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

I.   Docket No. G011/GR-13-617

Exhibit _____

Return on Common Equity

September 30, 2013

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GLOSSARY OF ACRONYMS AND DEFINED TERMS	
ACRONYM	DEFINED TERM
AFUDC	Allowance for Funds Used During Construction
β	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
CCR	Corporate Credit Rating
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
MERC	Minnesota Energy Resources Corporation
MPUC	Minnesota Public Utilities Commission
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	Represents the new common shares expected to be issued by a firm
s x v	Represents external growth
S&P	Standard & Poor's
SBBI	Stocks, Bonds, Bills and Inflation

GLOSSARY OF ACRONYMS AND DEFINED TERMS	
ACRONYM	DEFINED TERM
v	represents the value that accrues to existing shareholders from selling stock at a price different from book value

1	**I.**	**<u>INTRODUCTION AND SUMMARY OF RECOMMENDATIONS</u>**
2	Q.	PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.
3	A.	My name is Paul Ronald Moul. My business address is 251 Hopkins Road,
4		Haddonfield, New Jersey 08033-3062. I am Managing Consultant at the firm P. Moul
5		& Associates, an independent financial and regulatory consulting firm. My
6		educational background, business experience and qualifications are provided in
7		Appendix A, which follows my direct testimony.
8		
9	Q.	WHAT IS THE PURPOSE OF YOUR PRE-FILED DIRECT TESTIMONY?
10	A.	My direct testimony presents evidence, analysis, and a recommendation concerning the
11		appropriate cost of equity that the Minnesota Public Utilities Commission
12		("Commission") should recognize in the determination of the revenues that Minnesota
13		Energy Resources Corporation ("MERC") should realize as a result of this proceeding.
14		My analysis and recommendation are supported by the detailed financial data
15		contained in Exhibit ___ (PRM-1), which is divided into thirteen (13) schedules.
16		
17	Q.	BASED UPON YOUR ANALYSIS, WHAT IS YOUR CONCLUSION
18		CONCERNING THE APPROPRIATE COST OF EQUITY FOR MERC IN THIS
19		CASE?
20	A.	My conclusion is that MERC's cost of equity is 10.75% and that the Commission
21		should adopt this cost rate as part of its determination of MERC's rates. My cost of
22		equity determination is part of MERC's weighted average cost of capital, which is the
23		product of weighting the individual capital costs by the proportion of each respective

1

1   type of capital. This weighted average cost of capital should, if adopted by the

2   Commission, establish a compensatory level of return for the use of such capital and

3   should provide MERC with the ability to attract capital on reasonable terms. The

4   details supporting my cost of equity determination are presented on Schedule 1.

5

6 Q. WHAT BACKGROUND INFORMATION HAVE YOU CONSIDERED IN

7   REACHING A CONCLUSION CONCERNING MERC'S COST OF EQUITY?

8 A. MERC is a wholly-owned subsidiary of Integrys Energy Group, Inc. ("Integrys").

9   MERC was acquired by Integrys on July 1, 2006 from Aquila, Inc. d/b/a Aquila

10   Networks – NMU and PNG. Integrys was formerly named WPS Resources

11   Corporation prior to its merger with Peoples Energy Corporation. The merger with

12   Peoples Energy Corporation was completed on February 21, 2007. Integrys is a

13   holding company and owns, in addition to MERC, The Peoples Gas Light and Coke

14   Company, North Shore Gas Company, Michigan Gas Utilities, Upper Peninsula Power

15   Company, Wisconsin Public Service Corporation, and other energy investments.

16   MERC distributes natural gas to approximately 213,000 customers in 165

17   communities throughout Minnesota. Throughput to its customers in 2012 was

18   represented by approximately 21% to residential customers, 16% to commercial and

19   small industrial customers, and 63% to transportation customers, based on 2012 results

20   displayed on Exhibit ____ (HWJ-1), page 1 of Schedule E-1.   Approximately 99% of

21   MERC's residential customers use natural gas for space heating purposes. This means

22   that MERC's throughput is sensitive to temperature conditions over which MERC has

23   absolutely no control. MERC's throughput is also significantly influenced by

1		commercial, industrial and transportation customers. Those customers represent 79%
2		of total throughput, but comprise just 10% of total fixed charge counts, based on 2012
3		year end fixed charge counts from Exhibit ____ (HWJ-1), page 2 of Schedule E-1. As
4		such, the energy needs of a minority of MERC's customers can have a significant
5		impact on all of MERC's operations.
6		
7	Q.	HOW HAVE YOU DETERMINED THE COST OF COMMON EQUITY IN THIS
8		CASE?
9	A.	The cost of common equity is established using capital market and financial data relied
10		upon by investors to assess the relative risk, and hence the cost of equity, for a gas
11		distribution utility, such as MERC. In this regard, I have considered three (3) well-
12		recognized measures of the cost of equity: the Discounted Cash Flow ("DCF") model,
13		the Risk Premium ("RP") analysis, and the Capital Asset Pricing Model ("CAPM"). I
14		also considered as a check on the results of these models the Comparable Earnings
15		("CE") approach.
16		
17	Q.	IN YOUR OPINION, WHAT FACTORS SHOULD THE COMMISSION
18		CONSIDER WHEN DETERMINING MERC'S RATE OF RETURN IN THIS
19		PROCEEDING?
20	A.	The Commission's rate of return allowance must be set to cover MERC's interest and
21		dividend payments, provide a reasonable level of earnings retention, produce an
22		adequate level of internally generated funds to meet capital requirements, be
23		commensurate with the risk to which MERC's capital is exposed, assure confidence in

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1   the financial integrity of MERC, support reasonable credit quality, and allow MERC to

2   raise capital on reasonable terms. The return that I propose fulfills these established

3   standards of a fair rate of return set forth by the landmark <u>Bluefield</u> and <u>Hope</u> cases.[1]

4   That is to say, my proposed rate of return is commensurate with returns available on

5   investments having corresponding risks.

6

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

8   A.   It is necessary to use a proxy group of companies to measure MERC's cost of equity

9   because its stock is not traded. As noted above, MERC's stock is completely owned

10   by Integrys. The use of a proxy group to measure MERC's current cost of equity is a

11   common practice of analysts performing these types of studies.

12

13   Q.   PLEASE EXPLAIN THE SELECTION PROCESS USED TO ASSEMBLE THE

14   PROXY GROUP?

15   A.   I began with the universe of gas utilities contained in the basic service of <u>The Value</u>

16   <u>Line Investment Survey</u>, which consists of eleven companies. <u>Value Line</u> is an

17   investment advisory service that is a widely used source in public utility rate cases.

18   <u>Value Line</u> is a database that is familiar to the Commission, and is widely available to

19   investors. <u>Value Line</u> is frequently used by utility witnesses and witnesses for

20   opposing parties in public utility rate cases. I eliminated two companies from the

21   <u>Value Line</u> group when I assembled my proxy group. The eliminations were

22   NiSource, Inc. due to its natural gas pipeline and storage operations and UGI

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

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1   Corporation because of its highly diversified businesses. The remaining nine

2   companies are included in my proxy group. To this group, I added four combination

3   gas and electric utilities that are primarily delivery companies (i.e., they have no

4   significant generation assets). The complete group is comprised of the following

5   companies: AGL Resources, Inc., Atmos Energy Corp., Consolidated Edison, Inc.,

6   Laclede Group, Inc., New Jersey Resources Corp., Northeast Utilities, Northwest

7   Natural Gas, PEPCO Holdings, Inc., Piedmont Natural Gas Co., South Jersey

8   Industries, Inc., Southwest Gas Corporation, UIL Holding Corporation, and WGL

9   Holdings, Inc. I will refer to these companies as the "Delivery Group" throughout my

10   testimony. The models that I used to measure the cost of common equity for MERC

11   were applied with market and financial data developed from this group.

12

13 Q. WHY HAVE YOU PERFORMED YOUR COST OF EQUITY ANALYSIS

14   UTILIZING THE GROUP AVERAGE MARKET DATA?

15 A. I have applied the models/methods for estimating the cost of equity using the average

16   data for the Delivery Group. I have not measured separately the cost of equity for the

17   individual companies within the Delivery Group, because the determination of the cost

18   of equity for an individual company can be problematic. The use of group average

19   data will reduce the effect of potentially anomalous results for an individual company

20   if a company-by-company approach were utilized. This is to say, by employing group

21   average data, rather than individual company analysis; I have minimized the effect of

22   extraneous influences on the market data for an individual company.

23

1 Q. PLEASE SUMMARIZE YOUR COST OF EQUITY ANALYSIS.

2 A. My cost of equity determination was derived from the results of the methods/models

3   identified above. In general, the use of more than one method provides a superior

4   foundation to arrive at the cost of equity. At any point in time, any single method can

5   provide an incomplete measure of the cost of equity. The following table, derived

6   from the model results presented on Schedule 1, provides a summary of the indicated

7   costs of equity using each of these approaches.

DCF	9.64%
RP	12.39%
CAPM	10.89%
Measures of Central Tendency:	
Average	10.97%
Median	10.89%
Mid-point	11.02%
Comparable Earnings	11.70%

8   From these results, a reasonable return on equity for MERC would be 10.75%. Indeed,

9   the midpoint of the DCF and Risk Premium results is 11.02% (9.64% + 12.39% =

10   22.03% ÷ 2) and the midpoint of the DCF and CAPM results is 10.32% (9.64% +

11   10.89% = 20.53% ÷ 2). The 10.75% cost of equity that I propose fits well within this

12   range. As I indicated previously, the results of the Comparable Earnings approach,

13   which provides an 11.70% return, confirms the reasonableness of my cost of equity

14   determination. My recommended rate of return on common equity of 10.75% makes

15   no provision for the prospect that the rate of return may not be achieved due to

16   unforeseen events, such as unexpected spikes in the cost of purchased products and

1   other expenses. To obtain new capital and retain existing capital, the rate of return on

2   common equity must be high enough to satisfy investors' requirements. Indeed, in a

3   study prepared for the American Gas Foundation,[2] it was noted that allowed equity

4   returns below the level required by investors may lessen a utility's ability to maintain

5   and develop systems that are necessary to provide natural gas service efficiently.

6   Furthermore, the report specifically found that returns below 10% would trigger broad

7   disenchantment with local distribution company ("LDC") investments.

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[2]   American Gas Foundation, Regulatory Policy of Return on Equity [Review and Analysis of the Natural Gas Utility Sector] (2008)

II.   NATURAL GAS RISK FACTORS

2   Q.   WHAT FACTORS CURRENTLY AFFECT THE BUSINESS RISK OF NATURAL

3   GAS UTILITIES?

4   A.   Natural gas utilities face risks arising from competition, economic regulation, the

5   business 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 distributed

8   to customers and open access for the transportation of natural gas for large volume

9   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 utilities are now allocating more of their resources to

13   addressing aging infrastructure issues.

14

15   Q.   HOW DOES MERC's THROUGHPUT TO LARGE VOLUME CUSTOMERS

16   AFFECT ITS RISK PROFILE?

17   A.   MERC's risk profile is influenced by natural gas sold/delivered to large volume

18   customers (including customers engaged in food processing, chemicals, paper, wood

19   products and taconite mining), which represent approximately 79% of throughput,

20   based on volumes displayed on Exhibit _____(HWJ-1), page 1 of Schedule E-1.

21   Large volume users, which have traditionally used transportation service, have the

22   ability to readily bypass the LDC system. To date, MERC has been proactive in its

23   effort to avoid bypass.   Success in this aspect of MERC's market is subject to the

1   business cycle, the price of alternate energy sources, and pressures from competitors.

2   Moreover, external factors such as regulatory induced costs can also influence

3   MERC's throughput to these customers due to their ready option to acquire gas from

4   unregulated sources through bypass.

5   Q.   PLEASE INDICATE HOW ITS CONSTRUCTION PROGRAM AFFECTS MERC's

6   RISK PROFILE.

7   A.   MERC is required to undertake investments to maintain and upgrade existing facilities

8   in its service territories. To maintain safe and reliable service to existing customers,

9   MERC must invest to upgrade its infrastructure. As discussed in the Direct Testimony

10   of Mr. Seth DeMerritt, MERC anticipates an increase in capital expenditures in the

11   future. As previously noted, a fair rate of return represents a key to a financial profile

12   that will provide MERC with the ability to raise the capital necessary to meet its needs

13   on reasonable terms.

14

15   Q.   DOES YOUR COST OF EQUITY ANALYSIS AND RECOMMENDATION TAKE

16   INTO ACCOUNT THE REVENUE DECOUPLING MECHANISM ("RDM") THAT

17   IS PRESENTLY IN EFFECT FOR MERC?

18   A.   Yes. MERC's RDM, which was approved in Case No. U-G007, 011/GR-10-977, is

19   intended to separate revenues from variations in sales related to usage caused by

20   variations in year-to-year weather conditions from the "normal" weather assumed in

21   establishing rates in a test year context. My cost of equity analysis that provides a

22   10.75% rate of return on common equity takes into account MERC's RDM.

23

1 Q. HOW HAVE YOU REFLECTED THE EFFECT OF THE RDM IN YOUR

2 ANALYSIS?

3 A. Most of the companies included in my Delivery Group already have weather

4 normalization mechanisms in their tariffs similar to the RDM and other tariff features

5 designed to stabilize revenues. Therefore, my analysis already reflects the impacts of

6 the RDM and other revenue stabilization mechanisms on investor expectations through

7 the use of market-determined models. All but one of the companies in my Delivery

8 Group already has some form of revenue stabilization mechanism. The sole exception

9 is The Laclede Group, Inc., which has a weather mitigated rate design that recovers its

10 fixed costs more evenly during the heating season. Thus, the market prices of these

11 companies' common equity reflect the expectations of investors related to a regulatory

12 mechanism that adjusts revenues for abnormal weather and other occurrences.

13 In addition, the companies in my Delivery Group have other mechanisms that

14 are intended to stabilize revenue and assure recovery of the fixed costs. Many of these

15 mechanisms are intended to address the same issues as MERC's proposed rate design

16 in this case. As such, the market prices of these companies' common stocks reflect the

17 expectations of investors related to a regulatory mechanism that adjust revenues for

18 abnormal weather, changes in customer usage patterns, and other items such as

19 infrastructure investment. The trend in the industry is to stabilize the recovery of fixed

20 costs, which are unaffected by usage. Indeed, there has been a proliferation of tracking

21 mechanisms in the LDC business.

22

23 Q. HOW SHOULD THE COMMISSION RESPOND TO THE ISSUES FACING THE

1   NATURAL GAS UTILITIES AND, IN PARTICULAR, MERC?

2   A. The Commission should recognize and take into account the competitive environment

3   and the risk it poses in the natural gas business in determining the cost of capital for

4   MERC, and provide a reasonable opportunity for MERC to actually achieve its cost of

5   capital.

1		III. FUNDAMENTAL RISK ANALYSIS

2   Q.   IS IT NECESSARY TO CONDUCT A FUNDAMENTAL RISK ANALYSIS TO

3   PROVIDE A FRAMEWORK FOR A DETERMINATION OF A UTILITY'S COST

4   OF EQUITY?

5   A.   Yes, it is. It is necessary to establish a company's relative risk position within its

6   industry through a fundamental analysis of various quantitative and qualitative factors

7   that bear upon investors' assessment of overall risk. The qualitative factors that bear

8   upon Company risk have already been discussed. The quantitative risk analysis

9   follows. For this purpose, I compared MERC to the S&P Public Utilities, an industry-

10   wide proxy consisting of various regulated businesses, and to the Delivery Group.

11

12   Q.   WHAT ARE THE COMPONENTS OF THE S&P PUBLIC UTILITIES?

13   A.   The S&P Public Utilities is a widely recognized index that is comprised of electric

14   power and natural gas companies. These companies are identified on page 3 of

15   Schedule 4.

16

17   Q.   IS KNOWLEDGE OF A UTILITY'S BOND RATING AN IMPORTANT FACTOR

18   IN ASSESSING ITS RISK AND COST OF CAPITAL?

19   A.   Yes. Knowledge of a company's credit quality rating is important because the cost of

20   each type of capital is directly related to the associated risk of the firm. So while a

21   company's credit quality risk is shown directly by the rating and yield on its bonds,

22   these relative risk assessments also bear upon the cost of equity. This is because a

23   firm's cost of equity is represented by its borrowing cost plus compensation to

1	recognize the higher risk of an equity investment compared to debt.
2	
3	Q.	HOW DO THE BOND RATINGS COMPARE FOR MERC, THE DELIVERY
4		GROUP, AND THE S&P PUBLIC UTILITIES?
5	A.	Presently, the corporate credit rating ("CCR") for Integrys is A- from Standard and
6		Poor's Corporation ("S&P"), and the Long Term ("LT") issuer rating is Baa1 from
7		Moody's Investors Services ("Moody's"). The credit quality ratings of Integrys are
8		cited here because MERC does not have a credit rating and it obtains its long-term
9		debt from Integrys. The LT issuer rating by Moody's and the CCR designation by
10		S&P focus upon the credit quality of the issuer of the debt, rather than upon the debt
11		obligation itself. For the Delivery Group, the average LT issuer rating is A3 by
12		Moody's and the average CCR is A- by S&P, as displayed on page 2 of Schedule 3.
13		For the S&P Public Utilities, the average composite rating is Baa1 by Moody's and
14		BBB+ by S&P, as displayed on page 3 of Schedule 4. Many of the financial indicators
15		that I will subsequently discuss are considered during the rating process.
16		
17	Q.	HOW DOES THE FINANCIAL DATA COMPARE FOR MERC, THE DELIVERY
18		GROUP, AND THE S&P PUBLIC UTILITIES?
19	A.	The broad categories of financial data that I will discuss are shown on Schedules 2, 3,
20		and 4. The important categories of relative risk may be summarized as follows:
21		Size. In terms of capitalization, MERC is much smaller than the average size
22		of the Delivery Group, and very much smaller than the average size of the S&P Public
23		Utilities. All other things being equal, a smaller company is riskier than a larger

1   company because a given change in revenue and expense has a proportionately greater

2   impact on a small firm. As my testimony demonstrates below, the size of a firm can

3   impact its cost of equity. This is the case for MERC and the Delivery Group.

4   Market Ratios. Market-based financial ratios, such as earnings/price ratios and

5   dividend yields, provide a partial measure of the investor-required cost of equity. If all

6   other factors are equal, investors will require a higher rate of return for companies that

7   exhibit greater risk, in order to compensate for that risk. That is to say, a firm that

8   investors perceive to have higher risks will experience a lower price per share in

9   relation to expected earnings.[3]

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

11   stock. The five-year average price-earnings multiple for the Delivery Group was

12   slightly higher than that of the S&P Public Utilities. The five-year average dividend

13   yields were somewhat lower for the Delivery Group as compared to the S&P Public

14   Utilities. The average market-to-book ratios were somewhat higher for the Delivery

15   Group as compared to the S&P Public Utilities.

16   Common Equity Ratio. The level of financial risk is measured by the

17   proportion of long-term debt and other senior capital that is contained in a company's

18   capitalization. Financial risk is also analyzed by comparing common equity ratios (the

19   complement of the ratio of debt and other senior capital). That is to say, a firm with a

20   high common equity ratio has lower financial risk, while a firm with a low common

21   equity ratio has higher financial risk. The five-year average common equity ratios,

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[3]   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).

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1	based on total capital were 50.5% for MERC, 47.6% for the Delivery Group, and
2	43.3% for the S&P Public Utilities.
3	Return on Book Equity. Greater variability (i.e., uncertainty) of a firm's earned
4	returns signifies relatively greater levels of risk, as shown by the coefficient of
5	variation (standard deviation ÷ mean) of the rate of return on book common equity.
6	The higher the coefficients of variation, the greater degree of variability. For the five-
7	year period, the coefficients of variation were 0.413 (2.6% ÷ 6.3%) for MERC, 0.050
8	(0.5% ÷ 10.1%) for the Delivery Group, and 0.104 (1.1% ÷ 10.6%) for the S&P Public
9	Utilities. MERC's rates of return on equity were much more variable than the
10	Delivery Group and the S&P Public Utilities.
11	Operating Ratios. I also compared operating ratios (the percentage of revenues
12	consumed by operating expense, depreciation, and taxes other than income).[4] The
13	five-year average operating ratios were 93.0% for MERC, 87.5% for the Delivery
14	Group, and 82.3% for the S&P Public Utilities. MERC had higher operating ratios
15	than the Delivery Group and S&P Public Utilities.
16	Coverage. The level of fixed charge coverage (i.e., the multiple by which
17	available earnings cover fixed charges, such as interest expense) provides an indication
18	of the earnings protection for creditors. Higher levels of coverage, and hence earnings
19	protection for fixed charges, are usually associated with superior grades of
20	creditworthiness. The five-year average interest coverage (excluding Allowance for
21	Funds Used During Construction ("AFUDC")) was 2.89 times for MERC, 3.99 times
22	for the Delivery Group, and 3.12 times for the S&P Public Utilities. MERC's interest

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[4] 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.

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1   coverage was weak compared to the Delivery Group and the S&P Public Utilities.

2   Quality of Earnings. Measures of earnings quality usually are revealed by the

3   percentage of AFUDC related to income available for common equity, the effective

4   income tax rate, and other cost deferrals. These measures of earnings quality usually

5   influence a firm's internally generated funds because poor quality of earnings would

6   not generate high levels of cash flow. Quality of earnings has not been a significant

7   concern for MERC, the Delivery Group and the S&P Public Utilities.

8   Internally Generated Funds. Internally generated funds ("IGF") provide an

9   important source of new investment capital for a utility and represent a key measure of

10   credit strength. Historically, the five-year average percentage of IGF to capital

11   expenditures was 94.1% for the Delivery Group and 91.1% for the S&P Public

12   Utilities. MERC does not prepare a cash flow statement in its Jurisdictional Annual

13   Report to the Minnesota Department of Commerce and hence no cash flow statistics

14   were calculated for MERC.

15   Betas. The financial data that I have been discussing relate primarily to

16   company-specific risks. Market risk for firms with publicly-traded stock is measured

17   by beta coefficients. Beta coefficients attempt to identify systematic risk, i.e., the risk

18   associated with changes in the overall market for common equities.[5] Value Line

19   publishes such a statistical measure of a stock's relative historical volatility to the rest

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[5]   Beta is a relative measure of the historical sensitivity of the stock's price to overall fluctuations in the
New York Stock Exchange Composite Index. The ''Beta coefficient'' is derived from a regression analysis of
the relationship between weekly percentage changes in the price of a stock and weekly percentage changes in
the NYSE Index over a period of five years. The betas are adjusted for their long-term tendency to converge
toward 1.00. 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   of the market. A comparison of market risk is shown by the <u>Value Line</u> beta of 0.67 as

2   the average for the Delivery Group (see page 2 of Schedule 3) and 0.75 as the average

3   for the S&P Public Utilities (see page 3 of Schedule 4).

4

5   Q.   PLEASE SUMMARIZE YOUR RISK EVALUATION.

6   A.   MERC's risk is generally higher than that of the Delivery Group. MERC's higher risk

7   is attributable to its smaller size, its much higher earnings variability, its higher

8   operating ratio, and its lower interest coverage. Other measures of risk are

9   approximately equal, i.e., its common equity ratio and quality of earnings. As such,

10   the Delivery Group provides a conservative measure for measuring MERC's cost of

11   equity because of MERC's more numerous high risk factors indicate a higher return

12   can be justified.

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 among MERC, the Delivery Group, and the S&P Public
6		Utilities, the cost of equity must be measured by standard financial models that I
7		identified above. Differences in risk traits, such as size, business diversification,
8		geographical diversity, regulatory policy, financial leverage, and bond ratings must be
9		considered when analyzing the cost of equity.
10		It is also important to reiterate that no one method or model of the cost of
11		equity can be applied in an isolated manner. Rather, informed judgment must be used
12		to take into consideration the relative risk traits of the firm. It is for this reason that I
13		have used more than one method to measure MERC's cost of equity. As I describe
14		below, each of the methods used to measure the cost of equity contains certain
15		incomplete and/or overly restrictive assumptions and constraints that are not optimal.
16		Therefore, I favor considering the results from a variety of methods. In this regard, I
17		applied each of the methods with data taken from the Delivery Group to arrive at a cost
18		of equity of 10.75%.

1   V.   **DISCOUNTED CASH FLOW**

2   Q.   PLEASE DESCRIBE YOUR USE OF THE DISCOUNTED CASH FLOW

3   APPROACH TO DETERMINE THE COST OF EQUITY.

4   A.   The DCF model seeks to explain the value of an asset as the present value of future

5   expected cash flows discounted at the appropriate risk-adjusted rate of return. In its

6   simplest form, the DCF return on common stock consists of a current cash (dividend)

7   yield and future price appreciation (growth) of the investment. The dividend discount

8   equation is the familiar DCF valuation model and assumes future dividends are

9   systematically related to one another by a constant growth rate. The DCF formula is

10   derived from the standard valuation model: $P = D/(k-g)$, where P = price, D =

11   dividend, k = the cost of equity, and g = growth in cash flows. By rearranging the

12   terms, we obtain the familiar DCF equation: $k = D/P + g$. All of the terms in the DCF

13   equation represent investors' assessment of expected future cash flows that they will

14   receive in relation to the value that they set for a share of stock (P). The DCF equation

15   is sometimes referred to as the "Gordon" model.[6] My DCF results are provided on

16   Schedule 1 for the Delivery Group. The DCF return is 9.64%.

17   Among other limitations of the model, there is a certain element of circularity

18   in the DCF method when applied in rate cases. This is because investors' expectations

19   for the future depend upon regulatory decisions. In turn, when regulators depend upon

20   the DCF model to set the cost of equity, they rely upon investor expectations that

21   include an assessment of how regulators will decide rate cases. Due to this circularity,

---

[6]   Although the popular application of the DCF model is often attributed to the work of Myron J.
Gordon in the mid-1950's, J. B. Williams exposited the DCF model in its present form nearly two decades
earlier.

1   the DCF model may not fully reflect the true risk of a utility.

2

3   Q.   PLEASE EXPLAIN THE DIVIDEND YIELD COMPONENT OF A DCF

4   ANALYSIS.

5   A.   The DCF methodology requires the use of an expected dividend yield to establish the

6   investor-required cost of equity. The monthly dividend yields for the twelve months

7   ended May 2013 are shown on Schedule 5 and capture an adjustment to the month-end

8   prices to reflect the buildup of the dividend in the price that has occurred since the last

9   ex-dividend date (i.e., the date by which a shareholder must own the shares to be

10   entitled to the dividend payment – usually about two to three weeks prior to the actual

11   payment).

12   For the twelve months ended May 2013, the average dividend yield was 3.95%

13   for the Delivery Group based upon a calculation using annualized dividend payments

14   and adjusted month-end stock prices. The dividend yields for the more recent six- and

15   three-month periods were 3.91% and 3.78%, respectively. I have used, for the purpose

16   of the DCF model, the six-month average dividend yield of 3.91% for the Delivery

17   Group. The use of this dividend yield will reflect current capital costs, while avoiding

18   spot yields. For the purpose of a DCF calculation, the average dividend yield must be

19   adjusted to reflect the prospective nature of the dividend payments, i.e., the higher

20   expected dividends for the future. Recall that the DCF is an expectational model that

21   must reflect investor anticipated cash flows for the Delivery Group. I have adjusted

22   the six-month average dividend yield in three different, but generally accepted,

23   manners and used the average of the three adjusted values as calculated in the lower

1		panel of data presented on Schedule 5. That adjusted dividend yield is 4.02% for the
2		Delivery Group.
3		
4	Q.	PLEASE EXPLAIN THE UNDERLYING FACTORS THAT INFLUENCE
5		INVESTOR'S GROWTH EXPECTATIONS.
6	A.	As noted previously, investors are interested principally in the future growth of their
7		investment (i.e., the price per share of the stock). Future earnings per share growth
8		represent the DCF model's primary focus because under the constant price-earnings
9		multiple assumption of the model, the price per share of stock will grow at the same
10		rate as earnings per share. In conducting a growth rate analysis, a wide variety of
11		variables can be considered when reaching a consensus of prospective growth,
12		including: earnings, dividends, book value, and cash flows stated on a per share basis.
13		Historical values for these variables can be considered, as well as analysts' forecasts
14		that are widely available to investors. A fundamental growth rate analysis is
15		sometimes represented by the internal growth ("b x r"), where "r" represents the
16		expected rate of return on common equity and "b" is the retention rate that consists of
17		the fraction of earnings that are not paid out as dividends. To be complete, the internal
18		growth rate should be modified to account for sales of new common stock -- this is
19		called external growth ("s x v"), where "s" represents the new common shares
20		expected to be issued by a firm and "v" represents the value that accrues to existing
21		shareholders from selling stock at a price different from book value. Fundamental
22		growth, which combines internal and external growth, provides an explanation of the
23		factors that cause book value per share to grow over time.

1   Growth also can be expressed in multiple stages. This expression of growth

2   consists of an initial "growth" stage where a firm enjoys rapidly expanding markets,

3   high profit margins, and abnormally high growth in earnings per share. Thereafter, a

4   firm enters a "transition" stage where fewer technological advances and increased

5   product saturation begin to reduce the growth rate and profit margins come under

6   pressure. During the "transition" phase, investment opportunities begin to mature,

7   capital requirements decline, and a firm begins to pay out a larger percentage of

8   earnings to shareholders. Finally, the mature or "steady-state" stage is reached when a

9   firm's earnings growth, payout ratio, and return on equity stabilizes at levels where

10   they remain for the life of a firm. The three stages of growth assume a step-down of

11   high initial growth to lower sustainable growth. Even if these three stages of growth

12   can be envisioned for a firm, the third "steady-state" growth stage, which is assumed to

13   remain fixed in perpetuity, represents an unrealistic expectation because the three

14   stages of growth can be repeated. That is to say, the stages can be repeated where

15   growth for a firm ramps-up and ramps-down in cycles over time.

16

17 Q.   WHAT INVESTOR-EXPECTED GROWTH RATE IS APPROPRIATE IN A DCF

18   CALCULATION?

19 A.   Investors consider both company-specific variables and overall market sentiment (i.e.,

20   level of inflation rates, interest rates, economic conditions, etc.) when balancing their

21   capital gains expectations with their dividend yield requirements. I follow an approach

22   that is not rigidly formatted because investors are not influenced by a single set of

23   company-specific variables weighted in a formulaic manner. In my opinion, all

1   relevant growth rate indicators using a variety of techniques must be evaluated when

2   formulating a judgment of investor-expected growth.

3

4 Q. WHAT DATA FOR THE PROXY GROUP HAVE YOU CONSIDERED IN YOUR

5   GROWTH RATE ANALYSIS?

6 A. I have considered the growth in the financial variables shown on Schedules 6 and 7.

7   The historical growth rates were taken from the Value Line publication that provides

8   these data. As shown on Schedule 6, the historical growth of earnings per share was in

9   the range of 4.00% to 4.73% for the Delivery Group.

10   Schedule 7 provides projected earnings per share growth rates taken from

11   analysts' forecasts compiled by IBES/First Call, Zacks, Morningstar, SNL, and Value

12   Line. IBES/First Call, Zacks, Morningstar, and SNL represent reliable authorities of

13   projected growth upon which investors rely. The IBES/First Call, Zacks, and SNL

14   growth rates are consensus forecasts taken from a survey of analysts that make

15   projections of growth for these companies. The IBES/First Call, Zacks, Morningstar,

16   and SNL estimates are obtained from the Internet and are widely available to investors.

17   First Call probably is quoted most frequently in the financial press when reporting on

18   earnings forecasts. The Value Line forecasts also are widely available to investors and

19   can be obtained by subscription or free-of-charge at most public and collegiate

20   libraries. The IBES/First Call, Zacks, Morningstar, and SNL forecasts are limited to

21   earnings per share growth, while Value Line makes projections of other financial

22   variables. The Value Line forecasts of dividends per share, book value per share, and

23   cash flow per share have also been included on Schedule 7 for the Delivery Group.

1

2 Q. WHAT SPECIFIC EVIDENCE HAVE YOU CONSIDERED IN THE DCF

3   GROWTH ANALYSIS?

4 A. As to the five-year forecast growth rates, Schedule 7 indicates that the projected

5   earnings per share growth rates for the Delivery Group are 5.40% by IBES/First Call,

6   4.72% by Zacks, 4.88% by Morningstar, 5.74% by SNL, and 5.31% by Value Line.

7   The Value Line projections indicate that earnings per share for the Delivery Group will

8   grow prospectively at a more rapid rate (i.e., 5.31%) than the dividends per share (i.e.,

9   3.58%), which translates into a declining dividend payout ratio for the future. As

10   noted earlier, with the constant price-earnings multiple assumption of the DCF model,

11   growth for these companies will occur at the higher earnings per share growth rate,

12   thus producing the capital gains yield expected by investors.

13

14 Q. WHAT CONCLUSION HAVE YOU DRAWN FROM THESE DATA REGARDING

15   THE APPLICABLE GROWTH RATE TO BE USED IN THE DCF MODEL?

16 A. A variety of factors should be examined to reach a conclusion on the DCF growth rate.

17   However, certain growth rate variables should be emphasized when reaching a

18   conclusion on an appropriate growth rate. First, historical and projected earnings per

19   share, dividends per share, book value per share, cash flow per share, and retention

20   growth represent indicators that could be used to provide an assessment of investor

21   growth expectations for a firm. However, although history cannot be ignored, it

22   cannot receive primary emphasis. This is because an analyst, when developing a

23   forecast of future earnings growth, would first apprise himself/herself of the historical

1	performance of a company. Hence, there is no need to count historical growth rates
2	separately, because historical performance already is reflected in analysts' forecasts.
3	Second, from the various alternative measures of growth identified above, earnings per
4	share should receive greatest emphasis. Earnings per share growth is the primary
5	determinant of investors' expectations regarding their total returns in the stock market.
6	This is because the capital gains yield (i.e., price appreciation) will track earnings
7	growth with a constant price earnings multiple (a key assumption of the DCF model).
8	Moreover, earnings per share (derived from net income) are the source of dividend
9	payments and are the primary driver of retention growth and its surrogate, i.e., book
10	value per share growth. As such, under these circumstances, greater emphasis must be
11	placed upon projected earnings per share growth. In this regard, it is worthwhile to
12	note that Professor Myron Gordon, the foremost proponent of the DCF model in rate
13	cases, concluded that the best measure of growth in the DCF model is a forecast of
14	earnings per share growth.[7] Hence, to follow Professor Gordon's findings, projections
15	of earnings per share growth, such as those published by IBES/First Call, Zacks,
16	Morningstar, and Value Line, represent a reasonable assessment of investor
17	expectations.
18	The forecasts of earnings per share growth, as shown on Schedule 7, provide a
19	range of average growth rates of 4.72% to 5.74%. Although the DCF growth rates
20	cannot be established solely with a mathematical formulation, it is my opinion that an
21	investor-expected growth rate of 5.00% is within the array of earnings per share
22	growth rates shown by the analysts' forecasts. The stellar performance of the stock

---

[7]   Gordon, Gordon & Gould ,"Choice Among Methods of Estimating Share Yield," The Journal of Portfolio Management (Spring 1989).

1   market in 2013 points to an improving economy, as it is one of the leading economic

2   indicators compiled by The Conference Board.[8] In fact, the Leading Economic Index,

3   whose financial components include the stock market, has increased in five of the last

4   six months. In addition, "the strengths among the leading indicators have become

5   more widespread in recent months," said The Conference Board. This improving

6   economic growth argues for a higher DCF growth rate in the future.

7

8 Q. ARE THE DIVIDEND YIELD AND GROWTH COMPONENTS OF THE DCF

9   ADEQUATE TO EXPLAIN THE RATE OF RETURN ON COMMON EQUITY

10   WHEN IT IS USED IN THE CALCULATION OF THE WEIGHTED AVERAGE

11   COST OF CAPITAL?

12 A. Only if the capital structure ratios are measured with the market value of debt and

13   equity. In the case of the Delivery Group, those average capital structure ratios are

14   39.32% long-term debt, 0.13% preferred stock, and 60.55% common equity, as shown

15   on Schedule 8. If book values are used to compute the capital structure ratios, then an

16   adjustment is required.

17

18 Q. PLEASE EXPLAIN WHY.

19 A. If regulators use the results of the DCF (which are based on the market price of the

20   stock of the companies analyzed) to compute the weighted average cost of capital

21   based on a book value capital structure used for ratesetting purposes, the utility will

---

[8]   The Conference Board U.S. Business Cycle Indicators -The Conference Board Leading Economic Index (LEI) for the U.S. and Related Composite Economic Indexes for February 2013 [Press Release].Retrieved from http://www.conference-board.org/data/bci.cfm dated March 21, 2013.

1   not, by definition, recover its risk-adjusted capital cost. This is because market

2   valuations of equity are based on market value capital structures, which in general

3   have more equity and less debt and therefore reflect less risk than book value capital

4   structures (see Schedule 8 for the comparison). The utility's risk-adjusted cost of

5   equity will necessarily be lower with the less risky market value capital structure than

6   with the book value capital structure. The difference represents that portion of the

7   utility's cost of equity that it will not recover unless either the market value cost of

8   equity is applied to the utility's market value capital structure or it is adjusted to reflect

9   the higher risk associated with the book value capital structure. By the same token, if

10   the utility's market value capital structure is less than its book value structure, then the

11   utility's market cost of equity should be adjusted downward to reflect the lower risk

12   associated with the book value capital structure, or else the utility will over-recover its

13   total cost of equity.

14   This shortcoming of the DCF has persuaded the Pennsylvania Public Utility

15   Commission to adjust the DCF determined cost of equity upward to make the return

16   consistent with the book value capital structure. Specific adjustments to recognize this

17   risk difference were made in the following cases:

18   •   January 10, 2002 for Pennsylvania-American Water Company in Docket No. R-
19   00016339 -- 60 basis points adjustment.
20
21   •   August 1, 2002 for Philadelphia Suburban Water Company in Docket No. R-
22   00016750 -- 80 basis points adjustment.
23
24   •   January 29, 2004 for Pennsylvania-American Water Company in Docket No.
25   R-00038304 (affirmed by the Commonwealth Court on November 8, 2004) -- 60
26   basis points adjustment.
27
28   •   August 5, 2004 for Aqua Pennsylvania, Inc. in Docket No. R-00038805 -- 60
29   basis points adjustment.

1

2 • December 22, 2004 for PPL Electric Utilities Corporation in Docket No. R-
3 00049255 -- 45 basis points adjustment.

4

5 • February 8, 2007 for PPL Gas Utilities Corporation in Docket No. R-00061398 -
6 - 70 basis points adjustment.

7

8 In order to make the DCF results relevant to the capitalization measured at book value

9 (as is done for rate setting purposes), the market-derived cost rate cannot be used

10 without modification.

11

12 Q. IS YOUR LEVERAGE ADJUSTMENT DEPENDENT UPON THE MARKET

13 VALUATION OR BOOK VALUATION FROM AN INVESTOR'S PERSPECTIVE?

14 A. The only perspective that is important to investors is the return that they can realize on

15 the market value of their investment. As I have measured the DCF, the simple yield

16 (D/P) plus growth (g) provides a return applicable strictly to the price (P) that an

17 investor is willing to pay for a share of stock. The need for the leverage adjustment

18 arises when the results of the DCF model (k) are to be applied to a capital structure

19 that is different than indicated by the market price (P). From the market perspective,

20 the financial risk of the Delivery Group is accurately measured by the capital structure

21 ratios calculated from the market capitalization of a firm. If the ratesetting process

22 utilized the market capitalization ratios, then no additional analysis or adjustment

23 would be required, and the simple yield (D/P) plus growth (g) components of the DCF

24 would satisfy the financial risk associated with the market value of the equity

25 capitalization. Because the ratesetting process uses a different set of ratios calculated

26 from the book value capitalization, then further analysis is required to synchronize the

27 financial risk of the book capitalization with the required return on the book value of

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1   the equity. This adjustment is developed through precise mathematical calculations,

2   using well recognized analytical procedures that are widely accepted in the financial

3   literature. To arrive at that return, the rate of return on common equity is the

4   unleveraged cost of capital (or equity return at 100% equity) plus one or more terms

5   reflecting the increase in financial risk resulting from the use of leverage in the capital

6   structure. The calculations presented in the lower panel of data shown on Schedule 8,

7   under the heading "M&M," provides a return of 7.57% when applicable to a capital

8   structure with 100% common equity.

9

10   Q.   HOW IS THE DCF-DETERMINED COST OF EQUITY ADJUSTED FOR THE

11   FINANCIAL RISK ASSOCIATED WITH THE BOOK VALUE OF THE

12   CAPITALIZATION?

13   A.   In pioneering work, Nobel laureates Modigliani and Miller developed several theories

14   about the role of leverage in a firm's capital structure. As part of that work, Modigliani

15   and Miller established that, as the borrowing of a firm increases, the expected return on

16   stockholders' equity also increases. This principle is incorporated into my leverage

17   adjustment, which recognizes that the expected return on equity increases to reflect the

18   increased risk associated with the higher financial leverage shown by the book value

19   capital structure, as compared to the market value capital structure that contains lower

20   financial risk. Modigliani and Miller proposed several approaches to quantify the

21   equity return associated with various degrees of debt leverage in a firm's capital

22   structure. These formulas point toward an increase in the equity return associated with

23   the higher financial risk of the book value capital structure. Simply stated, the

1		leverage adjustment contains no factor for a particular market-to-book ratio. It merely
2		expresses the cost of equity as the unleveraged return plus compensation for the
3		additional risk of introducing debt and/or preferred stock into the capital structure.
4		There can be no dispute that a firm's financial risk varies with the relative amount of
5		leverage contained in its capital structure.
6		
7	Q.	IS THE LEVERAGE ADJUSTMENT THAT YOU PROPOSE DESIGNED TO
8		TRANSFORM THE MARKET RETURN INTO ONE THAT IS DESIGNED TO
9		PRODUCE A PARTICULAR MARKET-TO-BOOK RATIO?
10	A.	No, it is not. The adjustment that I label as a "leverage adjustment" is merely a
11		convenient way of showing the amount that must be added to (or subtracted from) the
12		result of the simple DCF model (i.e., $D/P + g$), in the context of a return that applies to
13		the capital structure used in ratemaking, which is computed with book value weights
14		rather than market value weights, in order to arrive at the utility's total cost of equity.
15		I specify a separate factor, which I call the leverage adjustment, but there is no need to
16		do so other than providing identification for this factor. If I expressed my return solely
17		in the context of the book value weights that we use to calculate the weighted average
18		cost of capital, and ignore the familiar $D/P + g$ expression entirely, then there would be
19		no separate element to reflect the financial leverage change from market value to book
20		value capitalization. As shown in the bottom panel of data on Schedule 8, the equity
21		return applicable to the book value common equity ratio is equal to 7.57%, which is
22		the return for the Delivery Group applicable to its equity with no debt in its capital
23		structure (i.e., the cost of capital is equal to the cost of equity with a 100% equity ratio)

1   plus 1.92% compensation for having a 46.09% debt ratio, plus 0.01% for having a

2   0.18% preferred stock ratio. The sum of the parts is 9.50% (7.57% + 1.92% + 0.01%)

3   and there is no need to even address the cost of equity in terms of D/P + g. To express

4   this same return in the context of the familiar DCF model, I summed the 4.13%

5   dividend yield, the 5.00% growth rate, and the 0.50% for the leverage adjustment in

6   order to arrive at the same 9.50% (4.02% + 5.00% + 0.48%) return. I know of no

7   means to mathematically solve for the 0.48% leverage adjustment by expressing it in

8   the terms of any particular relationship of market price to book value. The 0.48%

9   adjustment is merely a convenient way to compare the 9.50% return computed directly

10   with the Modigliani & Miller formulas to the 9.02% return generated by the DCF

11   model based on a market value capital structure. My point is that when we use a

12   market-determined cost of equity developed from the DCF model, it reflects a level of

13   financial risk that is different (in this case, lower) from the capital structure stated at

14   book value. This process has nothing to do with targeting any particular market-to-

15   book ratio. Each of the calculations that I described above apply to the market returns

16   associated with the holding companies from which the DCF is derived. It is well

17   understood that the leverage employed by the utility subsidiaries of those holding

18   companies is reflective of the risks associated with the utility business.

19

20 Q. HOW HAVE YOU MEASURED THE FLOTATION COST ALLOWANCE AS

21   PART OF THE DCF RETURN?

22 A. The flotation cost adjustment adds 0.14% (9.64% - 9.50%) to the rate of return on

23   common equity for the Gas Group as shown by the calculations provided on Schedule

1   1. In my opinion, this adjustment is reasonable and supported by the analysis of

2   natural gas utility stock issue shown on Schedule 9. On that schedule, I show that the

3   average underwriters' discount and commission and company issuance expenses are

4   3.9% for the twelve issues of common stock shown there for the Gas Group. Since I

5   apply the flotation cost to the entire DCF result, I have utilized an adjustment factor

6   that is less than one half of the 3.9% as measured on Schedule 9. Hence, my flotation

7   cost adjustment factor is 1.015, which is used on Schedule 1.

VI.   RISK PREMIUM ANALYSIS

1

2   Q.   PLEASE DESCRIBE YOUR USE OF THE RISK PREMIUM APPROACH TO

3   DETERMINE THE COST OF EQUITY.

4   A.   With the Risk Premium approach, the cost of equity capital is determined by corporate

5   bond yields plus a premium to account for the fact that common equity is exposed to

6   greater investment risk than debt capital. The result of my Risk Premium study is

7   shown on Schedule 1. That result is 12.39% including the adjustment for flotation

8   costs. As with other models used to determine the cost of equity, the Risk Premium

9   approach has its limitations, including potential imprecision in the assessment of the

10   future cost of corporate debt and the measurement of the risk-adjusted common equity

11   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 5.25% yield represents a reasonable estimate of the prospective yield

16   on long-term A-rated public utility bonds.

17

18   Q.   WHAT FORECASTS OF INTEREST RATES HAVE YOU CONSIDERED IN

19   YOUR ANALYSIS?

20   A.   I have determined the prospective yield on A-rated public utility debt by using the

21   Blue Chip Financial Forecasts ("Blue Chip") along with the spread in the yields that I

22   describe below. The Blue Chip is a reliable authority and contains consensus forecasts

23   of a variety of interest rates compiled from a panel of banking, brokerage, and

1		investment advisory services. In early 1999, <u>Blue Chip</u> stopped publishing forecasts of
2		yields on A-rated public utility bonds because the Federal Reserve deleted these yields
3		from its Statistical Release H.15. To independently project a forecast of the yields on
4		A-rated public utility bonds, I have combined the forecast yields on long-term
5		Treasury bonds published on June 1, 2013, and a yield spread of 1.50%, derived from
6		historical data.
7		
8	Q.	WHAT HISTORICAL DATA HAVE YOU ANALYZED?
9	A.	I have analyzed the historical yields on the Moody's index of long-term public utility
10		debt as shown on page 1 of Schedule 10. For the twelve months ended May 2013, the
11		average monthly yield on Moody's index of A-rated public utility bonds was 4.04%.
12		For the six and three-month periods ended May 2013, the yields were 4.12% for both
13		periods. During the twelve-months ended May 2013, the range of the yields on A-
14		rated public utility bonds was 3.84% to 4.20%. Page 2 of Schedule 10 shows the long-
15		run spread in yields between A-rated public utility bonds and long-term Treasury
16		bonds. As shown on page 3 of Schedule 10, the yields on A-rated public utility bonds
17		have exceeded those on Treasury bonds by 1.51% on a twelve-month average basis,
18		1.45% on a six-month average basis, and 1.44% on a the three-month average basis.
19		From these averages, 1.50% represents a reasonable spread for the yield on A-rated
20		public utility bonds over Treasury bonds.
21		

1 Q. HOW HAVE YOU USED THESE DATA TO PROJECT THE YIELD ON A-RATED

2 PUBLIC UTILITY BONDS FOR THE PURPOSE OF YOUR RISK PREMIUM

3 ANALYSES?

4 A. Shown below is my calculation of the prospective yield on A-rated public utility bonds

5 using the building blocks discussed above, i.e., the Blue Chip forecast of Treasury

6 bond yields and the public utility bond yield spread. For comparative purposes, I also

7 have shown the Blue Chip forecasts of Aaa-rated and Baa-rated corporate bonds.

8 These forecasts are:

		Blue Chip Financial Forecasts				
		Corporate		30-Year	A-rated Public Utility	
Year	Quarter	Aaa-rated	Baa-rated	Treasury	Spread	Yield
2013	Second	3.8%	4.7%	3.1%	1.50%	4.60%
2013	Third	3.9%	4.8%	3.2%	1.50%	4.70%
2013	Fourth	4.0%	4.9%	3.3%	1.50%	4.80%
2014	First	4.1%	5.0%	3.4%	1.50%	4.90%
2014	Second	4.2%	5.1%	3.5%	1.50%	5.00%
2014	Third	4.3%	5.2%	3.7%	1.50%	5.20%

9 Q. ARE THERE ADDITIONAL FORECASTS OF INTEREST RATES THAT EXTEND

10 BEYOND THOSE SHOWN ABOVE?

11 A. Yes. Twice yearly, Blue Chip provides long-term forecasts of interest rates. In its

12 June 1, 2013 publication, Blue Chip published longer-term forecasts of interest rates,

13 which were reported to be:

	Blue Chip Financial Forecasts		
	30-Year	Corporate	
Averages	Treasury	Aaa-rated	Baa-rated
2015-19	5.2%	5.8%	6.9%
2020-24	5.6%	6.3%	7.4%

14 Given these forecasted interest rates, a 5.25% yield on A-rated public utility bonds

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1   represents a reasonable expectation.

2

3   Q.   WHAT EQUITY RISK PREMIUM HAVE YOU DETERMINED FOR THIS CASE?

4   A.   To develop an appropriate equity risk premium, I analyzed the results from the 2013

5   Classic Yearbook for Stocks, Bonds, Bills and Inflation ("SBBI") published by

6   Ibbotson Associates that is part of Morningstar. My investigation reveals that the

7   equity risk premium varies according to the level of interest rates. That is to say, the

8   equity risk premium increases as interest rates decline and it declines as interest rates

9   increase. This inverse relationship is revealed by the summary data presented below

10   and shown on page 1 of Schedule 11.

Common Equity Risk Premiums	
Low Interest Rates	7.00%
Average Across All Interest Rates	5.41%
High Interest Rates	3.77%

11   Based on my analysis of the historical data, the equity risk premium was 7.00% when

12   the marginal cost of long-term government bonds was low (i.e., 3.03%, which was the

13   average yield during periods of low rates). Conversely, when the yield on long-term

14   government bonds was high (i.e., 7.35% on average during periods of high interest

15   rates) the spread narrowed to 3.77%. Over the entire spectrum of interest rates, the

16   equity risk premium was 5.41% when the average government bond yield was 5.16%.

17   With the current low interest rates, an equity risk premium of 7.00% is indicated today.

18

| 1 | | **VII.** | **CAPITAL ASSET PRICING MODEL ("CAPM")** |

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

3 A. The CAPM uses the yield on a risk-free interest bearing obligation plus a rate of return

4 premium that is proportional to the systematic risk of an investment. As shown on

5 Schedule 1, the result of the CAPM is 10.89% including flotation costs. To compute

6 the cost of equity with the CAPM, three components are necessary: a risk-free rate of

7 return ("Rf"), the beta measure of systematic risk ("β"), and the market risk premium

8 ("Rm-Rf") derived from the total return on the market of equities reduced by the risk-

9 free rate of return. The CAPM specifically accounts for differences in systematic risk

10 (i.e., market risk as measured by the beta) between an individual firm or group of firms

11 and the entire market of equities.

12

13 Q. WHAT BETAS HAVE YOU CONSIDERED IN THE CAPM?

14 A. For my CAPM analysis, I initially considered the <u>Value Line</u> betas. As shown on

15 Schedule 8, the average beta is 0.67 for the Delivery Group.

16

17 Q. WHAT BETAS HAVE YOU USED IN THE CAPM DETERMINED COST OF

18 EQUITY?

19 A. The betas must be reflective of the financial risk associated with the ratesetting capital

20 structure that is measured at book value. Therefore, <u>Value Line</u> betas cannot be used

21 directly in the CAPM, unless the cost rate developed using those betas is applied to a

22 capital structure measured with market values. To develop a CAPM cost rate

23 applicable to a book-value capital structure, the <u>Value Line</u> (market value) betas have

| 1 | been unleveraged and releveraged for the book value common equity ratios using the |

2   Hamada formula,[9] as follows:

3 $$\beta l = \beta u \,[1 + (1 - t)\, D/E + P/E]$$

4   where ßl = the leveraged beta, ßu = the unleveraged beta, t = income tax rate, D = debt

5   ratio, P = preferred stock ratio, and E = common equity ratio. The betas published by

6   Value Line have been calculated with the market price of stock and are related to the

7   market value capitalization. By using the formula shown above and the capital

8   structure ratios measured at market value, the beta would become 0.47 for the Delivery

9   Group if it employed no leverage and was 100% equity financed. Those calculations

10   are shown on Schedule 8 under the category "Hamada" who is credited with

11   developing those formulas. With the unleveraged beta as a base, I calculated the

12   leveraged beta of 0.73 for the book value capital structure of the Delivery Group. The

13   book value leveraged beta that I will employ in the CAPM cost of equity is 0.73 for the

14   Delivery Group.

15

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

17   A.   As shown on page 1 of Schedule 12, I provided the historical yields on Treasury notes

18   and bonds. For the twelve months ended May 2013, the average yield on 30-year

19   Treasury bonds was 2.91%. For the six- and three-months ended May 2013, the yields

20   on 30-year Treasury bonds were 3.06% and 3.07%, respectively. During the twelve-

21   months ended May 2013, the range of the yields on 30-year Treasury bonds was 2.59%

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[9]   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.

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Moul Direct

1 to 3.17%. The recent low yields on Treasury bonds can be traced to events that have

2 occurred during the past several years that included the financial crisis and its

3 aftermath. The resulting decline in the yields on Treasury obligations can be attributed

4 to a number of factors, including: the sovereign debt crisis in the euro zone, concern

5 over a possible double dip recession, the potential for deflation, and the Federal

6 Reserve's large balance sheet that has been expanded through the purchase of Treasury

7 obligations and mortgage-backed securities (also known as QEI, QEII, and QEIII), and

8 the reinvestment of the proceeds from maturing obligations and the lengthening of the

9 maturity of the Fed's bond portfolio through the sale of short-term Treasuries and the

10 purchase of long-term Treasury obligations (also known as "operation twist").

11 Essentially, low interest rates are the product of the policy of the FOMC in its attempt

12 to deal with stagnant job growth, which is part of its dual mandate.   As shown on page

13 2 of Schedule 12, forecasts published by Blue Chip on June 1, 2013 indicate that the

14 yields on long-term Treasury bonds are expected to be in the range of 3.1% to 3.7%

15 during the next six quarters. The longer term forecasts described previously show that

16 the yields on 30-year Treasury bonds will average 5.2% from 2015 through 2019 and

17 5.6% from 2020 to 2024. For the reasons explained previously, forecasts of interest

18 rates should be emphasized at this time in selecting the risk-free rate of return in

19 CAPM. Hence, I have used a 3.75% risk-free rate of return for CAPM purposes,

20 which considers not only the Blue Chip forecasts, but also the recent trend in the yields

21 on long-term Treasury bonds.

22

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

1   A.   As shown in the lower panel of data presented on page 2 of Schedule 12, the market

2   premium is derived from historical data and the Value Line and S&P 500 returns. For

3   the historically based market premium, I have used the arithmetic mean obtained from

4   the data presented on page 1 of Schedule 11. On that schedule, the market return on

5   large stocks during periods of low interest rates was 11.72%. During that time, the

6   yield on long-term government bonds was 3.03%. The resulting market premium is

7   8.69% (11.72% - 3.03%) based on historical data. For the forecast returns, I calculated

8   a 10.88% total market return from the Value Line data and a DCF return of 11.47% for

9   the S&P 500. With the average forecast return of 11.18% (10.88% + 11.47% =

10   22.35% ÷ 2), I calculated a market premium of 7.43% (11.18% - 3.75%) using forecast

11   data. The market premium applicable to the CAPM derived from these sources equals

12   8.06% (7.43% + 8.69% = 16.12% ÷ 2).

13

14   Q.   ARE THERE ADJUSTMENTS TO THE CAPM THAT ARE NECESSARY TO

15   FULLY REFLECT THE RATE OF RETURN ON COMMON EQUITY?

16   A.   Yes. The technical literature supports an adjustment relating to the size of the

17   company or portfolio for which the calculation is performed. As the size of a firm

18   decreases, its risk and required return increases. Moreover, in his discussion of the

19   cost of capital, Professor Brigham has indicated that smaller firms have higher capital

20   costs than otherwise similar larger firms.[10] Also, the Fama/French study (see "The

21   Cross-Section of Expected Stock Returns"; The Journal of Finance, June 1992)

22   established that the size of a firm helps explain stock returns. In an October 15, 1995

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[10]   See Fundamentals of Financial Management, Fifth Edition, at 623.

1   article in Public Utility Fortnightly, entitled "Equity and the Small-Stock Effect," it

2   was demonstrated that the CAPM could understate the cost of equity significantly

3   according to a company's size. Indeed, it was demonstrated in the SBBI Yearbook

4   that the returns for stocks in lower deciles (i.e., smaller stocks) had returns in excess of

5   those shown by the simple CAPM. In this regard, the Delivery Group has a market-

6   based average equity capitalization of $4,106 million, as shown on Schedule 8. For

7   my CAPM analysis, I have adopted the mid-cap adjustment of 1.12%, as revealed on

8   page 3 of Schedule 12.

| 1 | | **VIII.** **COMPARABLE EARNINGS** |

2   Q.   HOW HAVE YOU APPLIED THE COMPARABLE EARNINGS APPROACH IN

3   THIS CASE?

4   A.   The Comparable Earnings approach determines the equity return based upon results

5   from non-regulated companies. It is the oldest of all rate of return methods, having

6   been around for about one-century. Because regulation is a substitute for

7   competitively determined prices, the returns realized by non-regulated firms with

8   comparable risks to a public utility provide useful insight into a fair rate of return. In

9   order to identify the appropriate return, it is necessary to analyze returns earned (or

10   realized) by other firms within the context of the Comparable Earnings standard. The

11   firms selected for the Comparable Earnings approach should be companies whose

12   prices are not subject to cost-based price ceilings (i.e., non-regulated firms) so that

13   circularity is avoided.

14   There are two avenues available to implement the Comparable Earnings

15   approach. One method involves the selection of another industry (or industries) with

16   comparable risks to the public utility in question, and the results for all companies

17   within that industry serve as a benchmark. The second approach requires the selection

18   of parameters that represent similar risk traits for the public utility and the comparable

19   risk companies. Using this approach, the business lines of the comparable companies

20   become unimportant. The latter approach is preferable with the further qualification

21   that the comparable risk companies exclude regulated firms in order to avoid the

22   circular reasoning implicit in the use of the achieved earnings/book ratios of other

23   regulated firms. The United States Supreme Court has held that:

1	A public utility is entitled to such rates as will permit it to earn
2	a return on the value of the property which it employs for the
3	convenience of the public equal to that generally being made at
4	the same time and in the same general part of the country on
5	investments in other business undertakings which are attended
6	by corresponding risks and uncertainties…. The return should
7	be reasonably sufficient to assure confidence in the financial
8	soundness of the utility and should be adequate, under efficient
9	and economical management, to maintain and support its credit
10	and enable it to raise the money necessary for the proper
11	discharge of its public duties. Bluefield Water Works vs.
12	Public Service Commission, 262 U.S. 668 (1923).
13	

14   It is important to identify the returns earned by firms that compete for capital with a

15   public utility. This can be accomplished by analyzing the returns of non-regulated

16   firms that are subject to the competitive forces of the marketplace.

17

18   Q.   HOW HAVE YOU IMPLEMENTED THE COMPARABLE EARNINGS

19   APPROACH?

20   A.   In order to implement the Comparable Earnings approach, non-regulated companies

21   were selected from The Value Line Investment Survey for Windows that have six

22   categories of comparability designed to reflect the risk of the Delivery Group. These

23   screening criteria were based upon the range as defined by the rankings of the

24   companies in the Delivery Group. The items considered were: Timeliness Rank,

25   Safety Rank, Financial Strength, Price Stability, Value Line betas, and Technical

26   Rank. The identities of the companies comprising the Comparable Earnings group and

27   their associated rankings within the ranges are identified on page 1 of Schedule 13.

28   Value Line data was relied upon because it provides a comprehensive basis for

29   evaluating the risks of the comparable firms. As to the returns calculated by Value

1   Line for these companies, there is some downward bias in the figures shown on page 2

2   of Schedule 13, because Value Line computes the returns on year-end rather than

3   average book value. If average book values had been employed, the rates of return

4   would have been slightly higher. Nevertheless, these are the returns considered by

5   investors when taking positions in these stocks. Because many of the comparability

6   factors, as well as the published returns, are used by investors in selecting stocks, and

7   the fact that investors rely on the Value Line service to gauge returns, it is an

8   appropriate database for measuring comparable return opportunities.

9

10   Q.   WHAT DATA HAVE YOU USED IN YOUR COMPARABLE EARNINGS

11   ANALYSIS?

12   A.   I have used both historical realized returns and forecasted returns for non-utility

13   companies. As noted previously, I have not used returns for utility companies in order

14   to avoid the circularity that arises from using regulatory-influenced returns to

15   determine a regulated return. It is appropriate to consider a relatively long

16   measurement period in the Comparable Earnings approach in order to cover conditions

17   over an entire business cycle. A ten-year period (five historical years and five

18   projected years) is sufficient to cover an average business cycle. Unlike the DCF and

19   CAPM, the results of the Comparable Earnings method can be applied directly to the

20   book value capitalization. In other words, the Comparable Earnings approach does not

21   contain the potential misspecification contained in market models when the market

22   capitalization and book value capitalization diverge significantly. The historical rate

23   of return on book common equity was 10.9% using only the returns that were less than

1	20% as shown on page 2 of Schedule 13. The forecast rates of return as published by
2	Value Line are shown by the 12.5% also using values less than 20%, as provided on
3	page 2 of Schedule 13. Using these data my Comparable Earnings result is 11.70%, as
4	shown on Schedule 1.

1		**IX.** **CONCLUSION ON COST OF EQUITY**
2	Q.	WHAT IS YOUR CONCLUSION REGARDING MERC'S COST OF COMMON
3		EQUITY?
4	A.	Based upon the application of a variety of methods and models described previously, it
5		is my opinion that a reasonable cost of common equity for MERC is 10.75%. My cost
6		of equity recommendation is obtained from a range of results and should be considered
7		conservative in the context of MERC's higher risk characteristics. It is essential that
8		the Commission employ a variety of techniques to measure the MERC's cost of equity
9		because of the limitations/infirmities that are inherent in each method.
10		
11	Q.	DOES THIS COMPLETE YOUR PRE-FILED DIRECT TESTIMONY?
12	A.	Yes.

1   **EDUCATIONAL BACKGROUND, BUSINESS EXPERIENCE**
2   **<u>AND QUALIFICATIONS</u>**

3   I was awarded a degree of Bachelor of Science in Business Administration by Drexel

4   University in 1971. While at Drexel, I participated in the Cooperative Education Program

5   which included employment, for one year, with American Water Works Service Company,

6   Inc., as an internal auditor, where I was involved in the audits of several operating water

7   companies of the American Water Works System and participated in the preparation of

8   annual reports to regulatory agencies and assisted in other general accounting matters.

9   Upon graduation from Drexel University, I was employed by American Water

10   Works Service Company, Inc., in the Eastern Regional Treasury Department where my

11   duties included preparation of rate case exhibits for submission to regulatory agencies, as

12   well as responsibility for various treasury functions of the thirteen New England operating

13   subsidiaries.

14   In 1973, I joined the Municipal Financial Services Department of Betz

15   Environmental Engineers, a consulting engineering firm, where I specialized in financial

16   studies for municipal water and wastewater systems.

17   In 1974, I joined Associated Utility Services, Inc., now known as AUS Consultants.

18   I held various positions with the Utility Services Group of AUS Consultants, concluding my

19   employment there as a Senior Vice President.

20   In 1994, I formed P. Moul & Associates, an independent financial and regulatory

21   consulting firm. In my capacity as Managing Consultant and for the past twenty-nine years,

22   I have continuously studied the rate of return requirements for cost of service-regulated

23   firms. In this regard, I have supervised the preparation of rate of return studies, which were

24   employed, in connection with my testimony and in the past for other individuals. I have

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-seven

4   (37) 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

10 the Philadelphia Gas Commission, and the Texas Commission on Environmental Quality.

11 My testimony has been offered in over 200 rate cases involving electric power, natural gas

12 distribution and transmission, resource recovery, solid waste collection and disposal,

13 telephone, wastewater, and water service utility companies. While my testimony has

14 involved principally fair rate of return and financial matters, I have also testified on capital

15 allocations, capital recovery, cash working capital, income taxes, factoring of accounts

16 receivable, and take-or-pay expense recovery. My testimony has been offered on behalf of

17 municipal and investor-owned public utilities and for the staff of a regulatory commission. I

18 have also testified at an Executive Session of the State of New Jersey Commission of

19 Investigation concerning the BPU regulation of solid waste collection 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

1   1985, 1986 and 1987 (Docket Nos. RM85-19-000, RM86-12-000, RM87-35-000 and

2   RM88-25-000). Further, I have been the consultant to the New York Chapter of the

3   National Association of Water Companies, which represented the water utility group in the

4   Proceeding on Motion of the Commission to Consider Financial Regulatory Policies for

5   New York Utilities (Case 91-M-0509). I have also submitted comments to the Federal

6   Energy Regulatory Commission in its Notice of Proposed Rulemaking (Docket No. RM99-

7   2-000) concerning Regional Transmission Organizations and on behalf of the Edison

8   Electric Institute in its intervention in the case of Southern California Edison Company

9   (Docket No. ER97-2355-000). Also, I was a member of the panel of participants at the

10   Technical Conference in Docket No. PL07-2 on the Composition of Proxy Groups for

11   Determining Gas and Oil Pipeline Return on Equity.

12   In late 1978, I arranged for the private placement of bonds on behalf of an investor-

13   owned public utility. I have assisted in the preparation of a report to the Delaware Public

14   Service Commission relative to the operations of the Lincoln and Ellendale Electric

15   Company. I was also engaged by the Delaware P.S.C. to review and report on the proposed

16   financing and disposition of certain assets of Sussex Shores Water Company (P.S.C. Docket

17   Nos. 24-79 and 47-79). I was a co-author of a Report on Proposed Mandatory Solid Waste

18   Collection Ordinance prepared for the Board of County Commissioners of Collier County,

19   Florida.

20   I have been a consultant to the Bucks County Water and Sewer Authority concerning

21   rates and charges for wholesale contract service with the City of Philadelphia. My

22   municipal consulting experience also included an assignment for Baltimore County,

1   Maryland, regarding the City/County Water Agreement for Metropolitan District customers

2   (Circuit Court for Baltimore County in Case 34/153/87-CSP-2636).

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. G011/GR-13-617
Exhibit ____(PRM-1)

Exhibit to Accompany
Direct Testimony of

Paul R. Moul

Managing Consultant
P. Moul & Associates

September 20, 2013

<u>Minnesota Energy Resources Corporation</u>
Cost of Equity
as of May 31 2012

Market Models (DCF, RP & CAPM)

Discounted Cash Flow (DCF)	D_1/P_0	+	*g*	+	*lev.*	=	*k*	*x*	*flot.*	=	*K*
Delivery Group	4.02%	+	5.00%	+	0.48%	=	9.50%	x	1.015	=	9.64%

Risk Premium (RP)	*I*	+	*RP*	=	*k*	+	*flot.*	=	*K*
Delivery Group	5.25%	+	7.00%	=	12.25%	+	0.14%	=	12.39%

Capital Asset Pricing Model (CAPM)	*Rf*	+	*ß*	*x (*	*Rm-Rf*	*) +*	*size*	=	*k*	+	*flot.*	=	*K*
Delivery Group	3.75%	+	0.73	x (	8.06%	) +	1.12%	=	10.75%	+	0.14%	=	10.89%

Book Value Method

Comparable Earnings (CE)	*Historical*	*Forecast*	**Average**
Comparable Earnings Group	10.9%	12.5%	11.70%

Minnesota Energy Resources Corporation
Capitalization and Financial Statistics
2008-2012, Inclusive

	2012	2011	2010	2009	2008	
			(Millions of Dollars)			
Amount of Capital Employed						
Permanent Capital	$ 161.6	$ 190.4	$ 190.6	$ 178.2	$ 200.9	
Short-Term Debt	$ 44.2	$ 14.7	$ 14.9	$ 3.6	$ 22.3	
Total Capital [(1)]	$ 205.9	$ 205.0	$ 205.6	$ 181.8	$ 223.2	
Capital Structure Ratios						
Based on Total Capital:						Average
Total Debt incl. Short Term	49.7%	49.6%	49.6%	49.8%	49.0%	49.5%
Preferred Stock	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Common Equity [(2)]	50.3%	50.4%	50.4%	50.2%	51.0%	50.5%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Rate of Return on Book Common Equity [(2)]	2.7%	7.7%	7.0%	9.3%	4.7%	6.3%
Operating Ratio [(3)]	96.4%	93.3%	93.5%	85.8%	96.0%	93.0%
Coverage excl. AFUDC [(3)]						
Pre-tax: All Interest Charges	1.81	3.37	3.09	3.81 x	2.35 x	2.89 x
Post-tax: All Interest Charges	1.48	2.39	2.23	2.64 x	1.80 x	2.11 x
Quality of Earnings						
AFC/Income Avail. for Common Equity	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Effective Income Tax Rate	40.4%	41.2%	41.1%	41.7%	40.4%	41.0%

See Page 2 for Notes.

Minnesota Energy Resources Corporation
Capitalization and Financial Statistics
2008-2012, 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

Delivery Group
Capitalization and Financial Statistics [1]
2008-2012, Inclusive

	2012	2011	2010	2009	2008	
			(Millions of Dollars)			
Amount of Capital Employed						
Permanent Capital	$ 5,796.3	$ 5,032.1	$ 4,676.3	$ 4,584.3	$ 4,339.5	
Short-Term Debt	$ 478.5	$ 296.3	$ 214.9	$ 182.0	$ 338.3	
Total Capital	$ 6,274.8	$ 5,328.4	$ 4,891.2	$ 4,766.3	$ 4,677.8	
Market-Based Financial Ratios						Average
Price-Earnings Multiple	17 x	16 x	16 x	17 x	15 x	16 x
Market/Book Ratio	166.7%	168.3%	158.6%	145.8%	160.0%	159.9%
Dividend Yield	4.0%	4.1%	4.4%	4.8%	4.2%	4.3%
Dividend Payout Ratio	67.8%	67.0%	70.9%	75.0%	61.3%	68.4%
Capital Structure Ratios						
Based on Permanent Capital:						
Long-Term Debt	46.0%	46.0%	46.9%	48.0%	48.6%	47.1%
Preferred Stock	0.2%	0.3%	0.4%	0.4%	0.4%	0.3%
Common Equity [2]	53.9%	53.7%	52.7%	51.6%	51.0%	52.6%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Based on Total Capital:						
Total Debt incl. Short Term	51.5%	50.5%	51.4%	52.0%	55.1%	52.1%
Preferred Stock	0.2%	0.3%	0.3%	0.4%	0.4%	0.3%
Common Equity [2]	48.4%	49.2%	48.3%	47.6%	44.6%	47.6%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Rate of Return on Book Common Equity [2]	9.7%	9.8%	10.2%	9.8%	11.0%	10.1%
Operating Ratio [3]	85.6%	86.7%	87.2%	88.5%	89.6%	87.5%
Coverage incl. AFUDC [4]						
Pre-tax: All Interest Charges	4.21 x	4.14 x	4.24 x	3.72 x	3.95 x	4.05 x
Post-tax: All Interest Charges	3.21 x	3.08 x	3.07 x	2.74 x	2.85 x	2.99 x
Overall Coverage: All Int. & Pfd. Div.	3.20 x	3.06 x	3.06 x	2.72 x	2.84 x	2.98 x
Coverage excl. AFUDC [4]						
Pre-tax: All Interest Charges	4.12 x	4.07 x	4.17 x	3.69 x	3.90 x	3.99 x
Post-tax: All Interest Charges	3.12 x	3.01 x	3.01 x	2.70 x	2.80 x	2.93 x
Overall Coverage: All Int. & Pfd. Div.	3.10 x	2.99 x	2.99 x	2.69 x	2.78 x	2.91 x
Quality of Earnings & Cash Flow						
AFC/Income Avail. for Common Equity	4.7%	4.5%	4.4%	2.6%	3.5%	3.9%
Effective Income Tax Rate	32.6%	35.1%	34.3%	35.0%	37.0%	34.8%
Internal Cash Generation/Construction [5]	72.8%	88.1%	108.9%	103.0%	97.9%	94.1%
Gross Cash Flow/ Avg. Total Debt [6]	23.9%	24.4%	25.9%	21.4%	20.7%	23.3%
Gross Cash Flow Interest Coverage [7]	6.19 x	5.84 x	6.22 x	5.29 x	4.89 x	5.69 x
Common Dividend Coverage [8]	4.01 x	4.05 x	4.57 x	4.11 x	4.18 x	4.18 x

See Page 2 for Notes.

Delivery Group
Capitalization and Financial Statistics
2008-2012, 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 Delivery Group includes companies that are contained in The Value Line Investment Survey within the industry group "Natural Gas Utility," they are not currently the target of a publicly-announced merger or acquisition, and after eliminating NiSource due to its electric and natural gas pipeline/storage operations and UGI Corp. due to its highly diversified businesses. The Delivery Group also includes companies that are listed in the "Electric Utility (East)" section of Value Line, they are not currently the target of a publicly-announced merger or acquisition and they do not have a significant amount of electric generation.

		Corporate Credit Ratings		Stock	S&P Stock	Value Line
Ticker	Company	Moody's	S&P	Traded	Ranking	Beta
AGL	AGL Resources, Inc.	A3	BBB+	NYSE	A	0.75
ATO	Atmos Energy Corp.	Baa1	BBB+	NYSE	A-	0.70
ED	Consolidated Edison, Inc.	A3	A-	NYSE	B+	0.60
LG	Laclede Group	Baa1	A	NYSE	B+	0.55
NJR	New Jersey Resources Corp.	Aa3	A	NYSE	B+	0.65
NU	Northeast Utilities	Baa1	A-	NYSE	B+	0.70
NWN	Northwest Natural Gas	A3	A+	NYSE	A-	0.55
POM	PEPCO Holdings	Baa2	BBB+	NYSE	B	0.75
PNY	Piedmont Natural Gas Co.	A3	A	NYSE	A	0.65
SJI	South Jersey Industries, Inc.	Baa1	BBB+	NYSE	A-	0.65
SWX	Southwest Gas Corporation	Baa2	BBB	NYSE	B+	0.75
UIL	UIL Holdings	Baa2	BBB	NYSE	B	0.70
WGL	WGL Holdings, Inc.	A2	A+	NYSE	B+	0.65
	Average	A3	A-		B+	0.67

Source of Information: Utility COMPUSTAT
        Moody's Investors Service
        Standard & Poor's Corporation

Standard & Poor's Public Utilities
Capitalization and Financial Statistics [1]
2008-2012, Inclusive

	2012	2011	2010	2009	2008	
			(Millions of Dollars)			
Amount of Capital Employed						
Permanent Capital	$ 21,620.0	$ 18,840.8	$ 17,587.3	$ 16,618.6	$ 15,620.1	
Short-Term Debt	$ 648.9	$ 531.4	$ 435.4	$ 415.0	$ 803.5	
Total Capital	$ 22,268.9	$ 19,372.2	$ 18,022.7	$ 17,033.6	$ 16,423.6	
Market-Based Financial Ratios						Average
Price-Earnings Multiple	18 x	15 x	15 x	14 x	14 x	15 x
Market/Book Ratio	164.0%	155.2%	142.8%	137.1%	174.9%	154.8%
Dividend Yield	4.1%	4.4%	4.8%	5.2%	4.3%	4.6%
Dividend Payout Ratio	70.3%	64.7%	72.0%	72.2%	61.9%	68.2%
Capital Structure Ratios						
Based on Permanent Captial:						
Long-Term Debt	52.9%	52.9%	53.4%	54.2%	54.3%	53.5%
Preferred Stock	1.6%	1.3%	1.3%	1.5%	1.7%	1.5%
Common Equity [2]	45.5%	45.8%	45.3%	44.3%	44.0%	45.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Based on Total Capital:						
Total Debt incl. Short Term	54.5%	54.5%	54.7%	55.6%	57.1%	55.3%
Preferred Stock	1.6%	1.3%	1.3%	1.4%	1.6%	1.4%
Common Equity [2]	44.0%	44.3%	44.0%	43.0%	41.3%	43.3%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Rate of Return on Book Common Equity [2]	9.2%	10.5%	10.8%	10.1%	12.2%	10.6%
Operating Ratio [3]	81.3%	81.4%	81.6%	83.0%	84.1%	82.3%
Coverage incl. AFUDC [4]						
Pre-tax: All Interest Charges	2.94 x	3.35 x	3.34 x	3.06 x	3.39 x	3.22 x
Post-tax: All Interest Charges	2.35 x	2.59 x	2.52 x	2.36 x	2.57 x	2.48 x
Overall Coverage: All Int. & Pfd. Div.	2.32 x	2.57 x	2.50 x	2.33 x	2.53 x	2.45 x
Coverage excl. AFUDC [4]						
Pre-tax: All Interest Charges	2.85 x	3.25 x	3.25 x	2.96 x	3.28 x	3.12 x
Post-tax: All Interest Charges	2.25 x	2.49 x	2.43 x	2.26 x	2.46 x	2.38 x
Overall Coverage: All Int. & Pfd. Div.	2.22 x	2.47 x	2.41 x	2.22 x	2.42 x	2.35 x
Quality of Earnings & Cash Flow						
AFC/Income Avail. for Common Equity	7.1%	5.7%	6.6%	7.8%	7.7%	7.0%
Effective Income Tax Rate	26.2%	36.8%	34.3%	31.8%	33.8%	32.6%
Internal Cash Generation/Construction [5]	75.0%	89.4%	108.0%	100.0%	83.1%	91.1%
Gross Cash Flow/ Avg. Total Debt [6]	21.9%	23.2%	23.9%	22.5%	22.6%	22.8%
Gross Cash Flow Interest Coverage [7]	5.37 x	5.12 x	5.09 x	4.85 x	4.75 x	5.04 x
Common Dividend Coverage [8]	4.31 x	4.58 x	4.88 x	4.73 x	4.95 x	4.69 x

See Page 2 for Notes.

Standard & Poor's Public Utilities
Capitalization and Financial Statistics
2008-2012, 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

	Ticker	Credit Rating [1]		Common Stock Traded	S&P Stock Ranking	Value Line Beta
		Moody's	S&P			
AGL Resources Inc.	GAS	A3	BBB+	NYSE	A	0.75
Ameren Corporation	AEE	Baa2	BBB	NYSE	B	0.80
American Electric Power	AEP	Baa2	BBB	NYSE	B	0.70
CMS Energy	CMS	Baa1	BBB	NYSE	B	0.75
CenterPoint Energy	CNP	Baa2	BBB+	NYSE	B	0.80
Consolidated Edison	ED	A3	A-	NYSE	B+	0.60
DTE Energy Co.	DTE	A3	BBB+	NYSE	B+	0.75
Dominion Resources	D	A3	A-	NYSE	B+	0.65
Duke Energy	DUK	A3	BBB+	NYSE	B	0.60
Edison Int'l	EIX	A3	BBB+	NYSE	B	0.75
Entergy Corp.	ETR	Baa2	BBB	NYSE	A+	0.70
EQT Corp.	EQT	Baa3	BBB	NYSE	B+	1.15
Exelon Corp.	EXC	A3	BBB	NYSE	B+	0.80
FirstEnergy Corp.	FE	Baa2	BBB-	NYSE	A-	0.80
Integrys Energy Group	TEG	A2	A-	NYSE	B	0.90
NextEra Energy Inc.	NEE	A2	A-	NYSE	A	0.75
NiSource Inc.	NI	Baa2	BBB-	NYSE	B	0.85
Northeast Utilities	NU	Baa2	A-	NYSE	B	0.70
NRG Energy Inc.	NRG	Ba3	BB-	NYSE	NR	1.10
ONEOK, Inc.	OKE	Baa2	BBB	NYSE	NR	0.95
PEPCO Holdings, Inc.	POM	Baa2	BBB+	NYSE	B	0.75
PG&E Corp.	PCG	A3	BBB	NYSE	B	0.55
PPL Corp.	PPL	Baa2	BBB	NYSE	B+	0.65
Pinnacle West Capital	PNW	Baa1	BBB+	NYSE	B	0.70
Public Serv. Enterprise Inc.	PEG	A3	BBB	NYSE	B+	0.75
SCANA Corp.	SCG	Baa2	BBB+	NYSE	A-	0.65
Sempra Energy	SRE	A2	A	NYSE	A-	0.80
Southern Co.	SO	A3	A	NYSE	A-	0.55
TECO Energy	TE	A3	BBB+	NYSE	B	0.85
Wisconsin Energy Corp.	WEC	A2	A-	NYSE	A	0.65
Xcel Energy Inc	XEL	A3	A-	NYSE	B+	0.65
Average for S&P Utilities		Baa1	BBB+		A	0.75

Note: [1] 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

Monthly Dividend Yields for
Delivery Group
for the Twelve Months Ending May 2013

Company	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	12-Month Average	6-Month Average	3-Month Average
AGL RES INC (NYSE:GAS)	4.78%	4.59%	4.65%	4.52%	4.55%	4.73%	4.63%	4.54%	4.71%	4.51%	4.33%	4.45%			
ATMOS ENERGY CORP (NYSE:ATO)	3.95%	3.88%	3.95%	3.87%	3.92%	4.00%	4.00%	3.77%	3.67%	3.29%	3.17%	3.32%			
Consolidated Edison, Inc. (NYSE:ED)	3.91%	3.78%	4.00%	4.06%	4.04%	4.35%	4.38%	4.37%	4.18%	4.05%	3.90%	4.32%			
LACLEDE GROUP INC (NYSE:LG)	4.18%	4.00%	3.97%	3.87%	4.11%	4.22%	4.42%	4.29%	4.21%	3.99%	3.66%	3.62%			
NEW JERSEY RES (NYSE:NJR)	3.49%	3.50%	3.60%	3.50%	3.61%	3.97%	4.05%	3.83%	3.62%	3.57%	3.41%	3.55%			
Northeast Utilities (NYSE:NU)	3.55%	3.46%	3.64%	3.60%	3.51%	3.54%	3.52%	3.63%	3.54%	3.39%	3.26%	3.53%			
NORTHWEST NAT GAS CO (NYSE:NWN)	3.76%	3.66%	3.63%	3.64%	3.91%	4.16%	4.15%	4.01%	4.01%	4.18%	4.09%	4.28%			
PEPCO Holdings Inc. (NYSE:POM)	5.54%	5.45%	5.67%	5.74%	5.48%	5.54%	5.53%	5.58%	5.39%	5.06%	4.81%	5.26%			
PIEDMONT NAT GAS INC (NYSE:PNY)	3.73%	3.79%	3.87%	3.70%	3.78%	3.92%	3.84%	3.92%	3.87%	3.78%	3.62%	3.70%			
SOUTH JERSEY INDS INC (NYSE:SJI)	3.17%	3.06%	3.20%	3.05%	3.52%	3.57%	3.53%	3.28%	3.23%	3.19%	2.88%	3.05%			
SOUTHWEST GAS CORPORATION (SWX)	2.71%	2.66%	2.76%	2.68%	2.73%	2.82%	2.79%	2.66%	2.61%	2.49%	2.62%	2.79%			
UIL Holdings Corporation (NYSE:UIL)	4.83%	4.69%	4.96%	4.83%	4.81%	4.87%	4.83%	4.67%	4.45%	4.38%	4.18%	4.48%			
WGL HLDGS INC (NYSE:WGL)	4.06%	3.97%	4.12%	4.01%	4.03%	4.12%	4.12%	3.83%	3.81%	3.66%	3.64%	3.94%			
Average	**3.97%**	**3.88%**	**4.00%**	**3.93%**	**4.00%**	**4.14%**	**4.14%**	**4.03%**	**3.95%**	**3.81%**	**3.66%**	**3.87%**	**3.95%**	**3.91%**	**3.78%**

Note: Monthly dividend yields are calculated by dividing the annualized quarterly dividend by the month-end closing stock price adjusted by the fraction of the ex-dividend.

Source of Information: http://finance.yahoo.com/
http://ccbn.aol.com Event Calendar - Split/Dividend data provided by FT Interactive Data

Forward-looking Dividend Yield

		D_0/P_0		D_1/P_0	
1/2 Growth		3.91%	(.5g) 1.025000	4.01%	$K = \dfrac{D_0(1+g)^0 + D_0(1+g)^0 + D_0(1+g)^1 + D_0(1+g)^1}{P_0} + g$
Discrete		D_0/P_0 3.91%	Adj. 1.031059	D_1/P_0 4.03%	$K = \dfrac{D_0(1+g)^{.25} + D_0(1+g)^{.50} + D_0(1+g)^{.75} + D_0(1+g)^{1.00}}{P_0} + g$
Quarterly		D_0/P_0 0.9775%	Adj. 1.012272	D_1/P_0 4.02%	$K = \left[\left(1 + \dfrac{D_0(1+g)^{.25}}{P_0}\right)^4 - 1\right] + g$
Average				4.02%	
Growth rate				5.00%	
K				9.02%	

Historical Growth Rates
Earnings Per Share, Dividends Per Share,
Book Value Per Share, and Cash Flow Per Share

Delivery Group	Earnings per Share Value Line 5 Year	Earnings per Share Value Line 10 Year	Dividends per Share Value Line 5 Year	Dividends per Share Value Line 10 Year	Book Value per Share Value Line 5 Year	Book Value per Share Value Line 10 Year	Cash Flow per Share Value Line 5 Year	Cash Flow per Share Value Line 10 Year
AGL Resources, Inc.	1.50%	8.00%	6.50%	5.00%	5.00%	8.00%	1.50%	4.50%
Atmos Energy Corp.	3.00%	5.00%	1.50%	1.50%	4.00%	6.50%	3.00%	4.00%
Consolidated Edison	3.00%	2.00%	1.00%	1.00%	4.50%	4.00%	4.00%	2.00%
Laclede Group, Inc.	4.00%	7.00%	3.00%	2.00%	6.50%	5.50%	4.50%	5.00%
New Jersey Resources Corp.	8.50%	7.00%	8.50%	6.50%	6.50%	8.00%	6.00%	5.00%
Northeast Utilities	13.00%	10.50%	9.50%	9.50%	6.00%	4.00%	1.00%	-3.00%
Northwest Natural Gas	0.50%	3.50%	4.50%	3.50%	4.00%	4.00%	1.00%	3.00%
PEPCO Holdings	-4.50%	-4.50%	1.50%	-	0.50%	0.50%	-4.00%	-4.50%
Piedmont Natural Gas Co.	3.50%	5.00%	5.50%	5.00%	3.00%	5.00%	3.50%	5.00%
South Jersey Industries, Inc.	6.50%	9.50%	10.00%	7.50%	7.00%	10.00%	7.50%	8.50%
Southwest Gas Corporation	6.50%	6.00%	4.00%	2.00%	5.00%	4.50%	3.00%	3.50%
UIL Holdings	3.50%	-1.50%	-	-	2.00%	0.50%	0.50%	-2.00%
WGL Holdings, Inc.	3.00%	4.00%	3.00%	2.00%	4.50%	4.00%	1.50%	3.50%
Average	4.00%	4.73%	4.88%	4.14%	4.50%	4.96%	2.54%	2.65%

Source of Information: Value Line Investment Survey, May 24, 2013 and June 7, 2013

Analysts' Five-Year Projected Growth Rates
Earnings Per Share, Dividends Per Share,
Book Value Per Share, and Cash Flow Per Share

| | | | | | Value Line | | | | |
Delivery Group	I/B/E/S First Call	Zacks	Morningstar	SNL	Earnings Per Share	Dividends Per Share	Book Value Per Share	Cash Flow Per Share	Percent Retained to Common Equity
AGL Resources, Inc.	N/A	3.50%	5.40%	5.00%	9.00%	2.00%	5.00%	10.00%	6.00%
Atmos Energy Corp.	6.00%	6.00%	5.80%	6.00%	5.50%	1.50%	5.50%	4.50%	4.50%
Consolidated Edison	2.27%	3.30%	2.90%	3.00%	2.50%	1.50%	3.50%	4.50%	3.50%
Laclede Group, Inc.	5.30%	3.00%	-	4.00%	5.50%	2.00%	2.00%	5.00%	6.80%
New Jersey Resources Corp.	4.00%	4.00%	2.60%	4.50%	2.00%	3.00%	4.00%	2.50%	5.50%
Northeast Utilities	7.86%	7.60%	12.50%	8.50%	8.00%	8.00%	6.00%	4.50%	4.00%
Northwest Natural Gas	3.75%	3.80%	3.00%	3.80%	5.00%	2.50%	3.00%	1.50%	4.50%
PEPCO Holdings	4.75%	5.80%	4.10%	7.00%	6.00%	1.00%	2.00%	3.00%	2.50%
Piedmont Natural Gas Co.	5.00%	4.30%	4.60%	6.00%	3.00%	3.00%	4.00%	2.00%	3.00%
South Jersey Industries, Inc.	6.00%	6.00%	6.00%	7.50%	8.00%	8.50%	6.50%	7.00%	7.50%
Southwest Gas Corporation	6.00%	4.80%	-	6.00%	7.00%	7.00%	5.00%	5.00%	6.00%
UIL Holdings	8.59%	4.00%	4.00%	7.50%	4.00%	Nil	4.50%	3.00%	3.00%
WGL Holdings, Inc.	5.25%	5.30%	2.80%	5.80%	3.50%	3.00%	4.00%	2.50%	4.00%
Average	5.40%	4.72%	4.88%	5.74%	5.31%	3.58%	4.23%	4.23%	4.68%

Source of Information :   Yahoo First Call, June 3, 2013
Zacks, June 3, 2013
Morningstar, June 3, 2013
SNL, June 3, 2013
Value Line Investment Survey, May 24, 2013 and June 7, 2013

Delivery Group
Financial Risk Adjustment

	AGL Resources (NYSE:GAS)	ATMOS Energy (NYSE:ATO)	Consolidated Edison (NYSE:ED)	Laclede Group (NYSE:LG)	New Jersey Resources (NYSE:NJR)	Northeast Utilities (NYSE:NU)	Northwest Natural Gas (NYSE:NWN)	PEPCO Holdings (NYSE:POM)	Piedmont Natural Gas (NYSE:PNY)	South Jersey Industries (NYSE:SJI)	Southwest Gas (SWX)	UIL Holdings (NYSE:UIL)	WGL Holdings (NYSE:WGL)	Average
Fiscal Year	12/31/12	09/30/12	12/31/12	09/30/12	09/30/12	12/31/12	12/31/12	12/31/12	10/31/12	12/31/12	12/31/12	12/31/2011	09/30/12	
Capitalization at Fair Values														
Debt(D)	4,057,000	2,426,434	12,935,000	452,768	583,140	8,640,700	834,664	5,004,000	1,163,227	682,300	1,482,095	1,900,000	758,900	3,147,710
Preferred(P)	0	0	0	0	0	152,200	0	0	0	0	0	0	28,173	13,901
Equity(E)	4,710,667	3,229,686	14,976,983	969,196	1,776,495	12,273,216	1,189,731	4,510,603	2,302,608	1,593,109	1,957,128	1,813,615	2,077,369	4,106,185
Total	8,767,667	5,656,120	27,911,983	1,421,964	2,359,635	21,066,116	2,024,395	9,514,603	3,465,835	2,275,409	3,439,223	3,713,955	2,864,442	7,267,796
Capital Structure Ratios														
Debt(D)	46.27%	42.90%	46.34%	31.84%	24.71%	41.02%	41.23%	52.59%	33.56%	29.99%	43.09%	51.16%	26.49%	39.32%
Preferred(P)	0.00%	0.00%	0.00%	0.00%	0.00%	0.72%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.98%	0.13%
Equity(E)	53.73%	57.10%	53.66%	68.16%	75.29%	58.26%	58.77%	47.41%	66.44%	70.01%	56.91%	48.83%	72.52%	60.55%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Common Stock														
Issued	117,855.075	90,239.900	292,871.896	22,539.431	41,619.633		26,917.000	230,015.427	72,250.000		46,147.788	50,645.490	51,611.647	
Treasury	0.000	0.000	23,210.700	0.000	2,763.659		0.000	0.000	0.000		0.000	0.000	0.000	
Outstanding	117,855.075	90,239.900	269,661.196	22,539.431	38,855.974	314,053.634	26,917.000	230,015.427	72,250.000	31,653.262	46,147.788	50,645.490	51,611.647	
Market Price	$ 39.97	$ 35.79	$55.54	$ 43.00	$ 45.72	$39.08	$ 44.20	$ 19.61	$ 31.87	$ 50.33	$ 42.41	$ 35.81	$ 40.25	
Capitalization at Carrying Amounts														
Debt(D)	3,553,000	1,960,131	10,768,000	364,416	532,929	7,963,500	691,700	4,177,000	975,000	626,400	1,318,510	1,610,550	589,200	2,702,334
Preferred(P)	0	0	0	0	0	155,600	0	0	0	0	0	340	28,173	14,163
Equity(E)	3,413,000	2,359,243	11,869,000	601,611	813,865	9,237,050	733,033	4,446,000	1,027,004	736,214	1,310,179	1,116,553	1,269,556	2,994,793
Total	6,966,000	4,319,374	22,637,000	966,027	1,346,794	17,356,150	1,424,733	8,623,000	2,002,004	1,362,614	2,628,689	2,727,443	1,886,929	5,711,289
Capital Structure Ratios														
Debt(D)	51.00%	45.38%	47.57%	37.72%	39.57%	45.88%	48.55%	48.44%	48.70%	45.97%	50.16%	59.05%	31.23%	46.09%
Preferred(P)	0.00%	0.00%	0.00%	0.00%	0.00%	0.90%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	1.49%	0.18%
Equity(E)	49.00%	54.62%	52.43%	62.28%	60.43%	53.22%	51.45%	51.56%	51.30%	54.03%	49.84%	40.94%	67.28%	53.72%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Betas Value Line	0.75	0.70	0.60	0.60	0.65	0.70	0.60	0.75	0.65	0.65	0.75	0.70	0.65	0.67

Hamada

$Bl = Bu \; [1+ \; (1 - t) \; D/E \; + \; P/E \;]$

$0.67 = Bu \; [1+ \; (1-0.35) \; 0.6494 \; + \; 0.0021 \;]$

$0.67 = Bu \; [1+ \; 0.65 \; 0.6494 \; + \; 0.0021 \;]$

$0.67 = Bu \; 1.4242$

$0.47 = Bu$

Hamada

$Bl = 0.47 \; [1+ \; (1 - t) \; D/E \; + \; P/E \;]$

$Bl = 0.47 \; [1+ \; 0.65 \; 0.8580 \; + \; 0.0034 \;]$

$Bl = 0.47 \; 1.5611$

$Bl = 0.73$

M&M

$ku = ke \; - \; (((\; ku \; - \; i \;) \; 1-t \;) \; D \; / \; E \; - \; (ku \; - \; d \;) \; P \; / \; E$

$7.57\% = 9.02\% \; - \; (((\; 7.57\% \; - \; 4.12\% \;) \; 0.65 \;) \; 39.32\% \; / \; 60.55\% \; - \; 7.57\% \; - \; 5.68\% \;) \; 0.13\% \; / \; 60.55\%$

$7.57\% = 9.02\% \; - \; (((\; 3.45\% \;) \; 0.65 \;) \; 0.6494 \; - \; 1.89\% \;) \; 0.0021$

$7.57\% = 9.02\% \; - \; ((\; 2.24\% \;) \; 0.6494 \; - \; 1.89\% \;) \; 0.0021$

$7.57\% = 9.02\% \; - \; 1.45\% \; - \; 0.00\%$

M&M

$ke = ku \; + \; (((\; ku \; - \; i \;) \; 1-t \;) \; D \; / \; E \; + \; (ku \; - \; d \;) \; P \; / \; E$

$9.50\% = 7.57\% \; + \; (((\; 7.57\% \; - \; 4.12\% \;) \; 0.65 \;) \; 46.09\% \; / \; 53.72\% \; + \; 7.57\% \; - \; 5.68\% \;) \; 0.18\% \; / \; 53.72\%$

$9.50\% = 7.57\% \; + \; (((\; 3.45\% \;) \; 0.65 \;) \; 0.8580 \; + \; 1.89\% \;) \; 0.0034$

$9.50\% = 7.57\% \; + \; ((\; 2.24\% \;) \; 0.858 \; + \; 1.89\% \;) \; 0.0034$

$9.50\% = 7.57\% \; + \; 1.92\% \; + \; 0.01\%$

Analysis of Public Offerings of Common Stock

Company	Date of Offering	No. of shares offered	Dollar amount of offering	Price to public	Underwriters' discount and commission	Gross Proceeds per share	Estimated company issuance expenses	Net proceeds per share	Percent of offering price		
									Underwriters' discount and commission	Estimated company issuance expenses	Total Issuance and selling expense
Piedmont Natural Gas Company, Inc.	01/29/13	4,000,000	$ 128,000,000	$ 32.00	$ 1.120	$ 30.880	$ 0.088	$ 30.792	3.5%	0.3%	3.8%
Atmos Energy Corporation	12/07/06	5,500,000	$ 173,250,000	$ 31.50	$ 1.103	$ 30.398	$ 0.073	$ 30.325	3.5%	0.2%	3.7%
AGL Resources Inc.	11/19/04	9,600,000	$ 297,696,000	$ 31.01	$ 0.930	$ 30.080	$ 0.042	$ 30.038	3.0%	0.1%	3.1%
Atmos Energy Corporation	10/21/04	14,000,000	$ 346,500,000	$ 24.75	$ 0.990	$ 23.760	$ 0.029	$ 23.731	4.0%	0.1%	4.1%
Atmos Energy Corporation	07/19/04	8,650,000	$ 214,087,500	$ 24.75	$ 0.990	$ 23.760	$ 0.046	$ 23.714	4.0%	0.2%	4.2%
The Laclede Group, Inc.	05/25/04	1,500,000	$ 40,200,000	$ 26.80	$ 0.871	$ 25.929	$ 0.067	$ 25.862	3.3%	0.3%	3.6%
Northwest Natural Gas Company	03/30/04	1,200,000	$ 37,200,000	$ 31.00	$ 1.010	$ 29.99	$ 0.146	$ 29.844	3.3%	0.5%	3.8%
Piedmont Natural Gas Company, Inc.	01/23/04	4,250,000	$ 180,625,000	$ 42.50	$ 1.490	$ 41.010	$ 0.082	$ 40.928	3.5%	0.2%	3.7%
Atmos Energy Corporation	06/18/03	4,000,000	$ 101,240,000	$ 25.31	$ 1.0124	$ 24.298	$ 0.095	$ 24.203	4.0%	0.4%	4.4%
AGL Resources Inc.	02/11/03	5,600,000	$ 123,200,000	$ 22.00	$ 0.770	$ 21.230	$ 0.045	$ 21.185	3.5%	0.2%	3.7%
WGL Holdings, Inc	06/26/01	1,790,000	$ 47,846,700	$ 26.73	$ 0.895	$ 25.835	$ 0.031	$ 25.804	3.3%	0.1%	3.4%
Atmos Energy Corporation	11/07/00	6,000,000	$ 133,500,000	$ 22.25	$ 1.110	$ 21.140	$ 0.058	$ 21.082	5.0%	0.3%	5.3%
Average									3.7%	0.2%	3.9%

Source of Information: SNL Financial and SEC filings

**Interest Rates for Investment Grade Public Utility Bonds
Yearly for 2008-2012
and the Twelve Months Ended May 2013**

Years	Aa Rated	A Rated	Baa Rated	Average
2008	6.18%	6.53%	7.24%	6.65%
2009	5.75%	6.04%	7.06%	6.28%
2010	5.24%	5.46%	5.96%	5.55%
2011	4.78%	5.04%	5.57%	5.13%
2012	3.83%	4.13%	4.86%	4.27%
Five-Year Average	5.16%	5.44%	6.14%	5.58%

Months

	Aa Rated	A Rated	Baa Rated	Average
Jun-12	3.79%	4.08%	4.91%	4.26%
Jul-12	3.58%	3.93%	4.85%	4.12%
Aug-12	3.65%	4.00%	4.88%	4.18%
Sep-12	3.69%	4.02%	4.81%	4.17%
Oct-12	3.68%	3.91%	4.54%	4.05%
Nov-12	3.60%	3.84%	4.42%	3.95%
Dec-12	3.75%	4.00%	4.56%	4.10%
Jan-13	3.90%	4.15%	4.66%	4.24%
Feb-13	3.95%	4.18%	4.74%	4.29%
Mar-13	3.95%	4.20%	4.72%	4.29%
Apr-13	3.74%	4.00%	4.49%	4.08%
May-13	3.91%	4.17%	4.65%	4.24%
Twelve-Month Average	3.77%	4.04%	4.69%	4.16%
Six-Month Average	3.87%	4.12%	4.64%	4.21%
Three-Month Average	3.87%	4.12%	4.62%	4.20%

Source: Mergent Bond Record

Yields on
A-rated Public Utility Bonds and
Spreads over 20-Year Treasuries
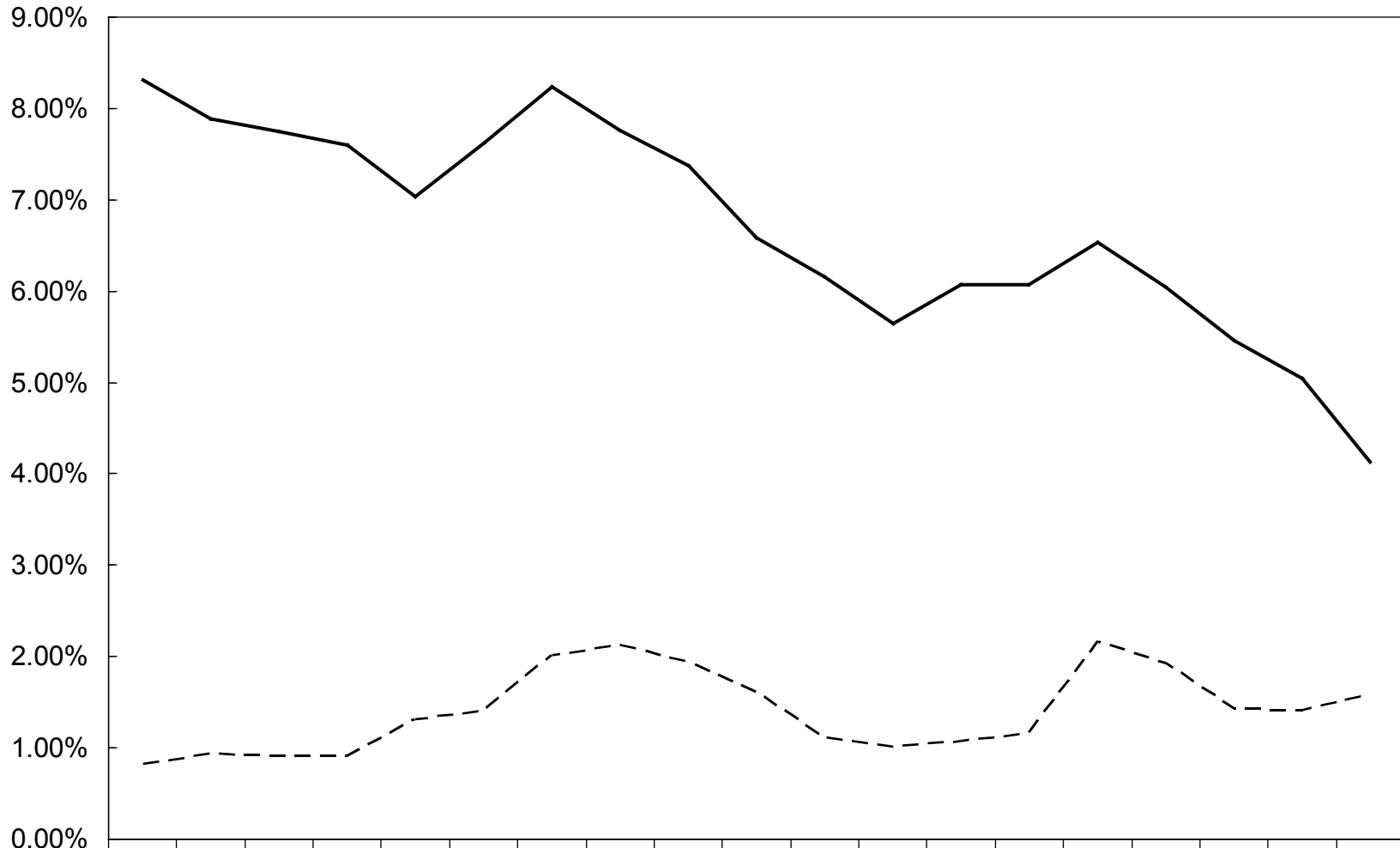
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
A-rated Public Utility	8.31%	7.89%	7.75%	7.60%	7.04%	7.62%	8.24%	7.76%	7.37%	6.58%	6.16%	5.65%	6.07%	6.07%	6.53%	6.04%	5.46%	5.04%	4.13%
Spread vs. 20-year	0.82%	0.94%	0.92%	0.91%	1.32%	1.42%	2.01%	2.13%	1.94%	1.62%	1.12%	1.01%	1.08%	1.16%	2.17%	1.93%	1.43%	1.42%	1.59%

A rated Public Utility Bonds over 20-Year Treasuries

Year	A-rated Public Utility	20-Year Treasuries Yield	Spread	Year	A-rated Public Utility	20-Year Treasuries Yield	Spread	Year	A-rated Public Utility	20-Year Treasuries Yield	Spread
Dec-98	6.91%	5.36%	1.55%								
Jan-99	6.97%	5.45%	1.52%	Jan-04	6.15%	5.01%	1.14%	Jan-09	6.39%	3.46%	2.93%
Feb-99	7.09%	5.66%	1.43%	Feb-04	6.15%	4.94%	1.21%	Feb-09	6.30%	3.83%	2.47%
Mar-99	7.26%	5.87%	1.39%	Mar-04	5.97%	4.72%	1.25%	Mar-09	6.42%	3.78%	2.64%
Apr-99	7.22%	5.82%	1.40%	Apr-04	6.35%	5.16%	1.19%	Apr-09	6.48%	3.84%	2.64%
May-99	7.47%	6.08%	1.39%	May-04	6.62%	5.46%	1.16%	May-09	6.49%	4.22%	2.27%
Jun-99	7.74%	6.36%	1.38%	Jun-04	6.46%	5.45%	1.01%	Jun-09	6.20%	4.51%	1.69%
Jul-99	7.71%	6.28%	1.43%	Jul-04	6.27%	5.24%	1.03%	Jul-09	5.97%	4.38%	1.59%
Aug-99	7.91%	6.43%	1.48%	Aug-04	6.14%	5.07%	1.07%	Aug-09	5.71%	4.33%	1.38%
Sep-99	7.93%	6.50%	1.43%	Sep-04	5.98%	4.89%	1.09%	Sep-09	5.53%	4.14%	1.39%
Oct-99	8.06%	6.66%	1.40%	Oct-04	5.94%	4.85%	1.09%	Oct-09	5.55%	4.16%	1.39%
Nov-99	7.94%	6.48%	1.46%	Nov-04	5.97%	4.89%	1.08%	Nov-09	5.64%	4.24%	1.40%
Dec-99	8.14%	6.69%	1.45%	Dec-04	5.92%	4.88%	1.04%	Dec-09	5.79%	4.40%	1.39%
Jan-00	8.35%	6.86%	1.49%	Jan-05	5.78%	4.77%	1.01%	Jan-10	5.77%	4.50%	1.27%
Feb-00	8.25%	6.54%	1.71%	Feb-05	5.61%	4.61%	1.00%	Feb-10	5.87%	4.48%	1.39%
Mar-00	8.28%	6.38%	1.90%	Mar-05	5.83%	4.89%	0.94%	Mar-10	5.84%	4.49%	1.35%
Apr-00	8.29%	6.18%	2.11%	Apr-05	5.64%	4.75%	0.89%	Apr-10	5.81%	4.53%	1.28%
May-00	8.70%	6.55%	2.15%	May-05	5.53%	4.56%	0.97%	May-10	5.50%	4.11%	1.39%
Jun-00	8.36%	6.28%	2.08%	Jun-05	5.40%	4.35%	1.05%	Jun-10	5.46%	3.95%	1.51%
Jul-00	8.25%	6.20%	2.05%	Jul-05	5.51%	4.48%	1.03%	Jul-10	5.26%	3.80%	1.46%
Aug-00	8.13%	6.02%	2.11%	Aug-05	5.50%	4.53%	0.97%	Aug-10	5.01%	3.52%	1.49%
Sep-00	8.23%	6.09%	2.14%	Sep-05	5.52%	4.51%	1.01%	Sep-10	5.01%	3.47%	1.54%
Oct-00	8.14%	6.04%	2.10%	Oct-05	5.79%	4.74%	1.05%	Oct-10	5.10%	3.52%	1.58%
Nov-00	8.11%	5.98%	2.13%	Nov-05	5.88%	4.83%	1.05%	Nov-10	5.37%	3.82%	1.55%
Dec-00	7.84%	5.64%	2.20%	Dec-05	5.80%	4.73%	1.07%	Dec-10	5.56%	4.17%	1.39%
Jan-01	7.80%	5.65%	2.15%	Jan-06	5.75%	4.65%	1.10%	Jan-11	5.57%	4.28%	1.29%
Feb-01	7.74%	5.62%	2.12%	Feb-06	5.82%	4.73%	1.09%	Feb-11	5.68%	4.42%	1.26%
Mar-01	7.68%	5.49%	2.19%	Mar-06	5.98%	4.91%	1.07%	Mar-11	5.56%	4.27%	1.29%
Apr-01	7.94%	5.78%	2.16%	Apr-06	6.29%	5.22%	1.07%	Apr-11	5.55%	4.28%	1.27%
May-01	7.99%	5.92%	2.07%	May-06	6.42%	5.35%	1.07%	May-11	5.32%	4.02%	1.30%
Jun-01	7.85%	5.82%	2.03%	Jun-06	6.40%	5.29%	1.11%	Jun-11	5.26%	3.91%	1.35%
Jul-01	7.78%	5.75%	2.03%	Jul-06	6.37%	5.25%	1.12%	Jul-11	5.27%	3.95%	1.32%
Aug-01	7.59%	5.58%	2.01%	Aug-06	6.20%	5.08%	1.12%	Aug-11	4.69%	3.24%	1.45%
Sep-01	7.75%	5.53%	2.22%	Sep-06	6.00%	4.93%	1.07%	Sep-11	4.48%	2.83%	1.65%
Oct-01	7.63%	5.34%	2.29%	Oct-06	5.98%	4.94%	1.04%	Oct-11	4.52%	2.87%	1.65%
Nov-01	7.57%	5.33%	2.24%	Nov-06	5.80%	4.78%	1.02%	Nov-11	4.25%	2.72%	1.53%
Dec-01	7.83%	5.76%	2.07%	Dec-06	5.81%	4.78%	1.03%	Dec-11	4.33%	2.67%	1.66%
Jan-02	7.66%	5.69%	1.97%	Jan-07	5.96%	4.95%	1.01%	Jan-12	4.34%	2.70%	1.64%
Feb-02	7.54%	5.61%	1.93%	Feb-07	5.90%	4.93%	0.97%	Feb-12	4.36%	2.75%	1.61%
Mar-02	7.76%	5.93%	1.83%	Mar-07	5.85%	4.81%	1.04%	Mar-12	4.48%	2.94%	1.54%
Apr-02	7.57%	5.85%	1.72%	Apr-07	5.97%	4.95%	1.02%	Apr-12	4.40%	2.82%	1.58%
May-02	7.52%	5.81%	1.71%	May-07	5.99%	4.98%	1.01%	May-12	4.20%	2.53%	1.67%
Jun-02	7.42%	5.65%	1.77%	Jun-07	6.30%	5.29%	1.01%	Jun-12	4.08%	2.31%	1.77%
Jul-02	7.31%	5.51%	1.80%	Jul-07	6.25%	5.19%	1.06%	Jul-12	3.93%	2.22%	1.71%
Aug-02	7.17%	5.19%	1.98%	Aug-07	6.24%	5.00%	1.24%	Aug-12	4.00%	2.40%	1.60%
Sep-02	7.08%	4.87%	2.21%	Sep-07	6.18%	4.84%	1.34%	Sep-12	4.02%	2.49%	1.53%
Oct-02	7.23%	5.00%	2.23%	Oct-07	6.11%	4.83%	1.28%	Oct-12	3.91%	2.51%	1.40%
Nov-02	7.14%	5.04%	2.10%	Nov-07	5.97%	4.56%	1.41%	Nov-12	3.84%	2.39%	1.45%
Dec-02	7.07%	5.01%	2.06%	Dec-07	6.16%	4.57%	1.59%	Dec-12	4.00%	2.47%	1.53%
Jan-03	7.07%	5.02%	2.05%	Jan-08	6.02%	4.35%	1.67%	Jan-13	4.15%	2.68%	1.47%
Feb-03	6.93%	4.87%	2.06%	Feb-08	6.21%	4.49%	1.72%	Feb-13	4.18%	2.78%	1.40%
Mar-03	6.79%	4.82%	1.97%	Mar-08	6.21%	4.36%	1.85%	Mar-13	4.20%	2.78%	1.42%
Apr-03	6.64%	4.91%	1.73%	Apr-08	6.29%	4.44%	1.85%	Apr-13	4.00%	2.55%	1.45%
May-03	6.36%	4.52%	1.84%	May-08	6.28%	4.60%	1.68%	May-13	4.17%	2.73%	1.44%
Jun-03	6.21%	4.34%	1.87%	Jun-08	6.38%	4.74%	1.64%				
Jul-03	6.57%	4.92%	1.65%	Jul-08	6.40%	4.62%	1.78%				
Aug-03	6.78%	5.39%	1.39%	Aug-08	6.37%	4.53%	1.84%	Average:			
Sep-03	6.56%	5.21%	1.35%	Sep-08	6.49%	4.32%	2.17%	12-months			1.51%
Oct-03	6.43%	5.21%	1.22%	Oct-08	7.56%	4.45%	3.11%	6-months			1.45%
Nov-03	6.37%	5.17%	1.20%	Nov-08	7.60%	4.27%	3.33%	3-months			1.44%
Dec-03	6.27%	5.11%	1.16%	Dec-08	6.52%	3.18%	3.34%				

Common Equity Risk Premiums
Years 1926-2012

	Large Common Stocks	Long-Term Corp. Bonds	Equity Risk Premium	Long-Term Govt. Bonds Yields
Low Interest Rates	11.72%	4.72%	7.00%	3.03%
Average Across All Interest Rates	11.82%	6.41%	5.41%	5.16%
High Interest Rates	11.92%	8.15%	3.77%	7.35%

Source of Information: 2013 Stocks, Bonds, Bills, and Inflation (SBBI) Classis Yearbook

Basic Series
Annual Total Returns (except yields)

Year	Large Common Stocks	Long-Term Corp. Bonds	Stocks vs. Corp. Bonds	Long-Term Govt. Bonds Yields
1940	-9.78%	3.39%	-13.17%	1.94%
1945	36.44%	4.08%	32.36%	1.99%
1941	-11.59%	2.73%	-14.32%	2.04%
1949	18.79%	3.31%	15.48%	2.09%
1946	-8.07%	1.72%	-9.79%	2.12%
1950	31.71%	2.12%	29.59%	2.24%
1939	-0.41%	3.97%	-4.38%	2.26%
1948	5.50%	4.14%	1.36%	2.37%
2012	16.00%	10.68%	5.32%	2.41%
1947	5.71%	-2.34%	8.05%	2.43%
1942	20.34%	2.60%	17.74%	2.46%
1944	19.75%	4.73%	15.02%	2.46%
1943	25.90%	2.83%	23.07%	2.48%
2011	2.11%	17.95%	-15.84%	2.48%
1938	31.12%	6.13%	24.99%	2.52%
1936	33.92%	6.74%	27.18%	2.55%
1951	24.02%	-2.69%	26.71%	2.69%
1954	52.62%	5.39%	47.23%	2.72%
1937	-35.03%	2.75%	-37.78%	2.73%
1953	-0.99%	3.41%	-4.40%	2.74%
1935	47.67%	9.61%	38.06%	2.76%
1952	18.37%	3.52%	14.85%	2.79%
1934	-1.44%	13.84%	-15.28%	2.93%
1955	31.56%	0.48%	31.08%	2.95%
2008	-37.00%	8.78%	-45.78%	3.03%
1932	-8.19%	10.82%	-19.01%	3.15%
1927	37.49%	7.44%	30.05%	3.16%
1957	-10.78%	8.71%	-19.49%	3.23%
1930	-24.90%	7.98%	-32.88%	3.30%
1933	53.99%	10.38%	43.61%	3.36%
1928	43.61%	2.84%	40.77%	3.40%
1929	-8.42%	3.27%	-11.69%	3.40%
1956	6.56%	-6.81%	13.37%	3.45%
1926	11.62%	7.37%	4.25%	3.54%
1960	0.47%	9.07%	-8.60%	3.80%
1958	43.36%	-2.22%	45.58%	3.82%
1962	-8.73%	7.95%	-16.68%	3.95%
1931	-43.34%	-1.85%	-41.49%	4.07%
2010	15.06%	12.44%	2.62%	4.14%
1961	26.89%	4.82%	22.07%	4.15%
1963	22.80%	2.19%	20.61%	4.17%
1964	16.48%	4.77%	11.71%	4.23%
1959	11.96%	-0.97%	12.93%	4.47%
1965	12.45%	-0.46%	12.91%	4.50%
2007	5.49%	2.60%	2.89%	4.50%
1966	-10.06%	0.20%	-10.26%	4.55%
2009	26.46%	3.02%	23.44%	4.58%
2005	4.91%	5.87%	-0.96%	4.61%
2002	-22.10%	16.33%	-38.43%	4.84%
2004	10.88%	8.72%	2.16%	4.84%
2006	15.79%	3.24%	12.55%	4.91%
2003	28.68%	5.27%	23.41%	5.11%
1998	28.58%	10.76%	17.82%	5.42%
1967	23.98%	-4.95%	28.93%	5.56%
2000	-9.10%	12.87%	-21.97%	5.58%
2001	-11.89%	10.65%	-22.54%	5.75%
1971	14.30%	11.01%	3.29%	5.97%
1968	11.06%	2.57%	8.49%	5.98%
1972	18.99%	7.26%	11.73%	5.99%
1997	33.36%	12.95%	20.41%	6.02%
1995	37.58%	27.20%	10.38%	6.03%
1970	3.86%	18.37%	-14.51%	6.48%
1993	10.08%	13.19%	-3.11%	6.54%
1996	22.96%	1.40%	21.56%	6.73%
1999	21.04%	-7.45%	28.49%	6.82%
1969	-8.50%	-8.09%	-0.41%	6.87%
1976	23.93%	18.65%	5.28%	7.21%
1973	-14.69%	1.14%	-15.83%	7.26%
1992	7.62%	9.39%	-1.77%	7.26%
1991	30.47%	19.89%	10.58%	7.30%
1974	-26.47%	-3.06%	-23.41%	7.60%
1986	18.67%	19.85%	-1.18%	7.89%
1994	1.32%	-5.76%	7.08%	7.99%
1977	-7.16%	1.71%	-8.87%	8.03%
1975	37.23%	14.64%	22.59%	8.05%
1989	31.69%	16.23%	15.46%	8.16%
1990	-3.10%	6.78%	-9.88%	8.44%
1978	6.57%	-0.07%	6.64%	8.98%
1988	16.61%	10.70%	5.91%	9.18%
1987	5.25%	-0.27%	5.52%	9.20%
1985	31.73%	30.09%	1.64%	9.56%
1979	18.61%	-4.18%	22.79%	10.12%
1982	21.55%	42.56%	-21.01%	10.95%
1984	6.27%	16.86%	-10.59%	11.70%
1983	22.56%	6.26%	16.30%	11.97%
1980	32.50%	-2.76%	35.26%	11.99%
1981	-4.92%	-1.24%	-3.68%	13.34%

Yields for Treasury Constant Maturities
Yearly for 2008-2012
and the Twelve Months Ended May 2013

Years	1-Year	2-Year	3-Year	5-Year	7-Year	10-Year	20-Year	30-Year
2008	1.82%	2.00%	2.24%	2.80%	3.17%	3.67%	4.36%	4.28%
2009	0.47%	0.96%	1.43%	2.19%	2.81%	3.26%	4.11%	4.08%
2010	0.32%	0.70%	1.11%	1.93%	2.62%	3.21%	4.03%	4.25%
2011	0.18%	0.45%	0.75%	1.52%	2.16%	2.79%	3.62%	3.91%
2012	0.18%	0.28%	0.38%	0.76%	1.22%	1.80%	2.54%	2.92%
Five-Year Average	0.59%	0.88%	1.18%	1.84%	2.40%	2.95%	3.73%	3.89%

Months	1-Year	2-Year	3-Year	5-Year	7-Year	10-Year	20-Year	30-Year
Jun-12	0.19%	0.29%	0.39%	0.71%	1.08%	1.62%	2.31%	2.70%
Jul-12	0.19%	0.25%	0.33%	0.62%	0.98%	1.53%	2.22%	2.59%
Aug-12	0.18%	0.27%	0.37%	0.71%	1.14%	1.68%	2.40%	2.77%
Sep-12	0.18%	0.26%	0.34%	0.67%	1.12%	1.72%	2.49%	2.88%
Oct-12	0.18%	0.28%	0.37%	0.71%	1.15%	1.75%	2.51%	2.90%
Nov-12	0.18%	0.27%	0.36%	0.67%	1.08%	1.65%	2.39%	2.80%
Dec-12	0.16%	0.26%	0.35%	0.70%	1.13%	1.72%	2.47%	2.88%
Jan-13	0.15%	0.27%	0.39%	0.81%	1.30%	1.91%	2.68%	3.08%
Feb-13	0.16%	0.27%	0.40%	0.85%	1.35%	1.98%	2.78%	3.17%
Mar-13	0.15%	0.26%	0.39%	0.82%	1.32%	1.96%	2.78%	3.16%
Apr-13	0.12%	0.23%	0.34%	0.71%	1.15%	1.76%	2.55%	2.93%
May-13	0.12%	0.25%	0.40%	0.84%	1.31%	1.93%	2.73%	3.11%
Twelve-Month Average	0.16%	0.26%	0.37%	0.74%	1.18%	1.77%	2.53%	2.91%
Six-Month Average	0.14%	0.26%	0.38%	0.79%	1.26%	1.88%	2.67%	3.06%
Three-Month Average	0.13%	0.25%	0.38%	0.79%	1.26%	1.88%	2.69%	3.07%

Source: Federal Reserve statistical release H.15

Measures of the Risk-Free Rate & Corporate Bond Yields
The forecast of Treasury and Corporate yields
per the consensus of nearly 50 economists
reported in the Blue Chip Financial Forecasts dated June 1, 2013

		Treasury					Corporate	
Year	Quarter	1-Year Bill	2-Year Note	5-Year Note	10-Year Note	30-Year Bond	Aaa Bond	Baa Bond
2013	Second	0.2%	0.3%	0.8%	1.9%	3.1%	3.8%	4.7%
2013	Third	0.2%	0.3%	0.9%	2.0%	3.2%	3.9%	4.8%
2013	Fourth	0.2%	0.4%	1.0%	2.1%	3.3%	4.0%	4.9%
2014	First	0.3%	0.4%	1.2%	2.3%	3.4%	4.1%	5.0%
2014	Second	0.3%	0.6%	1.3%	2.4%	3.5%	4.2%	5.1%
2014	Third	0.4%	0.7%	1.5%	2.5%	3.7%	4.3%	5.2%

Measures of the Market Premium

Value Line Return

As of:	Dividend Yield		Median Appreciation Potential		Median Total Return
May 31, 2013	2.1%	+	8.78%	=	10.88%

DCF Result for the S&P 500 Composite

D/P	(1+.5g)	+	g	=	k
1.95%	(1.0472)	+	9.43%	=	11.47%

where:	Price (P)	at	31-May-13	=	1630.74
	Dividend (D)	for	1st Qtr. '13	=	7.95
	Dividend (D)		annualized	=	31.80
	Growth (g)	by	First Call	=	9.43%

Summary

Value Line	10.88%
S&P 500	11.47%
Average	11.18%
Risk-free Rate of Return (Rf)	3.75%
Forecast Market Premium	7.43%

Historical Market Premium	(Rm)	(Rf)	
1926-2012 Arith. mean	11.72%	3.03%	8.69%

Average - Forecast/Historical	8.06%

Table 7-6: Size-Decile Portfolios of the NYSE/AMEX/NASDAQ Long-Term Returns in Excess of CAPM

| Decile	Beta*	Arith-metic Mean Return (%)	Actual Return in Excess of Riskless Rate** (%)	CAPM Return in Excess of Riskless Rate† (%)	Size Premium (Return in Excess of CAPM) (%)
Mid-Cap, 3-5	1.12	13.73	8.61	7.50	1.12
Low-Cap, 6-8	1.23	15.19	10.07	8.23	1.85
Micro-Cap, 9-10	1.36	18.03	12.91	9.10	3.81

Data from 1926–2012.

*Betas are estimated from monthly returns in excess of the 30-day U.S. Treasury bill total return, January 1926–December 2012.

**Historical riskless rate measured by the 87-year arithmetic mean income return component of 20-year government bonds (5.12 percent).

†Calculated in the context of the CAPM by multiplying the equity risk premium by beta. The equity risk premium is estimated by the arithmetic mean total return of the S&P 500 (11.82 percent) minus the arithmetic mean income return component of 20-year government bonds (5.12 percent) from 1926–2012.

Graph 7-2: Security Market Line Versus Size-Decile Portfolios of the NYSE/AMEX/NASDAQ
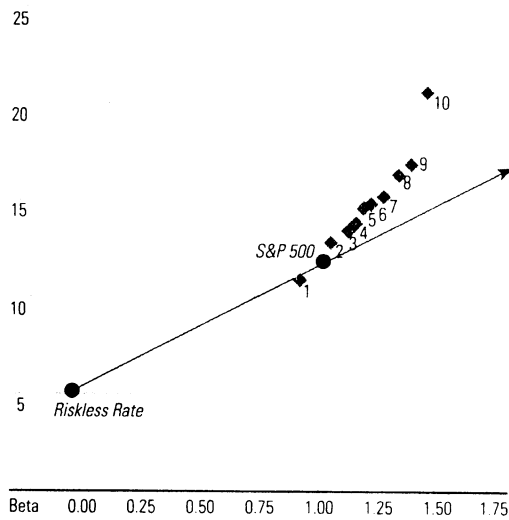
Data from 1926–2012.

Serial Correlation in Small Company Stock Returns

The serial correlation, or first-order autocorrelation, of returns on large capitalization stocks is near zero. [See Table 7-1.] If stock returns are serially correlated, then one can gain some information about future performance based on past returns. For the smallest stocks, the serial correlation is near or above 0.1. This observation bears further examination.

Table 7-7: Size-Decile Portfolios of the NYSE/AMEX/NASDAQ Serial Correlations of Annual Returns in Excess of Decile 1 Returns

Decile	Serial Correlations of Annual Returns in Excess of Decile 1 Return
2	0.22
3	0.27
4	0.25
5	0.25
6	0.33
7	0.27
8	0.34
9	0.29
10	0.38

Data from 1926–2012. Source: Morningstar and CRSP. Calculated (or Derived) based on data from CRSP US Stock Database and CRSP US Indices Database ©2013 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business. Used with permission.

To remove the randomizing effect of the market as a whole, the returns for decile 1 are geometrically subtracted from the returns for deciles 2 through 10. The result illustrates that these series differences exhibit greater serial correlation than the decile series themselves. Table 7-7 above presents the serial correlations of the excess returns for deciles 2 through 10. These serial correlations suggest some predictability of smaller company excess returns. However, caution is necessary. The serial correlation of small company excess returns for non-calendar years (February through January, etc.) do not always confirm the results shown here for calendar (January through December) years. The results for the non-calendar years (not shown in this book) suggest that predicting small company excess returns may not be easy.

Comparable Earnings Approach
Using Non-Utility Companies with
Timeliness of 2, 3 & 4; Safety Rank of 1, 2 & 3; Financial Strength of B, B+, B++ & A;
Price Stability of 95 to 100; Betas of .60 to .75; and Technical Rank of 2 & 3

Company	Industry	Timeliness Rank	Safety Rank	Financial Strength	Price Stability	Beta	Technical Rank
AmerisourceBergen	MEDICNON	3	2	B++	100	0.70	2
Berkley (W.R.)	INSPRPTY	2	2	B++	95	0.70	2
Capitol Fed. Fin'l	THRIFT	3	3	B+	95	0.65	3
Church & Dwight	HOUSEPRD	2	1	A	100	0.60	3
Clorox Co.	HOUSEPRD	2	2	B++	100	0.60	3
ConAgra Foods	FOODPROC	3	1	A+	100	0.65	3
DaVita Inc.	MEDSERV	2	3	B+	95	0.70	3
Dollar General	RETAIL	2	3	B++	95	0.60	3
Erie Indemnity Co.	INSPRPTY	3	2	B++	100	0.75	2
Haemonetics Corp.	MEDICNON	3	2	B++	95	0.65	3
Hershey Co.	FOODPROC	2	2	B++	100	0.65	2
Hormel Foods	FOODPROC	3	1	A	100	0.65	3
Kroger Co.	GROCERY	3	2	B++	95	0.60	3
Laboratory Corp.	MEDSERV	3	1	A	100	0.65	3
Marsh & McLennan	FINSERV	3	3	B	95	0.75	3
Mercury General	INSPRPTY	4	2	B++	95	0.70	3
People's United Fin'l	THRIFT	3	3	B+	95	0.70	3
Philip Morris Int'l	TOBACCO	3	2	B++	95	0.75	3
Quest Diagnostics	MEDSERV	3	2	B++	95	0.75	3
Silgan Holdings	PACKAGE	3	3	B+	95	0.75	3
Smucker (J.M.)	FOODPROC	2	1	A+	95	0.70	3
Stericycle Inc.	ENVIRONM	2	2	B++	95	0.70	3
Sysco Corp.	GROCERY	3	1	A+	100	0.70	3
Techne Corp.	BIOTECH	3	1	A+	95	0.75	2
Tootsie Roll Ind.	FOODPROC	2	1	A+	100	0.70	2
Verisk Analytics	INFOSER	2	2	B+	100	0.60	3
Waste Connections	ENVIRONM	3	3	B+	95	0.70	2
Weis Markets	GROCERY	3	1	A	95	0.65	3
Average		3	2	B++	97	0.68	3
Delivery Group	Average	3	2	B++	99	0.67	3

Source of Information: Value Line Investment Survey for Windows, May 2013

Comparable Earnings Approach
Five -Year Average Historical Earned Returns
for Years 2008-2012 and
Projected 3-5 Year Returns

Company	2008	2009	2010	2011	2012	Average	Projected 2016-18
AmerisourceBergen	17.3%	18.8%	21.6%	24.6%	28.8%	22.2%	32.0%
Berkley (W.R.)	16.5%	10.2%	11.4%	7.7%	8.5%	10.9%	11.0%
Capitol Fed. Fin'l	5.8%	7.0%	7.1%	3.3%	4.1%	5.5%	4.5%
Church & Dwight	15.1%	15.5%	15.3%	15.9%	17.0%	15.8%	15.5%
Clorox Co.	-	-	726.5%	NMF	NMF	726.5%	NMF
ConAgra Foods	9.7%	14.7%	15.8%	16.2%	17.3%	14.7%	19.5%
DaVita Inc.	19.2%	19.8%	22.8%	22.5%	16.0%	20.1%	18.0%
Dollar General	3.8%	10.0%	15.5%	16.4%	19.1%	13.0%	17.5%
Erie Indemnity Co.	18.0%	12.0%	17.8%	21.4%	24.9%	18.8%	23.5%
Haemonetics Corp.	11.9%	12.5%	12.2%	10.7%	11.6%	11.8%	12.0%
Hershey Co.	135.3%	69.3%	65.1%	76.4%	71.4%	83.5%	41.5%
Hormel Foods	14.2%	16.1%	17.0%	17.8%	17.7%	16.6%	16.5%
Kroger Co.	24.1%	23.2%	21.1%	30.0%	33.8%	26.4%	23.0%
Laboratory Corp.	30.4%	25.3%	23.7%	25.8%	24.4%	25.9%	20.0%
Marsh & McLennan	NMF	9.2%	8.6%	16.2%	17.8%	13.0%	20.0%
Mercury General	7.7%	10.0%	6.4%	8.2%	4.0%	7.3%	10.0%
People's United Fin'l	2.7%	2.0%	1.6%	3.8%	4.9%	3.0%	8.0%
Philip Morris Int'l	91.9%	111.0%	207.0%	NMF	NMF	136.6%	NMF
Quest Diagnostics	17.8%	18.3%	17.9%	19.7%	17.0%	18.1%	14.5%
Silgan Holdings	25.1%	23.2%	26.1%	29.4%	20.1%	24.8%	18.5%
Smucker (J.M.)	6.5%	9.8%	10.7%	10.4%	10.5%	9.6%	12.0%
Stericycle Inc.	22.8%	21.1%	20.4%	20.2%	18.7%	20.6%	14.5%
Sysco Corp.	32.4%	30.6%	30.9%	24.5%	23.9%	28.5%	23.0%
Techne Corp.	21.3%	23.1%	21.9%	19.2%	16.7%	20.4%	27.5%
Tootsie Roll Ind.	6.1%	8.2%	8.0%	6.6%	8.0%	7.4%	11.5%
Verisk Analytics	-	-	-	-	-	-	29.0%
Waste Connections	8.2%	8.7%	10.5%	12.1%	9.3%	9.8%	13.0%
Weis Markets	7.1%	9.1%	9.4%	10.1%	10.4%	9.2%	9.0%
Average						48.9%	17.9%
Average (excluding companies with values >20%)						10.9%	12.5%