



**National Fuel Gas Distribution Company**  
**Docket No. R-00038168**

**Direct Testimony of**  
**Dr. J. Randall Woolridge**

**TABLE OF CONTENTS**

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I. Subject of Testimony and Summary of Recommendations	1
II. Comparison Group Selection	2
III. Capital Structure Ratios and Debt Cost Rates.	4
IV. The Cost of Common Equity Capital	6
A. Overview	6
B. Discounted Cash Flow Analysis	12
C. Risk Premium Approach.	23
D. Equity Cost Rate Summary	27
V. Critique of NFGDC's Rate of Return Testimony	35
APPENDIX A - Qualifications of Dr. J. Randall Woolridge	50

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**LIST OF SCHEDULES**

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<b><u>Schedule</u></b>	<b><u>Title</u></b>
JRW-1	Recommended Rate of Return
JRW-2	Summary Financial Statistics
JRW-3	Monthly Dividend Yields
JRW-4	Growth Rate Indicators
JRW-5	Risk Premium Study
JRW-6	Public Utility Capital Cost Indicators
JRW-7	Industry Average Betas
JRW-8	Three-Stage Dividend Discount Model
JRW-9	Analysts Biased Forecasts
JRW-10	Risk Premium Assessment

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1 **Q. PLEASE STATE YOUR FULL NAME, ADDRESS, AND OCCUPATION.**

2 A. My name is J. Randall Woolridge and my business address is 120 Haymaker Circle, State  
3 College, PA 16801. I am a Professor of Finance and the Goldman, Sachs & Co. and Frank P.  
4 Smeal Endowed University Fellow in Business Administration at the University Park Campus of  
5 the Pennsylvania State University. I am also the Director of the Smeal College Trading Room. In  
6 addition, I am affiliated with the Columbia Group Inc., a public utility consulting firm based in  
7 Ridgefield, CT. A summary of my educational background, research, and related business  
8 experience is provided in Appendix A.

9

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**I. SUBJECT OF TESTIMONY AND**

11

**SUMMARY OF RECOMMENDATIONS**

12

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

14 A. I have been asked by the Office of Consumer Advocate ("OCA") to provide an opinion as  
15 to the overall fair rate of return for National Fuel Gas Distribution Company ("NFGDC" or  
16 "Company") and to evaluate NFGDC's rate of return testimony in this proceeding.

17 **Q. PLEASE REVIEW YOUR COST OF CAPITAL RETURN FINDINGS.**

18 A. I have independently arrived at a cost of capital for the Company. I have established an  
19 equity cost rate of 9.1% for NFGDC primarily by applying the discounted cash flow (DCF)  
20 approach to a group of publicly-held gas distribution companies. I have also performed a risk  
21 premium study. Utilizing my equity cost rate, capital structure ratios, and senior capital cost rates, I  
22 am recommending an overall fair rate of return for the Company of 7.80%. This recommendation  
23 is summarized in Schedule JRW-1.

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 **Q. PLEASE SUMMARIZE YOUR ASSESSMENT OF THE COMPANY'S RATE OF**  
2 **RETURN POSITION.**

3 A. The Company's rate of return testimony is offered by Mr. Frank J Hanley. Mr. Hanley  
4 provides a recommendation for the Company's capital structure, senior capital cost rates, equity  
5 cost rate, and overall rate of return. The Company's proposed rate of return is inflated due to an  
6 inappropriate capital structure and an overstated equity cost rate. Mr. Hanley uses a hypothetical  
7 capital structure that has an excessive common equity ratio. Mr. Hanley's estimated equity cost  
8 rate of 12.75% is unreasonably high primarily due to 1) an inflated growth rate forecast he uses in  
9 his DCF equity cost rate, (2) outdated and seriously flawed risk premium, Capital Asset Pricing  
10 Model (CAPM) studies, and Comparable Earnings and (3) inappropriate adjustments to his equity  
11 cost rate estimate. He has also failed to take into consideration the effect of the *Jobs and Growth*  
12 *Tax Relief Reconciliation Act of 2003* on the return requirements of investors.

13

14

**II. COMPARISON GROUP SELECTION**

15

16 **Q. PLEASE DESCRIBE YOUR APPROACH TO DEVELOPING A FAIR RATE OF**  
17 **RETURN RECOMMENDATION FOR NFGDC.**

18 A. To develop a fair rate of return recommendation for NFGDC, I evaluate the return  
19 requirements of investors on the common stock of a group of publicly-held gas distribution  
20 companies.

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 **Q. PLEASE DESCRIBE YOUR GROUP OF GAS DISTRIBUTION COMPANIES.**

2 A. To select a group of comparable companies, I evaluated the gas distribution companies  
3 covered by the *Value Line Investment Survey Expanded Edition* and *C.A. Turner Utility Reports*. I  
4 concluded that, with one caveat, the group used by Mr. Hanley represents a reasonable set of  
5 companies to use to estimate NFGDC's equity cost rate. These companies include AGL resources,  
6 Atmos Energy, Cascade Natural Gas Corp., Laclede Group Inc., NICOR, Northwest Natural Gas,  
7 Peoples Energy Corp, and Piedmont Natural Gas Inc.

8 Summary financial statistics for the group are provided on page 1 of Schedule JRW-2. The  
9 mean net plant and operating revenues for the group are \$1,292.9M and \$1,289.7M, respectively.  
10 The group has an average bond rating of 'A' with a common equity ratio of 47% and total interest  
11 coverage of 3.2X. On average, the group is currently earning a return on common equity of 11.1%  
12 and has a market-to-book ratio of 171%.

13 My primary caveat relates to the percent of revenue from gas figures for several of the  
14 companies in the group. Mr. Hanley's screen required that at least 80% of revenues must come  
15 from gas. He used 2001 data to establish the group. Since that time, as some of these companies  
16 have diversified, their percent of revenue from gas has declined. In particular, the percent of  
17 revenues from gas figure for AGL Resources (66%), Peoples Energy (72%), and Piedmont Natural  
18 Gas (57%) have fallen below Mr. Hanley's 80% screening number. The impact of this change is  
19 that this group may be somewhat riskier than Mr. Hanley initially suspected when he prepared his  
20 testimony.

1

2

**III. CAPITAL STRUCTURE RATIOS AND DEBT COST RATES**

3

4 **Q. PLEASE DISCUSS THE COMPANY'S ACTUAL AND PROPOSED CAPITAL**  
5 **STRUCTURE RATIOS.**

6 A. NFGDC's projected capital structure as of September 30, 2003 consists of 59.21% common  
7 equity, 32.47% long-term debt, and 8.32% short-term debt. Because this capitalization is out of  
8 line with the capital structure ratios of the gas distribution industry, Mr. Hanley has proposed a  
9 hypothetical capital structure which includes 53.0% common equity, 43.47% long-term debt, and  
10 3.53% short-term debt. This is presented in Schedule 2 of NFGDC Exhibit No. 400.

11 **Q. ARE YOU EMPLOYING MR. HANLEY'S HYPOTHETICAL CAPITAL**  
12 **STRUCTURE?**

13 A. No. In my opinion, this capital structure is not reflective of the norms in the gas distribution  
14 industry.

15 **Q. WHAT CAPITAL STRUCTURE RATIOS ARE YOU USING TO ESTIMATE AN**  
16 **OVERALL RATE OF RETURN FOR NFGDC?**

17 A. I am employing the capital structure ratios for NFGDC's parent, National Fuel Gas Corp.,  
18 projected as of September 30, 2003. As provided in the updated version (7/3/03) of Schedule 3 of  
19 Exhibit 400, these capital structure ratios are 45.52% common equity, 50.39% long-term debt, and  
20 4.09% short-term debt.

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 **Q. WHY ARE YOU USING NFG'S CAPITAL STRUCTURE RATIOS IN**  
2 **ESTIMATEING AN OVERALL RATE OF RETURN FOR NFGDC?**

3 A. There are two reasons. First, NFG is the ultimate source of both debt and equity capital for  
4 NFGDC. This is especially true now since NFGDC no longer issues its own debt securities. Hence,  
5 in the interest of consistency, it is appropriate to apply the same capital structure that is used to raise  
6 capital for the company. Second, this capital structure more closely resembles the capital structures  
7 of the comparison group. As shown on page 6 of Schedule 1 of Exhibit 300, the average capital  
8 structure ratios for the group as of September 30, 2002 was 44.49% common equity, 0.45%  
9 preferred stock, 44.74% long-term debt, and 10.32% short-term debt.

10 **Q. WHAT SENIOR CAPITAL COST RATES ARE YOU USING?**

11 A. I will use the company's proposed rates, which are found in Schedule 1 of Exhibit 400.  
12 These are 3.29% for short-term debt and 6.99% for long-term debt. As such, my proposed capital  
13 structure and senior capital cost rates are:

14

Capital	Ratio	Cost Rate
Short-Term Debt	4.09%	3.29%
Long-Term Debt	59.39%	6.99%
Common Equity	45.52%	

15

16

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

2 **A. OVERVIEW**

3  
4 **Q. WHY MUST AN OVERALL COST OF CAPITAL OR FAIR RATE OF RETURN**  
5 **BE ESTABLISHED FOR A PUBLIC UTILITY?**

6 A. In a competitive industry the return on a firm's common equity capital is determined  
7 through the competitive market for its goods and services. Due to the capital requirements needed  
8 to provide utility services, however, and to the economic benefit to society from avoiding  
9 duplication of these services, public utilities are monopolies. It is not appropriate to permit utilities  
10 to set their own prices because of the lack of competition and the essential nature of the services.  
11 Thus, regulation seeks to establish prices which are fair to consumers and at the same time are  
12 sufficient to meet the operating and capital costs of the utility, i.e., provide an adequate return on  
13 capital to attract investors.

14 **Q. PLEASE PROVIDE AN OVERVIEW OF THE COST OF CAPITAL IN THE**  
15 **CONTEXT OF THE THEORY OF THE FIRM.**

16 A. The total cost of operating a business includes the cost of capital. The cost of common  
17 equity capital is the expected return on a firm's common stock that the marginal investor would  
18 deem sufficient to compensate for risk and the time value of money. In equilibrium, the expected  
19 and required rates of return on a company's common stock are equal.

20 Normative economic models of the firm, developed under very restrictive assumptions,



**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 provide insight into the relationship between firm performance or profitability, capital costs, and the  
2 value of the firm. Under the economist's ideal model of perfect competition, where entry and exit is  
3 costless, products are undifferentiated, and there are increasing marginal costs of production, firms  
4 produce up to the point where price equals marginal cost. Over time, a long-run equilibrium is  
5 established where price equals average cost, including the firm's capital costs. In equilibrium, total  
6 revenues equal total costs, and because capital costs represent investors' required return on the  
7 firm's capital, actual returns equal required returns and the market value and the book value of the  
8 firm's securities must be equal.

9 In the real world, firms can achieve competitive advantage due to product market  
10 imperfections - most notably through product differentiation (adding real or perceived value to  
11 products) and achieving economies of scale (decreasing marginal costs of production). Competitive  
12 advantage allows firms to price products above average cost and thereby earn accounting profits  
13 greater than those required to cover capital costs. When these profits are in excess of that required  
14 by investors, or when a firm earns a return on equity in excess of its cost of equity, investors  
15 respond by valuing the firm's equity in excess of its book value.

16 James M. McTaggart, founder of the international management consulting firm Marakon  
17 Associates, has described this essential relationship between the return on equity, the cost of equity,  
18 and the market-to-book ratio in the following manner:<sup>1</sup>

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<sup>1</sup> James M. McTaggart, "The Ultimate Poison Pill: Closing the Value Gap," *Commentary* (Spring 1988), p. 2.

1           Fundamentally, the value of a company is determined by the cash flow it  
2 generates over time for its owners, and the minimum acceptable rate of return  
3 required by capital investors. This "cost of equity capital" is used to discount the  
4 expected equity cash flow, converting it to a present value. The cash flow is, in turn,  
5 produced by the interaction of a company's return on equity and the annual rate of  
6 equity growth. High return on equity (ROE) companies in low-growth markets, such  
7 as Kellogg, are prodigious generators of cash flow, while low ROE companies in  
8 high-growth markets, such as Texas Instruments, barely generate enough cash flow  
9 to finance growth.

10  
11           A company's ROE over time, relative to its cost of equity, also determines  
12 whether it is worth more or less than its book value. If its ROE is consistently  
13 greater than the cost of equity capital (the investor's minimum acceptable return), the  
14 business is economically profitable and its market value will exceed book value. If,  
15 however, the business earns an ROE consistently less than its cost of equity, it is  
16 economically unprofitable and its market value will be less than book value.  
17

18 As such, the relationship between a firm's return on equity, cost of equity, and market-to-book ratio  
19 is relatively straightforward. A firm, which earns a return on equity above its cost of equity will see  
20 its common stock, sell at a price above its book value. Conversely, a firm which earns a return on  
21 equity below its cost of equity will see its common stock sell at a price below its book value.

22 **Q.     WHAT ECONOMIC FACTORS HAVE AFFECTED THE COST OF EQUITY**  
23 **CAPITAL FOR PUBLIC UTILITIES?**

24 A.     Schedule JRW-6 provides indicators of public utility equity cost rates for recent years.  
25 Page 1 shows the dividend yields for the fifteen utilities in the Dow Jones Utilities Average over  
26 the past decade. These yields peaked in 1994 at 6.4% and bottomed out in 1998 at 4.3%. Since  
27 that time they have slowly increased to 5.0% range as of the year 2002.

28           Average earned returns on common equity and market-to-book ratios are given on page 2 of

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 Schedule JRW-6. Over the past decade, earned returns on common equity have consistently been  
2 in the 10.0 - 12.0 percent range. The low point was 10.1% in 1997 and they have gradually  
3 increased to 11.9% as of the year 2002. Over the past decade market-to-book ratios for this group  
4 bottomed out at 138% in 1995 and they steadily increased to the 190% range as of the year 2002.

5 The indicators in Schedule JRW-6, coupled with the overall decreased in interest rates,  
6 suggest that capital costs for the Dow Jones Utilities have decreased over the past decade.  
7 Specifically for the equity cost rate, the significant increase in the market-to-book ratio since 1995,  
8 coupled with only a much small increase in the average return on equity, suggests a substantial  
9 decline in the overall equity cost rate.

10 **Q. WHAT FACTORS DETERMINE INVESTORS' EXPECTED OR REQUIRED**  
11 **RATE OF RETURN ON EQUITY?**

12 A. The expected or required rate of return on common stock is a function of market-wide, as  
13 well as company-specific, factors. The most important market factor is the time value of money as  
14 indicated by the level of interest rates in the economy. Common stock investor requirements  
15 generally increase and decrease with like changes in interest rates. The perceived risk of a firm is  
16 the predominant factor that influences investor return requirements on a company-specific basis.  
17 Firm risk is often separated into business and financial risk. Business risk encompasses all factors  
18 that affect a firm's operating revenues and expenses. Financial risk results from incurring fixed  
19 obligations in the form of debt in financing its assets.

20 **Q. COMPARE THE BUSINESS AND FINANCIAL RISK OF PUBLIC UTILITIES**

1 **AND OTHER INDUSTRIES.**

2 A. Due to the essential nature of their service as well as their regulated status, public utilities  
3 are exposed to a lesser degree of business risk than other, non-regulated businesses. The relatively  
4 low level of business risk allows public utilities to meet much of their capital requirements through  
5 borrowing in the financial markets, thereby incurring greater than average financial risk.  
6 Nonetheless, the overall investment risk of public utilities is below most other industries. Schedule  
7 JRW-7 provides an assessment of investment risk for 97 different industries as measured by beta,  
8 which according to modern capital market theory is the only relevant measure of investment risk  
9 that need be of concern for investors. These betas come from the *Value Line Investment Survey* and  
10 are compiled by Aswath Damodaran of New York University. They may be found on the Internet  
11 at <http://www.stern.nyu.edu/~adamodar/>. The study shows that the investment risk of public  
12 utilities is quite low. The electric, gas distribution, and water utility industries are all ranked in the  
13 bottom 10% of the 97 industries. As such, the cost of equity for these industries must be among the  
14 lowest of all industries in the U.S.

15 **Q. HOW CAN THE EXPECTED OR REQUIRED RATE OF RETURN ON COMMON**  
16 **EQUITY CAPITAL BE DETERMINED?**

17 A. The costs of debt and preferred stock are normally based on historic or book values and can  
18 be determined with a great degree of accuracy. The cost of common equity capital, however,  
19 cannot be determined precisely and must instead be estimated from market data and informed  
20 judgment. The return to the equity owner should be commensurate with returns on investments in

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 other enterprises having comparable risks.

2           According to valuation principles, the present value of an asset equals the discounted value  
3 of its expected future cash flows. Investors discount these expected cash flows at their required rate  
4 of return that, as noted above, reflects the time value of money and the perceived riskiness of the  
5 expected future cash flows. As such, the cost of common equity is the rate at which investors  
6 discount expected cash flows associated with common stock ownership.

7           Models have been developed to ascertain the cost of common equity capital for a firm.  
8 Each model, however, has been developed using restrictive economic assumptions. Consequently,  
9 judgment is required in selecting appropriate financial valuation models to estimate a firm's cost of  
10 common equity capital, in determining the data inputs for these models, and in interpreting the  
11 models' results. All of these decisions must take into consideration the firm involved as well as  
12 conditions in the economy and the financial markets.

13 **Q.     HOW DO YOU PLAN TO ESTIMATE THE COST OF EQUITY CAPITAL FOR**  
14 **THE COMPANY?**

15 A.     I rely primarily on the discounted cash flow (DCF) model to estimate the cost of equity  
16 capital. I believe that the DCF model provides the best measure of equity cost rates for public  
17 utilities. I have also performed a risk premium (RP) study, but I give these results less weight  
18 because I believe that risk premium studies provide a less reliable indication of equity cost rates for  
19 public utilities.

20

**B. DISCOUNTED CASH FLOW ANALYSIS**

**Q. BRIEFLY DESCRIBE THE THEORY BEHIND THE TRADITIONAL DCF MODEL.**

A. According to the discounted cash flow (DCF) model, the current stock price is equal to the discounted value of all future dividends that investors expect to receive from investment in the firm. As such, stockholders' returns ultimately result from current as well as future dividends. As owners of a corporation, common stockholders are entitled to a pro-rata share of the firm's earnings. The DCF model presumes that earnings that are not paid out in the form of dividends are reinvested in the firm so as to provide for future growth in earnings and dividends. The rate at which investors discount future dividends, which reflects the timing and riskiness of the expected cash flows, is interpreted as the market's expected or required return on the common stock. Therefore this discount rate represents the cost of common equity. Algebraically, the DCF model can be expressed as:

$$P = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_n}{(1+k)^n}$$

where P is the current stock price,  $D_n$  is the dividend in year n, and k is the cost of common equity.

**Q. HOW DO YOU ESTIMATE STOCKHOLDERS' EXPECTED OR REQUIRED RATE OF RETURN USING THE DCF MODEL?**

1 A. Under certain assumptions, including a constant and infinite expected growth rate, and  
2 constant dividend/earnings and price/earnings ratios, the DCF model can be simplified to the  
3 following:

4  
5  
6 
$$P = \frac{D_1}{k - g}$$
  
7  
8

9 where  $D_1$  represents the expected dividend over the coming year and  $g$  is the expected growth rate  
10 of dividends. This is known as the constant-growth version of the DCF model. To use the  
11 constant-growth DCF model to estimate a firm's cost of equity, you solve for  $k$  in the above  
12 expression and obtain the following:

13  
14 
$$k = \frac{D_1}{P} + g$$
  
15  
16  
17

18 In the constant-growth version of the DCF model, the current dividend payment and stock price are  
19 directly observable. Therefore, the primary problem and controversy in applying the DCF model to  
20 estimate equity cost rates entails estimating investors' expected dividend growth rate.

21 **Q. WHAT FACTORS SHOULD ONE CONSIDER WHEN APPLYING THE DCF**  
22 **METHODOLOGY?**

23 A. One should be sensitive to several factors when using the DCF model to estimate a firm's  
24 cost of equity capital. In general, one must recognize the assumptions under which the DCF model

1 was developed in estimating its components (the dividend yield and expected growth rate). The  
2 dividend yield can be measured precisely at any point in time, but tends to vary somewhat over  
3 time. Estimation of expected growth is considerably more difficult. One must consider recent firm  
4 performance, in conjunction with current economic developments and other information available  
5 to investors, to accurately estimate investors' expectations.

6 **Q. IS THE CONSTANT GROWTH DCF MODEL CONSISTENT WITH**  
7 **VALUATION TECHNIQUES EMPLOYED BY INVESTMENT FIRMS?**

8 A. Yes. Virtually all investment firms use some form of the DCF model as a valuation  
9 technique. Schedule JRW-8 provides a description of a three-stage DCF or dividend discount  
10 model (DDM), which is commonly referred to as the Merrill Lynch DDM.<sup>2</sup> This model presumes  
11 that a company's dividend payout progresses initially through a growth stage, then proceeds  
12 through a transition stage, and finally assumes a steady state stage. The dividend payment stage of  
13 a firm depends on the profitability of its internal investments, which, in turn, is largely a function of  
14 the life cycle of the product or service. Given the regulated status of public utilities, and especially  
15 the fact that their returns on investment are effectively set through the ratemaking process, the  
16 industry would be in the steady-state stage of a three-stage DDM. The DCF valuation procedure  
17 for companies in this stage is the constant-growth DCF.

18 **Q. BEFORE YOU PRESENT YOUR DCF RESULTS, PLEASE DISCUSS THE**

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<sup>2</sup> A description of this model is found in William F. Sharp, Gordon J. Alexander, and Jeffrey V. Bailey, *Investments* (Prentice-Hall, 1995), pp. 590-1.



1 **IMPACT OF THE NEW TAX LAW ON INVESTOR REQUIRED RETURNS.**

2 A. On May 28<sup>th</sup> of this year, President Bush signed the *Jobs and Growth Tax Relief*  
3 *Reconciliation Act of 2003*. The primary purpose of this legislations was to reduce taxes to  
4 enhance economic growth. A primary component of the new tax law was a significant reduction  
5 in the taxation of corporate dividends for individuals. Dividends are said to be double-taxed –  
6 First corporations pay taxes on the income they earn before they pay dividends to investors, and  
7 then investors pay taxes on the dividends that they receive from corporations. One of the  
8 implications of the double-taxation of dividends is that, all else equal, it results in a high cost of  
9 raising capital for corporations. The new tax legislation reduces the double-taxation of dividends  
10 by reducing the tax rate on dividends from the 30 percent range (the average tax bracket for  
11 individuals) to 15 percent. This reduction in the taxation of dividends for individuals enhances  
12 their after-tax returns and thereby reduces their pre-tax required returns. This reduction in pre-  
13 tax required returns (due to the lower tax on dividends) effectively reduces the cost of equity  
14 capital for companies.

15 **Q. GIVEN THIS DISCUSSION, WHAT DIVIDEND YIELD DO YOU EMPLOY IN**  
16 **YOUR DCF ANALYSIS FOR THE GAS DISTRIBUTION GROUP?**

17 A. The dividend yields on the common stock for the comparison group are provided in  
18 Schedule JRW-3 for the seven-month period ending July, 2003. Over this period, the average  
19 monthly dividend yield for this group has been in the 5% range. However, of particular note, is

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**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 the decline in recent months in the dividend yields. This decline has been attributed to new tax  
2 law that was signed on May 28th. To reflect the impact on the new tax law, I will use the average  
3 dividend yield for the group for the last two months. This figure is 4.75%.

4 **Q. PLEASE DISCUSS THE APPROPRIATE ADJUSTMENT TO THE SPOT**  
5 **DIVIDEND YIELD.**

6 A. According to the traditional DCF model, the dividend yield term relates to the dividend  
7 yield over the coming period. As indicated by Professor Myron Gordon, who is commonly  
8 associated with the development of the DCF model for popular use, (1) multiplying the expected  
9 dividend over the coming quarter by 4, and (2) dividing this dividend by the current stock price to  
10 determine the appropriate dividend yield for a firm, which pays dividends on a quarterly basis.<sup>3</sup>

11 In applying the DCF model, it is common to adjust the current dividend for growth over the  
12 coming year as opposed to the coming quarter. This can be complicated because firms tend to  
13 announce changes in dividends at different times during the year. As such, the dividend yield  
14 computed based on presumed growth over the coming quarter as opposed to the coming year can be  
15 quite different. Consequently, it is common to adjust the dividend yield by some fraction of the  
16 long-term expected growth rate.

17 The appropriate adjustment to the dividend yield is further complicated in the regulatory  
18 process when the overall cost of capital is applied to a projected or end-of-future-test-year rate base.

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<sup>3</sup> See Direct Testimony of Myron J. Gordon and Lawrence I. Gould before the FCC at FCC Docket No. 79-05, in the Matter of ATT Petition for Modification of Prescribed Rate of Return, April 1980, p. 62.

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 The net effect of this application is an overstatement of the equity cost rate estimate derived from  
2 the DCF model. In the context of the constant-growth DCF model, both the adjusted dividend  
3 yield and the growth component are overstated. Put simply, the overstatement results from  
4 applying an equity cost rate computed using current market data to a future or test-year-end rate  
5 base which includes growth associated with the retention of earnings during the year.

6 **Q. GIVEN THIS DISCUSSION, WHAT ADJUSTMENT FACTOR WILL YOU USE**  
7 **FOR YOUR DIVIDEND YIELD?**

8 A. I will adjust the dividend yield for the two groups by 1/2 the expected growth so as to  
9 reflect growth over the coming year.

10 **Q. PLEASE DISCUSS THE GROWTH RATE COMPONENT OF THE DCF MODEL.**

11 A. There is much debate as to the proper methodology to employ in estimating the growth  
12 component of the DCF model. By definition, this component is investors' expectation of the long-  
13 term dividend growth rate. Presumably, investors use some combination of historic and/or  
14 projected growth rates for earnings and dividends per share and for internal or book value growth to  
15 assess long-term potential. Alternative approaches to measure these expectations tend to generate  
16 different results, and therein lies the debate.

17 **Q. HOW ARE YOU DETERMINING A GROWTH RATE COMPONENT FOR YOUR**  
18 **DCF MODEL?**

19 A. I have analyzed many measures of growth for the companies in the gas distribution  
20 company group. Initially, I evaluated historic earnings, dividends, and book value per share growth

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 rates as provided in the *Value Line Investment Survey*. I have also used *Value Line's* 5-year  
2 projected growth rate estimates for earnings, dividends, and book value per share. In addition, I  
3 have utilized earnings growth rate forecasts as provided by Zacks, Multex Global, and First Call.  
4 These services solicit 5-year earning growth rate projections for securities analysts and compile and  
5 publish the averages of these forecasts on a monthly basis. They are readily available on the  
6 Internet. Finally, I have also assessed prospective growth as measured by prospective earnings  
7 retention rates and returns on average common equity.

8 **Q. PLEASE DISCUSS HISTORIC GROWTH IN EARNINGS AND DIVIDENDS AS**  
9 **WELL AS INTERNAL GROWTH.**

10 A. Historic growth rates for earnings, dividends, and book value per share are readily available  
11 to virtually all investors and presumably an important ingredient in forming expectations  
12 concerning future growth. However, one must use historic growth numbers as measures of  
13 investors' expectations with caution. In some cases, past growth may not reflect future growth  
14 potential. Also, employing a single growth rate number (for example, for five or ten years), is  
15 unlikely to accurately measure investors' expectations due to the sensitivity of a single growth rate  
16 figure to fluctuations in individual firm performance as well as overall economic fluctuations (i.e.,  
17 business cycles). However, one must appraise the context in which the growth rate is being  
18 employed. According to the conventional DCF model, the expected return on a security is equal to  
19 the sum of the dividend yield and the expected long-term (actually **infinite**) growth in dividends.  
20 Therefore, to best estimate the cost of common equity capital using the conventional DCF model,

1 one must look to long-term growth rate expectations.

2 Internally generated growth is a function of the percentage of earnings retained within the  
3 firm (the earnings retention rate) and the rate of return earned on those earnings (the return on  
4 equity). The internal growth rate is computed as the retention rate times the return on equity.  
5 Internal growth is significant in determining long-run earnings and, therefore, dividends. Investors  
6 recognize the importance of internally generated growth and pay premiums for stocks of companies  
7 that retain earnings and earn high returns on internal investments.

8 **Q. WHAT GROWTH DATA HAVE YOU REVIEWED FOR THE GROUP OF GAS**  
9 **DISTRIBUTION COMPANIES?**

10 A. Schedule JRW-4 provides the following growth rates for the companies in the group:  
11 historic five- and ten- year historic growth rates in earnings, dividends, and book value per share  
12 (where available) as computed by *Value Line* (using the *Value Line* methodology); and projected  
13 five-year EPS growth rates from Zacks, Multex Global, and First Call as well as *Value Line's*  
14 projected 5-year growth rates for earnings, dividends, and book value per share.

15 **Q. PLEASE SUMMARIZE YOUR ANALYSIS OF THE *VALUE LINE'S* HISTORIC**  
16 **AND PROSPECTIVE GROWTH FOR THE GROUP OF GAS DISTRIBUTION**  
17 **COMPANIES.**

18 A. Page 1 of Schedule JRW-4 provides a summary of historic and prospective growth rates for  
19 the companies in the group as provided in the *Value Line Investment Survey*. Historic growth in  
20 earnings, dividends, and book value for the group range from 2.4% to 3.8%, and the average of the

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 historic five- and ten- year earnings, dividends, and book value growth is 3.1%. Prospective  
2 internal growth is 5.2%, with *Value Line* average projected retention and equity return rates of  
3 40.9% and 12.7%, respectively. *Value Line* average projected growth rates for earnings, dividends,  
4 and book value per share for the group are 5.9%, 1.6%, and 4.4%, respectively. The average of the  
5 *Value Line* prospective and projected growth rates is 4.3%.

6 **Q. PLEASE ASSESS GROWTH FOR THE GROUP AS MEASURED BY ANALYSTS'**  
7 **FORECASTS OF EXPECTED 5-YEAR GROWTH IN EARNINGS PER SHARE (EPS).**

8 A. Zacks, First Call, and Multex Global (formerly I/B/E/S) collect, summarize, and publish  
9 Wall Street analysts' projected 5-year EPS growth rate forecasts for companies. Whereas there is a  
10 well-known upward bias to the projections, they do provide insight to expected future growth.  
11 These forecasts are provided for the comparison group companies on page 2 of Schedule JRW-4.  
12 Since (1) there is considerable overlap in analyst coverage between the three services, and (2) not  
13 all of the companies have forecasts from the different services, I have averaged the expected 5-year  
14 EPS growth rates from the three services for each company to arrive at an expected EPS growth  
15 rate by company. The right-hand column shows these averages, and the resulting mean for the  
16 group, which is 4.9%.

17 **Q. PLEASE SUMMARIZE YOUR ANALYSIS OF THE HISTORIC AND**  
18 **PROSPECTIVE GROWTH OF THE GAS DISTRIBUTION COMPANY GROUP.**

19 A. Table 1 provides a summary of historic and prospective growth rates for the group.  
20 Historic indicators imply an average growth rate for the comparison group of 3.1%. Projected

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 growth for the group is a little higher and has a broader range. The average of Value Lines'  
2 projected growth rate figures is 4.3%. And the average projected EPS growth rate (as indicated  
3 by Zacks, First Call, and Multex Global) is 4.9%. Given these results and the discussion above,  
4 average growth would appear to be in the 4.0-4.5 percent range. I will use the midpoint of this  
5 range – 4.25% - as the expected growth component of my DCF model.

**Table 1**  
**Comparison Group of Gas Distribution Companies**  
**Growth Rate Indicators**

<u>Historic Growth</u>	
5-Year Historic EPS Growth	3.0%
5-Year Historic DPS Growth	2.7%
5-Year Historic BVPS Growth	3.3%
10-Year Historic EPS Growth	3.8%
10-Year Historic DPS Growth	2.4%
10-Year Historic BVPS Growth	3.4%
Average Historic Growth	3.1%
<u>Projected Growth</u>	
Prospective Internal Growth	5.2%
Average VL Projected DPS Growth =	1.6%
Average VL Projected BVPS Growth	4.4%
Average VL Projected EPS Growth	5.9%
Average VL Projected Growth	4.3%
Average Projected EPS Growth	
AGL Resources	5.9%
Atmos Energy	6.2%
Cascade Natural Gas	4.1%
Enbridge Group	3.7%
NICOR	4.8%
Northwest Natural Gas	4.7%
Peoples Energy	4.7%
Piedmont Natural Gas	5.0%
Average Projected EPS Growth	4.9%

20 Q. WHAT IS YOUR INDICATED COMMON EQUITY COST RATE FROM THE

1 **DCF MODEL FOR COMPARISON GROUP?**

2 A. My DCF-derived equity cost rate for the group is:

3 DCF Equity Cost Rate = D/P + G  
4 Gas Distribution Group 4.75% \* 1.02125 + 4.25 = 9.10

5

6 **C. RISK PREMIUM APPROACH**

7

8 **Q. HOW WILL YOU ESTIMATE THE COMPANY'S EQUITY COST RATE USING**  
9 **THE RISK PREMIUM APPROACH?**

10 A. According to the risk premium approach, the cost of equity is the sum of the interest rate on  
11 a risk-free bond ( $R_f$ ) and a risk premium (RP), as in the following:

12 
$$k = R_f + RP$$

13 I use the yield on long-term Treasury securities as the risk-free interest rate, and estimate the risk  
14 premium by assessing investors' return requirements and market-to-book ratios for water service  
15 companies.

16 **Q. PLEASE PROVIDE AN OVERVIEW OF YOUR RISK PREMIUM APPROACH.**

17 A. My risk premium approach is based on two fundamental economic concepts: the economic  
18 theory of the firm, as discussed earlier in my testimony, and the fundamental financial proposition  
19 of a positive relationship between risk and return. According to economic theory, when a firm's  
20 accounting profits (which include capital costs) are sufficient to meet investors' requirements, the



1 market value and the book value of the firm will be equal. Accordingly, if a firm is earning profits  
2 greater than required by investors, the market-to-book ratio will be greater than 1.0, and if a firm is  
3 earning profits less than required by investors, the market-to-book ratio will be less than 1.0. In  
4 recent years, the market-to-book ratios for water service companies have been greater than 1.0,  
5 indicating that the earnings of these companies are more than sufficient to meet investors'  
6 requirements. The positive relationship between risk and return requires that, in a world of risk  
7 aversion, investors require a higher expected return for a higher level of perceived risk in an  
8 investment. By definition, the premium for assuming risk is based on the difference between the  
9 expected return on the risky investment and the expected return on a riskless investment.

10 **Q. HOW DO YOU PERFORM YOUR RISK PREMIUM STUDY?**

11 A. As discussed above, a market-to-book ratio of 1.0 indicates that investors' return  
12 requirements are being met. In my approach, the risk premium, defined as the return on common  
13 equity minus the riskless interest rate, is compared to contemporaneous market-to-book ratios. As  
14 such, this methodology shows the additional return that utility common stock investors require  
15 above the risk-free interest rate.

16 To establish a cost of equity for the Company, I examine required rates of return as  
17 indicated by both accounting- and market- based rates of return. I perform the study in three steps  
18 for the companies in the gas distribution group: (1) using the companies in the group, I compute the  
19 premium for risk required by investors as the expected return on equity minus the yield on long-  
20 term Treasury securities; (2) I regress the risk premium for each firm on the market-to-book ratio

1 for different time periods; and (3) I add the indicated average risk premium for the gas distribution  
2 companies to the current yield on long-term Treasury securities.

3 **Q. PLEASE DISCUSS THE FEATURES OF YOUR RISK PREMIUM STUDY.**

4 A. First, by directly comparing the expected returns on equity (minus the risk-free interest rate)  
5 to market-to-book ratios, I am directly measuring the accounting earnings required by investors.  
6 Risk premium studies that measure a risk premium as the difference between bond and stock  
7 returns do not directly address the adequacy of accounting earnings. Second, I am using historic  
8 and forecasted returns on equity and not simply historic bond and stock returns to determine  
9 investor return requirements and an appropriate risk premium. Security prices and capital cost rates  
10 are based on expectations of the future and not on extrapolations of returns from the past. Third, I  
11 am employing a group of gas distribution companies (and not a broader group of companies or  
12 utilities) to measure investors' return requirements. Fourth, I am using the same base in my risk  
13 premium study - the yield on long-term Treasury securities - as I use in estimating the cost of equity  
14 for the Company employing the risk premium approach. I do not establish a risk premium utilizing  
15 bond returns as a base and then estimate an equity cost rate utilizing current bond yields as a base  
16 rate. And finally, since my risk premium study does not evaluate returns derived from a series of  
17 security prices over long time periods, the appropriate measure of central tendency for historic  
18 returns - arithmetic mean or median, or geometric mean returns - is not an issue.

19 **Q. WHAT RISK-FREE RATE OF INTEREST ARE YOU USING IN YOUR**  
20 **ANALYSIS?**

1 A. The riskless or risk-free rate of interest is presumed to be equal to the yields on obligations  
2 of the U.S. Treasury. These obligations are termed riskless because they are presumed to have no  
3 default risk.

4 Page 2 of Schedule JRW-5 shows the yields on 10-year Treasury securities over the past 18  
5 months. These yields have declined from the five percent range to 3.33 percent as of June, 2003.  
6 Considering the range over the past six months, I will utilize the 3.5% as the risk-free rate in my  
7 risk premium approach.

8 **Q. PLEASE PROVIDE THE DETAILS OF YOUR RISK PREMIUM STUDY.**

9 A. As described above, I examine required rates of return as indicated by both accounting- and  
10 market- based rates of return. My risk premium study uses past and expected returns since capital  
11 cost rates and security prices are based on expectations of the future. I perform a risk premium  
12 study for the companies in the gas distribution. Forecasts of returns on common equity (ROE) are  
13 available from the *Value Line Investment Survey* for these companies. I use a one-year base period  
14 (2002/2003) in my risk premium study. *Value Line* publishes individual company updates four  
15 times per year. For each *Value Line* update, I obtain the year t-1, t, t+1 and the 3-5 year projected  
16 ROE. Market-to-book ratios as of the month of the update are obtained from *C. A. Turner Utility*  
17 *Reports*. The yield on 10-year Treasury securities for the appropriate month comes from the  
18 Federal Reserve Website ([www.federalreserve.gov](http://www.federalreserve.gov)). For each company, I compute the risk  
19 premium as the ROE minus the yield on long-term Treasury securities. I average the ROEs for the  
20 different time periods to determine the expected ROE. I then regress the risk premium (using the

1 average ROE and the risk-free rate) on the market-to-book ratio for the firms in the water group.  
2 Finally, I add the indicated average risk premium to the current yield on long-term Treasury  
3 securities to obtain an equity cost rate for the Company.

4 **Q. PLEASE DISCUSS THE RESULTS OF YOUR RISK PREMIUM ANALYSIS.**

5 A. The table on page 1 of Schedule JRW-5 shows the regression results for the five different  
6 time periods. The average is 3.76%, which I will use as my equity risk premium.

7 **Q. WHAT EQUITY COST RATE DO YOU ESTIMATE FOR THE COMPANY**  
8 **USING THE RISK PREMIUM APPROACH?**

9 A. Given my risk-free rate and risk premium, the indicated equity cost rate for the group using  
10 the risk premium approach is:

11 Risk Premium Equity Cost Rate	=	Riskfree Rate	+	Risk Premium	
12 Gas Distribution Group		3.5%	+	3.76%	= 7.3%

13

14

**D. EQUITY COST RATE SUMMARY**

15

16 **Q. PLEASE SUMMARIZE YOUR EQUITY COST RATE STUDY.**

17 A. My DCF analysis for the comparable group indicates an equity cost rate of 9.1%. My risk  
18 premium analysis suggests an equity cost rate of 7.3%.

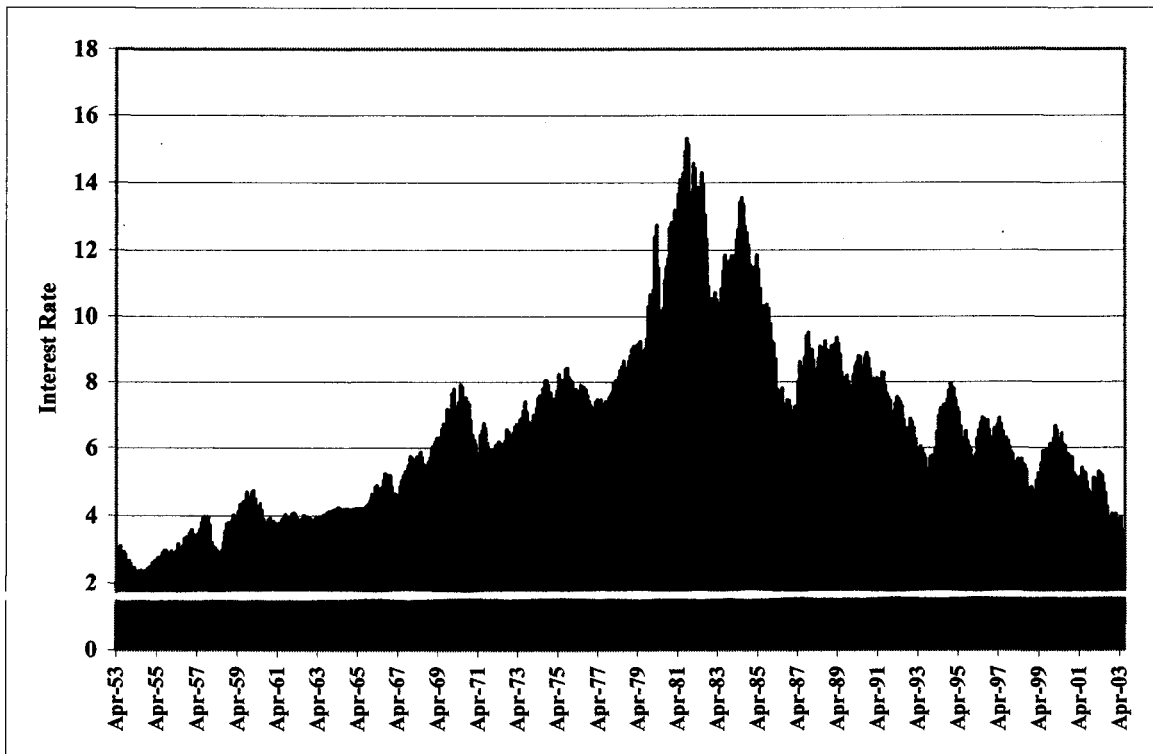
19 **Q. GIVEN THESE RESULTS, WHAT EQUITY COST RATE RECOMMENDATION**  
20 **ARE YOU MAKING FOR NFGDC?**

1 A. Given these results, I am recommending an equity cost rate of 9.1% for NFGDC.

2 **Q. ISN'T YOUR RECOMMENDED RETURN LOW BY HISTORIC STANDARDS?**

3 A. Yes it is, and that is because capital costs are very low by historic standards. The baseline  
4 for capital costs in our economy is the yield on long-term Treasury securities. This is the baseline  
5 because these yields represent the riskless cost of long-term capital, and the cost of all other risky  
6 capital is based off of this figure.

7 **Figure 1**  
8 **Ten-Year Treasury Yields**  
9 **1953-2003**  
10



11  
12

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 In Figure 1 above, I have plotted the yields on 10-year Treasury securities for the past 50 years.  
2 The 10-year Treasury yield as of June, 2003 is 3.3%. This is extremely low by historic standards.  
3 In fact, the 10-year Treasury yield has not been as low as 3.3% since July, 1958 – that’s 45 years  
4 ago! And so yes, my recommendation is low by historic standards, but that’s because capital costs  
5 are as well.

6 **Q. HOW DO YOU TEST THE REASONABLENESS OF YOUR 9.1%**  
7 **RECOMMENDATION?**

8 A. To test the reasonableness of my 9.1% recommendation, I have examined the relationship  
9 between the return on common equity and the market-to-book ratios for the gas distribution group.

10 **Q. WHAT DO THE RETURNS ON COMMON EQUITY AND MARKET-TO-BOOK**  
11 **RATIOS FOR THE GROUP INDICATE ABOUT THE REASONABLENESS OF YOUR**  
12 **9.0% RECOMMENDATION?**

13 A. Schedules JRW-2 and JRW-4 provide financial performance and market valuation statistics  
14 for the group. The average current return on equity and market-to-book ratio for the group are  
15 11.1% and 1.71, respectively. These results indicate that these companies are earning returns on  
16 equity well in excess of their equity cost rates. As such, this provides clear evidence that my  
17 recommended equity cost rate of 9.1% is reasonable and fully consistent with the financial  
18 performance and market valuation of the gas distribution group.

19 **Q. FINALLY, PLEASE DISCUSS THIS RECOMMENDATION IN LIGHT OF**  
20 **RECENT YIELDS ON PUBLIC UTILITY BONDS.**

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 A. In recent months the yields on public utility bonds have been in the 6.5-.70 percent range.  
2 My equity return recommendation of 9.1% must be viewed in the context of the both the low  
3 interest rate environment of today as well as the significant shift in the risk and return  
4 characteristics of bonds and stocks over the past two decades. This change and its implications for  
5 equity risk premiums are discussed further in my critique of Mr. Hanley's testimony. In short, the  
6 relative risk of stocks and bonds has changed in recent years as stocks have become less volatile  
7 and risky while bonds have become more volatile and risky. The fact that stocks and bonds are  
8 nearly equal in terms of volatility and risk implies that investors' required rates of returns on stocks  
9 and bonds are much closer today than in the past. Accordingly, the return premium that equity  
10 investors require over bond yields is much lower than it was when stock returns were much more  
11 volatile than bond returns.

12 **Q. WHAT IS THE MAGNITUDE OF THE DECLINE OF THE EQUITY RISK**  
13 **PREMIUMS?**

14 A. Most historic assessments of the equity risk premium (such as the analysis performed by  
15 Mr. Hanley) suggest an equity risk premium of 5-7 percent above the rate on long-term Treasury  
16 bonds. However, recent studies by leading academic scholars and investment firms suggest that  
17 this equity risk premium is now in the 2-4 percent range.

18 **Q. PLEASE BRIEFLY SUMMARIZE THE NEW ACADEMIC STUDIES ON THE**  
19 **DECLINE IN THE EQUITY RISK PREMIUM.**

20 A. Several recent studies suggest that the historic equity risk premium is severely biased as a

1 measure of the expected risk premium. Jeremy Siegel, a Wharton finance professor and author of  
2 the popular book *Stocks for the Long Term*, recently published a study entitled "The Shrinking  
3 Equity Risk Premium."<sup>4</sup> His concluding observations include the following:

4 "The degree of the equity risk premium calculated from data estimated from 1926 is  
5 unlikely to persist in the future. The real return on fixed-income assets is likely to be  
6 significantly higher than estimated on earlier data. This is confirmed by the yields available  
7 on Treasury index-linked securities, which currently exceed 4%. Furthermore, despite the  
8 acceleration in earnings growth, the return on equities is likely to fall from its historical  
9 level due to the very high level of equity prices relative to fundamentals."  
10

11 The declining equity risk premium, as well as the controversy of alternative approaches for  
12 estimating the cost of equity capital, has been the subject of several very recent studies. The  
13 primary debate revolves around two related issues: (1) the size of equity risk premium which is the  
14 return equity investors require above the yield on bonds; and (2) the fact that estimates of the equity  
15 risk premium using fundamental firm data (earnings and dividends) are much lower than estimates  
16 using historic stock and bond return data. Eugene Fama and Ken French, two of the most  
17 preeminent scholars in finance, recently published a paper entitled "The Equity Premium."<sup>5</sup> They  
18 use dividend and earnings growth models to estimate expected stock returns and equity risk  
19 premiums and compare these results to actual stock returns. For the period 1951-2000, they  
20 estimate that the expected equity risk premium from DCF models using dividend and earnings  
21 growth to be between 2.55% and 4.32%. These figures are much lower than the equity risk

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<sup>4</sup>Jeremy J. Siegel, "The Shrinking Equity Risk Premium, *The Journal of Portfolio Management* (Fall, 1999).

<sup>5</sup>Eugene F. Fama and Kenneth R. French, "The Equity Premium," CRSP Working Paper # 522. This paper may be



**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 premium produced from the average stock and bond return returns between 1926 and 2002, which  
2 is 8.4%. Fama and French believe that using fundamental data is superior in estimating equity cost  
3 rates than using historic stock returns for three reasons: (1) the estimates are more precise (a lower  
4 standard error); (2) The Sharpe ratio, which is measured as the [(expected stock return – risk-free  
5 rate)/standard deviation], is constant over time for the DCF models but more than doubles for the  
6 average stock-bond return model; and (3) valuation theory specifies relations between the market-  
7 to-book ratio, return on investment, and cost of equity capital that favor estimates from  
8 fundamentals. They conclude that the high average stock returns over the past 50 years were the  
9 result of low expected returns and that the average equity risk premium has been in the 3-4 percent  
10 range.

11 A soon-to-be published study by James Claus and Jacob Thomas of Columbia University  
12 provides direct support for the findings of Fama and French.<sup>6</sup> These authors compute equity risk  
13 premiums over the 1985-1998 period by (1) computing the discount rate that equates market values  
14 with the present value of expected future cash flows, and (2) then subtracting the risk-free interest  
15 rate. The expected cash flows are developed using analysts' earnings forecasts. They conclude that  
16 over this period the equity risk premium is in the range of 3.0%. They note that over this period  
17 average stock returns overstate the equity risk premium because as the equity risk premium has  
18 declined, stock prices have risen (present values increase when required rates of return decline).

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downloaded from the Internet at: [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=236590](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=236590).

<sup>6</sup>James Claus and Jacob Thomas, "Equity Risk Premia as Low as Three Percent? Empirical Evidence from Analysts'

1 The higher stock prices have produced returns that have exceeded expectations and therefore  
2 historic equity risk premium estimates are biased upwards.

3 **Q. DOES THE INVESTMENT COMMUNITY ALSO RECOGNIZE THAT THE**  
4 **EQUITY RISK PREMIUM HAS DECLINED?**

5 A. Yes. One of the first studies in this area was by Stephen Einhorn, one of Wall Street's  
6 leading investment strategists.<sup>7</sup> His study showed that the market or equity risk premium had  
7 declined to the 2.0 to 3.0 percent range by the early 1990s. Among the evidence he provided in  
8 support of a lower equity risk premium is the inverse relationship between real interest rates  
9 (observed interest rates minus inflation) and stock prices. He noted that the decline in the market  
10 risk premium has led to a significant change in the relationship between interest rates and stock  
11 prices. One implication of this development was that stock prices had increased higher than would  
12 be suggested by the historic relationship between valuation levels and interest rates.

13 The equity risk premiums of some of the other leading investment firms today support the  
14 result of the academic studies. An article in *The Economist* indicated that some other firms like J.P.  
15 Morgan are estimating an equity risk premium for an average risk stock in the 2.0 to 3.0 percent  
16 range above the interest rate on U.S. Treasury bonds.<sup>8</sup>

17 **Q. IS THIS DECLINE IN THE EQUITY RISK PREMIUM A GENERALLY**

---

Earnings Forecasts for Domestic and International Stock Market," Forthcoming, *Journal of Finance*.

<sup>7</sup> See Steven G. Einhorn, "The Perplexing Issue of Valuation: Will the Real Value Please Stand Up?" *Financial Analysts Journal* (July-August 1990 (pp. 11-16).

<sup>8</sup> For example, see "Welcome to Bull Country," *The Economist* (July 18, 1998), pp. 21-3, and "Choosing the Right Mixture," *The Economist* (February 27, 1999), pp. 71-2.

1 **ACCEPTED NOTION BY GOVERNMENT POLICY MAKERS?**

2 A. Yes. In fact, Alan Greenspan, the Chairman of the Federal Reserve Board, indicated in an  
3 October 14, 1999 speech on financial risk that the fact that equity risk premiums have declined  
4 during the past decade is "not in dispute." He summarized some of the elements of the decline in  
5 the following passage:<sup>9</sup>

6 "There can be little doubt that the dramatic improvements in information technology in  
7 recent years have altered our approach to risk. Some analysts perceive that information  
8 technology has permanently lowered equity premiums and, hence, permanently raised the  
9 prices of the collateral that underlies all financial assets.

10  
11 The reason, of course, is that information is critical to the evaluation of risk. The less that  
12 is known about the current state of a market or a venture, the less the ability to project  
13 future outcomes and, hence, the more those potential outcomes will be discounted.

14  
15 The rise in the availability of real-time information has reduced the uncertainties and  
16 thereby lowered the variances that we employ to guide portfolio decisions. At least part of  
17 the observed fall in equity premiums in our economy and others over the past five years  
18 does not appear to be the result of ephemeral changes in perceptions. It is presumably the  
19 result of a permanent technology-driven increase in information availability, which by  
20 definition reduces uncertainty and therefore risk premiums. This decline is most evident  
21 in equity risk premiums. It is less clear in the corporate bond market, where relative  
22 supplies of corporate and Treasury bonds and other factors we cannot easily identify have  
23 outweighed the effects of more readily available information about borrowers.

24  
25 The marked increase over this decade in the projected slope of technology advance, of  
26 course, has also augmented expectations of earnings growth, as evidenced by the dramatic  
27 increase since 1995 in security analysts' projections of long-term earnings. While it may  
28 be that the expectations of higher earnings embodied in equity values have had a spillover  
29 effect on discount factors, the latter remain essentially independent of the earnings  
30 expectations themselves.

31  
32 That equity premiums have generally declined during the past decade is not in dispute.

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<sup>9</sup> Alan Greenspan, "Measuring Financial Risk in the Twenty-First Century," OCC Conference, October 14, 1999.

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1           What is at issue is how much of the decline reflects new, irreversible technologies, and  
2           what part is a consequence of a prolonged business expansion without a significant period  
3           of adjustment. The business expansion is, of course, reversible, whereas the technological  
4           advancements presumably are not.”  
5

**V. CRITIQUE OF NFGDC'S RATE OF RETURN TESTIMONY**

1  
2  
3 **Q. PLEASE SUMMARIZE MR. HANLEY'S OVERALL RATE OF RETURN**  
4 **RECOMMENDATION.**

5 A. As summarized below, Mr. Hanley's overall rate of return recommendation is 9.28%.

Capital <u>Source</u>	<u>Ratio</u>	Cost <u>Rate</u>	Weighted <u>Cost Rate</u>
S-T Debt	2.19%	3.29%	0.07%
L-T Debt	44.81%	6.99%	3.13%
<u>Common Equity</u>	<u>53.00%</u>	<u>12.75%</u>	<u>6.76%</u>
Cost of Capital			9.96%

6  
7  
8  
9  
10  
11  
12  
13 Whereas I have adopted Mr. Hanley's short-term and long-term debt cost rates, I believe that his  
14 capital structure, equity cost rate estimate, and overall rate of return recommendation are excessive.

15 In my Rebuttal Testimony, I will address these differences in our assessments of the appropriate  
16 return for NFGDC. I will also discuss the historically low capital costs that we now have in the  
17 U.S., and the effect of the *Jobs and Growth Tax Relief Reconciliation Act of 2003* on these capital  
18 costs. In addition, I will address interest coverage as a test of reasonableness, and Mr. Hanley's  
19 adjustment to account for the divergence of market and book values.

20 **Q. PLEASE REVIEW YOUR OBJECTION TO MR. HANLEY'S CAPITAL**  
21 **STRUCTURE FOR NFGDC.**

22 A. Mr. Hanley's hypothetical capital structure is inappropriate for NFGDC for three reasons.  
23 First, the basis for raising debt and equity capital for NFGDC is NFG's capital structure, not Mr.

1 Hanley's hypothetical capital structure. Second, NFG's capital structure is more similar to the  
2 capital structures of the comparison group than Mr. Hanley's hypothetical capital structure. As  
3 shown on page 6 of Schedule 1 of Exhibit 300, the average capital structure ratios for the group as  
4 of September 30, 2002 was 44.49% common equity, 0.45% preferred stock, 44.74% long-term  
5 debt, and 10.32% short-term debt. Finally, according to the June 20, 2003 *Value Line Investment*  
6 *Survey*, the average common equity ration for the natural gas distribution industry for both 2003  
7 and 2004 is 44.0%. Therefore, Mr. Hanley's hypothetical capital structure, which provides for a  
8 common equity ratio of 53.0%, clearly does not reflect the capital structure ratios of either the  
9 comparison group or the gas distribution industry.

10 **Q. PLEASE REVIEW MR. HANLEY'S EQUITY COST RATE APPROACHES.**

11 A. Mr. Hanley estimates an equity cost rate for NFGDC by applying several equity cost rate  
12 models to the gas distribution group. His equity cost rate approaches include a DCF model, a  
13 comparable earnings analysis, a historic risk premium, and the CAPM. His equity cost rate  
14 estimates are summarized below:

15 **Summary of Approaches and Results**

16

	<u>Gas Distribution Group</u>
DCF	12.70%
Risk Premium	12.80%
CAPM	12.80%
Comparable Earnings	12.90%

17  
18 Based on these figures, he arrives at an equity cost rate estimate for NFGDC 12.75%.

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1           The primary errors in his equity cost rate studies are (1) excessive DCF growth rates for his  
2 gas distribution group, (2) an arbitrary adjustment to his DCF estimates to reflect the difference  
3 between book and market values in the firms' capitalizations; (3) outdated and biased equity risk  
4 premium estimates for his risk premium and CAPM analyses, and (4) a flawed comparable earnings  
5 analysis. These errors are discussed in detail below.

6 **Q.     PLEASE SUMMARIZE MR. HANLEY'S DCF ESTIMATES.**

7 A.     Mr. Hanley performs a traditional DCF analysis and then adjusts this result upwards to  
8 reflect the difference between the market and book value capitalizations of his gas distribution  
9 group.

10        Mr. Hanley uses an adjusted dividend yield of 5.3% for his gas distribution group. For the  
11 growth component of the DCF, Mr. Hanley averages the earnings per share growth rate projections  
12 of *Value Line* and of securities analysts as provided by Thompson First Call. This calculation,  
13 found on page 1 of Schedule 11 of NFGDC Exhibit 400, yields a DCF growth rate of 6.4%.

14        The sum of the adjusted dividend yield and the growth rate provides the equity cost rate  
15 estimate using the DCF model. This estimate for NFGDC  $5.3\% + 6.4\% = 11.7\%$ .

16        Instead of using this figure as his DCF equity cost estimate, Mr. Hanley makes an  
17 adjustment to reflect the difference between the book value capitalization employed in the rate  
18 setting process and the groups' market value capitalization. This calculation, which is found on  
19 page 4 of Schedule 1 of Exhibit 400, adds another 100 basis points to his 11.7% DCF figure.  
20 Hence, his adjusted DCF estimate for NFGDC is 12.7%.

1 **Q. PLEASE EXPRESS YOUR CONCERNS WITH MR. HANLEY'S DCF STUDY.**

2 A. I have two primary concerns with Mr. Hanley's DCF equity cost rate study: (1) his clearly  
3 excessive DCF growth rate of 6.4%; and (2) his market-value-book value adjustment.

4 **Q. PLEASE CRITIQUE MR. HANLEY'S DCF GROWTH RATE ESTIMATES.**

5 A. Mr. Hanley has blindly relied solely on the EPS growth rate forecasts of *Value Line* and  
6 Wall Street analysts in arriving at his DCF growth rate figure of 6.4%. Given the research scandal  
7 on Wall Street and the fact that major brokerage firms have paid over \$1.5B in the Global Research  
8 Settlement, it seems highly unlikely that investors today would rely exclusively on the forecasts of  
9 securities analysts in arriving at expected growth. Clearly, investors have learned to be suspicious  
10 of the upwardly biased forecasts of securities analysts. In the academic world, the fact that the  
11 EPS forecasts of securities' analysts are biased upwards has been known for years. To demonstrate  
12 the magnitude of the bias, I have compared the actual five-year EPS growth for the S&P 500 with  
13 the average forecasted EPS growth of Wall Street analysts. The results are shown below and are  
14 very dramatic. Whereas Wall Street analysts have continually forecasted 5-year EPS growth for the  
15 S&P 500 in the in the 11-16 percent range, these firms have delivered EPS growth in the 7-8  
16 percent range. The only years when firms met analysts' expectations were in the early 1990s. As  
17 such, Mr. Hanley's sole reliance on these upwardly biased forecasts is clearly in error.

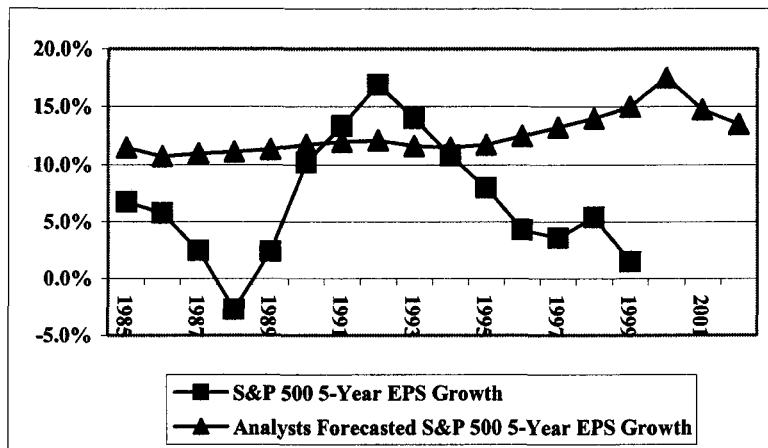
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Actual Versus Forecasts EPS Growth for the S&P 500  
1985-2002



To demonstrate this bias in Mr. Hanley's DCF growth rate, the table below shows *Value Line's* growth rate measures for the gas distribution group. Six measures of historic growth and four measures of projected growth are given for the companies in the group. For the group, none of the average historic or projected growth are figures are as large as Mr. Hanley's 6.4% growth rate!

**Value Line Historic and Projected Growth Rate Measures  
Gas Distribution Company Comparison Group**

**Value Line  
Historic Growth**

Company	Past 10 Years			Past 5 Years		
	Earnings	Dividends	Book	Earnings	Dividends	Book Value
AGL Resources	4.0%	0.5%	2.5%	2.5%	0.5%	2.5%
Atmos Energy	3.5%	4.0%	4.0%	-0.5%	4.0%	5.0%
Cascade Natural Gas Corp.	3.0%	0.5%	2.0%	13.5%	2.0%	1.5%
Laclede Group Inc.	1.5%	1.0%	2.5%	-3.5%	1.0%	2.0%
NICOR	4.0%	4.5%	3.5%	5.5%	5.0%	3.0%
Northwest Natural Gas	5.5%	1.0%	4.0%	0.0%	1.0%	4.0%
Peoples Energy Corp.	3.5%	2.0%	3.0%	3.0%	2.0%	3.0%
Piedmont Natural Gas Inc.	5.5%	5.5%	6.0%	3.5%	6.0%	5.5%
Mean	3.8%	2.4%	3.4%	3.0%	2.7%	3.3%

Company	Value Line Projected Growth			Value Line Internal Growth		
	Est'd. '00-'02 to '06-'08			Return on Equity	Retention Rate	Internal Growth
	Earnings	Dividends	Book Value			
AGL Resources	8.0%	0.0%	6.0%	11.0%	48.0%	5.3%
Atmos Energy	10.0%	2.0%	3.0%	14.5%	44.0%	6.4%
Cascade Natural Gas Corp.	4.5%	0.5%	5.0%	12.5%	45.0%	5.6%
Laclede Group Inc.	5.0%	0.5%	3.0%	10.5%	25.0%	2.6%
NICOR	3.0%	3.5%	3.0%	18.5%	46.0%	8.5%
Northwest Natural Gas	5.0%	1.0%	4.0%	10.0%	42.0%	4.2%
Peoples Energy Corp.	4.0%	1.5%	5.5%	12.0%	40.0%	4.8%
Piedmont Natural Gas Inc.	7.5%	4.0%	5.5%	12.5%	37.0%	4.6%
Mean	5.9%	1.6%	4.4%	12.7%	40.9%	5.2%

Data Sources: Value Line Investment Survey, June 20, 2003.

Several other specific observations are worth noting concerning Mr. Hanley's growth rate estimate:

- (1) Mr. Hanley has totally ignored historic growth rate figures for the group. This observation is especially relevant for his group since historic growth rate figures are provided by virtually all investment firms and presumably influence investors' expectations. Plus, given the distrust of Wall Street securities

1 analysts these days, what else can investors look to as a measure of growth; and

2 (2) The *Value Line* projected dividend growth rates for the group is only 1.6%. He  
3 gave no weight to this growth indicator, which is especially significant *since the*  
4 *relevant growth variable in the DCF model is dividends.*

5 **Q. DO YOU BELIEVE THAT THE CRACKDOWN ON WALL STREET FIRMS HAS**  
6 **LED TO MORE HONEST AND LESS BIASED FORECASTED EPS GROWTH RATES?**

7 A. No. The fact is that analysts continue to provide overly positive outlooks for their stocks. In  
8 Schedule JRW-9, I have provided copies of two recent Wall Street Journal articles that focus on  
9 this very issue. The first article ("Stock Analysts Still Put Their Clients First") shows that despite  
10 the recent reforms, analysts still give higher rating to companies that employ their firms for  
11 investment banking services. In the second article, the title says it all -- "Analysts Still Coming Up  
12 Rosy -- Over-Optimism on Growth Rates is Rampant -- and the Estimates Help to Buoy the  
13 Market's Valuation." The following quote also provides insight into the continuing bias in  
14 analysts' forecasts:

15 "Hope springs eternal," says Mark Donovan, who manages Boston Partners Large Cap  
16 Value Fund. "You would have thought that, given what happened in the last three years,  
17 people would have given up the ghost. But in large measure they have not."

18 These overly optimistic growth estimates also show that, even with all the regulatory  
19 focus on too-bullish analysts allegedly influenced by their firms' investment-banking  
20 relationships, a lot of things haven't changed: Research remains rosy and many believe it  
21 always will.

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 **Q. PLEASE SUMMARIZE YOUR ASSESSMENT OF MR. HANLEY'S DCF**  
2 **GROWTH RATE.**

3 A. Mr. Hanley relies exclusively on the EPS forecasts of Value Line and Wall Street analysts  
4 to arrive at a DCF growth rate. This approach ignores all other measures of growth (dividends,  
5 book value), and also ignores all historic growth rate indicators. But most importantly, by relying  
6 exclusively on analysts' EPS forecasts, he is employing (as his only growth rate indicator) a  
7 measure that is generally known to be upwardly biased.

8 **Q. PLEASE ADDRESS MR. HANLEY'S CRITICISMS OF THE DCF MODEL IN**  
9 **GENERAL AND, SPECIFICALLY, THE ADJUSTMENT TO HIS DCF EQUITY COST**  
10 **RATE TO ACCOUNT FOR THE DIVERGENCE OF MARKET AND BOOK VALUES.**

11 A. Mr. Hanley criticizes the use of the DCF model to estimate equity cost rates in today's  
12 market conditions and makes an adjustment for one of these factors. His criticisms can be  
13 summarized as follows: (1) the assumptions used in the theoretical derivation of the DCF model;  
14 (2) in conjunction with the DCF assumptions, which include the assumption of a constant P/E ratio,  
15 the fact that P/E ratios are not constant but change over time, and (3) the DCF model produces  
16 insufficient earnings when market-to-book ratios are above 1.0. I will address these issues in order.

17 (1) The assumptions used in the derivation of the DCF model - First, it must be noted that  
18 all economic models are derived using fairly restrictive assumptions. In the DCF model,  
19 assumptions such as constant P/E and dividend payout ratios make the model internally consistent.  
20 Criticisms of the assumptions of the model are valid if it can be demonstrated that the model is not

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 robust with respect to obvious real world conditions that deviate from these assumptions. No such  
2 evidence has been provided in this proceeding. The fact that the DCF model is used almost  
3 universally in the investment community and in utility ratemaking is indicative of the robustness of  
4 the methodology. The model does not require that investors have an infinite investment horizon.  
5 Simply put, the DCF model only presumes that stocks are priced on the basis of current and  
6 prospective dividends. Especially in the case of public utility stocks, I believe that this is a  
7 reasonable assumption;

8       (2) The assumption of a constant P/E ratio, given that P/E ratios are not constant but change  
9 over time - P/E ratios change constantly as new information comes to the market that causes  
10 investors to revalue a company's shares (the numerator of the P/E ratio) relative to current earnings  
11 (the denominator of the P/E ratio). This new information may be associated with changes in the  
12 economic landscape that result in changes in equity cost rates (such as changes in interest rates or  
13 investors' risk/return tradeoff). In the context of the DCF model, the fact that P/E ratios change  
14 only provides an indication of changes in a firm's share price relative to past earnings. Share prices  
15 look forward and are determined by a firm's prospective cash returns discounted to the present by  
16 investors' required return. Earnings look backwards and are a function of firm performance and  
17 generally accepted accounting conventions.

18       Thus, in the context of the DCF model, the fact that P/E ratios change is simply an  
19 indication that new information relating to the economic environment is available and this has  
20 caused investors to revalue shares. The DCF is based on expectations, and thus it is also likely that

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 the new information actually results in a change in equity cost rates; and

2       (3) The DCF model produces insufficient earnings when market-to-book ratios are above  
3 1.0. - The market value of a firm's equity exceeds the book value of equity when the firm is  
4 expected to earn more on the book value of investment than investors require. In other words, the  
5 expected return on equity capital is greater than the cost of equity capital (the return that investors  
6 require). Given the almost universal application of the DCF model in regulatory and investment  
7 circles, it is rather obvious that public utilities would not be selling at nearly 2.00 times book value  
8 if the DCF model produced insufficient earnings. As such, Mr. Hanley's hypothesis is incorrect.

9 **Q. PLEASE REVIEW MR. HANLEY'S DCF ADJUSTMENT FOR MARKET AND**  
10 **BOOK VALUE DIVERGENCE.**

11 A. Mr. Hanley makes a specific adjustment to his DCF equity cost rate to account for the  
12 divergence of market and book values. This adjustment adds 100 basis points to the DCF equity  
13 cost estimate for the gas distribution group. His adjustment is based on a procedure for adjusting  
14 returns based on alternative debt/equity capitalizations. Mr. Hanley has cited the recent  
15 Pennsylvania American Water Company and Philadelphia Suburban Water Company cases to  
16 justify the adjustment.

17 **Q. PLEASE CRITIQUE THIS SO-CALLED LEVERAGE OR RISK ADJUSTMENT.**

18 A. Mr. Hanley's adjustment increased his equity cost rate estimates to account for the  
19 differences in the market values and the book values of the firms in his groups. He claims that this  
20 adjustment is necessary since investor return requirements are estimated on the basis of market

1 values and then are applied in the rate setting to book values.

2       As I have indicated in my testimony, the market value of a firm's equity exceeds the book  
3 value of equity when the firm is expected to earn more on the book value of investment than  
4 investors require. In other words, the expected return on equity capital is greater than the cost of  
5 equity capital. Given the almost universal application of the DCF model in regulatory and  
6 investment circles, it is rather obvious that public utilities would not be selling at nearly 2.00  
7 times book value if the DCF model produced insufficient earnings when these return  
8 requirements are applied to book values. The fact is that there is no need for such an adjustment.  
9 If there was such a need, it would be reflected in the market prices paid for these companies. As  
10 such, Mr. Hanley's adjustment is incorrect.

11 **Q. PLEASE REVIEW MR. HANLEY'S RISK PREMIUM ANALYSIS.**

12 A. Mr. Hanley arrives at a risk premium derived equity cost rate of 12.80% for the gas  
13 distribution group. These figures include a base yield of 7.40% and an equity risk premium of  
14 5.40%. These equity cost estimates are excessive due to an overstated base yield and biased and  
15 inflated equity risk premiums that does not reflect today's investment fundamentals.

16 **Q. PLEASE DISCUSS THE BASE YIELD OF MR. HANLEY'S RISK PREMIUM**  
17 **ANALYSIS.**

18 A. The base yield in Mr. Hanley's risk premium analyses is the prospective yield on long-term,  
19 'A' rated public utility bonds. Using the yield on these securities inflates the required return on  
20 equity for NFGDC in two ways: (1) long-term bonds are subject to interest rate risk, a risk which

1 does not affect common stockholders since dividend payments (unlike bond interest payments) are  
2 not fixed but tend to increase over time and (2) the base yield in Mr. Hanley's risk premium study is  
3 subject to credit risk since it is not default risk-free like an obligation of the U.S. Treasury. As a  
4 result, its yield-to-maturity includes a premium for default risk and therefore is above its expected  
5 return. Hence using such a bond's yield-to-maturity as a base yield results in an overstatement of  
6 investors' return expectations.

7 **Q. PLEASE REVIEW MR. HANLEY'S RISK PREMIUM STUDY.**

8 A. Mr. Hanley derives his risk premium of 5.4% in Schedule 12 of NFGDC Exhibit 400. In  
9 this Schedule, Mr. Hanley performed two different analyses using historic stock and bond returns to  
10 derive a risk premium. In the first, he computes a risk premium of 4.5% using the historic  
11 difference between S&P Public Utility Index stock returns and 'A' rated public utility bond returns  
12 over the 1979-2001 time period. In his second study, Mr. Hanley uses historic stock and bond  
13 returns between 1926 and 2001 to compute a historic equity risk premium of 6.6% and computes a  
14 prospective risk premium of 11.6% using the expected returns from the Value Line Investment  
15 Survey. The average of these risk premiums, adjusted for the betas of the gas distribution group, is  
16 6.3%. The average of the 4.5% and 6.3% risk premiums is his overall risk premium of 5.4%.

17 **Q. PLEASE EVALUATE MR. HANLEY'S USE OF HISTORIC RETURNS IN HIS**  
18 **RISK PREMIUM STUDY.**

19 A. The primary issue with Mr. Hanley's risk premium study is his calculation of the risk  
20 premium. He uses two approaches: a historic approach and a prospective approach. The historic



**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 evaluation of stock and bond returns is often called the "Ibbotson approach" after Professor Roger  
2 Ibbotson who popularized this method of assessing historic financial market returns. Mr. Hanley  
3 evaluates the stock-bond return differentials in computing a risk premium.

4       Using the historic relationship between stock and bond returns to measure an equity risk  
5 premium is erroneous and, especially in this case, overstates the true market equity risk premium.  
6 The equity risk premium is based on expectations of the future and when past market conditions  
7 vary significantly from the present, historic data does not provide a realistic or accurate barometer  
8 of expectations of the future. Currently, using historic returns to measure the equity risk premium  
9 masks the dramatic change in the risk and return relationship between stocks and bonds which  
10 suggests that the equity risk premium has declined in recent years. As discussed above, the notion  
11 that the equity risk premium has declined over the past decade or so, resulting in higher stock prices  
12 and returns, is a well-recognized and accepted fact in today's capital markets.

13 **Q. PLEASE DISCUSS THE ERRORS IN USING HISTORIC STOCK AND BOND**  
14 **RETURNS TO ESTIMATE AN EQUITY RISK PREMIUM.**

15 A. There are several flaws in using historic returns over long time periods to estimate expected  
16 equity risk premiums. Most significant is the implicit assumption that (1) risk premiums do not  
17 change over time, and (2) there has been no change in the relative risk of stocks and bonds.  
18 Specific problems with the methodology include:

19       (A) Biased historical bond returns;

20       (B) The arithmetic versus the geometric mean return;

1 (C) Unattainable and biased stock historical returns; and

2 (D) The change in risk and return.

3 These issues will be addressed in this order.

4 **Q. HOW ARE HISTORIC BOND RETURNS BIASED?**

5 A. An essential assumption of these studies is that over long periods of time investors'  
6 expectations are realized. However, the experienced returns of bondholders in the past violate this  
7 critical assumption. Historic bond returns are biased downward as a measure of expectancy because  
8 of capital losses suffered by bondholders in the past. As such, risk premiums derived from this data  
9 are biased upwards.

10 **Q. PLEASE DISCUSS THE ISSUE RELATING TO THE USE OF THE**  
11 **ARITHMETIC VERSUS THE GEOMETRIC MEAN RETURNS IN THE IBBOTSON**  
12 **METHODOLOGY.**

13 A. The measure of investment return has a significant effect on the interpretation of the risk  
14 premium results. When analyzing a single security price series over time (i.e., a time series), the  
15 best measure of investment performance is the geometric mean return. Using the arithmetic mean  
16 overstates the return experienced by investors. In a study entitled "Risk and Return on Equity: The  
17 Use and Misuse of Historical Estimates," Carleton and Lakonishok make the following  
18 observation: "The geometric mean measures the changes in wealth over more than one period on a

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 buy and hold (with dividends invested) strategy."<sup>10</sup> Since Mr. Hanley's study covers more than one  
2 period (and he assumes that dividends are reinvested), he should be employing the geometric mean  
3 and not the arithmetic mean.

4 **Q. PLEASE PROVIDE AN EXAMPLE DEMONSTRATING THE PROBLEM WITH**  
5 **USING THE ARITHMETIC MEAN RETURN.**

6 A. To demonstrate the upward bias of the arithmetic mean, consider the following example.  
7 Assume that you have a stock (that pays no dividend) that is selling for \$100 today, increases to  
8 \$200 in one year, and then falls back to \$100 in two years. The table below shows the prices and  
9 returns.

Time Period	Stock Price	Annual Return
0	\$100	
1	\$200	100%
2	\$100	-50%

10

11 The arithmetic mean return is simply  $(100\% + (-50\%))/2 = 25\%$  per year. The geometric mean  
12 return is  $((1 * .50)^{(1/2)) - 1 = 0\%$  per year. Hence, the arithmetic mean return suggests that your  
13 stock has appreciated at an annual rate of 25%, while the geometric mean return indicates an annual  
14 return of 0%. Since after two years, your stock is still only worth \$100, the geometric mean return  
15 is the appropriate return measure. For this reason, when stock returns and earnings growth rates are

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<sup>10</sup> Willard T. Carleton and Josef Lakonishok, "Risk and Return on Equity: The Use and Misuse of Historical Estimates," *Financial Analysts Journal* (January-February, 1985), pp. 38-47.

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 reported in the financial press, they are normally reported using the geometric mean. This is  
2 because of the upward bias of the arithmetic mean. Hence, Mr. Hanley's arithmetic mean return  
3 measures are biased and should be disregarded.

4 **Q. YOU NOTE THAT HISTORIC STOCK RETURNS ARE BIASED USING THE**  
5 **IBBOTSON METHODOLOGY. PLEASE ELABORATE.**

6 A. Returns developed using Ibbotson's methodology are computed on stock indexes and  
7 therefore (1) cannot be reflective of expectations because these returns are unattainable to investors,  
8 and (2) produce biased results. This methodology assumes (a) monthly portfolio rebalancing and  
9 (b) reinvestment of interest and dividends. Monthly portfolio rebalancing presumes that investors  
10 rebalance their portfolios at the end of each month so as to have an equal dollar amount invested in  
11 each security at the beginning of each month. The assumption would obviously generate extremely  
12 high transactions costs and, as such, these returns are unattainable to investors. In addition, an  
13 academic study demonstrates that the monthly portfolio rebalancing assumption produces biased  
14 estimates of stock returns.<sup>11</sup>

15 Transaction costs themselves provide another bias in historic versus expected returns. The  
16 observed stock returns of the past were not the realized returns of investors due to the much higher  
17 transactions costs of previous decades. These higher transactions costs were not only the higher

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<sup>11</sup> See Richard Roll, "On Computing Mean Returns and the Small Firm Premium," *Journal of Financial Economics* (1983), pp. 371-86.

1 commissions on stock trades, but also the lack of low cost mutual funds like index funds.

2 **Q. FINALLY, PLEASE DISCUSS THE NOTION THAT MR. HANLEY'S RISK**  
3 **PREMIUM STUDIES DO NOT REFLECT THE CHANGE IN RISK AND RETURN IN**  
4 **TODAY'S FINANCIAL MARKETS.**

5 A. The methodology employed by Mr. Hanley is also unrealistic in that it makes the explicit  
6 assumption that (1) the chosen time horizon is appropriate for estimating the current market risk  
7 premium, and (2) risk premiums do not change over time. These assumptions are not valid in  
8 today's environment. Economic developments over the past decade have changed the economy and  
9 business cycle and have resulted in a dramatic change in the risk/return relationship between stocks  
10 and bonds. The nature of the change is that bonds have increased in risk relative to stocks.

11 Page 1 of Schedule JRW-10 shows interest rates on long-term government bonds since  
12 1926. Obviously, the interest rate levels of the past twenty years are significantly above those of the  
13 previous 50 years. Page 2 of Schedule JRW-9 provides the annual market risk premiums for the  
14 1926 to 2002 period where the annual premium is defined as the return on common stock minus the  
15 return on long-term Treasury Bonds. There is considerable variability in this series and a clear  
16 decline in recent decades. The high was 54% in 1933 and the low was -38% in 1931. Clear  
17 evidence of a change in the relative riskiness of bonds and stocks is provided on page 3 of Schedule  
18 JRW-10 which plots the standard deviation of annual stock and bond returns since 1926. The plot  
19 shows that, whereas stock returns were much more volatile than bond returns from the 1920s to the  
20 1970s, bond returns became more variable than stock returns during the 1980s. In recent years the

1 volatility of stocks and bonds have been much more similar to each other. The decrease in the  
2 volatility of stocks relative to bonds has been attributed to several stock related factors - the impact  
3 of technology on productivity and the new economy, the role of information (see Greenspan's  
4 comments above) on the economy and markets, better cost and risk management by businesses -  
5 and several bond related factors - deregulation of the financial system, inflation fears and interest  
6 rates, and the increase in the use of debt financing. Further evidence of the greater relative riskiness  
7 of bonds is shown on page 4 of Schedule JRW-9, which plots real interest rates (the nominal  
8 interest rate minus inflation) from 1926 to 2002. Real rates have been well above historic norms  
9 during the past 10-15 years. These high real interest rates reflect the fact that investors view bonds  
10 as riskier investments.

11 The net effect of the change in risk and return has been a significant decrease in the return  
12 premium that stock investors require over bond yields. In short, the equity or market risk premium  
13 has declined in recent years. As I highlighted earlier in my testimony, this decline has been  
14 discovered in studies by leading academic scholars and investment firms, and has been  
15 acknowledged by government regulators. As such, Mr. Hanley's historic market risk premium  
16 analysis is simply outdated and not reflective of current investor expectations and investment  
17 fundamentals.

18 **Q. PLEASE CRITIQUE MR. HANLEY'S PROSPECTIVE EQUITY OR MARKET**  
19 **RISK PREMIUM WHICH HE CALCULATES USING *VALUE LINE'S* PROJECTED**  
20 **RETURNS.**

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 A. The primary error in using *Value Line's* 3-5 year annual return projections is that these  
2 projections are consistently high relative to actual experienced returns and, as such, provide  
3 upwardly biased market risk premiums. This bias is highlighted in a study shown in Schedule  
4 JRW-11. Over the 1984-2002 time period, this study demonstrates that *Value Line's* projected 3-5  
5 year annual return has been, on average, 4.68 percent above the actual 3-5 year annual return. As  
6 such, *Value Line's* 3-5 year annual returns produce upwardly-biased equity or market risk  
7 premiums.

8 **Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS CONCERNING MR.**  
9 **HANLEY'S RISK PREMIUM ANALYSIS.**

10 A. Mr. Hanley's risk premium study is erroneous and should be disregarded in estimating  
11 NFGDC's equity cost rate. As indicated, the base yield of 7.40% (1) includes interest rate risk, a  
12 risk not generally faced by equity investors, and (2) is above investors' expected return on medium-  
13 term public utility bonds. The equity risk premium of 5.40% for the gas distribution group is based  
14 on: (1) a historic risk premium studies of stock and bond returns over periods of up to 75 years that  
15 (a) employ biased bond returns; (b) use the arithmetic mean return, (c) utilize biased and  
16 unattainable stock returns, and (d) most importantly, mask the change in the relative risk of stocks  
17 and bonds and the resulting decline in the equity risk premium; and (2) a prospective equity or  
18 market risk premium computed using *Value Line's* 3-5 year annual return projections that are  
19 upwardly-biased and hence produce inflated equity risk premiums.

20 **Q. PLEASE REVIEW MR. HANLEY'S USE OF THE CAPITAL ASSET PRICING**

1 **MODEL.**

2 A. Mr. Hanley applies the both a traditional and an 'empirical' CAPM to the gas distribution  
3 group to estimate an equity cost rate for the Company. For the traditional ('empirical'), CAPM, Mr.  
4 Hanley computes an equity cost rate of 12.40% (12.80%) for NFGDC. For both CAPMs, he uses a  
5 30-year risk-free rate of 5.40% and an average adjusted beta of .69. The difference between the two  
6 is the market risk premium – he uses 7.0% for the traditional CAPM and 7.8% for the 'empirical'  
7 CAPM.

8 **Q. PLEASE DISCUSS THE ERRORS IN MR. HANLEY'S HIS CAPM APPROACH.**

9 A. The primary problem with Mr. Hanley's traditional and 'empirical' CAPM analyses is the  
10 size of the market or equity risk premium. His market or equity risk premium is an average of the  
11 historic risk premium (the difference between the arithmetic mean returns on the S&P 500 and  
12 long-term Treasuries), and expected returns (the difference between *Value Line's* expected market  
13 return and the 30-year Treasury rate). The biases and errors in both of these approaches have been  
14 discussed above and that discussion will not be repeated here. Simply stated, the primary problem is  
15 that both the Ibbotson study and *Value Line* projected return overstate the market or equity risk  
16 premium.

17 **Q. TO CONCLUDE THIS DISCUSSION, PLEASE SUMMARIZE MR. HANLEY'S**  
18 **RISK PREMIUM AND CAPM RESULTS IN LIGHT OF THE EVIDENCE ON RISK**  
19 **PREMIUMS IN TODAY'S MARKETS.**

20 A. Both Mr. Hanley's risk premium and CAPM methods are effectively risk premium



**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 approaches to estimating equity cost rates. And the primary issue in both cases is the magnitude  
2 of the equity or market risk premium. Mr. Hanley's risk premium and CAPM studies should be  
3 totally ignored due to the size of his equity risk premium estimates. They are totally out of line with  
4 the equity risk premium estimates (a) discovered in recent academic studies by leading finance  
5 scholars and (b) employed by leading investment banks. In both cases, a more realistic market risk  
6 premium is in the 2-4 percent range. Furthermore, even Federal Reserve Chairman Mr. Greenspan  
7 believes that the equity risk premium has declined.

8 **Q. USING A MORE REALISTIC EQUITY RISK PREMIUM, WHAT EQUITY COST**  
9 **RATE WOULD MR. HANLEY GET USING THE CAPM?**

10 A. Using the current 30-Treasury rate (5.0%), the average beta for the gas distribution group  
11 (0.69), and the average equity risk premium from the Fama-French study  
12  $[(2.55\%+4.32\%)/2=3.45\%$ , an equity cost rate of is indicated.

**CAPM Equity Cost Rate**

14 = Risk-Free Rate + Beta \* Equity Risk Premium  
15 Gas Group = 5.00% + 0.69 \* 3.45 7.40

16 **Q. PLEASE DISCUSS MR. HANLEY'S COMPARABLE EARNINGS ANALYSIS.**

17 A. Mr. Hanley also estimates an equity cost rate for the Company employing the comparable  
18 earnings approach. His methodology involves averaging the projected returns on common equity  
19 for a proxy group of non-utility companies "comparable" in risk to his gas distribution group as  
20 determined from screening *Value Line's* Value Screen database. Mr. Hanley screens the database

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 on beta and standard error measures and arrives at a group of 25 unregulated "comparable"  
2 companies. The average projected return on common equity for the group is 15.5%. He then  
3 arbitrarily deletes several companies from the group (due to high projected returns on equity) and  
4 arrives at a figure of 12.9%.

5 This approach is fundamentally flawed, and the fact that he has to eliminate several of the  
6 companies highlights the primary fault. For example, he deletes Moody's Corp., the provider of  
7 bond ratings, because its projected return on common equity is 74%. A company's projected return  
8 on common equity is not its cost of equity capital. In this case, no one trained in basic finance  
9 would believe that Moody's cost of equity capital is 74%. And therein lies the fault in Mr. Hanley's  
10 analysis -- he has not performed any analysis to examine whether these return on equity figures are  
11 above or below the returns that investors' require. One method to do this is to look at the market-to-  
12 book ratios for these companies. These returns on common equity are excessive if the market-to-  
13 book ratios for these companies are above 1.0.

14 **Q. MR. HANLEY USES INTEREST COVERAGE AS A TEST OF**  
15 **REASONABLENESS IN THIS PROCEEDING. PLEASE COMMENT.**

16 A. Mr. Hanley uses interest coverage as a test of reasonableness and highlights that his rate of  
17 return recommendation would produce interest coverage for NFGDC of 4.61X. He believes that  
18 this indicates that his return recommendation is reasonable. It appears to be more than reasonable  
19 since the average interest coverage ratio for the gas distribution group, as shown in Schedule JRW-  
20 2, is only 3.2X.

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1           But the bigger issue is the use of interest coverage as a test of reasonableness. In contrast to  
2 Mr. Hanley's discussion of the strict coverage and capitalization guidelines that rating agencies  
3 require to maintain a certain bond rating, these guidelines are often violated. For example, in the  
4 gas group, Laclede Group has an interest coverage ratio of 2.0X, and a common equity ratio of  
5 41%, but it's bond rating is still an 'A' according to Standard & Poor's.

6           I have used market-to-book ratios relative to earned returns on equity as a means of testing  
7 my overall rate of return recommendation. As discussed above, this procedure involves a  
8 straightforward relationship between a firm's return on equity, cost of equity, and market-to-book  
9 ratio. A firm which earns a return on equity above (below) its cost of equity will see its common  
10 stock sell at a price above (below) its book value.

11 **Q.       FINALLY, PLEASE DISCUSS THE IMPACT OF THE NEW TAX LAW ON THE**  
12 **RATE OF RETURN DEBATE IN THIS PROCEEDING.**

13 A.       The major objective of the *Jobs and Growth Tax Relief Reconciliation Act of 2003*. was to  
14 reduce taxes to enhance economic growth. This included a significant reduction in the taxation  
15 of corporate dividends for individuals to reduce the effect of the double-taxation of dividends. As  
16 previously discussed, one of the implications of this double-taxation of dividends is that it results  
17 in a high cost of raising capital for corporations

18           To demonstrate the effect of the new legislation, assume that a utility has a 10% expected  
19 return – 5.0% in dividends and 5.0% in capital gains. The new tax law reduces the double-  
20 taxation by reducing the tax rate on dividends from the 30 percent range (the marginal tax

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

1 bracket for the average individual tax-payer) to 15 percent. The table below illustrates the effect  
 2 of the new tax law. Panel A shows that under the old tax law a 10.0% pre-tax return provided for  
 3 a 7.5% after tax return. Panel B shows that under the new Tax law, with tax rates of 15% on  
 4 both dividends and capital gains, the 10% pre-tax return is worth 8.5% on an after-tax basis. In  
 5 Panel C, I have held the after-tax return constant (at 7.5%) to illustrate the effect of the new tax  
 6 law on required pre-tax returns. Assuming that the entire after-tax 1% return difference (7.5% to  
 7 8.5%) is attributed to the lower taxation of dividends, the 10.0% pre-tax return under the new law  
 8 is now only 8.82%. In other words, to generate an after-tax return of 7.5%, the new tax law  
 9 reduced the required pre-tax return from 10.0% to 8.82%.

**The Impact of the New Tax Law on Pre- and After- Tax Returns**

<u>Panel A</u> Old Tax Law				<u>Panel B</u> New Tax Law			
10% Pre-Tax Return - 5% Dividend Yield & 5% Capital Gain				10% Pre-Tax Return - 5% Dividend Yield & 5% Capital Gain			
Tax Rates - Dividends 30% & Capital Gains 20%				Tax Rates - Dividends 15% & Capital Gains 15%			
	Pre-Tax Return	Tax Rate	After-Tax Return		Pre-Tax Return	Tax Rate	After-Tax Return
Dividends	5.00%	30.00%	3.50%	Dividends	5.00%	15.00%	4.25%
<u>Capital Gain</u>	5.00%	20.00%	4.00%	<u>Capital Gain</u>	5.00%	15.00%	4.25%
<b>Total</b>	<b>10.00%</b>		<b>7.50%</b>	<b>Total</b>	<b>10.00%</b>		<b>8.50%</b>

Panel C  
 The Effect of the New Tax Law on Pre-Tax Returns  
 7.50% After-Tax Return - 3.25% Dividend Yield & 4.25% Capital Gain  
 Tax Rates - Dividends 15% & Capital Gains 15%

	Pre-Tax Return	Tax Rate	After-Tax Return
Dividends	3.82%	15.00%	3.25%
<u>Capital Gain</u>	5.00%	15.00%	4.25%
<b>Total</b>	<b>8.82%</b>		<b>7.50%</b>

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12 **Q. HOW HAVE YOU INCORPORATED THE NEW TAX LEGISLATION INTO**  
 13 **YOUR ANALYSIS?**

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 A. To capture the effect of the new tax law, I have only used dividends yields since the passage  
2 of the new law. But this only reflects the reduction in the dividend portion of the new tax law, and  
3 not the capital gains. Regardless, the above example illustrates the effect that the new tax law has  
4 on the pre-tax required returns.

5 **Q. HOW HAS MR. HANLEY INCORPORATED THE NEW TAX LEGISLATION**  
6 **INTO HIS RECOMMENDATION?**

7 A. In Interrogatory OCA-V-1, Mr. Hanley was asked how the new tax law affects his cost of  
8 equity estimates using his four different equity cost rate methods. His response is difficult to  
9 interpret, but he seems to be saying that it will not. However, this response is in error. All of his  
10 approaches evaluate pre-tax returns. Investors clearly focus on after-tax returns. In Schedule JRW-  
11 12, I have provided a copy of a recent *Wall Street Journal* that highlights the impact of the new law  
12 on dividend-paying stocks like utilities. As such, Mr. Hanley's equity cost rate result, which focus  
13 on pre-tax returns, need to be adjusted downwards to reflect the new tax law.

14 **Q. HOW DO YOU RECOMMEND THAT THE COMMISSION ADDRESS THE**  
15 **ISSUE OF THE NEW TAX LAW?**

16 A. The Commission needs to recognize that the new tax law has reduced the pre-tax return  
17 requirements of investors. As such, in setting rate of return for utilities, a lower pre-tax allowed  
18 rate of return produces the same after-tax return to investors. In the example above, a pre-tax  
19 required return of 10.0% under the old tax law need only be 8.82% to produce the same after-tax  
20 return.

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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

2 **A. Yes it does.**

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Appendix A

EDUCATIONAL BACKGROUND, RESEARCH,  
AND RELATED BUSINESS EXPERIENCE

J. RANDALL WOOLRIDGE

J. Randall Woolridge is a Professor of Finance, the Goldman, Sachs & Co. and Frank P. Smeal Endowed Faculty Fellow in Business Administration, and Director of the Smeal College Trading Room in the College of Business Administration of the Pennsylvania State University in University Park, PA. He is also a Vice President of the Columbia Group, a public utility consulting firm based in Ridgefield, CT, and serves on the Investment Committee of ARIS Corporation, an asset management company based in State College, PA.

Professor Woolridge received a Bachelor of Arts degree in Economics from the University of North Carolina, a Master of Business Administration degree from the Pennsylvania State University, and a Doctor of Philosophy degree in Business Administration (major area-finance, minor area-statistics) from the University of Iowa. At Iowa he received a Graduate Fellowship and was awarded membership in Beta Gamma Sigma, a national business honorary society. He has taught Finance courses at the University of Iowa and Cornell College as well as the Pennsylvania State University. These courses include corporation finance, commercial and investment banking, and investments at the undergraduate and graduate levels.

Professor Woolridge's research has centered on the theoretical and empirical foundations of corporation finance and financial markets and institutions. He has published over 25 articles in the best academic and professional journals in the field, including the *Journal of Finance*, the *Journal of Financial Economics*, and the *Harvard Business Review*. His research has been cited extensively in the business press. His work has been featured in the *New York Times*, *Forbes*, *Fortune*, *The Economist*, *Financial World*, *Barron's*, *Wall Street Journal*, *Business Week*, *Washington Post*, *Investors' Business Daily*, *Worth Magazine*, *USA Today*, and other publications. In addition, he has provided commentary on CNN's *Money Line* and CNBC's *Business Today*.

Dr. Woolridge co-authored two books that have been published in 1999 – *Spin-Offs and Equity Carve-Outs: Achieving Faster Growth and Better Performance* (Financial Executives Research Foundation) and *The Streetsmart Guide to Valuing a Stock* (McGraw Hill).

Professor Woolridge has consulted with and prepared research reports for private businesses, investment banking firms, and government agencies (including the National Association of Security Dealers, the Federal Home Loan Bank Board, and the Securities and Exchange Commission). In addition, he has directed and participated in over 350 company-sponsored professional development programs for executives in more than 20 countries in North and South America, Europe, Asia, and Africa. His clients have included major corporations and financial institutions around the world.

Dr. Woolridge has prepared testimony on behalf of the Pennsylvania Office of Consumer Advocate in the

**DIRECT TESTIMONY OF DR. J. RANDALL WOOLRIDGE**

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1 following cases before the Pennsylvania Public Utility Commission: Bell Telephone Company (R-811819), Peoples  
2 Natural Gas Company (R-832315), Pennsylvania Power Company (R-832409), Western Pennsylvania Water Company  
3 (R-832381), Pennsylvania Power Company (R-842740), Pennsylvania Gas and Water Company (R-850178),  
4 Metropolitan Edison Company (R-860384), Pennsylvania Electric Company (R-860413), North Penn Gas Company (R-  
5 860535), Philadelphia Electric Company (R-870629), Western Pennsylvania Water Company (R-870825), York Water  
6 Company (R-870749), Pennsylvania-American Water Company (R-880916), Equitable Gas Company (R-880971), the  
7 Bloomsburg Water Co. (R-891494), Columbia Gas of Pennsylvania, Inc. (R-891468), Pennsylvania-American Water  
8 Company (R-90562), Breezewood Telephone Company (R-901666), York Water Company (R-901813), Columbia Gas  
9 of Pennsylvania, Inc. (R-901873), National Fuel Gas Distribution Company (R-911912), Pennsylvania-American Water  
10 Company (R-911909), Borough of Media Water Fund (R-912150), UGI Utilities, Inc. - Electric Utility Division (R-  
11 922195), Dauphin Consolidated Water Supply Company - General Waterworks of Pennsylvania, Inc. (R-932604),  
12 National Fuel Gas Distribution Company (R-932548), Commonwealth Telephone Company (I-920020), Conestoga  
13 Telephone and Telegraph Company (I-920015), Peoples Natural Gas Company (R-932866), Blue Mountain  
14 Consolidated Water Company (R-932873), National Fuel Gas Company (R-942991), UGI - Gas Division (R-953297),  
15 UGI - Electric Division (R-953534), Pennsylvania-American Water Company (R-973944), Pennsylvania-American  
16 Water Company (R-994638), Philadelphia Suburban Water Company (R-004868), Pennsylvania-American Water  
17 Company (R-00011663). He has prepared testimony on behalf of the Pennsylvania Office of Consumer Advocate in  
18 the following case before the Federal Energy Regulatory Commission (National Fuel Gas Supply Corporation (RP-92-  
19 73-000). He has prepared testimony for the New Jersey Department of the Public Advocate, Division of Rate Counsel:  
20 New Jersey-American Water Company (R-91081399J), New Jersey-American Water Company (R-92090908J), and  
21 Environmental Disposal Corp (R-94070319). He has prepared testimony for the Hawaii Office of the Consumer  
22 Advocate: East Honolulu Community Services, Inc. (Docket No. 7718). He has prepared testimony for the County of  
23 Nassau in New York State: Long Island Lighting Company (PSC Case No. 942354). He has prepared testimony for the  
24 Office of Consumer Counsel in Connecticut: United Illuminating (Docket No. 96-03-29). He has prepared testimony for  
25 the Office of the People's Counsel in the District of Columbia: Potomac Electric Power Company (Formal Case No.  
26 939).

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