return in the traditional CAPM. Very short term yields on Treasury bills should  
27 be avoided for several reasons. First, rates should be set on the basis of financial conditions  
28 that will exist during the effective period of the proposed rates. Second, 91-day Treasury bill

**APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL**

1 yields are more volatile than longer-term yields and are greatly influenced by FOMC  
2 monetary policy, political, and economic situations. Moreover, Treasury bill yields have  
3 been shown to be empirically inadequate for the CAPM. Some advocates of the theory  
4 would argue that the risk-free rate of return in the CAPM should be derived from quality  
5 long-term corporate bonds. To take a balanced approach to the risk-free rate of return, the  
6 yield on long-term Treasury bonds has been used for this purpose.

**APPENDIX H TO DIRECT TESTIMONY OF PAUL R. MOUL**

**RISK PREMIUM ANALYSIS**

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The cost of equity requires recognition of the risk premium required by common equities over long-term corporate bond yields. In the case of senior capital, a company contracts for the use of long-term debt capital at a stated coupon rate for a specific period of time and in the case of preferred stock capital at a stated dividend rate, usually with provision for redemption through sinking fund requirements. In the case of senior capital, the cost rate is known with a high degree of certainty because the payment for use of this capital is a contractual obligation, and the future schedule of payments is known. In essence, the investor-expected cost of senior capital is equal to the realized return over the entire term of the issue, absent default.

The cost of equity, on the other hand, is not fixed, but rather varies with investor perception of the risk associated with the common stock. Because no precise measurement exists as to the cost of equity, informed judgment must be exercised through a study of various market factors, which motivate investors to purchase common stock. In the case of common equity, the realized return rate may vary significantly from the expected cost rate due to the uncertainty associated with earnings on common equity. This uncertainty highlights the added risk of a common equity investment.

As one would expect from traditional risk and return relationships, the cost of equity is affected by expected interest rates. As noted in Appendix G, yields on long-term corporate bonds traditionally consist of a real rate of return without regard to inflation, an increment to reflect investor perception of expected future inflation, the investment horizon shown by the term of the issue until maturity, and the credit risk associated with each rating category.

## APPENDIX H TO DIRECT TESTIMONY OF PAUL R. MOUL

1           The Risk Premium approach recognizes the required compensation for the more risky  
2 common equity over the less risky secured debt position of a lender. The cost of equity  
3 stated in terms of the familiar risk premium approach is:

$$k=i+RP$$

4  
5 where, the cost of equity (" $k$ ") is equal to the interest rate on long-term corporate debt (" $i$ "),  
6 plus an equity risk premium (" $RP$ ") which represents the additional compensation for the  
7 riskier common equity.

### Equity Risk Premium

8  
9           The equity risk premium is determined as the difference in the rate of return on debt  
10 capital and the rate of return on common equity. Because the common equity holder has  
11 only a residual claim on earnings and assets, there is no assurance that achieved returns on  
12 common equities will equal expected returns. This is quite different from returns on bonds,  
13 where the investor realizes the expected return during the entire holding period, absent  
14 default. It is for this reason that common equities are always more risky than senior debt  
15 securities. There are investment strategies available to bond portfolio managers that  
16 immunize bond returns against fluctuations in interest rates because bonds are redeemed  
17 through sinking funds or at maturity, whereas no such redemption is mandated for public  
18 utility common equities.

19           It is well recognized that the expected return on more risky investments will exceed  
20 the required yield on less risky investments. Neither the possibility of default on a bond nor  
21 the maturity risk detracts from the risk analysis, because the common equity risk rate  
22 differential (i.e., the investor-required risk premium) is always greater than the return

**APPENDIX H TO DIRECT TESTIMONY OF PAUL R. MOUL**

1 components on a bond. It should also be noted that the investment horizon is typically long-  
2 run for both corporate debt and equity, and that the risk of default (i.e., corporate bankruptcy)  
3 is a concern to both debt and equity investors. Thus, the required yield on a bond provides a  
4 benchmark or starting point with which to track and measure the cost rate of common equity  
5 capital. There is no need to segment the bond yield according to its components, because it  
6 is the total return demanded by investors that is important for determining the risk rate  
7 differential for common equity. This is because the complete bond yield provides the basis  
8 to determine the differential, and as such, consistency requires that the computed differential  
9 must be applied to the complete bond yield when applying the risk premium approach. To  
10 apply the risk rate differential to a partial bond yield would result in a misspecification of the  
11 cost of equity because the computed differential was initially determined by reference to the  
12 entire bond return.

13         The risk rate differential between the cost of equity and the yield on long-term  
14 corporate bonds can be determined by reference to a comparison of holding period returns  
15 (here defined as one year) computed over long time spans. This analysis assumes that over  
16 long periods of time investors' expectations are on average consistent with rates of return  
17 actually achieved. Accordingly, historical holding period returns must not be analyzed over  
18 an unduly short period because near-term realized results may not have fulfilled investors'  
19 expectations. Moreover, specific past period results may not be representative of investment  
20 fundamentals expected for the future. This is especially apparent when the holding period  
21 returns include negative returns, which are not representative of either investor requirements  
22 of the past or investor expectations for the future. The short-run phenomenon of unexpected

## APPENDIX H TO DIRECT TESTIMONY OF PAUL R. MOUL

1 returns (either positive or negative) demonstrates that an unduly short historical period would  
2 not adequately support a risk premium analysis. It is important to distinguish between  
3 investors' motivation to invest, which encompass positive return expectations, and the  
4 knowledge that losses can occur. No rational investor would forego payment for the use of  
5 capital, or expect loss of principal, as a basis for investing. Investors will hold cash rather  
6 than invest with the expectation of a loss.

7         Within these constraints, page 1 of Schedule 9 provides the historical holding period  
8 returns for the S&P Public Utility Index which has been independently computed and the  
9 historical holding period returns for the S&P Composite Index which have been reported in  
10 Stocks, Bonds, Bills and Inflation published by Ibbotson & Associates. The tabulation  
11 begins with 1928 because January 1928 is the earliest monthly dividend yield for the S&P  
12 Public Utility Index. I have considered all reliable data for this study to avoid the  
13 introduction of a particular bias to the results. The measurement of the common equity return  
14 rate differential is based upon actual capital market performance using realized results. As a  
15 consequence, the underlying data for this risk premium approach can be analyzed with a high  
16 degree of precision. Informed professional judgment is required only to interpret the results  
17 of this study, but not to quantify the component variables.

18         The risk rate differentials for all equities, as measured by the S&P Composite, are  
19 established by reference to long-term corporate bonds. For public utilities, the risk rate  
20 differentials are computed with the S&P Public Utilities as compared with public utility  
21 bonds.

## APPENDIX H TO DIRECT TESTIMONY OF PAUL R. MOUL

1           The measurement procedure used to identify the risk rate differentials consisted of  
2 arithmetic means, geometric means, and medians for each series. Measures of the central  
3 tendency of the results from the historical periods provide the best indication of  
4 representative rates of return. In regulated ratesetting, the correct measure of the equity risk  
5 premium is the arithmetic mean because a utility must expect to earn its cost of capital in  
6 each year in order to provide investors with their long-term expectations. In other contexts,  
7 such as pension determinations, compound rates of return, as shown by the geometric means,  
8 may be appropriate. The median returns are also appropriate in ratesetting because they are a  
9 measure of the central tendency of a single period rate of return. Median values have also  
10 been considered in this analysis because they provide a return, which divides the entire series  
11 of annual returns in half, and are representative of a return that symbolizes, in a meaningful  
12 way, the central tendency of all annual returns contained within the analysis period. Medians  
13 are regularly included in many investor-influencing publications.

14           As previously noted, the arithmetic mean provides the appropriate point estimate of  
15 the risk premium. As further explained in Appendix I, the long-term cost of capital in rate  
16 cases requires the use of arithmetic means. To supplement my analysis, I have also used the  
17 rates of return taken from the geometric mean and median for each series to provide the  
18 bounds of the range to measure the risk rate differentials. While the use of the geometric  
19 mean would be inappropriate for CAPM purposes due to the specification of that model, it  
20 can provide a limit of the bounds for the Risk Premium approach that does not contain the  
21 single-period limitation. This further analysis shows that when selecting the midpoint from a  
22 range established with the geometric means and medians, the arithmetic mean is indeed a

**APPENDIX H TO DIRECT TESTIMONY OF PAUL R. MOUL**

1 reasonable measure for the long-term cost of capital. For the years 1928 through 2007, the  
2 risk premiums for each class of equity are:

	<u>S&amp;P Composite</u>	<u>S&amp;P Public Utilities</u>
3		
4		
5		
6	Arithmetic Mean	<u>5.82%</u>
7		<u>5.52%</u>
8	Geometric Mean	4.23%
9	Median	<u>9.27%</u>
10		<u>7.50%</u>
11	Midpoint of Range	<u>6.75%</u>
12		<u>5.49%</u>
13	Average of Arithmetic Mean and Midpoint of Range	<u>6.29%</u>
		<u>5.51%</u>

14 The empirical evidence suggests that the common equity risk premium is higher for the S&P  
15 Composite Index compared to the S&P Public Utilities.

16 If, however, specific historical periods were also analyzed in order to match more  
17 closely historical fundamentals with current expectations, the results provided on page 2 of  
18 Schedule 9 should also be considered. One of these sub-periods included the 56-year period,  
19 1952-2007. These years follow the historic 1951 Treasury-Federal Reserve Accord, which  
20 affected monetary policy and the market for government securities.

21 A further investigation was undertaken to determine whether realignment has taken  
22 place subsequent to the historic 1973 Arab Oil embargo and during the deregulation of the  
23 financial markets. In each case, the public utility risk premiums were computed by using the  
24 arithmetic mean, and the geometric means and medians to establish the range shown by those  
25 values. The time periods covering the more recent periods 1974 through 2007 and 1979  
26 through 2007 contain events subsequent to the initial oil shock and the advent of monetarism  
27 as Fed policy, respectively. For the 56-year, 34-year and 29-year periods, the public utility

**APPENDIX H TO DIRECT TESTIMONY OF PAUL R. MOUL**

- 1 risk premiums were 6.58%, 6.08%, and 6.37% respectively, as shown by the average of the
- 2 specific point-estimates and the midpoint of the ranges provided on page 2 of Schedule 9.

**APPENDIX I TO DIRECT TESTIMONY OF PAUL R. MOUL**

**CAPITAL ASSET PRICING MODEL**

1  
2 Modern portfolio theory provides a theoretical explanation of expected returns on  
3 portfolios of securities. The Capital Asset Pricing Model ("CAPM") attempts to describe the  
4 way prices of individual securities are determined in efficient markets where information is  
5 freely available and is reflected instantaneously in security prices. The CAPM states that the  
6 expected rate of return on a security is determined by a risk-free rate of return plus a risk  
7 premium, which is proportional to the non-diversifiable (or systematic) risk of a security.

8 The CAPM theory has several unique assumptions that are not common to most other  
9 methods used to measure the cost of equity. As with other market-based approaches, the  
10 CAPM is an expectational concept. There has been significant academic research conducted  
11 that found that the empirical market line, based upon historical data, has a less steep slope  
12 and higher intercept than the theoretical market line of the CAPM. For equities with a beta  
13 less than 1.0, such as utility common stocks, the CAPM theoretical market line will  
14 underestimate the realistic expectation of investors in comparison with the empirical market  
15 line, which shows that the CAPM may potentially misspecify investors' required return.

16 The CAPM considers changing market fundamentals in a portfolio context. The  
17 balance of the investment risk, or that characterized as unsystematic, must be diversified.  
18 Some argue that diversifiable (unsystematic) risk is unimportant to investors. But this  
19 contention is not completely justified because the business and financial risk of an individual  
20 company, including regulatory risk, are widely discussed within the investment community  
21 and therefore influence investors in regulated firms. In addition, I note that the CAPM  
22 assumes that through portfolio diversification, investors will minimize the effect of the  
23 unsystematic (diversifiable) component of investment risk. Because it is not known whether

## APPENDIX I TO DIRECT TESTIMONY OF PAUL R. MOUL

1 the average investor holds a well-diversified portfolio, the CAPM must also be used with  
2 other models of the cost of equity.

3 To apply the traditional CAPM theory, three inputs are required: the beta coefficient  
4 (" $\beta$ "), a risk-free rate of return (" $R_f$ "), and a market premium (" $R_m - R_f$ "). The cost of equity  
5 stated in terms of the CAPM is:

$$6 \quad k = R_f + \beta (R_m - R_f)$$

7 As previously indicated, it is important to recognize that the academic research has  
8 shown that the security market line was flatter than that predicted by the CAPM theory and it  
9 had a higher intercept than the risk-free rate. These tests indicated that for portfolios with  
10 betas less than 1.0, the traditional CAPM would understate the return for such stocks.  
11 Likewise, for portfolios with betas above 1.0, these companies had lower returns than  
12 indicated by the traditional CAPM theory. Once again, CAPM assumes that through  
13 portfolio diversification investors will minimize the effect of the unsystematic (diversifiable)  
14 component of investment risk. Therefore, the CAPM must also be used with other models of  
15 the cost of equity, especially when it is not known whether the average public utility investor  
16 holds a well-diversified portfolio.

### 17 Beta

18 The beta coefficient is a statistical measure, which attempts to identify the non-  
19 diversifiable (systematic) risk of an individual security and measures the sensitivity of rates  
20 of return on a particular security with general market movements. Under the CAPM theory,  
21 a security that has a beta of 1.0 should theoretically provide a rate of return equal to the  
22 return rate provided by the market. When employing stock price changes in the derivation of  
23 beta, a stock with a beta of 1.0 should exhibit a movement in price, which would track the

## APPENDIX I TO DIRECT TESTIMONY OF PAUL R. MOUL

1 movements in the overall market prices of stocks. Hence, if a particular investment has a  
2 beta of 1.0, a one percent increase in the return on the market will result, on average, in a one  
3 percent increase in the return on the particular investment. An investment, which has a beta  
4 less than 1.0, is considered to be less risky than the market.

5 The beta coefficient (" $\beta$ "), the one input in the CAPM application, which specifically  
6 applies to an individual firm, is derived from a statistical application, which regresses the  
7 returns on an individual security (dependent variable) with the returns on the market as a  
8 whole (independent variable). The beta coefficients for utility companies typically describe a  
9 small proportion of the total investment risk because the coefficients of determination ( $R^2$ )  
10 are low.

11 Page 1 of Schedule 10 provides the betas published by Value Line. By way of  
12 explanation, the Value Line beta coefficient is derived from a "straight regression" based  
13 upon the percentage change in the weekly price of common stock and the percentage change  
14 weekly of the New York Stock Exchange Composite average using a five-year period. The  
15 raw historical beta is adjusted by Value Line for the measurement effect resulting in  
16 overestimates in high beta stocks and underestimates in low beta stocks. Value Line then  
17 rounds its betas to the nearest .05 increment. Value Line does not consider dividends in the  
18 computation of its betas.

### 19 Market Premium

20 The final element necessary to apply the CAPM is the market premium. The market  
21 premium by definition is the rate of return on the total market less the risk-free rate of return  
22 (" $R_m - R_f$ "). In this regard, the market premium in the CAPM has been calculated from the  
23 total return on the market of equities using forecast and historical data. The future market

**APPENDIX I TO DIRECT TESTIMONY OF PAUL R. MOUL**

1 return is established with forecasts by Value Line using estimated dividend yields and capital  
2 appreciation potential.

3 With regard to the forecast data, I have relied upon the Value Line forecasts of capital  
4 appreciation and the dividend yield on the 1,700 stocks in the Value Line Survey. According  
5 to the June 25, 2010 edition of The Value Line Investment Survey Summary and Index, (see  
6 page 5 of Schedule 10) the total return on the universe of Value Line equities is:

	<u>Dividend</u> <u>Yield</u>	+	<u>Median</u> <u>Appreciation</u> <u>Potential</u>	=	<u>Median</u> <u>Total</u> <u>Return</u>
As of June 25, 2010	2.0%	+	13.34% <sup>1</sup>	=	15.34%

12 The tabulation shown above provides the dividend yield and capital gains yield of the  
13 companies followed by Value Line. Another measure of the total market return is provided  
14 by the DCF return on the S&P 500 Composite index. That return is shown below.

DCF Result for the S&P 500 Composite					
D/P	( 1+.5g )	+	g	=	k
2.17%	( 1.0530 )	+	10.60%	=	12.89%
where:	Price (P)	at	6/30/2010	=	1030.71
	Dividend (D)	for	2nd Qtr. '10	=	5.58
	Dividend (D)		annualized	=	22.32
	Growth (g)		First Call EpS	=	10.60%

15  
16 Using these indicators, the total market return is 14.12% (15.34% + 12.89% = 28.23% ÷ 2)  
17 using both the Value Line and S&P derived returns. With the 14.12% forecast market return  
18 and the 4.75% risk-free rate of return, a 9.37% (14.12% - 4.75%) market premium would be  
19 indicated using forecast market data.

---

<sup>1</sup>The estimated median appreciation potential is forecast to be 65% for 3 to 5 years hence. The annual capital gains yield at the midpoint of the forecast period is 13.34% (i.e., 1.65<sup>.25</sup> - 1).

## APPENDIX I TO DIRECT TESTIMONY OF PAUL R. MOUL

1 I have also provided market premiums that have been widely circulated among the  
2 investment and academic community, which today is published by Morningstar, Inc. These  
3 data are contained in the 2009 Ibbotson® Stocks, Bonds, Bills and Inflation ("SBBI") Classic  
4 Yearbook. From the data provided on page 6 of Schedule 10, I calculate a market premium  
5 using the historical common stock arithmetic mean returns of 11.7% less government bond  
6 arithmetic mean returns of 6.1%. For the period 1926-2008, the market premium was 5.6%  
7 (11.7% - 6.1%). I should note that the arithmetic mean must be used in the CAPM because it  
8 is a single period model. It is further confirmed by Ibbotson who has indicated:

### *Arithmetic Versus Geometric Differences*

9 For use as the expected equity risk premium in the CAPM,  
10 the *arithmetic* or *simple difference* of the *arithmetic* means of  
11 stock market returns and riskless rates is the relevant  
12 number. This is because the CAPM is an additive model  
13 where the cost of capital is the sum of its parts. Therefore,  
14 the CAPM expected equity risk premium must be derived by  
15 arithmetic, *not geometric*, subtraction.  
16  
17

### *Arithmetic Versus Geometric Means*

18 The expected equity risk premium should always be  
19 calculated using the arithmetic mean. The arithmetic mean  
20 is the rate of return which, when compounded over multiple  
21 periods, gives the mean of the probability distribution of  
22 ending wealth values. This makes the arithmetic mean return  
23 appropriate for computing the cost of capital. The discount  
24 rate that equates expected (mean) future values with the  
25 present value of an investment is that investment's cost of  
26 capital. The logic of using the discount rate as the cost of  
27 capital is reinforced by noting that investors will discount  
28 their (mean) ending wealth values from an investment back  
29 to the present using the arithmetic mean, for the reason given  
30 above. They will therefore require such an expected (mean)  
31 return prospectively (that is, in the present looking toward  
32 the future) to commit their capital to the investment. (Stocks,  
33 Bonds, Bills and Inflation - 1996 Yearbook, pages 153-154)  
34  
35

36 Also shown on page 6 of Schedule 10 is the long-horizon expected market premiums

**APPENDIX I TO DIRECT TESTIMONY OF PAUL R. MOUL**

1 of 6.5% also published in the SBBI Classic Yearbook. An average of the historical and  
2 expected SBBI market premium is 6.05% ( $5.6\% + 6.5\% = 12.1\% \div 2$ ).

3 For the CAPM, a market premium of 7.71% ( $6.05\% + 9.37\% = 15.42\% \div 2$ ) would  
4 be reasonable which is the average of the 6.05% SBBI data and the 9.37% Value Line and  
5 S&P 500 data.



## APPENDIX J TO DIRECT TESTIMONY OF PAUL R. MOUL

### Financial Strength

1  
2  
3 The financial strength of each of the more than 1,600  
4 companies in the VS II data base is rated relative to all the  
5 others. The ratings range from A++ to C in nine steps. (For  
6 screening purposes, think of an A rating as "greater than" a  
7 B). Companies that have the best relative financial strength  
8 are given an A++ rating, indicating ability to weather hard  
9 times better than the vast majority of other companies.  
10 Those who don't quite merit the top rating are given an A+  
11 grade, and so on. A rating as low as C++ is considered  
12 satisfactory. A rating of C+ is well below average, and C is  
13 reserved for companies with very serious financial problems.  
14 The ratings are based upon a computer analysis of a number  
15 of key variables that determine (a) financial leverage, (b)  
16 business risk, and (c) company size, plus the judgment of  
17 Value Line's analysts and senior editors regarding factors  
18 that cannot be quantified across-the-board for companies.  
19 The primary variables that are indexed and studied include  
20 equity coverage of debt, equity coverage of intangibles,  
21 "quick ratio", accounting methods, variability of return, fixed  
22 charge coverage, stock price stability, and company size.  
23

### Price Stability Index

24  
25  
26 An index based upon a ranking of the weekly percent  
27 changes in the price of the stock over the last five years. The  
28 lower the standard deviation of the changes, the more stable  
29 the stock. Stocks ranking in the top 5% (lowest standard  
30 deviations) carry a Price Stability Index of 100; the next 5%,  
31 95; and so on down to 5. One standard deviation is the range  
32 around the average weekly percent change in the price that  
33 encompasses about two thirds of all the weekly percent  
34 change figures over the last five years. When the range is  
35 wide, the standard deviation is high and the stock's Price  
36 Stability Index is low.  
37

### Beta

38  
39  
40 A measure of the sensitivity of the stock's price to overall  
41 fluctuations in the New York Stock Exchange Composite  
42 Average. A Beta of 1.50 indicates that a stock tends to rise  
43 (or fall) 50% more than the New York Stock Exchange  
44 Composite Average. Use Beta to measure the stock market  
45 risk inherent in any diversified portfolio of, say, 15 or more  
46 companies. Otherwise, use the Safety Rank, which measures

**APPENDIX J TO DIRECT TESTIMONY OF PAUL R. MOUL**

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total risk inherent in an equity, including that portion attributable to market fluctuations. Beta is derived from a least squares regression analysis between weekly percent changes in the price of a stock and weekly percent changes in the NYSE Average over a period of five years. In the case of shorter price histories, a smaller time period is used, but two years is the minimum. The Betas are periodically adjusted for their long-term tendency to regress toward 1.00.

Technical Rank

A prediction of relative price movement, primarily over the next three to six months. It is a function of price action relative to all stocks followed by Value Line. Stocks ranked 1 (Highest) or 2 (Above Average) are likely to outpace the market. Those ranked 4 (Below Average) or 5 (Lowest) are not expected to outperform most stocks over the next six months. Stocks ranked 3 (Average) will probably advance or decline with the market. Investors should use the Technical and Timeliness Ranks as complements to one another.

Direct Testimony and Schedules  
Paul R. Moul

Before the Minnesota Public Utilities Commission  
State of Minnesota

In the Matter of the Application of Minnesota Energy Resources Corporation for Authority to  
Increase Rates for Natural Gas Service in Minnesota

Docket No. G007,011/GR-10-977

Exhibit \_\_\_\_\_

**Exhibits**

November 30, 2010

Minnesota Energy Resources Corporation  
Index of Schedules

	<u>Schedule Numbers</u>
Minnesota Energy Resources Corporation Historical Capitalization and Financial Statistics	1
Gas Group Historical Capitalization and Financial Statistics	2
Standard & Poor's Public Utilities Historical Capitalization and Financial Statistics	3
Dividend Yields	4
Historical Growth Rates	5
Projected Growth Rates	6
Analysis of Public Offerings of Common Stock	7
Interest Rates for Investment Grade Public Utility Bonds	8
Long-Term, Year-by-Year Total Returns for the S&P Composite Index, S&P Public Utility Index, and Long-Term Corporate Bonds and Public Utility Bonds	9
Component Inputs for the Capital Market Pricing Model	10
Comparable Earnings Approach	11

Minnesota Energy Resources Corporation  
Capitalization and Financial Statistics  
2005-2009, Inclusive

	<u>2009</u>	<u>2008</u>	<u>2007</u>	<u>2006</u>	<u>2005</u>	
	(Millions of Dollars)					
Amount of Capital Employed						
Permanent Capital	\$ 178.2	\$ 200.9	\$ 180.1	\$ 177.7	\$ 409.2	
Short-Term Debt	\$ 3.6	\$ 22.3	\$ 33.1	\$ 27.0	\$ -	
Total Capital <sup>(1)</sup>	<u>\$ 181.8</u>	<u>\$ 223.2</u>	<u>\$ 213.2</u>	<u>\$ 204.7</u>	<u>\$ 409.2</u>	
Capital Structure Ratios						
Based on Total Capital:						<u>Average</u>
Total Debt incl. Short Term	49.8%	49.0%	56.3%	55.7%	49.0%	<u>52.0%</u>
Common Equity <sup>(2)</sup>	50.2%	51.0%	43.7%	44.3%	51.0%	<u>48.0%</u>
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>
Rate of Return on Book Common Equity <sup>(2)</sup>	9.3%	4.7%	2.1%	1.6%	2.6%	4.1%
Operating Ratio <sup>(3)</sup>	85.8%	96.0%	96.9%	95.8%	95.4%	94.0%
Coverage incl. AFUDC <sup>(4)</sup>						
Pre-tax: All Interest Charges	3.81 x	2.35 x	1.55 x	2.09 x	2.95 x	2.55 x
Post-tax: All Interest Charges	2.64 x	1.80 x	1.32 x	1.40 x	2.09 x	1.85 x
Quality of Earnings & Cash Flow						
AFC/Income Avail. for Common Equity	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Effective Income Tax Rate	41.7%	40.4%	41.9%	63.4%	44.1%	46.3%
Internal Cash Generation/Construction <sup>(5)</sup>	-31.6%	192.9%	124.8%			95.4%
Gross Cash Flow/ Avg. Total Debt <sup>(6)</sup>	33.5%	22.0%	17.8%			24.4%
Gross Cash Flow Interest Coverage <sup>(7)</sup>	6.78 x	5.19 x	4.49 x			5.49 x

See Page 2 for Notes.

Minnesota Energy Resources Corporation  
Capitalization and Financial Statistics  
2005-2009, Inclusive

Notes:

- (1) 2005 data is the sum of data provided in Aquila Networks - NMU and PNG Gas Company Jurisdictional Annual Reports to the Minnesota Department of Commerce. These values are 12 point averages. Note that no distinction is made between long-term and short-term debt in this report. For these purposes all debt reported is assumed to be long-term.
- (2) Excludes non-utility items - goodwill and related deferred taxes and home services customer lists.
- (3) Total operating expenses, maintenance, depreciation and taxes other than income taxes as a percent of operating revenues.
- (4) Coverage calculations represent the number of times available earnings including AFUDC (allowance for funds used during construction) cover fixed charges.
- (5) Internal cash generation/gross construction is the percentage of gross construction expenditures provided by internally-generated funds from operations after payment of all cash dividends divided by gross construction expenditures.
- (6) Gross Cash Flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less total AFUDC) plus interest charges, divided by interest charges.
- (7) Gross Cash Flow plus interest charges divided by interest charges.

Source of Information: Company provided data

Gas Group  
Capitalization and Financial Statistics <sup>(1)</sup>  
2005-2009, Inclusive

	<u>2009</u>	<u>2008</u>	<u>2007</u>	<u>2006</u>	<u>2005</u>	
			(Millions of Dollars)			
Amount of Capital Employed						
Permanent Capital	\$ 2,164.5	\$ 2,065.5	\$ 1,979.7	\$ 1,900.4	\$ 1,823.5	
Short-Term Debt	\$ 229.5	\$ 361.8	\$ 232.6	\$ 263.5	\$ 187.8	
Total Capital	<u>\$ 2,394.0</u>	<u>\$ 2,427.3</u>	<u>\$ 2,212.3</u>	<u>\$ 2,163.9</u>	<u>\$ 2,011.3</u>	
Market-Based Financial Ratios						<u>Average</u>
Price-Earnings Multiple	20 x	15 x	17 x	16 x	16 x	17 x
Market/Book Ratio	171.6%	181.7%	195.4%	192.9%	198.4%	188.0%
Dividend Yield	4.3%	4.1%	3.7%	3.7%	3.7%	3.9%
Dividend Payout Ratio	79.4%	56.0%	60.2%	59.4%	59.6%	62.9%
Capital Structure Ratios						
Based on Permanent Capital:						
Long-Term Debt	44.2%	44.5%	44.9%	46.4%	46.1%	45.2%
Preferred Stock	0.4%	0.4%	0.5%	0.5%	0.4%	0.4%
Common Equity <sup>(2)</sup>	<u>55.4%</u>	<u>55.2%</u>	<u>54.6%</u>	<u>53.2%</u>	<u>53.5%</u>	<u>54.4%</u>
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>
Based on Total Capital:						
Total Debt incl. Short Term	50.3%	53.2%	51.5%	53.8%	51.9%	52.1%
Preferred Stock	0.3%	0.3%	0.4%	0.4%	0.4%	0.4%
Common Equity <sup>(2)</sup>	<u>49.4%</u>	<u>46.5%</u>	<u>48.1%</u>	<u>45.8%</u>	<u>47.7%</u>	<u>47.5%</u>
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>
Rate of Return on Book Common Equity <sup>(2)</sup>	10.2%	12.6%	11.7%	12.4%	12.2%	11.8%
Operating Ratio <sup>(3)</sup>	88.2%	89.0%	88.7%	89.1%	89.1%	88.8%
Coverage incl. AFUDC <sup>(4)</sup>						
Pre-tax: All Interest Charges	4.35 x	4.82 x	4.07 x	4.14 x	4.43 x	4.36 x
Post-tax: All Interest Charges	3.11 x	3.36 x	2.89 x	2.92 x	3.11 x	3.08 x
Overall Coverage: All Int. & Pfd. Div.	3.10 x	3.34 x	2.88 x	2.91 x	3.10 x	3.07 x
Coverage excl. AFUDC <sup>(4)</sup>						
Pre-tax: All Interest Charges	4.32 x	4.77 x	4.04 x	4.11 x	4.41 x	4.33 x
Post-tax: All Interest Charges	3.07 x	3.31 x	2.86 x	2.89 x	3.10 x	3.05 x
Overall Coverage: All Int. & Pfd. Div.	3.06 x	3.30 x	2.85 x	2.88 x	3.08 x	3.03 x
Quality of Earnings & Cash Flow						
AFC/Income Avail. for Common Equity	2.4%	1.8%	1.9%	1.8%	0.9%	1.8%
Effective Income Tax Rate	35.7%	38.3%	38.2%	38.5%	38.1%	37.8%
Internal Cash Generation/Construction <sup>(5)</sup>	100.4%	108.2%	110.5%	78.0%	84.6%	96.3%
Gross Cash Flow/ Avg. Total Debt <sup>(6)</sup>	22.1%	21.5%	21.1%	18.9%	20.3%	20.8%
Gross Cash Flow Interest Coverage <sup>(7)</sup>	5.95 x	5.24 x	4.80 x	4.15 x	4.53 x	4.93 x
Common Dividend Coverage <sup>(8)</sup>	3.53 x	3.51 x	3.41 x	3.10 x	3.06 x	3.32 x

See Page 2 for Notes.

Gas Group  
Capitalization and Financial Statistics  
2005-2009, Inclusive

Notes:

- (1) All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group.
- (2) Excluding Accumulated Other Comprehensive Income ("OCI") from the equity account.
- (3) Total operating expenses, maintenance, depreciation and taxes other than income taxes as a percent of operating revenues.
- (4) Coverage calculations represent the number of times available earnings, both including and excluding AFUDC (allowance for funds used during construction) as reported in its entirety, cover fixed charges.
- (5) Internal cash generation/gross construction is the percentage of gross construction expenditures provided by internally-generated funds from operations after payment of all cash dividends divided by gross construction expenditures.
- (6) Gross Cash Flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less total AFUDC) plus interest charges, divided by interest charges.
- (7) Gross Cash Flow plus interest charges divided by interest charges.
- (8) Common dividend coverage is the relationship of internally-generated funds from operations after payment of preferred stock dividends to common dividends paid.

Basis of Selection:

The Gas Group includes companies that are contained in The Value Line Investment Survey basic service, and the elimination of NiSource due to its electric and natural gas pipeline/storage operations, Southwest Gas due to its location, UGI Corp. due to its highly diversified businesses, and Laclede Group and NICOR due to their lack of extensive revenue stabilization mechanisms.

Ticker	Company	Corporate Credit Ratings		Stock Traded	S&P Stock Ranking	Value Line Beta
		Moody's	S&P			
ATG	AGL Resources, Inc.	A3	A-	NYSE	A-	0.75
ATO	Atmos Energy Corp.	Baa2	BBB+	NYSE	B+	0.65
NJR	New Jersey Resources Corp	Aa3	A	NYSE	A	0.65
NWN	Northwest Natural Gas	A3	A+	NYSE	A-	0.60
PNY	Piedmont Natural Gas Co.	A3	A	NYSE	A-	0.65
SJI	South Jersey Industries, Inc.	Baa1	BBB+	NYSE	B+	0.60
WGL	WGL Holdings, Inc.	A2	AA-	NYSE	B+	0.65
	Average	<u>A3</u>	<u>A</u>		<u>A-</u>	<u>0.65</u>

Note: Ratings are those of utility subsidiaries

Source of Information: Utility COMPUSTAT  
Moody's Investors Service  
Standard & Poor's Corporation  
S&P Stock Guide

Standard & Poor's Public Utilities  
Capitalization and Financial Statistics <sup>(1)</sup>  
2005-2009, Inclusive

	<u>2009</u>	<u>2008</u>	<u>2007</u>	<u>2006</u>	<u>2005</u>	
	(Millions of Dollars)					
<b>Amount of Capital Employed</b>						
Permanent Capital	\$ 16,345.0	\$ 15,307.2	\$ 13,978.1	\$ 14,025.4	\$ 13,213.3	
Short-Term Debt	\$ 370.6	\$ 746.9	\$ 578.0	\$ 478.8	\$ 436.5	
Total Capital	<u>\$ 16,715.6</u>	<u>\$ 16,054.1</u>	<u>\$ 14,556.1</u>	<u>\$ 14,504.2</u>	<u>\$ 13,649.8</u>	
<b>Market-Based Financial Ratios</b>						
						<u>Average</u>
Price-Earnings Multiple	14 x	15 x	16 x	17 x	16 x	16 x
Market/Book Ratio	138.4%	184.8%	228.7%	217.3%	211.3%	196.1%
Dividend Yield	5.0%	4.1%	3.3%	3.7%	3.7%	4.0%
Dividend Payout Ratio	68.1%	60.6%	53.3%	61.6%	59.4%	60.6%
<b>Capital Structure Ratios</b>						
Based on Permanent Capital:						
Long-Term Debt	52.7%	53.7%	51.8%	53.0%	54.5%	53.1%
Preferred Stock	0.9%	1.0%	1.1%	1.2%	1.3%	1.1%
Common Equity <sup>(2)</sup>	<u>46.3%</u>	<u>45.4%</u>	<u>47.1%</u>	<u>45.9%</u>	<u>44.2%</u>	<u>45.8%</u>
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>
Based on Total Capital:						
Total Debt incl. Short Term	54.2%	56.6%	54.5%	55.1%	56.8%	55.4%
Preferred Stock	0.9%	1.0%	1.1%	1.1%	1.2%	1.1%
Common Equity <sup>(2)</sup>	<u>44.9%</u>	<u>42.5%</u>	<u>44.5%</u>	<u>43.8%</u>	<u>41.9%</u>	<u>43.5%</u>
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>
Rate of Return on Book Common Equity <sup>(2)</sup>	10.0%	12.3%	13.1%	12.1%	11.2%	11.7%
Operating Ratio <sup>(3)</sup>	82.9%	84.2%	84.3%	84.6%	86.0%	84.4%
<b>Coverage incl. AFUDC <sup>(4)</sup></b>						
Pre-tax: All Interest Charges	3.66 x	3.42 x	3.81 x	3.38 x	3.23 x	3.50 x
Post-tax: All Interest Charges	2.73 x	2.58 x	2.87 x	2.62 x	2.57 x	2.67 x
Overall Coverage: All Int. & Pfd. Div.	2.66 x	2.55 x	2.84 x	2.59 x	2.53 x	2.63 x
<b>Coverage excl. AFUDC <sup>(4)</sup></b>						
Pre-tax: All Interest Charges	3.56 x	3.31 x	3.73 x	3.33 x	3.19 x	3.42 x
Post-tax: All Interest Charges	2.63 x	2.47 x	2.79 x	2.57 x	2.53 x	2.60 x
Overall Coverage: All Int. & Pfd. Div.	2.56 x	2.44 x	2.75 x	2.54 x	2.49 x	2.56 x
<b>Quality of Earnings &amp; Cash Flow</b>						
AFC/Income Avail. for Common Equity	7.6%	7.2%	5.0%	3.5%	1.0%	4.9%
Effective Income Tax Rate	31.6%	32.3%	34.1%	32.7%	29.4%	32.0%
Internal Cash Generation/Construction <sup>(5)</sup>	90.5%	78.6%	82.3%	88.5%	101.9%	88.4%
Gross Cash Flow/ Avg. Total Debt <sup>(6)</sup>	26.9%	24.7%	24.6%	22.6%	20.8%	23.9%
Gross Cash Flow Interest Coverage <sup>(7)</sup>	5.65 x	5.13 x	4.94 x	4.49 x	4.40 x	4.92 x
Common Dividend Coverage <sup>(8)</sup>	5.15 x	5.31 x	5.84 x	4.31 x	4.46 x	5.01 x

See Page 2 for Notes.

Standard & Poor's Public Utilities  
Capitalization and Financial Statistics  
2005-2009, Inclusive

Notes:

- (1) All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group.
- (2) Excluding Accumulated Other Comprehensive Income ("OCI") from the equity account
- (3) Total operating expenses, maintenance, depreciation and taxes other than income taxes as a percent of operating revenues.
- (4) Coverage calculations represent the number of times available earnings, both including and excluding AFUDC (allowance for funds used during construction) as reported in its entirety, cover fixed charges.
- (5) Internal cash generation/gross construction is the percentage of gross construction expenditures provided by internally-generated funds from operations after payment of all cash dividends divided by gross construction expenditures.
- (6) Gross Cash Flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less total AFUDC) as a percentage of average total debt.
- (7) Gross Cash Flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less total AFUDC) plus interest charges, divided by interest charges.
- (8) Common dividend coverage is the relationship of internally-generated funds from operations after payment of preferred stock dividends to common dividends paid.

Source of Information: Annual Reports to Shareholders  
Utility COMPUSTAT

**Standard & Poor's Public Utilities**Company Identities <sup>(1)</sup>

	Ticker	Credit Rating <sup>(2)</sup>		Common Stock Traded	S&P Stock Ranking	Value Line Beta
		Moody's	S&P			
Allegheny Energy	AYE	Baa3	BBB-	NYSE	B	1.00
Ameren Corporation	AEE	Baa2	BBB-	NYSE	B+	0.80
American Electric Power	AEP	Baa2	BBB	NYSE	B	0.70
CMS Energy	CMS	Baa2	BBB-	NYSE	B	0.80
CenterPoint Energy	CNP	Baa3	BBB	NYSE	B	0.80
Consolidated Edison	ED	A3	A-	NYSE	B+	0.65
Constellation Energy Group	CEG	Baa2	BBB	NYSE	B	0.80
DTE Energy Co.	DTE	Baa1	BBB	NYSE	B	0.75
Dominion Resources	D	Baa1	A-	NYSE	B+	0.70
Duke Energy	DUK	A3	A-	NYSE	B	0.65
Edison Int'l	EIX	A3	BBB+	NYSE	B	0.80
Entergy Corp.	ETR	Baa2	BBB	NYSE	A	0.70
EQT Corp.	EQT	Baa1	BBB	NYSE	B+	1.15
Exelon Corp.	EXC	A3	BBB	NYSE	B+	0.85
FPL Group	FPL	A1	A	NYSE	A	0.75
FirstEnergy Corp.	FE	Baa2	BBB	NYSE	A-	0.80
Integrus Energy Group	TEG	A2	A-	NYSE	B+	0.95
NICOR Inc.	GAS	A2	AA	NYSE	B	0.70
NiSource Inc.	NI	Baa2	BBB-	NYSE	B	0.85
Northeast Utilities	NU	Baa1	BBB	NYSE	B	0.70
PEPCO Holdings, Inc.	POM	Baa2	BBB	NYSE	B	0.80
PG&E Corp.	PCG	A3	BBB+	NYSE	B	0.55
PPL Corp.	PPL	Baa1	A-	NYSE	B+	0.70
Pinnacle West Capital	PNW	Baa2	BBB-	NYSE	B	0.75
Progress Energy, Inc.	PGN	A3	BBB+	NYSE	B	0.65
Public Serv. Enterprise Inc.	PEG	Baa1	BBB	NYSE	B+	0.80
Questar Corp.	STR	A3	BBB+	NYSE	A	1.20
SCANA Corp.	SCG	Baa1	BBB+	NYSE	B	0.65
Sempra Energy	SRE	A2	A	NYSE	B+	0.85
Southern Co.	SO	A2	A	NYSE	A-	0.55
TECO Energy	TE	Baa1	BBB	NYSE	B	0.85
Wisconsin Energy Corp.	WEC	A1	A-	NYSE	B+	0.65
Xcel Energy Inc	XEL	A3	BBB+	NYSE	B	0.65
Average for S&P Utilities		<u>Baa1</u>	<u>BBB+</u>		<u>B+</u>	<u>0.77</u>

Note: <sup>(1)</sup> Includes companies contained in S&P Utility Compustat. AES Corp. and Dynegy, Inc. are not included.

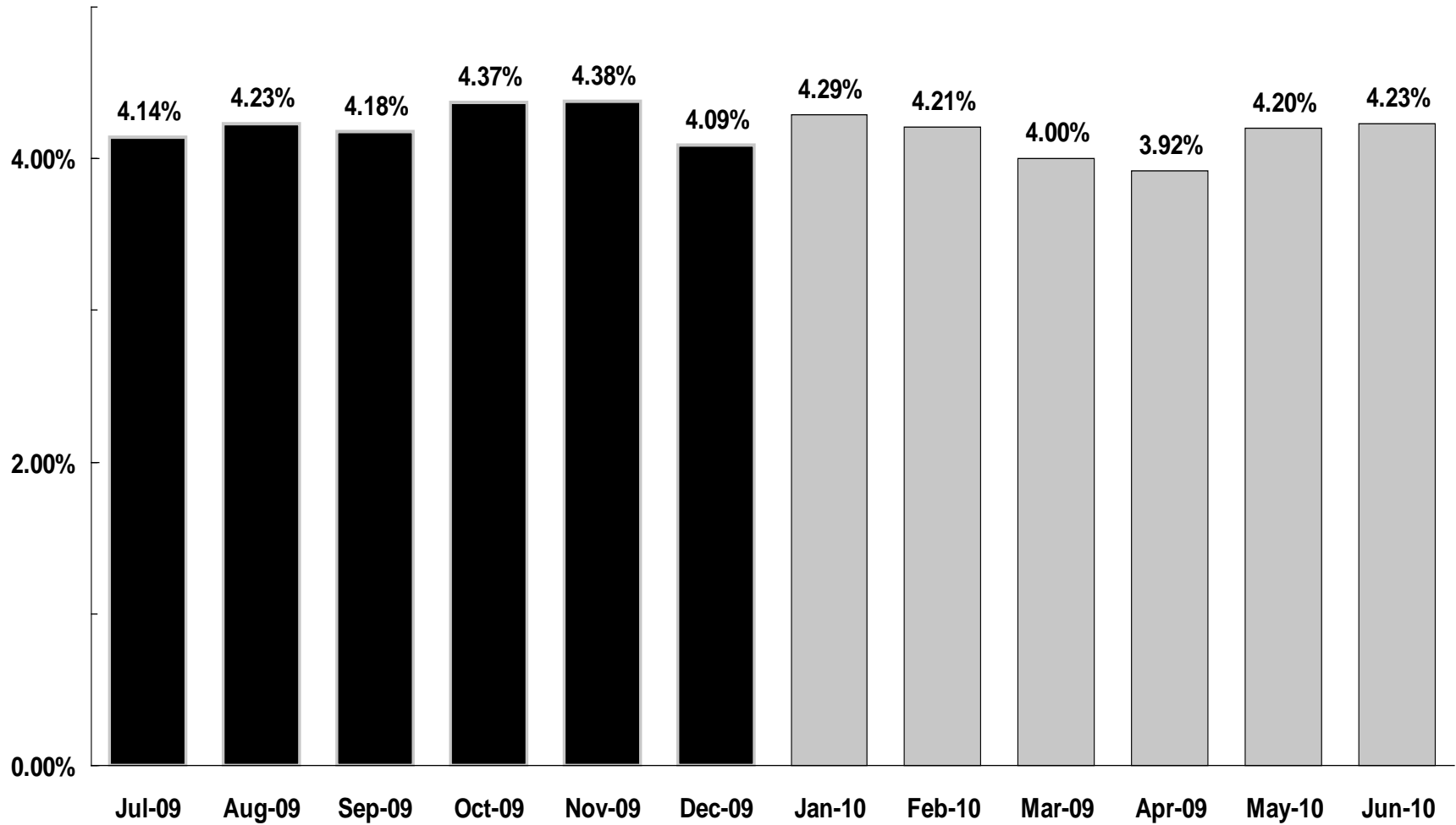
<sup>(2)</sup> Ratings are those of utility subsidiaries

Source of Information: Moody's Investors Service  
Standard & Poor's Corporation  
Standard & Poor's Stock Guide  
Value Line Investment Survey for Windows



# Gas Group

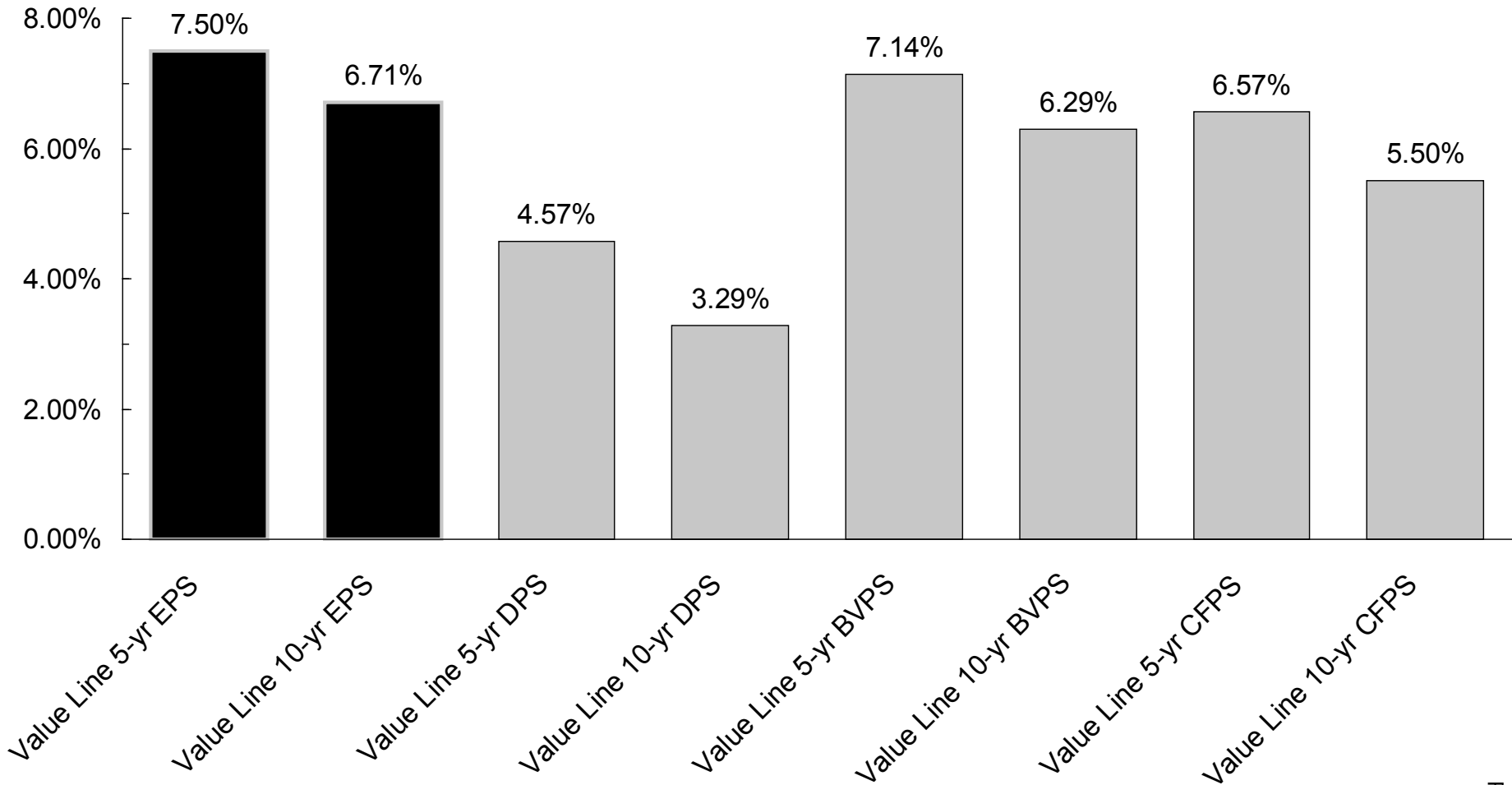
## Monthly Dividend Yield





# Gas Group

## Historical Growth Rates

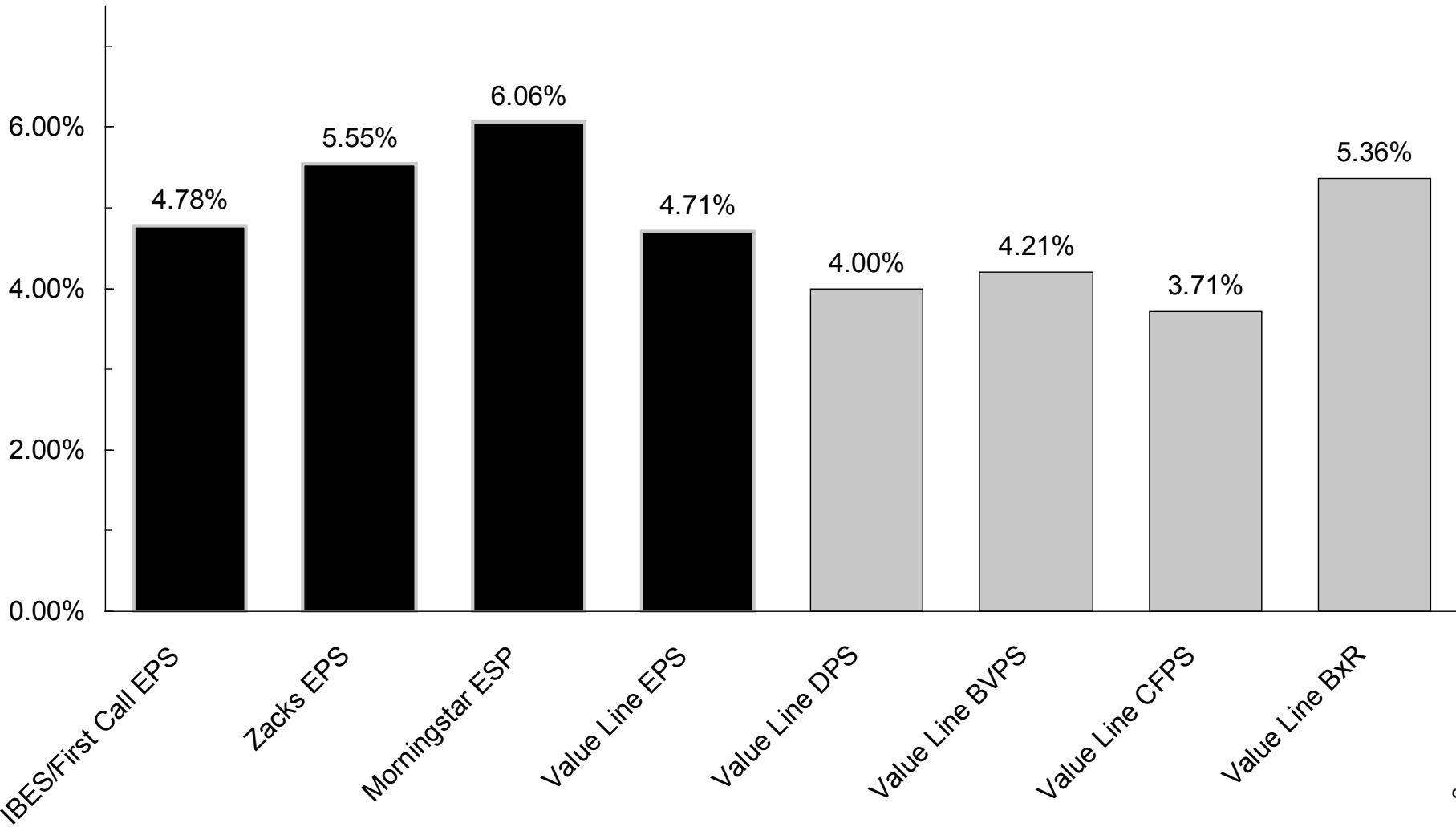


Earnings per Share=EPS      Book Values per Share=BVPS  
 Dividends per Share=DPS      Cash Flow per Share=CFPS  
 Percent Retained to Common Equity=BxR



# Gas Group

## Five-Year Projected Growth Rates



Earnings per Share=EPS      Book Values per Share=BVPS  
 Dividends per Share=DPS      Cash Flow per Share=CFPS  
 Percent Retained to Common Equity=BxR



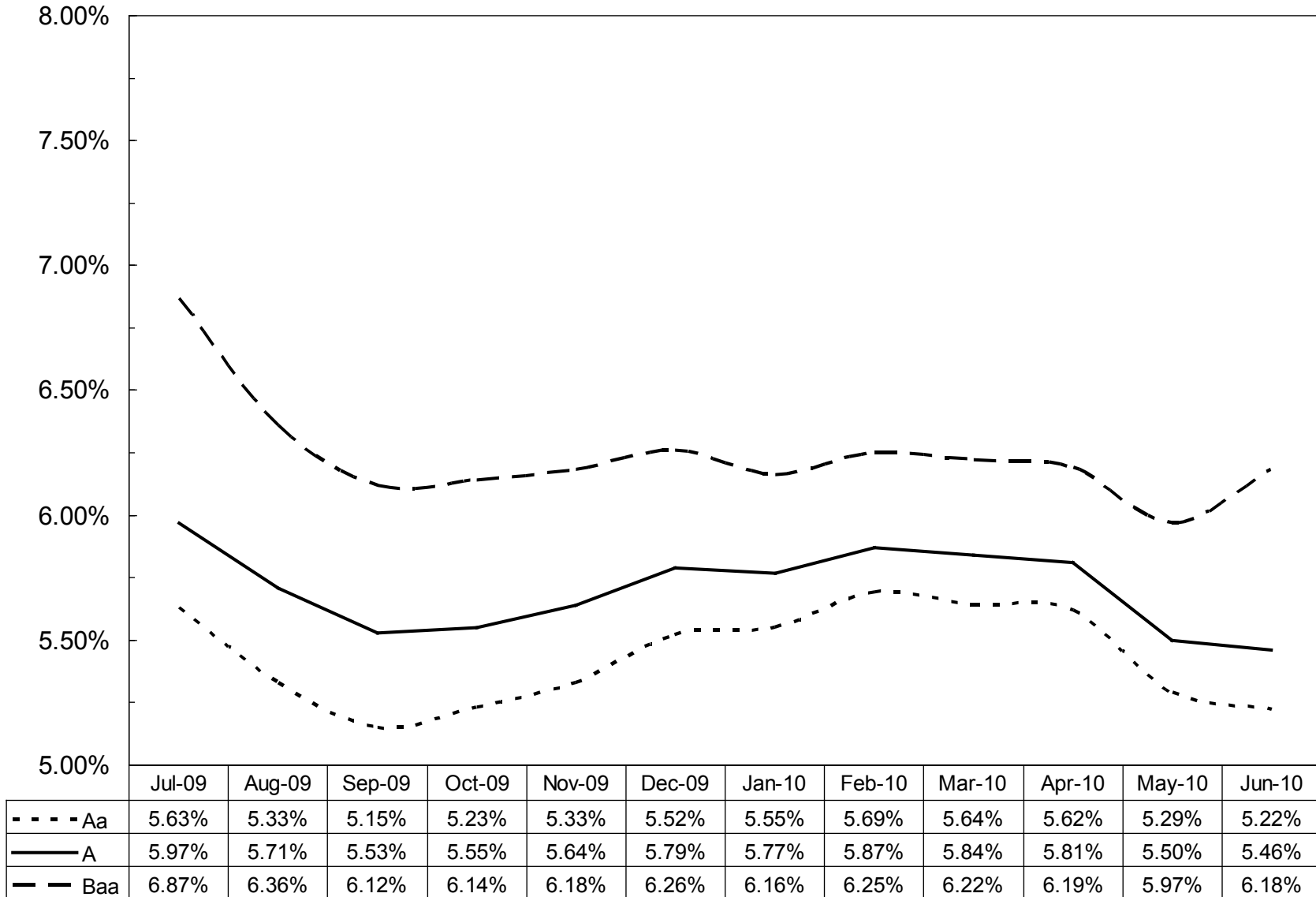
**Natural Gas Industry**  
Analysis of Public Offerings of Common Stock  
Years 2003-2008

	AGL RESOURCES	SOUTHERN UNION CO.	ATMOS ENERGY	VECTREN CORP.	SEMPRA ENERGY	PIEDMONT NATURAL	UGI CORP.	NORTHWEST NATURAL	LACLEDE GROUP
Date of Offering	2/11/2003	6/5/2003	6/18/2003	8/7/2003	10/8/2003	1/20/2004	3/18/2004	3/30/2004	5/6/2004
No. of shares offered (000)	5,600	9,500	4,000	6,500	15,000	4,250	7,500	1,200	1,500
Dollar amt. of offering (\$000)	\$ 123,200	\$ 152,000	\$ 101,240	\$ 148,265	\$ 420,000	\$ 180,625	\$ 240,750	\$ 37,200	\$ 40,200
Price to public	\$ 22.000	\$ 16.000	\$ 25.310	\$ 22.810	\$ 28.000	\$ 42.500	\$ 32.100	\$ 31.000	\$ 26.800
Underwriter's discounts and commission	\$ 0.770	\$ 0.560	\$ 1.013	\$ 0.798	\$ 0.840	\$ 1.490	\$ 1.404	\$ 1.010	\$ 0.871
Gross Proceeds	\$ 21.230	\$ 15.440	\$ 24.297	\$ 22.012	\$ 27.160	\$ 41.010	\$ 30.696	\$ 29.990	\$ 25.929
Estimated company issuance expenses	\$ 0.045	\$ 0.089	\$ 0.095	\$ 0.046	\$ 0.033	NA	\$ 0.020	\$ 0.146	\$ 0.067
Net proceeds to company per share	\$ 21.185	\$ 15.351	\$ 24.202	\$ 21.966	\$ 27.127	\$ 41.010	\$ 30.676	\$ 29.844	\$ 25.862
Underwriter's discount as a percent of offering price	3.5%	3.5%	4.0%	3.5%	3.0%	3.5%	4.4%	3.3%	3.3%
Issuance expense as a percent of offering price	0.2%	0.6%	0.4%	0.2%	0.1%	NA	0.1%	0.5%	0.3%
Total Issuance and selling expense as as a percent of offering price	3.7%	4.1%	4.4%	3.7%	3.1%	3.5%	4.5%	3.8%	3.6%
	SOUTHERN UNION CO.	AQUILA	ATMOS ENERGY	AGL RESOURCES	SOUTHERN UNION CO.	SEMCO Energy	Chesapeake Utilities	Vectren	
Date of Offering	7/26/2004	8/18/2004	10/21/2004	11/19/2004	2/7/2005	8/9/2005	11/15/2006	2/22/2007	
No. of shares offered (000)	11,000	40,000	14,000	9,600	14,913	4,300	600.3	4,600	
Dollar amt. of offering (\$000)	\$ 206,250	\$ 102,000	\$ 346,500	\$ 297,696	\$ 342,999	\$ 27,176	\$ 18,069	\$ 130,318	
Price to public	\$ 18.750	\$ 2.550	\$ 24.750	\$ 31.010	\$ 23.000	\$ 6.320	\$ 30.100	\$ 28.330	
Underwriter's discounts and commission	\$ 0.656	\$ 0.099	\$ 0.990	\$ 0.930	\$ 0.700	\$ 0.253	\$ 1.125	\$ 0.990	
Gross Proceeds	\$ 18.094	\$ 2.451	\$ 23.760	\$ 30.080	\$ 22.300	\$ 6.067	\$ 28.975	\$ 27.340	
Estimated company issuance expenses	\$ 0.091	NA	NA	\$ 0.042	\$ 0.067	\$ 0.070	\$ 0.375	\$ 0.092	
Net proceeds to company per share	\$ 18.003	\$ 2.451	\$ 23.760	\$ 30.038	\$ 22.233	\$ 5.997	\$ 28.600	\$ 27.248	
									<b>Average</b>
Underwriter's discount as a percent of offering price	3.5%	3.9%	4.0%	3.0%	3.0%	4.0%	3.7%	3.5%	3.6%
Issuance expense as a percent of offering price	0.5%	NA	NA	0.1%	0.3%	1.1%	1.2%	0.3%	0.4%
Total Issuance and selling expense as as a percent of offering price	4.0%	3.9%	4.0%	3.1%	3.3%	5.1%	4.9%	3.8%	4.0%

Source of Information: Public Utility Financial Tracker



## Interest Rates for Investment Grade Public Utility Bonds

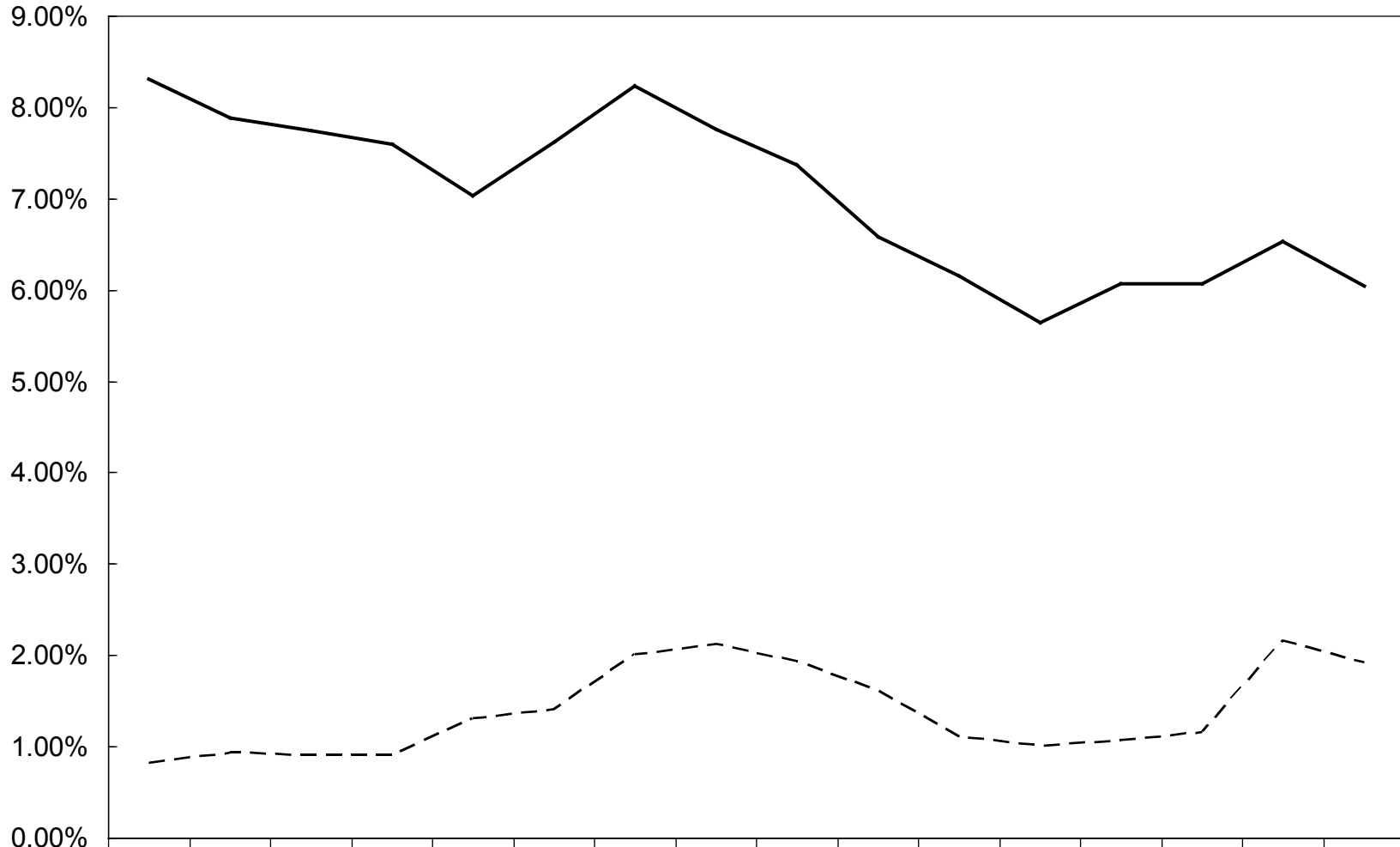


**Interest Rates for Investment Grade Public Utility Bonds  
Yearly for 2005-2009  
and the Twelve Months Ended June 2010**

<u>Years</u>	<u>Aa Rated</u>	<u>A Rated</u>	<u>Baa Rated</u>	<u>Average</u>
2005	5.44%	5.65%	5.93%	5.67%
2006	5.84%	6.07%	6.32%	6.08%
2007	5.94%	6.07%	6.33%	6.11%
2008	6.18%	6.53%	7.24%	6.65%
2009	5.75%	6.04%	7.06%	6.28%
<b>Five-Year Average</b>	<u>5.83%</u>	<u>6.07%</u>	<u>6.58%</u>	<u>6.16%</u>
<b><u>Months</u></b>				
Jul-09	5.63%	5.97%	6.87%	6.15%
Aug-09	5.33%	5.71%	6.36%	5.80%
Sep-09	5.15%	5.53%	6.12%	5.60%
Oct-09	5.23%	5.55%	6.14%	5.64%
Nov-09	5.33%	5.64%	6.18%	5.71%
Dec-09	5.52%	5.79%	6.26%	5.86%
Jan-10	5.55%	5.77%	6.16%	5.83%
Feb-10	5.69%	5.87%	6.25%	5.94%
Mar-10	5.64%	5.84%	6.22%	5.90%
Apr-10	5.62%	5.81%	6.19%	5.87%
May-10	5.29%	5.50%	5.97%	5.59%
Jun-10	5.22%	5.46%	6.18%	5.62%
<b>Twelve-Month Average</b>	<u>5.43%</u>	<u>5.70%</u>	<u>6.24%</u>	<u>5.79%</u>
<b>Six-Month Average</b>	<u>5.50%</u>	<u>5.71%</u>	<u>6.16%</u>	<u>5.79%</u>
<b>Three-Month Average</b>	<u>5.38%</u>	<u>5.59%</u>	<u>6.11%</u>	<u>5.69%</u>

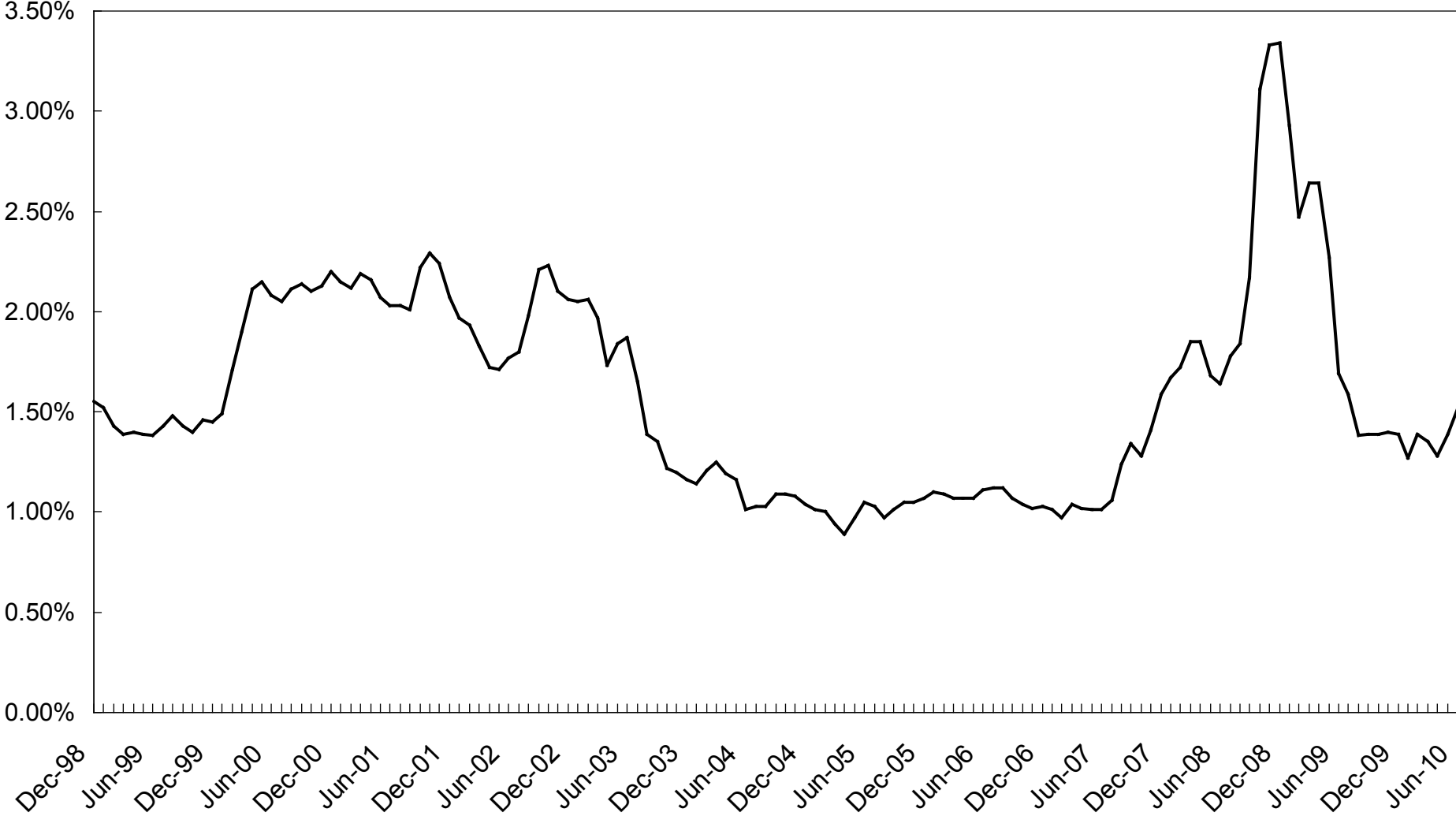
Source: Mergent Bond Record

# Yields on A-rated Public Utility Bonds and Spreads over 20-Year Treasuries



— A-rated Public Utility	8.31%	7.89%	7.75%	7.60%	7.04%	7.62%	8.24%	7.76%	7.37%	6.58%	6.16%	5.65%	6.07%	6.07%	6.53%	6.04%
- - - Spread vs. 20-year	0.82%	0.94%	0.92%	0.91%	1.32%	1.42%	2.01%	2.13%	1.94%	1.62%	1.12%	1.01%	1.08%	1.16%	2.17%	1.93%

# Interest Rate Spreads A-rated Public Utility Bonds over 20-Year Treasuries



**A rated Public Utility Bonds over 20-Year Treasuries**

Year	A-rated Public Utility	20-Year Treasuries		Year	A-rated Public Utility	20-Year Treasuries		Year	A-rated Public Utility	20-Year Treasuries	
		Yield	Spread			Yield	Spread			Yield	Spread
Dec-98	6.91%	5.36%	1.55%								
Jan-99	6.97%	5.45%	1.52%	Jan-03	7.07%	5.02%	2.05%	Jan-07	5.96%	4.95%	1.01%
Feb-99	7.09%	5.66%	1.43%	Feb-03	6.93%	4.87%	2.06%	Feb-07	5.90%	4.93%	0.97%
Mar-99	7.26%	5.87%	1.39%	Mar-03	6.79%	4.82%	1.97%	Mar-07	5.85%	4.81%	1.04%
Apr-99	7.22%	5.82%	1.40%	Apr-03	6.64%	4.91%	1.73%	Apr-07	5.97%	4.95%	1.02%
May-99	7.47%	6.08%	1.39%	May-03	6.36%	4.52%	1.84%	May-07	5.99%	4.98%	1.01%
Jun-99	7.74%	6.36%	1.38%	Jun-03	6.21%	4.34%	1.87%	Jun-07	6.30%	5.29%	1.01%
Jul-99	7.71%	6.28%	1.43%	Jul-03	6.57%	4.92%	1.65%	Jul-07	6.25%	5.19%	1.06%
Aug-99	7.91%	6.43%	1.48%	Aug-03	6.78%	5.39%	1.39%	Aug-07	6.24%	5.00%	1.24%
Sep-99	7.93%	6.50%	1.43%	Sep-03	6.56%	5.21%	1.35%	Sep-07	6.18%	4.84%	1.34%
Oct-99	8.06%	6.66%	1.40%	Oct-03	6.43%	5.21%	1.22%	Oct-07	6.11%	4.83%	1.28%
Nov-99	7.94%	6.48%	1.46%	Nov-03	6.37%	5.17%	1.20%	Nov-07	5.97%	4.56%	1.41%
Dec-99	8.14%	6.69%	1.45%	Dec-03	6.27%	5.11%	1.16%	Dec-07	6.16%	4.57%	1.59%
Jan-00	8.35%	6.86%	1.49%	Jan-04	6.15%	5.01%	1.14%	Jan-08	6.02%	4.35%	1.67%
Feb-00	8.25%	6.54%	1.71%	Feb-04	6.15%	4.94%	1.21%	Feb-08	6.21%	4.49%	1.72%
Mar-00	8.28%	6.38%	1.90%	Mar-04	5.97%	4.72%	1.25%	Mar-08	6.21%	4.36%	1.85%
Apr-00	8.29%	6.18%	2.11%	Apr-04	6.35%	5.16%	1.19%	Apr-08	6.29%	4.44%	1.85%
May-00	8.70%	6.55%	2.15%	May-04	6.62%	5.46%	1.16%	May-08	6.28%	4.60%	1.68%
Jun-00	8.36%	6.28%	2.08%	Jun-04	6.46%	5.45%	1.01%	Jun-08	6.38%	4.74%	1.64%
Jul-00	8.25%	6.20%	2.05%	Jul-04	6.27%	5.24%	1.03%	Jul-08	6.40%	4.62%	1.78%
Aug-00	8.13%	6.02%	2.11%	Aug-04	6.14%	5.07%	1.07%	Aug-08	6.37%	4.53%	1.84%
Sep-00	8.23%	6.09%	2.14%	Sep-04	5.98%	4.89%	1.09%	Sep-08	6.49%	4.32%	2.17%
Oct-00	8.14%	6.04%	2.10%	Oct-04	5.94%	4.85%	1.09%	Oct-08	7.56%	4.45%	3.11%
Nov-00	8.11%	5.98%	2.13%	Nov-04	5.97%	4.89%	1.08%	Nov-08	7.60%	4.27%	3.33%
Dec-00	7.84%	5.64%	2.20%	Dec-04	5.92%	4.88%	1.04%	Dec-08	6.52%	3.18%	3.34%
Jan-01	7.80%	5.65%	2.15%	Jan-05	5.78%	4.77%	1.01%	Jan-09	6.39%	3.46%	2.93%
Feb-01	7.74%	5.62%	2.12%	Feb-05	5.61%	4.61%	1.00%	Feb-09	6.30%	3.83%	2.47%
Mar-01	7.68%	5.49%	2.19%	Mar-05	5.83%	4.89%	0.94%	Mar-09	6.42%	3.78%	2.64%
Apr-01	7.94%	5.78%	2.16%	Apr-05	5.64%	4.75%	0.89%	Apr-09	6.48%	3.84%	2.64%
May-01	7.99%	5.92%	2.07%	May-05	5.53%	4.56%	0.97%	May-09	6.49%	4.22%	2.27%
Jun-01	7.85%	5.82%	2.03%	Jun-05	5.40%	4.35%	1.05%	Jun-09	6.20%	4.51%	1.69%
Jul-01	7.78%	5.75%	2.03%	Jul-05	5.51%	4.48%	1.03%	Jul-09	5.97%	4.38%	1.59%
Aug-01	7.59%	5.58%	2.01%	Aug-05	5.50%	4.53%	0.97%	Aug-09	5.71%	4.33%	1.38%
Sep-01	7.75%	5.53%	2.22%	Sep-05	5.52%	4.51%	1.01%	Sep-09	5.53%	4.14%	1.39%
Oct-01	7.63%	5.34%	2.29%	Oct-05	5.79%	4.74%	1.05%	Oct-09	5.55%	4.16%	1.39%
Nov-01	7.57%	5.33%	2.24%	Nov-05	5.88%	4.83%	1.05%	Nov-09	5.64%	4.24%	1.40%
Dec-01	7.83%	5.76%	2.07%	Dec-05	5.80%	4.73%	1.07%	Dec-09	5.79%	4.40%	1.39%
Jan-02	7.66%	5.69%	1.97%	Jan-06	5.75%	4.65%	1.10%	Jan-10	5.77%	4.50%	1.27%
Feb-02	7.54%	5.61%	1.93%	Feb-06	5.82%	4.73%	1.09%	Feb-10	5.87%	4.48%	1.39%
Mar-02	7.76%	5.93%	1.83%	Mar-06	5.98%	4.91%	1.07%	Mar-10	5.84%	4.49%	1.35%
Apr-02	7.57%	5.85%	1.72%	Apr-06	6.29%	5.22%	1.07%	Apr-10	5.81%	4.53%	1.28%
May-02	7.52%	5.81%	1.71%	May-06	6.42%	5.35%	1.07%	May-10	5.50%	4.11%	1.39%
Jun-02	7.42%	5.65%	1.77%	Jun-06	6.40%	5.29%	1.11%	Jun-10	5.46%	3.95%	1.51%
Jul-02	7.31%	5.51%	1.80%	Jul-06	6.37%	5.25%	1.12%				
Aug-02	7.17%	5.19%	1.98%	Aug-06	6.20%	5.08%	1.12%				
Sep-02	7.08%	4.87%	2.21%	Sep-06	6.00%	4.93%	1.07%	Average:			
Oct-02	7.23%	5.00%	2.23%	Oct-06	5.98%	4.94%	1.04%	12-months			1.39%
Nov-02	7.14%	5.04%	2.10%	Nov-06	5.80%	4.78%	1.02%	6-months			1.37%
Dec-02	7.07%	5.01%	2.06%	Dec-06	5.81%	4.78%	1.03%	3-months			1.39%



S&P Composite Index and S&P Public Utility IndexLong-Term Corporate and Public Utility BondsYearly Total Returns  
1928-2007

Year	S & P Composite Index	S & P Public Utility Index	Long Term Corporate Bonds	Public Utility Bonds
1928	43.61%	57.47%	2.84%	3.08%
1929	-8.42%	11.02%	3.27%	2.34%
1930	-24.90%	-21.96%	7.98%	4.74%
1931	-43.34%	-35.90%	-1.85%	-11.11%
1932	-8.19%	-0.54%	10.82%	7.25%
1933	53.99%	-21.87%	10.38%	-3.82%
1934	-1.44%	-20.41%	13.84%	22.61%
1935	47.67%	76.63%	9.61%	16.03%
1936	33.92%	20.69%	6.74%	8.30%
1937	-35.03%	-37.04%	2.75%	-4.05%
1938	31.12%	22.45%	6.13%	8.11%
1939	-0.41%	11.26%	3.97%	6.76%
1940	-9.78%	-17.15%	3.39%	4.45%
1941	-11.59%	-31.57%	2.73%	2.15%
1942	20.34%	15.39%	2.60%	3.81%
1943	25.90%	46.07%	2.83%	7.04%
1944	19.75%	18.03%	4.73%	3.29%
1945	36.44%	53.33%	4.08%	5.92%
1946	-8.07%	1.26%	1.72%	2.98%
1947	5.71%	-13.16%	-2.34%	-2.19%
1948	5.50%	4.01%	4.14%	2.65%
1949	18.79%	31.39%	3.31%	7.16%
1950	31.71%	3.25%	2.12%	2.01%
1951	24.02%	18.63%	-2.69%	-2.77%
1952	18.37%	19.25%	3.52%	2.99%
1953	-0.99%	7.85%	3.41%	2.08%
1954	52.62%	24.72%	5.39%	7.57%
1955	31.56%	11.26%	0.48%	0.12%
1956	6.56%	5.06%	-6.81%	-6.25%
1957	-10.78%	6.36%	8.71%	3.58%
1958	43.36%	40.70%	-2.22%	0.18%
1959	11.96%	7.49%	-0.97%	-2.29%
1960	0.47%	20.26%	9.07%	9.01%
1961	26.89%	29.33%	4.82%	4.65%
1962	-8.73%	-2.44%	7.95%	6.55%
1963	22.80%	12.36%	2.19%	3.44%
1964	16.48%	15.91%	4.77%	4.94%
1965	12.45%	4.67%	-0.46%	0.50%
1966	-10.06%	-4.48%	0.20%	-3.45%
1967	23.98%	-0.63%	-4.95%	-3.63%
1968	11.06%	10.32%	2.57%	1.87%
1969	-8.50%	-15.42%	-8.09%	-6.66%
1970	4.01%	16.56%	18.37%	15.90%
1971	14.31%	2.41%	11.01%	11.59%
1972	18.98%	8.15%	7.26%	7.19%
1973	-14.66%	-18.07%	1.14%	2.42%
1974	-26.47%	-21.55%	-3.06%	-5.28%
1975	37.20%	44.49%	14.64%	15.50%
1976	23.84%	31.81%	18.65%	19.04%
1977	-7.18%	8.64%	1.71%	5.22%
1978	6.56%	-3.71%	-0.07%	-0.98%
1979	18.44%	13.58%	-4.18%	-2.75%
1980	32.42%	15.08%	-2.76%	-0.23%
1981	-4.91%	11.74%	-1.24%	4.27%
1982	21.41%	26.52%	42.56%	33.52%
1983	22.51%	20.01%	6.26%	10.33%
1984	6.27%	26.04%	16.86%	14.82%
1985	32.16%	33.05%	30.09%	26.48%
1986	18.47%	28.53%	19.85%	18.16%
1987	5.23%	-2.92%	-0.27%	3.02%
1988	16.81%	18.27%	10.70%	10.19%
1989	31.49%	47.80%	16.23%	15.61%
1990	-3.17%	-2.57%	6.78%	8.13%
1991	30.55%	14.61%	19.89%	19.25%
1992	7.67%	8.10%	9.39%	8.65%
1993	9.99%	14.41%	13.19%	10.59%
1994	1.31%	-7.94%	-5.76%	-4.72%
1995	37.43%	42.15%	27.20%	22.81%
1996	23.07%	3.14%	1.40%	3.04%
1997	33.36%	24.69%	12.95%	11.39%
1998	28.58%	14.82%	10.76%	9.44%
1999	21.04%	-8.85%	-7.45%	-1.69%
2000	-9.11%	59.70%	12.87%	9.45%
2001	-11.88%	-30.41%	10.65%	5.85%
2002	-22.10%	-30.04%	16.33%	1.63%
2003	28.70%	26.11%	5.27%	10.01%
2004	10.87%	24.22%	8.72%	6.03%
2005	4.91%	16.79%	5.87%	3.02%
2006	15.80%	20.95%	3.24%	3.94%
2007	5.49%	19.39%	2.60%	5.20%
Geometric Mean	10.04%	8.92%	5.81%	5.45%
Arithmetic Mean	11.95%	11.24%	6.13%	5.72%
Standard Deviation	20.02%	22.43%	8.52%	7.84%
Median	13.38%	12.05%	4.11%	4.55%

**Tabulation of Risk Rate Differentials for  
S&P Public Utility Index and Public Utility Bonds  
For the Years 1928-2007, 1952-2007, 1974-2007, and 1979-2007**

<b><u>Total Returns</u></b>	<u>Range</u>		<u>Midpoint</u>	<u>Point Estimate</u>	<u>Average of the Midpoint of Range and Point Estimate</u>
	<u>Geometric Mean</u>	<u>Median</u>		<u>Arithmetic Mean</u>	
<b><u>1928-2007</u></b>					
S&P Public Utility Index	8.92%	12.05%		11.24%	
Public Utility Bonds	<u>5.45%</u>	<u>4.55%</u>		<u>5.72%</u>	
Risk Differential	<u>3.47%</u>	<u>7.50%</u>	<u>5.49%</u>	<u>5.52%</u>	<u>5.51%</u>
<b><u>1952-2007</u></b>					
S&P Public Utility Index	11.14%	14.00%		12.65%	
Public Utility Bonds	<u>6.15%</u>	<u>5.07%</u>		<u>6.45%</u>	
Risk Differential	<u>4.99%</u>	<u>8.93%</u>	<u>6.96%</u>	<u>6.20%</u>	<u>6.58%</u>
<b><u>1974-2007</u></b>					
S&P Public Utility Index	12.98%	15.94%		14.90%	
Public Utility Bonds	<u>8.45%</u>	<u>8.39%</u>		<u>8.79%</u>	
Risk Differential	<u>4.53%</u>	<u>7.55%</u>	<u>6.04%</u>	<u>6.11%</u>	<u>6.08%</u>
<b><u>1979-2007</u></b>					
S&P Public Utility Index	13.62%	16.79%		15.41%	
Public Utility Bonds	<u>8.83%</u>	<u>8.65%</u>		<u>9.15%</u>	
Risk Differential	<u>4.79%</u>	<u>8.14%</u>	<u>6.47%</u>	<u>6.26%</u>	<u>6.37%</u>

**Value Line Betas**

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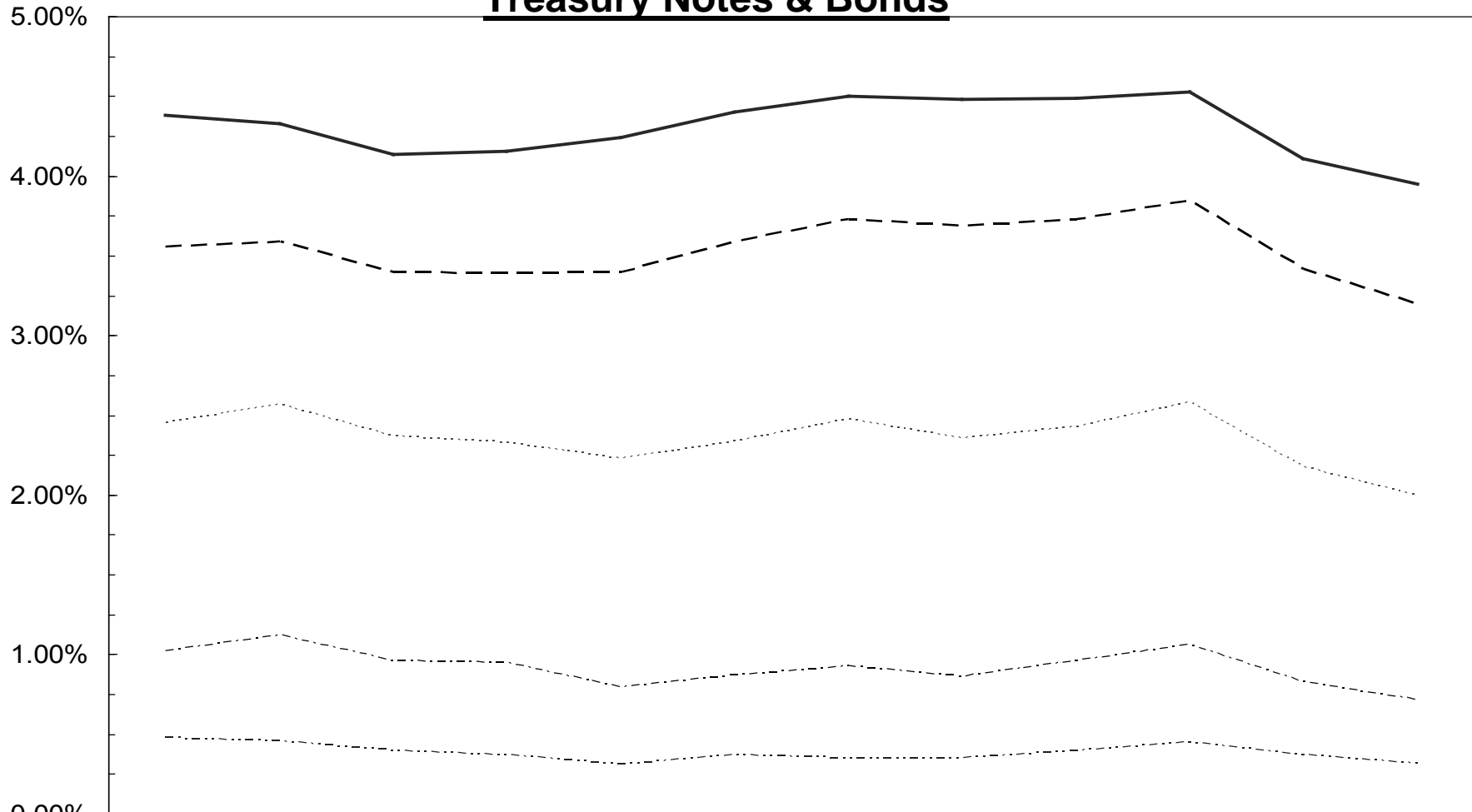
**Gas Group**

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AGL Resources, Inc.	0.75
Atmos Energy Corp.	0.65
New Jersey Resources Corp.	0.65
Northwest Natural Gas	0.60
Piedmont Natural Gas Co.	0.65
South Jersey Industries, Inc.	0.60
WGL Holdings, Inc.	<u>0.65</u>
Average	<u><u>0.65</u></u>

Source of Information:  
Value Line Investment Survey  
June 11, 2010

## Yields on Treasury Notes & Bonds



	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10
1-Year	0.48%	0.46%	0.40%	0.37%	0.31%	0.37%	0.35%	0.35%	0.40%	0.45%	0.37%	0.32%
2-Year	1.02%	1.12%	0.96%	0.95%	0.80%	0.87%	0.93%	0.86%	0.96%	1.06%	0.83%	0.72%
5-Year	2.46%	2.57%	2.37%	2.33%	2.23%	2.34%	2.48%	2.36%	2.43%	2.58%	2.18%	2.00%
10-Year	3.56%	3.59%	3.40%	3.39%	3.40%	3.59%	3.73%	3.69%	3.73%	3.85%	3.42%	3.20%
20-Year	4.38%	4.33%	4.14%	4.16%	4.24%	4.40%	4.50%	4.48%	4.49%	4.53%	4.11%	3.95%

**Yields for Treasury Constant Maturities  
Yearly for 2005-2009  
and the Twelve Months Ended June 2010**

<u>Years</u>	<u>1-Year</u>	<u>2-Year</u>	<u>3-Year</u>	<u>5-Year</u>	<u>7-Year</u>	<u>10-Year</u>	<u>20-Year</u>
2005	3.62%	3.85%	3.93%	4.05%	4.15%	4.29%	4.64%
2006	4.93%	4.82%	4.77%	4.75%	4.76%	4.79%	4.99%
2007	4.52%	4.36%	4.34%	4.43%	4.50%	4.63%	4.91%
2008	1.82%	2.00%	2.24%	2.80%	3.17%	3.67%	4.36%
2009	0.47%	0.96%	1.43%	2.19%	2.81%	3.26%	4.11%
<b>Five-Year Average</b>	<u>3.07%</u>	<u>3.20%</u>	<u>3.34%</u>	<u>3.64%</u>	<u>3.88%</u>	<u>4.13%</u>	<u>4.60%</u>
<b><u>Months</u></b>							
Jul-09	0.48%	1.02%	1.55%	2.46%	3.14%	3.56%	4.38%
Aug-09	0.46%	1.12%	1.65%	2.57%	3.21%	3.59%	4.33%
Sep-09	0.40%	0.96%	1.48%	2.37%	3.02%	3.40%	4.14%
Oct-09	0.37%	0.95%	1.46%	2.33%	2.96%	3.39%	4.16%
Nov-09	0.31%	0.80%	1.32%	2.23%	2.92%	3.40%	4.24%
Dec-09	0.37%	0.87%	1.38%	2.34%	3.07%	3.59%	4.40%
Jan-10	0.35%	0.93%	1.49%	2.48%	3.21%	3.73%	4.50%
Feb-10	0.35%	0.86%	1.40%	2.36%	3.12%	3.69%	4.48%
Mar-10	0.40%	0.96%	1.51%	2.43%	3.16%	3.73%	4.49%
Apr-10	0.45%	1.06%	1.64%	2.58%	3.28%	3.85%	4.53%
May-10	0.37%	0.83%	1.32%	2.18%	2.86%	3.42%	4.11%
Jun-10	0.32%	0.72%	1.17%	2.00%	2.66%	3.20%	3.95%
<b>Twelve-Month Average</b>	<u>0.39%</u>	<u>0.92%</u>	<u>1.45%</u>	<u>2.36%</u>	<u>3.05%</u>	<u>3.55%</u>	<u>4.31%</u>
<b>Six-Month Average</b>	<u>0.37%</u>	<u>0.89%</u>	<u>1.42%</u>	<u>2.34%</u>	<u>3.05%</u>	<u>3.60%</u>	<u>4.34%</u>
<b>Three-Month Average</b>	<u>0.38%</u>	<u>0.87%</u>	<u>1.38%</u>	<u>2.25%</u>	<u>2.93%</u>	<u>3.49%</u>	<u>4.20%</u>

Source: Federal Reserve statistical release H.15

**Measures of the Risk-Free Rate**

The forecast of Treasury yields  
per the consensus of nearly 50 economists  
reported in the Blue Chip Financial Forecasts dated July 1, 2010

<u>Year</u>	<u>Quarter</u>	<u>1-Year Treasury Bill</u>	<u>2-Year Treasury Note</u>	<u>5-Year Treasury Note</u>	<u>10-Year Treasury Note</u>	<u>30-Year Treasury Bond</u>
2010	Third	0.4%	0.9%	2.2%	3.4%	4.3%
2010	Fourth	0.5%	1.1%	2.4%	3.6%	4.5%
2011	First	0.8%	1.4%	2.7%	3.8%	4.7%
2011	Second	1.3%	1.8%	3.0%	4.0%	4.8%
2011	Third	1.7%	2.2%	3.3%	4.2%	5.0%
2011	Fourth	2.2%	2.5%	3.5%	4.4%	5.1%

**June 25, 2010**

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

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

**16.2**

<b>26 Weeks Ago</b>	<b>Market Low</b>	<b>Market High</b>
16.9	3-9-09 10.3	7-13-07 19.7

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

**2.0%**

<b>26 Weeks Ago</b>	<b>Market Low</b>	<b>Market High</b>
2.1%	3-9-09 4.0%	7-13-07 1.6%

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

**65%**

<b>26 Weeks Ago</b>	<b>Market Low</b>	<b>Market High</b>
55%	3-9-09 185%	7-13-07 35%

**ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER**  
Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

PAGE	PAGE	PAGE	PAGE
Advertising (46) ..... 2369	*Electric Util. (Central) (75) ..... 901	Machinery (40) ..... 1701	Recreation (36) ..... 2301
Aerospace/Defense (41) ..... 701	Electric Utility (East) (93) ..... 147	Maritime (88) ..... 271	Reinsurance (96) ..... 2022
Air Transport (19) ..... 245	Electric Utility (West) (78) ..... 2236	Medical Services (27) ..... 788	Restaurant (6) ..... 288
Apparel (2) ..... 2101	Electronics (20) ..... 1320	Medical Supplies (33) ..... 168	Retail Automotive (14) ..... 2119
Auto & Truck (61) ..... 101	Entertainment (31) ..... 2319	Metal Fabricating (76) ..... 728	Retail Building Supply (10) ..... 1133
*Auto Parts (26) ..... 983	Entertainment Tech (58) ..... 2004	Metals & Mining (Div.) (65) ..... 1562	Retail (Special Lines) (5) ..... 2165
Bank (56) ..... 2501	Environmental (69) ..... 347	Natural Gas Utility (84) ..... 445	Retail Store (8) ..... 2131
Bank (Canadian) (63) ..... 1980	Financial Svcs. (Div.) (52) ..... 2528	Natural Gas (Div.) (80) ..... 426	Retail/Wholesale Food (57) ..... 1942
Bank (Midwest) (79) ..... 771	Food Processing (45) ..... 1901	Newspaper (15) ..... 2360	Securities Brokerage (77) ..... 1796
Beverage (55) ..... 1959	Foreign Electronics (59) ..... 1972	Office Equip/Supplies (54) ..... 1426	Semiconductor (16) ..... 1347
Biotechnology (81) ..... 823	Funeral Services (83) ..... 1829	Oil/Gas Distribution (66) ..... 519	Semiconductor Equip (11) ..... 1385
Building Materials (95) ..... 1101	Furn/Home Furnishings (12) ..... 1140	Oilfield Svcs/Equip. (94) ..... 2389	Shoe (1) ..... 2153
*Cable TV (13) ..... 1019	Healthcare Information (64) ..... 814	Packaging & Container (53) ..... 1167	Steel (General) (86) ..... 739
Canadian Energy (92) ..... 415	Heavy Construction (91) ..... 1228	Paper/Forest Products (50) ..... 1156	Steel (Integrated) (89) ..... 1784
Chemical (Basic) (47) ..... 1573	Homebuilding (72) ..... 1120	Petroleum (Integrated) (97) ..... 397	*Telecom. Equipment (32) ..... 946
Chemical (Diversified) (42) ..... 2414	Hotel/Gaming (49) ..... 2333	Petroleum (Producing) (85) ..... 2379	*Telecom. Services (74) ..... 922
Chemical (Specialty) (21) ..... 458	Household Products (29) ..... 1182	*Pharmacy Services (22) ..... 974	*Telecom. Utility (30) ..... 1037
Coal (38) ..... 508	Human Resources (82) ..... 1627	Power (98) ..... 1211	Thrift (37) ..... 1501
Computers/Peripherals (35) ..... 1400	Industrial Services (73) ..... 320	Precious Metals (17) ..... 1552	Tobacco (48) ..... 1987
Computer Software/Svcs (43) ..... 2567	Information Services (34) ..... 375	Precision Instrument (9) ..... 115	*Toiletries/Cosmetics (4) ..... 1010
Diversified Co. (51) ..... 1752	Insurance (Life) (25) ..... 1538	*Property Management (71) ..... 1030	Trucking (87) ..... 261
Drug (39) ..... 1585	Insurance (Prop/Cas.) (68) ..... 749	Public/Private Equity (24) ..... 2634	Water Utility (90) ..... 1790
E-Commerce (18) ..... 1812	Internet (28) ..... 2613	Publishing (23) ..... 2350	Wireless Networking (70) ..... 487
Educational Services (3) ..... 1994	Investment Co. (62) ..... 1198	Railroad (7) ..... 279	
Electrical Equipment (44) ..... 1301	Investment Co. (Foreign) (67) ..... 360	R.E.I.T. (60) ..... 1512	

\*Reviewed in this week's issue.

In three parts: This is Part 1, the Summary & Index. Part 2 is Selection & Opinion. Part 3 is Ratings & Reports. Volume LXV, No. 44.  
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**Table 2-1: Basic Series: Summary Statistics of Annual Total Returns**

Series	Geometric Mean (%)	Arithmetic Mean (%)	Standard Deviation (%)	Distribution (%)
Large Company Stocks	9.6	11.7	20.6	
Small Company Stocks*	11.7	16.4	33.0	
Long-Term Corporate Bonds	5.9	6.2	8.4	
Long-Term Government Bonds	5.7	6.1	9.4	
Intermediate-Term Government Bonds	5.4	5.6	5.7	
U.S. Treasury Bills	3.7	3.8	3.1	
Inflation	3.0	3.1	4.2	

Data from 1926–2008. \* The 1933 Small Company Stocks Total Return was 142.9 percent.

**Table 10-1: Building Blocks for Expected Return Construction**

	Value (%)
<b>Yields (Riskless Rates)<sup>1</sup></b>	
Long-Term (20-year) U.S. Treasury Coupon Bond Yield	3.0
Intermediate-Term (5-year) U.S. Treasury Coupon Note Yield	1.3
Short-Term (30-day) U.S. Treasury Bill Yield	0.1
<b>Fixed Income Risk Premia<sup>1, †</sup></b>	
Expected default premium: <i>long-term corporate bond total returns minus long-term government bond total returns</i>	0.1
Expected long-term horizon premium: <i>long-term government bond income returns minus U.S. Treasury bill total returns*</i>	1.4
Expected intermediate-term horizon premium: <i>intermediate-term government bond income returns minus U.S. Treasury bill total returns*</i>	1.0
<b>Equity Risk Premia<sup>†</sup></b>	
Long-horizon expected equity risk premium: <i>large company stock total returns minus long-term government bond income returns</i>	6.5
Intermediate-horizon expected equity risk premium: <i>large company stock total returns minus intermediate-term government bond income returns</i>	6.9
Short-horizon expected equity risk premium: <i>large company stock total returns minus U.S. Treasury bill total returns*</i>	7.9
Small Stock Premium: <i>small company stock total return minus large company stock total return</i>	4.8

1. As of December 31, 2008. Maturities are approximate. Expected risk premia for fixed income and equities are based on the differences of historical arithmetic mean returns from 1926–2008.

†We would prefer to use the 1970–2008 time range for calculating fixed income premia to reflect that bond volatility has increased over time. However, abnormal returns in 2008 make using a short time frame for forward-looking expectations unrealistic.

\*For U.S. Treasury bills, the income return and total return are the same.

**Comparable Earnings Approach**

Using Non-Utility Companies with  
Timeliness of 3 & 4; Safety Rank of 1 & 2; Financial Strength of B+, B++ & A;  
Price Stability of 90 to 100; Betas of .60 to .75; and Technical Rank of 2 & 3

<u>Company</u>	<u>Industry</u>	<u>Timeliness Rank</u>	<u>Safety Rank</u>	<u>Financial Strength</u>	<u>Price Stability</u>	<u>Beta</u>	<u>Technical Rank</u>
Aon Corp.	FINSERV	4	2	A	95	0.65	3
Bristol-Myers Squibb	DRUG	3	1	A	90	0.75	3
Brown & Brown	FINSERV	4	2	A	95	0.70	2
Campbell Soup	FOODPROC	3	2	B++	100	0.60	3
Clorox Co.	HOUSEPRD	3	2	B++	100	0.60	3
ConAgra Foods	FOODPROC	3	1	A	95	0.65	3
Erie Indemnity Co.	INSRPTY	3	2	B++	100	0.70	3
Gallagher (Arthur J.)	FINSERV	3	1	A	95	0.70	3
Haemonetics Corp.	MEDSUPPL	3	2	B++	95	0.60	2
Hormel Foods	FOODPROC	3	1	A	100	0.65	3
Kellogg	FOODPROC	3	1	A	100	0.60	3
Mercury General	INSRPTY	3	2	B++	95	0.70	3
Quest Diagnostics	MEDSERV	3	2	B++	95	0.65	3
Reynolds American	TOBACCO	3	2	B+	100	0.60	3
SAIC Inc.	INDUSRV	3	2	B++	95	0.60	3
Safeway Inc.	GROCERY	4	2	B++	95	0.70	3
Weis Markets	GROCERY	4	1	A	95	0.65	3
Average		<u>3</u>	<u>2</u>	<u>B++</u>	<u>96</u>	<u>0.65</u>	<u>3</u>
Gas Group	Average	<u>4</u>	<u>2</u>	<u>B++</u>	<u>100</u>	<u>0.65</u>	<u>2</u>

Source of Information: Value Line Investment Survey for Windows, July 2010

**Comparable Earnings Approach**  
Five -Year Average Historical Earned Returns  
for Years 2005-2009 and  
Projected 3-5 Year Returns

<u>Company</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>Average</u>	<u>Projected 2013-15</u>
Aon Corp.	12.1%	12.2%	10.9%	11.7%	12.7%	11.9%	17.5%
Bristol-Myers Squibb	26.8%	13.6%	20.5%	25.7%	21.9%	21.7%	17.5%
Brown & Brown	19.7%	18.5%	17.4%	13.4%	11.2%	16.0%	12.0%
Campbell Soup	55.7%	38.5%	59.5%	60.5%	105.9%	64.0%	33.5%
Clorox Co.	-	-	NMF	NMF	NMF	-	53.0%
ConAgra Foods	14.5%	12.8%	14.9%	9.7%	14.7%	13.3%	14.5%
Erie Indemnity Co.	18.1%	17.6%	20.6%	18.0%	12.0%	17.3%	21.0%
Gallagher (Arthur J.)	39.9%	15.9%	21.6%	15.1%	14.9%	21.5%	18.0%
Haemonetics Corp.	11.8%	10.5%	11.4%	11.9%	12.5%	11.6%	12.5%
Hormel Foods	16.1%	15.9%	15.8%	14.2%	16.1%	15.6%	15.0%
Kellogg	42.9%	48.5%	43.7%	79.3%	53.5%	53.6%	35.0%
Mercury General	15.1%	11.8%	12.0%	7.7%	10.0%	11.3%	10.0%
Quest Diagnostics	19.8%	21.2%	16.7%	17.8%	18.3%	18.8%	15.5%
Reynolds American	15.0%	16.1%	18.1%	22.5%	20.8%	18.5%	18.0%
SAIC Inc.	12.6%	24.0%	20.3%	21.4%	21.8%	20.0%	15.5%
Safeway Inc.	12.8%	13.7%	13.3%	14.2%	14.6%	13.7%	18.5%
Weis Markets	10.5%	8.9%	7.1%	7.1%	9.1%	8.5%	9.0%
Average						21.1%	19.8%
Average (excluding companies with values >20%)						14.2%	14.9%