UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Eastern Shore Natural Gas Company	)	Docket No. RP07-___-000

PREPARED DIRECT TESTIMONY
OF
PAUL R. MOUL

INTRODUCTION AND SUMMARY OF RECOMMENDATION

Q. Please state your name, occupation and business address.

A. My name is Paul Ronald Moul. My business address is 251 Hopkins Road, Haddonfield, New Jersey 08033-3062. I am Managing Consultant of the firm P. Moul & Associates, an independent, financial and regulatory consulting firm. My educational background, business experience and qualifications are provided in Appendix A that follows my direct testimony.

Q. What is the purpose of your testimony?

A. My testimony presents evidence, analysis, and a recommendation concerning the rate of return on equity and overall rate of return that the Federal Energy Regulatory Commission ("FERC" or the "Commission") should allow Eastern Shore Natural Gas Company ("Eastern Shore" or the "Company") an opportunity to earn. My analysis and recommendation are supported by the detailed financial data set forth in Exhibit No. ES-6, which is a multi-page document divided into fifteen (15)

schedules. Exhibit No. ES-5 provides additional evidence, in the form of appendices, and is incorporated herein by reference. The items covered in these appendices deal with the technical aspects of my testimony.

Q. Based upon your analysis, what is your conclusion concerning the appropriate rate of return on equity for the Company in this case?

A. Based upon my independent analysis, my conclusion is that Eastern Shore should be afforded an opportunity to earn a rate of return on equity of 14.875%, which is taken from the range of 13.00% to 15.50%. From this range, I propose a 14.875% rate of return on equity, which is at the midpoint of the top half of my range (i.e., 14.25% to 15.50%). This rate of return on common equity will provide recognition of the Company's above average risk. My recommended rate of return on common equity of 14.875% is used in conjunction with the capital structure ratios and cost of debt of the Parent Company to arrive at the weighted average cost of capital, which I have shown on Schedule 1. This weighted average cost of capital, when applied to Eastern Shore's rate base, will provide a compensatory level of return for the use of capital and will provide Eastern Shore with the ability to attract new capital on reasonable terms.

It is important that the Commission seriously consider the Company's relative risk position when selecting the rate of return on common equity from the range of possibilities. Too often, the choice of the return, whether measured as the midpoint, mean or median, relegates most companies to the average risk category. Indeed, a process that assigns an average return to most companies, defeats the

purpose of establishing a range which is designed to encompass varying degrees of risk. In this case, the Company, which is a small secondary pipeline, is entitled to a return above the average in recognition of its above average risk, as explained in my testimony and in the testimony of Eastern Shore witness Bittner.

Q. What background information have you considered in reaching a conclusion as to the Company's cost of equity?

A. Eastern Shore operates a secondary interstate natural gas pipeline system which transports natural gas from connection points in Pennsylvania and Northern Delaware to two affiliated distribution operating divisions, to other utilities, and to industrial customers in Pennsylvania, Delaware, and Maryland's Eastern Shore. The Company's total throughput in 2005 was just 20.2 million decatherms -- small in comparison with most major pipelines, especially the interconnecting pipelines of Transcontinental Gas Pipeline Corporation and Columbia Gas Transmission Corporation.

The Company is a wholly-owned subsidiary of Chesapeake Utilities Corporation ("Chesapeake" or the "Parent Company"). Chesapeake is a public utility, which provides natural gas distribution service in Central and Southern Delaware, Maryland's Eastern Shore, and through its Florida operating division. The Parent Company also owns other non-regulated businesses engaged in the distribution and marketing of propane, and advanced information services. Chesapeake is a New York Stock Exchange listed company.

Q. How have you determined the cost of equity for Eastern Shore?

A. Initially, I established a range of the cost of equity using publicly-available capital market and financial data to assess the relative risk, and hence the cost of equity for a natural gas pipeline, such as Eastern Shore. In this regard, I relied on four well-recognized measures: the Discounted Cash Flow ("DCF") model, the Risk Premium analysis, the Capital Asset Pricing Model ("CAPM"), and the Comparable Earnings approach. By considering the results of a variety of approaches, I determined that a reasonable range cost of equity is 13.00% to 15.50%. This range is consistent with well-recognized principles for determining a fair rate of return. From that range, I recommend that Eastern Shore's rate of return on common equity should be set at 14.875% in recognition of its above average risk.

The models that I used to measure the cost of equity for Eastern Shore were applied with market data from a proxy group comprised of six gas companies that were used by the Commission in its rate case decision in Docket No. RP00-107-000 (104 FERC ¶ 61,036 (2003)). The Commission has used a smaller group of companies in its decisions in HIOS (*High Island Offshore System, L.L.C.*, 110 FERC ¶ 61,043*, reh'g*, 112 FERC ¶ 61,050 (2005) and Kern River Gas Transmission Company (117 FERC ¶ 61,077 (2006)) by removing El Paso and Williams from the group. The reasons for excluding these companies (i.e., their financial circumstances at that time made those companies inappropriate for inclusion in the proxy group) are no longer present. Today, the DCF results that I will subsequently develop for these companies provide credible evidence of the cost of equity because their returns now provide adequate recognition of the risk of

common equity as compared to the yield on corporate debt. Hence, the larger group that includes these companies is appropriate this case. This group will be referred to as the "Corporate Pipeline Group" throughout the remainder of my testimony.

Q. Please summarize the basis for your recommended cost of equity in this proceeding.

A. My recommendation is derived from the results of the four methods/models identified above. In general, the use of more than one method can provide a superior foundation to arrive at the cost of equity. Moreover, at any point in time, individual methods may be unduly influenced by extraneous factors and/or market sentiment that may produce anomalous results. The following table provides a summary of the indicated costs of equity using each of these approaches. I have presented the results of my analysis by both including and excluding an allowance for flotation costs.

	Corporate Pipeline Group	
	Excl. Flot.	Incl. Flot. [1]
DCF:		
Constant growth	16.89%	17.23%
Two-step	15.76%	16.10%
Risk Premium	12.75%	13.09%
CAPM	20.80%	21.14%
Comparable Earnings	13.85%	13.85%
Range:		
High	20.80%	21.14%
Low	12.75%	13.09%
Mid-point	16.78%	17.12%
Average	16.01%	16.28%
Median	15.76%	16.10%

It is noteworthy that in determining an appropriate cost of equity, I considered directly the results of a two-stage DCF model. The Commission has frequently insisted upon a DCF analysis that uses more than a single constant growth rate in setting the cost of equity in rate cases. My testimony will explain the results of the two-stage DCF model following generally the Commission's past use of this model.

From the summary presented above, the median values are represented by 16.10% for the Corporate Pipeline Group including flotation costs and 15.76% excluding flotation costs. The average of the models that I used to measure the cost of equity is 16.28% including flotation costs and 16.01% excluding flotation costs

[1] Flotation costs are defined as the out-of-pocket costs associated with the issuance of common stock. Those costs typically consist of the underwriters' discount and company issuance expenses.

for the Corporate Pipeline Group. The Risk Premium cost rate is 13.09% including flotation costs for the Corporate Pipeline Group. From these values, as well as the other results shown above, I recommend a range for a rate of return on equity bounded by 13.00% to 15.50%. From this range, I have proposed a 14.875% rate of return on common equity for Eastern Shore in recognition of its higher than average risk profile. That is to say, the top half of the range is 14.25% to 15.50%, and its midpoint of 14.875% is reflective of the Company's higher than average risk.

Q. Setting aside the specific mechanics of computing a reasonable return, could you describe your overall perspective on the process?

A. My procedure for establishing the rate of return on equity includes a comprehensive approach by broadening the scope of my analysis beyond a single measure of the cost of equity. There are risks in relying upon an approach limited to a single method that may contain a variety of limitations and/or unrealistic assumptions. Moreover, it is necessary to exercise care in using individually-computed costs of equity that, due to aberrations in the data, may cause individual company calculations to produce anomalous and/or counter-intuitive results. This situation was recently addressed by the Commission in its Opinion and Order in the rate case for Kern River. As the Commission noted in paragraph 20 of its Order, abnormally low DCF results cannot be relied upon when those estimates do not provide sufficient recognition of the higher risk of stocks over the yield on long-term corporate debt. Indeed, when viewing the results of the Commission's preferred two-stage DCF, where individual results are developed for each company within a

proxy group, those anomalies sometimes become apparent. Hence, use of a variety of methods to establish the cost of equity minimizes the inevitable limitations found in all models/methods.

Q. In your opinion, what factors should the Commission consider when setting Eastern Shore's rate of return in this proceeding?

A. The Commission should consider the principles that I have set forth in Appendix B. In this regard, the end result of the rate of return finding by the Commission must provide for the payment of interest, compensate Chesapeake equity investors for the use of capital, produce an adequate level of internally generated funds to meet capital requirements, support reasonable credit quality, be adequate to attract capital on reasonable terms, and compensate for the risk to which Chesapeake equity capital is exposed.

INTERSTATE NATURAL GAS COMPANY RISK FACTORS

Q. Please describe the business environment facing interstate natural gas companies.

A. Competitive, regulatory and economic risks facing the natural gas business are different today than formerly. The Commission's general policy fosters competition in the natural gas business through regulatory and commercial practices (e.g., alteration of certification authorization procedures, greater ease in obtaining authorization to build capacity, and the discounting and negotiation of rates). For the future, the business environment facing the natural gas business will be influenced by changing regulation, revenues being pressured by the lower of cost or

market-based rates, shorter contract durations with customers, and counter party risk.

Q. What is the competitive position of the natural gas business environment?

A. The competitiveness of the natural gas business has increased significantly at all levels. Even beyond the federal level, unbundling initiatives at the state level for both gas and electric service will have an impact on the position of many pipelines. Gas producers, marketers, distributors, and other end users now have a broad array of choices that may reduce the need for traditional long-term contracts for transportation service. Shippers can more readily obtain short term contracts, shifting risks to the pipelines. Indeed, shippers can compete directly with pipelines by releasing their firm capacity to other shippers.

Moreover, heightened competition will undoubtedly continue to develop from consolidation within and between the utility and pipeline industries because the surviving companies can bring to bear the economies of scope and scale in dealing with suppliers/vendors in order to obtain the most attractive prices for purchased goods and services. Also, as natural gas prices increase, the competitive position of natural gas diminishes, particularly as a fuel in electric generation and for general industrial applications.

Q. Please indicate how its capital program affects the Company's risk profile.

A. The Company is faced with the requirement to undertake investments to maintain, upgrade, and expand its facilities. To maintain safe and reliable service to existing customers, and to expand its facilities to respond to customers' request for

additional transportation service, the Company projects its capital expenditures will be significant.

Q. What is the overall business risk facing Eastern Shore?

A. Eastern Shore witness Bittner discusses the general business risk faced by the Company. In this regard, Eastern Shore faces substantial risk because it is facing substantial capital expenditures and it is a relatively small pipeline.

FUNDAMENTAL RISK ANALYSIS

Q. Is it necessary to conduct a fundamental risk analysis prior to a determination of a pipeline's cost of equity?

A. Yes. In addition to qualitative factors, it is necessary to establish a company's relative risk position within its industry through an analysis of various quantitative factors that bear upon investors' assessment of overall risk. Items that influence investors' evaluation of risk and their required returns are described in Appendix C. For this purpose, I have compared Eastern Shore to the S&P Public Utilities, an industry-wide proxy consisting of various regulated businesses, and the Corporate Pipeline Group.

Q. What comparison groups have you employed to assess the Company's position vis-à-vis other regulated companies?

A. I have compared Eastern Shore to two groups of companies for my analysis. Those groups are the S&P Public Utilities and the Corporate Pipeline Group. The S&P Public Utilities is a widely recognized index comprised of electric power companies and natural gas companies. The companies that comprise the group are identified

on page 3 of Schedule 4. I used this group as a broad-based measure of all types of regulated companies. The Corporate Pipeline Group includes: El Paso Energy Corporation, Equitable Resources, Inc., Kinder Morgan, Inc., National Fuel Gas Company, Questar Corporation, and The Williams Companies, Inc. Each of these companies were included as part of the proxy group used by the Commission in its rate case decision in Docket No. RP00-107-000 (104 FERC ¶ 61,036 (2003)). Although the Commission has used a smaller group of companies in its decisions in HIOS and Kern River by removing El Paso and Williams from the group, the reasons for excluding these companies are no longer present. As indicated previously, the DCF results that I will subsequently develop for these companies provide credible evidence of the cost of equity. Hence, the larger group that includes these companies is appropriate this case.

Q. What is the significance of a firm's bond rating in assessing its risk and cost of capital?

A. Bond ratings are a measure of a company's credit quality and represent one indication of risk. Eastern Shore must have the financial characteristics of sufficient strength that will, at a minimum, contribute positively to the credit quality profile of Chesapeake, the parent company of Eastern Shore and the source of its external capital. It is important that the Commission provide Eastern Shore with a reasonable opportunity to achieve adequate credit quality so that Eastern Shore has a financial profile commensurate with an investment grade bond rating. I used bond ratings along with other measures of risk in analyzing the Corporate Pipeline

Group. Knowledge of a company's credit quality is important because the cost of each type of capital is directly related to the associated risk of the firm. A company's credit quality risk is directly shown by the rating and yield on its bonds. It is important to recognize that credit ratings provide an indication of risk associated with the debt of a firm. Bond ratings do not necessarily reflect all of the factors that are important to equity investors, because equity investors face additional risks that are not faced by lenders.

Q. How do the bond ratings compare for Eastern Shore, the Corporate Pipeline Group, and the S&P Public Utilities?

A. Eastern Shore does not have a credit quality rating. There is also no public rating on the debt of Chesapeake. Chesapeake's long-term debt carries a designation of "1" from the National Association of Insurance Commissioners ("NAIC"), which is equivalent to all of the A ratings by Standard & Poor's Corporation ("S&P") and Moody's Investors Service ("Moody's") -- both national recognized credit rating agencies. The credit quality score of Chesapeake is influenced by its diversified businesses, which are dominated by its gas distribution utility operations. The average LT issuer rating for the Corporate Pipeline Group is Baa2 from Moody's and the CCR is BBB from S&P. The LT issuer rating by Moody's and the CCR designation by S&P focuses upon the credit quality of the issuer of the debt, rather than upon the debt obligation itself. For the S&P Public Utilities, the average rating is Baa1 by Moody's and BBB+ by S&P. Many of the financial indicators that I will subsequently discuss are considered during the rating process.

Q. What specific financial data have you considered in your analysis?

A. For this purpose, I have compared Eastern Shore to the S&P Public Utilities, an industry-wide proxy consisting of various regulated businesses, and the Corporate Pipeline Group. The broad categories of financial data that I will discuss are shown on Schedule 2, Schedule 3, and Schedule 4. The data cover the five-year period 2001-2005. These schedules include data concerning the following factors that affect investors' perception of the market required return.

Size. In terms of capitalization, the average size of the companies in the Corporate Pipeline Group and the S&P Public Utilities is many times larger than Eastern Shore. All other things being equal, a smaller company, such as Eastern Shore, is riskier than a larger company because a given change in revenue and/or expense has a proportionately greater impact on a smaller company. As Eastern Shore witness Bittner testifies, the amount of capital that Eastern Shore has invested recently in new pipeline infrastructure is proportionately much larger than infrastructure investment by other, much larger pipelines. Given its smaller size, Eastern Shore's much higher than average level of capital expenditures has a proportionately greater impact on its risk profile.

Market Ratios. Market-based financial ratios provide a partial measure of the investor-required cost of equity. If all other factors are equal, investors will require a higher return on equity for companies which exhibit greater risk in order to compensate for that risk. That is to say, a firm that investors perceive to have higher risks will experience a lower price per share in relation to expected

earnings.[2]

The five-year average price-earnings multiple was higher for the Corporate Pipeline Group than for the S&P Public Utilities. The five-year average market-to-book ratio was also higher for the Corporate Pipeline Group than for the S&P Public Utilities. There are no market-based financial ratios for Eastern Shore. And hence, no conclusions can be drawn from these factors in the fundamental risk analysis of Eastern Shore.

Common Equity Ratio. The level of financial risk is measured by the ratio of long-term debt and other senior capital to permanent capital. Financial risk is also analyzed by comparing common equity ratios (the complement of the ratio of debt and other senior capital). That is to say, a firm with a high common equity ratio has lower financial risk, while a firm with a low common equity ratio has higher financial risk. The five-year average common equity ratio comparisons, based on permanent capital, were 42.9% for the Corporate Pipeline Group and 39.5% for the S&P Public Utilities. The capital structure ratios for Eastern Shore are not meaningful because its entire capitalization is represented by its common equity that is owned by Chesapeake, and, therefore, no conclusions can be drawn from this analysis. For ratesetting purposes, the capital structure ratios of Chesapeake are employed pursuant to Commission policy.

Return on Book Equity. Greater variability (i.e., uncertainty) of a firm's

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

earned returns signifies relative levels of risk, as shown by the coefficient of variation (standard deviation ÷ mean) of the rate of return on book common equity. The higher the coefficient of variation, the greater degree of variability. For the five year period, the coefficients of variation were 0.158 (1.8% ÷ 11.4%) for Eastern Shore, 0.242 (2.2% ÷ 9.1%) for the Corporate Pipeline Group, and 0.231 (2.5% ÷ 10.8%) for the S&P Public Utilities. Although the coefficient of variation for Eastern Shore is somewhat less than the other groups, the magnitude of the difference is not great. Moreover, the ratio for Eastern Shore is less meaningful in the context of its capitalization that is represented entirely by common equity.

Operating Ratios. I have also compared operating ratios (the percentage of revenues consumed by operating expense, depreciation, and taxes other than income).[3] The five-year average operating ratios were 59.7% for Eastern Shore, 81.6% for the Corporate Pipeline Group, and 84.6% for the S&P Public Utilities. It is difficult to make a comparison of the operating ratios for Eastern Shore to the other groups because no provision is made for the cost of purchased product in the Company's cost of service. For the Corporate Pipeline Group and the S&P Public Utilities, the cost of purchased products and/or fuel expense acts to elevate their operating ratios. With an absence of any cost of purchased products, a lower operating ratio would be expected for Eastern Shore, which makes any comparison with the other groups not meaningful.

[3] The complement of the operating ratio is the operating margin which provides a measure of profitability. The higher the operating ratio, the lower the operating margin.

Coverage. The level of fixed charge coverage (i.e., the multiple by which available earnings cover fixed charges, such as interest expense) provides an indication of the earnings protection for creditors. Higher levels of coverage, and hence earnings protection for fixed charges, are usually associated with increased grades of creditworthiness. The five-year average interest coverage (excluding AFUDC) was 4.83 times for Eastern Shore, 3.91 times for the Corporate Pipeline Group, and 2.68 times for the S&P Public Utilities. It is difficult to assign much meaning to the Eastern Shore interest coverages, because interest is payable to its Parent Company. Because the other companies pay interest directly to investors, and Eastern Shore does not, any comparison of coverage ratios for Eastern Shore to the other groups is not meaningful.

Quality of Earnings. Measures of earnings quality usually are revealed by the percentage of AFUDC related to income available for common equity, the effective income tax rate, and other cost deferrals. These measures of earnings quality usually influence a firm's internally generated funds. Typically, quality of earnings has not been a significant concern for Eastern Shore, the Corporate Pipeline Group, and the S&P Public Utilities.

Internally Generated Funds. Internally generated funds ("IGF") provide an important source of new investment capital for a utility and represent a key measure of credit strength. The coefficient of variation of the IGF percentage of capital expenditures was 0.885 (130.6% ÷ 147.5%) for Eastern Shore, 0.217 (30.2% ÷ 139.0%) for the Corporate Pipeline Group, and 0.174 (19.0% ÷ 109.0%) for the

S&P Public Utilities. The historical percentage of IGF to capital expenditures has been highly variable for the Company, which means that the Company's risk is higher than the Corporate Pipeline Group and S&P Public Utilities.

Betas. The financial data that I have been discussing relate primarily to company-specific risks. Market risk for firms with traded stock is measured by beta coefficients. Beta coefficients attempt to identify systematic risk (i.e., the risk associated with changes in the overall market for common equities). Value Line publishes such a statistical measure of a stock's relative historical volatility to the rest of the market. A comparison of market risk is shown by the Value Line betas which are 1.47 as the average for the Corporate Pipeline Group (see page 2 of Schedule 3) and .95 as the average for the S&P Public Utilities (see page 3 of Schedule 4). Keeping in mind that the gas industry has changed dramatically during the past five years, the systematic risk percentage is 155% (1.47 ÷ .95) for the Corporate Pipeline Group using the S&P Public Utilities' average beta as a benchmark. For Eastern Shore, a comparison of systematic risk is non-existent because there is no Value Line beta for Eastern Shore, whose stock is not traded.

Q. Please summarize your risk evaluation of Eastern Shore, the Corporate Pipeline Group, and the S&P Public Utilities.

A. The risk of Eastern Shore and the Corporate Pipeline Group is clearly greater than the S&P Public Utilities. Eastern Shore has some of the same risk characteristics as the Corporate Pipeline Group, although on balance Eastern Shore has greater risk, as shown in my testimony and in the testimony of Eastern Shore witnesses Bittner

and McMasters. The Company's higher risk is attributed to its small size, which is much smaller than the average size of the Corporate Pipeline Group; its capital expenditures, which in the past and projected for the future is proportionately much larger than other larger pipelines; and its ratio of IGF to capital expenditures has been significantly more variable than the Corporate Pipeline Group. Based on my evaluation of these risk factors, I recommend that the Company should be allowed the opportunity to earn a rate of return on common equity of 14.875%.

CAPITAL STRUCTURE RATIOS

Q. Please explain the selection of capital structure ratios for Chesapeake.

A. It is appropriate that Chesapeake's capital structure ratios be employed for rate of return purposes. Furthermore, consistency requires that the embedded cost rate of Chesapeake's senior securities also be employed. This procedure is consistent with the ratesetting procedures used by the Commission in prior rate cases for Eastern Shore.

In the selection of capital structure ratios for rate of return purposes, the Commission's general policy requires the use of the capital structure ratios of the entity that secures the external financing for the pipeline. As first established in Kentucky West Virginia Gas Co. (2 FERC ¶61,139) and re-affirmed in Transcontinental Gas Pipe Line Corporation (85 FERC ¶61,323), the Commission's policy requires consideration of: (i) the applicant's own capitalization when it issues debt directly in the capital markets; (ii) the use of the parent company's capitalization when the parent company engages in the long-term borrowings on

behalf of the applicant; and (iii) the use of hypothetical capital structure ratios when the parent company's capitalization is atypical of the industry in which the applicant does business. In Transco, the Commission refined its guidelines by stating that the subsidiary capitalization should be used for rate of return purposes if: (i) the applicant issues its own debt that is not guaranteed by its parent company, (ii) it has its own bond rating separate from that of its corporate parent, and (iii) if its capital structure compares with ratios approved previously by the Commission for other companies that it regulates, as well as those of the proxy companies. Chesapeake issues its debt directly to outside investors and it has a rating on its debt from the NAIC. As the Commission has noted in Transco, it has approved capital structure ratios that contain common equity up to 61.79%. Given these circumstances, it is appropriate to rely on the capital structure ratios and the associated cost of senior capital of Chesapeake in this case. As the Commission has stated, the standard to be applied is whether the capital structure produces just and reasonable rates and that the proposed equity ratio is not excessive in light of equity ratios approved by the Commission in other recent cases. Using these guidelines, I propose capital structure ratios based upon the capitalization of Chesapeake. Chesapeake provides all the permanent capital, both debt and equity, for Eastern Shore. Moreover, Chesapeake's capital structure ratios are comparable with ratios employed by other firms engaged in the gas pipeline business. Given these circumstances, it is appropriate to rely on the capital structure ratios and cost of debt of Chesapeake in this case.

Q. Does Schedule 5 provide Chesapeake's capitalization and capital structure ratios?

A. Yes. Schedule 5 presents Chesapeake's capitalization and related capital structure ratios based upon investor-provided capital. The June 30, 2006 capitalization corresponds with the end of the base period in this case. Schedule 5 contains a ratesetting adjustment to remove the accumulated Other Comprehensive Income ("OCI") from the common equity account.

Q. Please explain the justification for removing the accumulated OCI?

A. It is critical that the accumulated OCI be eliminated from the capital structure for ratesetting purposes. OCI arises from a variety of sources, including: minimum pension liability ("MPL"), foreign currency hedges, unrealized gains and losses on securities available for sale, interest rate swaps, and other cash flow hedges. The accumulated OCI for Chesapeake has its roots in the MPL. None of the accounting entries that affect accumulated OCI have anything to do with financing the rate base of Chesapeake and its subsidiaries (i.e., they do not generate or consume any cash). A MPL entry must be recorded on the balance sheet when the present value of the pension benefit earned by employees exceeds the market value of trust fund assets. As such, MPL arises from a decline in stock market values and a decline in interest rates, which reduces the value of the trust fund assets and increases the present value calculation of the pension benefit obligation. SFAS 87 requires that the MPL be recognized as a pension expense over future periods, as long as the MPL continues to exist. If the stock market improves and when interest rates rise from

recent low levels, the MPL will reverse and not impact future pension expense. Hence, the accumulated OCI must be excluded from the common equity.

Q. What capital structure ratios do you recommend be adopted for rate of return purposes in this proceeding?

A. I will adopt Chesapeake's test year-end capital structure ratios, which are expected to be approximately 39% debt and 61% common equity. At this time, details of Chesapeake's capital accounts cannot be revealed due to SEC disclosure restrictions. The test year capital structure will be updated after March 31, 2007 to reflect actual issues of debt and equity, if any, issued up through March 31, 2007.

COST OF SENIOR CAPITAL

Q. What cost rate have you assigned to the debt portion of Chesapeake's capital structure?

A. Consistency with the capital structure ratios for the Company requires that the embedded cost rates of Chesapeake's senior securities must also be employed. This procedure is consistent with the ratesetting procedures used by the Commission for the Company. The determination of the cost of debt is essentially an arithmetic exercise. This is due to the fact that Chesapeake has contracted for the use of this capital for a specific period of time at a specified cost rate. As shown on page 1 of Schedule 6, the actual embedded cost rate of long-term debt was 7.24% on June 30, 2006. On October 12, 2006, Chesapeake completed the private placement of $20 million of senior notes pursuant to a note agreement with institutional investors. By March 31, 2007, the embedded cost of long-term debt is expected to be 6.73%,

which reflects the actual cost of the newly issued Senior Notes having a 5.50% stated interest rate. The details leading to the development of the individual effective cost rates for each series of long-term debt are shown on page 3 of 6. The effective cost rate is the internal rate of return ("IRR") that equates the present value of all future interest and principal payments with the net proceeds of the bond.

COST OF EQUITY – GENERAL APPROACH

Q. Please describe the process you employed to determine the cost of equity for the Company.

A. Although my fundamental financial analysis provides the required framework to establish the risk relationships among the Company, the Corporate Pipeline Group, and the S&P Public Utilities, the cost of equity must be measured by standard financial models that I describe in Appendix D. Differences in risk traits, such as size, business diversification, regulatory policy, financial leverage, and bond ratings must be considered when analyzing the cost of equity.

DISCOUNTED CASH FLOW ANALYSIS

Q. Please describe your use of the Discounted Cash Flow approach to determine the cost of equity.

A. The details of my use of the DCF approach and the calculations and evidence in support of my conclusions are set forth in Appendix E. I will summarize them here. The Discounted Cash Flow ("DCF") model seeks to explain the value of an asset as the present value of future expected cash flows discounted at the appropriate risk-adjusted rate of return. In its simplest form, the DCF return on common stocks

consists of a current cash yield (e.g., dividend yields in the case of corporations) and future price appreciation (growth) of the investment. The DCF model is premised on the total return that can be realized from a combination of these two components.

Among other limitations of the model, there is a certain element of circularity in the DCF method when applied in rate cases. This is because investors' expectations for the future depend upon regulatory decisions. In turn, when regulators depend upon the DCF model to set the cost of equity, they rely upon investor expectations that include an assessment of how regulators will decide rate cases. Due to this circularity, the DCF model may not fully reflect the true equity return of a utility.

As I describe in Appendix E, the DCF approach has other limitations that diminish its usefulness in the ratesetting process when the market capitalization diverges significantly from the book value capitalization. When this situation exists, the DCF method will lead to a misspecified cost of equity when it is applied to a book value capital structure.

Q. Please explain the cash yield component of a DCF analysis.

A. The DCF methodology requires the use of an expected cash yield to establish the investor-required cost of equity. For the twelve months ended August 2006, the monthly cash yields for the Corporate Pipeline Group are shown graphically on Schedule 7. The monthly cash yields shown on Schedule 7 reflect recognition of the build up of the cash payment in the price that has occurred since the last ex-

dividend date (i.e., the date by which a shareholder must have owned the shares to be entitled to the cash payment – usually about two to three weeks prior to the actual payment). An explanation of this element is provided in Appendix E.

For the twelve months ending August 2006, the average cash yield was 2.20% for the Corporate Pipeline Group based upon a calculation using annualized cash payments and adjusted month-end stock prices. The cash yields for the more recent six- and three- month periods were 2.22% and 2.15%, respectively. These averages were calculated from the cash yields shown on Schedule 7. I have used, for the purpose of my direct testimony, a cash yield of 2.22% for the Corporate Pipeline Group, which represents the six-month average yield. The use of this dividend yield will reflect current capital costs while avoiding spot yields.

For the purpose of a DCF calculation, the average cash yields must be adjusted to reflect the prospective nature of the payments i.e., the higher expected payments for the future. Recall that the DCF is an expectational model that must reflect investor anticipated cash flows. I have adjusted the six-month average cash yield in three different but generally accepted manners, and used the average of the three adjusted values as calculated in Appendix E. That adjusted cash yield is 2.34% for the Corporate Pipeline Group.

Q. Please explain the underlying factors that influence investors' growth expectations.

A. As noted previously, investors are interested principally in the future growth of their investment (i.e., the cash and stock appreciation realized). Future earnings per

share growth represent their primary focus because under the constant price-earnings multiple assumption of the DCF model, the price per share of stock will grow at the same rate as earnings per share. In conducting a growth rate analysis, a wide variety of variables can be considered when reaching a consensus of prospective growth. The variables that can be considered include: earnings, dividends, book value, and cash flow stated on a per share basis. Historical values for these variables can be considered, as well as analysts' forecasts that are widely available to investors. A fundamental growth rate analysis can also be formulated, which consists of internal growth ("*b x r*"), where "*r*" represents the expected rate of return on common equity and "*b*" is the retention rate that consists of the fraction of earnings that are not paid out as dividends. The internal growth rate can be modified to account for sales of new common stock -- this is called external growth ("*s x v*"), where "*s*" represents the new common shares expected to be issued by a firm and "*v*" represents the value that accrues to existing shareholders from selling stock at a price different from book value. Fundamental growth, which combines internal and external growth, provides an explanation of the factors that cause book value per share to grow over time. Hence, a fundamental growth rate analysis is duplicative of expected book value per share growth.

Growth can also be expressed in multiple stages. This expression of growth includes a "growth" stage where a firm enjoys rapidly expanding markets, high profit margins, and abnormally high growth in earnings per share. Thereafter, a firm enters a "transition" stage where fewer technological advances and increased

product saturation begins to reduce the growth rate and profit margins come under pressure. During the "transition" phase, investment opportunities begin to mature, capital requirements decline, and a firm begins to pay out a larger percentage of earnings to shareholders. Subsequently, the mature or "steady-state" stage is reached when a firm's earnings growth, payout ratio, and return on equity stabilizes at levels where they remain for much of the life of a firm. The three stages of growth assume a step-down of high growth to lower sustainable growth. Even if these three stages of growth can be envisioned for a firm, the third "steady-state" growth stage, which is assumed to remain fixed in perpetuity, represents an unrealistic expectation because the three stages of growth can be repeated. That is to say, the stages can be repeated where growth for a firm ramps-up and ramps-down in cycles over time.

Q. What investor-expected growth rate is appropriate in a DCF calculation?

A. Although some DCF devotees would advocate that mathematical precision should be followed when selecting a growth rate (i.e., precise input variables often considered within the confines of retention growth described above), the fact is that investors, when establishing the market prices for a firm, do not behave in the same manner assumed by the constant growth rate model using accounting values. Rather, investors consider both company-specific variables and overall market sentiment (i.e., level of inflation rates, interest rates, economic conditions, etc.) when balancing their capital gains expectations with their dividend yield requirements. Investors are not influenced by a single set of company-specific

variables weighted in a formulaic manner. Therefore, in my opinion, an array of relevant growth rate indicators using a variety of techniques must be evaluated when formulating a judgment of investor expected growth.

Q. What company-specific data have you considered in your growth rate analysis?

A. I have considered the growth in the financial variables shown on Schedule 8 and Schedule 9. The bar graphs provided on Schedule 8 show the historical growth rates in earnings per share, dividends per share, book value per share, and cash flow per share for the Corporate Pipeline Group. The historical growth rates were taken from the Value Line publication that provides these data. As shown on Schedule 8, the historical earnings per share growth rates were 3.00% and 3.33% for the Corporate Pipeline Group. The historical growth rates contain instances of negative values for individual companies within the Corporate Pipeline Group. Although indications of negative growth should not be considered for reasons stated below, both positive and negative growth rates have been included in the averages for the Corporate Pipeline Group. Obviously, negative growth rates provide no reliable guide to gauge investor expected growth for these companies. Investor expectations encompass long-term positive growth rates and, as such, could not be represented by sustainable negative rates of change. Therefore, statistics that include negative growth rates should not be given any weight when formulating a composite growth rate expectation.

Schedule 9 provides projected earnings per share growth rates taken from

analysts' forecasts compiled by IBES/First Call, Zacks, and Reuters/Market Guide and from the Value Line publication. IBES/First Call, Zacks, and Reuters/Market Guide represent reliable authorities of projected growth upon which investors rely. The IBES/First Call, Zacks, and Reuters/Market Guide forecasts are limited to earnings per share growth, while Value Line makes projections of other financial variables. The Value Line forecasts of dividends per share, book value per share, and cash flow per share have also been included on Schedule 9 for the Corporate Pipeline Group.

Although five-year forecasts usually receive the most attention in the growth analysis for DCF purposes, present market performance has been strongly influenced by short-term earnings forecasts. Each of the major publications provides earnings forecasts for the current and subsequent year. These short-term earnings forecasts receive prominent coverage, and indeed they dominate these publications. While the DCF model typically focuses upon long-run estimates of earnings, stock prices are clearly influenced by current and near-term earnings forecasts.

Q. Is a five-year investment horizon associated with the analysts' forecasts consistent with the DCF model?

A. Yes. In fact, it illustrates that the infinite form of the model contains an unrealistic assumption. Rather than viewing the DCF in the context of an endless stream of growing dividends (e.g., a century of cash flows), the growth in the share value (i.e., capital appreciation, or capital gains yield) is most relevant to investors' total return

expectations. Hence, the sale price of a stock can be viewed as a liquidating dividend that can be discounted along with the annual cash receipts during the investment-holding period to arrive at the investor expected return. The growth in the price per share will equal the growth in earnings per share absent any change in price-earnings (P-E) multiple -- a necessary assumption of the DCF. As such, my company-specific growth analysis, which focuses principally upon five-year forecasts of earnings per share growth, conforms with the type of analysis that influences the total return expectation of investors. Moreover, academic research focuses on five-year growth rates as they influence stock prices. Indeed, if investors really required forecasts that extended beyond five years in order to properly value common stocks, some investment advisory service would begin publishing that information for individual stocks in order to meet the market created by the demands of investors. The absence of such a publication signals that investors do not require infinite forecasts in order to purchase and sell stocks in the marketplace.

Q. What specific evidence have you considered in the DCF growth analysis?

A. As to the five-year forecast growth rates, Schedule 9 indicates that the projected earnings per share growth rates for the Corporate Pipeline Group are 11.11% by IBES/First Call, 10.93% by Zacks, 9.97% by Reuters/Market Guide, and 15.17% by Value Line. As indicated earlier, with the constant price-earnings multiple assumption of the DCF model, growth for these companies will occur at the higher earnings per share growth rate, thus producing the capital gains yield expected by

investors.

Q. What conclusion have you drawn from these data?

A. Although ideally historical and projected earnings per share and dividends per share growth indicators would be used to provide an assessment of investor growth expectations for a firm, the circumstances of the Corporate Pipeline Group mandate that the greater emphasis be placed upon projected earnings per share growth. Historical evidence alone does not represent a complete measure of growth for these companies. Rather, projections of future earnings growth provide the principal focus of investor expectations. In this regard, it is worthwhile to note that Professor Myron Gordon, the foremost proponent of the DCF model in rate cases, established that the best measure of growth in the DCF model is forecasts of earnings per share growth.[4] Hence, to follow Professor Gordon's findings, projections of earnings per share growth, such as those published by IBES/First Call, Zacks, Reuters/Market Guide, and Value Line, represents a reasonable assessment of investor expectations.

It is appropriate to consider all forecasts of earnings growth rates that are available to investors. In this regard, I have considered the forecasts from IBES/First Call, Zacks, Reuters/Market Guide and Value Line. The IBES/First Call, Zacks, and Reuters/Market Guide growth rates are consensus forecasts taken from a survey of analysts that make projections of growth for these companies. The

[4] "Choice Among Methods of Estimating Share Yield," The Journal of Portfolio Management, spring 1989 by Gordon, Gordon & Gould.

IBES/First Call, Zacks, and Reuters/Market Guide estimates are obtained from the Internet and are widely available to investors free-of-charge. First Call is probably quoted most frequently in the financial press when reporting on earnings forecasts. The Value Line forecasts are also widely available to investors and can be obtained by subscription or free-of-charge at most public and collegiate libraries.

The forecasts of earnings per share growth as shown on Schedule 9 provide a range of growth rates of 9.97% to 15.17% for the Corporate Pipeline Group. While the DCF growth rates cannot be established solely with a mathematical formulation, it is my opinion that an investor-expected growth rate of 11.00% for the Corporate Pipeline Group is within the array of earnings per share growth rates shown by the analysts' forecasts and the forecast growth in overall corporate profits. As previously indicated, consolidation now taking place in the utility industry will provide additional risks and opportunities as the utility industry successfully adapts to the new business environment. These changes in growth fundamentals will undoubtedly develop beyond the next five years typically considered in the analysts' forecasts that will enhance the growth prospects for the future. As such, a growth rate of 11.00% for the Corporate Pipeline Group will accommodate all these factors.

Q. Please explain why the sum of the dividend yield and growth rate does not provide a complete representation of the cost of equity.

A. As demonstrated previously, the divergence of stock prices from book values creates a conflict when the results of a market-derived cost of equity are applied to

the common equity account measured at book value, which is the measure used in calculating the weighted average cost of capital. This is the situation today where the market price of stock exceeds its book value for most utilities. This divergence of price and book value creates a financial risk difference, whereby the capitalization of a utility measured at its market value contains relatively less debt and more equity than the capitalization measured at its book value.

If regulators rely upon the results of the DCF (which are based on the market price of the stock of the companies analyzed) and apply those results to book value, the resulting earnings will not produce the level of required return specified by the model when market prices vary from book value. This is to say, such distortions tend to produce DCF results that understate the cost of equity to the regulated firm when using book values. This shortcoming of the DCF has caused regulatory decisions to adjust the cost of equity upward to make the return consistent with the book value capital structure. For instance, consider PPL Electric Utilities Corporation at Pennsylvania PUC Docket No. R-00049255 (Order entered December 22, 2004) where the Pennsylvania PUC acknowledged that an adjustment to the DCF results was required to make the return consistent with the book value capital structure. In that decision, the Pennsylvania PUC provided PPL (a wires-only electric delivery utility) with an additional increment to the simple DCF derived cost of equity for the financial risk difference related to the divergence of the market capitalization from the book value capitalization. Similar provisions were made by the Pennsylvania PUC in other rate case decisions and in one case

affirmed by the Commonwealth Court. It must be recognized that in order to make the DCF results relevant to the capitalization measured at book value (as is done for ratesetting purposes), the market-derived cost rate cannot be used without modification. As I will explain later in my testimony, the DCF model can successfully recognize differences in risk attributed to changes in financial leverage reflecting the divergence in the market capitalization and the book value capitalization.

Q. Have you presented this modification to the Commission in prior rate case proceedings?

A. Yes. The leverage adjustment presented below was discussed by the Commission in its Order at Docket No. RP00-107-000 (104 FERC ¶ 61,036 (2003)). There the Commission found that the leverage adjustment was unnecessary, based on the mistaken belief that it was a market-to-book adjustment, which it is not. Perhaps, with an improved explanation of my adjustment in this case, the Commission will realize the necessity of this adjustment.

Q. Has the Commission been inflexible in its application of the DCF model?

A. No. The Commission has modified the results of the DCF model when the situation warrants. For example, the Commission has periodically changed the DCF model by including a second-stage growth rate and has changed the weighting assigned to the first- and second-stage growth rates. The Commission has also altered the DCF model when the results are considered unreliable.

Q. Does the DCF derived return that is related to market value require

modification to account for the common equity ratio indicated by the book value capitalization?

A. Yes. The capital structure ratios measured at the utility's book value show more financial leverage, and hence higher risk, than the capitalization measured at their market values. Please refer to Appendix E for the comparison. This means that a market-derived cost of equity, using models such as DCF and, reflects a level of financial risk that is different from that shown by the book value capitalization. Hence, it is necessary to adjust the market-determined cost of equity upward to reflect the higher financial risk related to the book value capitalization used for ratesetting purposes. Failure to make this modification would result in a mismatch of the lower financial risk related to market value used to measure the cost of equity and the higher financial risk of the book value capital structure used in the ratesetting process. Because the ratesetting process utilizes the book value capitalization, it is necessary to adjust the market-determined cost of equity for the higher financial risk related to the book value of the capitalization.

Q. How is the DCF-determined cost of equity adjusted for the financial risk associated with the book value capitalization?

A. In pioneering work, Nobel laureates Modigliani and Miller developed several theories about the role of leverage in a firm's capital structure. Modigliani and Miller established that as the borrowing of a firm increases, the expected return on stockholders' equity also increases. This principle is incorporated into my leverage adjustment which recognizes that the expected return on equity increases to reflect

the increased risk associated with the higher financial leverage shown by the book value capital structure, as compared to the market value capital structure that contains lower financial risk. Modigliani and Miller proposed several approaches to quantify the equity return associated with various degrees of debt leverage in a firm's capital structure. These formulas point toward an increase in the equity return associated with the higher financial risk of the book value capital structure. As detailed in Appendix E, the Modigliani and Miller theory shows that the cost of equity increases by 3.55% (16.89% - 13.34%) for the Corporate Pipeline Group when the book value of equity, rather than the market value of equity, is used for ratesetting purposes.

Q. Please provide the DCF return based upon your preceding discussion of dividend yield, growth, and leverage.

A. As explained previously, I have utilized a six-month average cash yield ("D_1 / P_0") adjusted in a forward-looking manner for my DCF calculation. This dividend yield is used in conjunction with the growth rate ("*g* ") previously developed. The DCF also includes the leverage modification ("*lev*.") required when the book value equity ratio is used in determining the weighted average cost of capital in the ratesetting process rather than the market value equity ratio related to the price of stock. The cost of equity must also include an adjustment to cover flotation costs ("*flot*."). Therefore, a flotation costs adjustment must be applied to the DCF result (i.e., "*k*") that provides an additional increment to the rate of return on equity (i.e., "*K*"). The factor used to develop the modification that would account for the flotation costs

adjustment is provided in Schedule 10.

Q. What are your DCF results?

A. The resulting DCF cost rate is:

	D_1/P_0	+	g	+	$lev.$	=	k	x	$flot.$	=	K
Corporate Pipeline Group	2.34%	+	11.00%	+	3.55%	=	16.89%	x	1.02	=	17.23%

As indicated by the DCF result shown above, the flotation cost adjustment adds 0.34% (17.23% - 16.89%) to the rate of return on common equity for the Corporate Pipeline Group. The DCF result shown above represents the simplified (i.e., Gordon) form of the model that contains a constant growth assumption. I should reiterate, however, that the DCF indicated cost rate provides an explanation of the rate of return on common stock market prices without regard to the prospect of a change in the price-earnings multiple. An assumption that there will be no change in the price-earnings multiple is not supported by the realities of the equity market because price-earnings multiples do not remain constant.

TWO-STAGE DCF MODEL

Q. In previous rate case decisions for natural gas pipelines, the Commission has employed a two-stage DCF model to set the rate of return on common equity. Have you considered this form of the DCF formula in this case?

A. Yes. Putting aside for the moment the fact that the DCF formula model was initially expressed with a single constant growth rate, I have included a calculation in my testimony based upon the Commission's approach in Transcontinental Gas Pipe Line Corp. (85 FERC ¶ 61,323 (1998)). It should be noted that in making

these calculations, I am aware of the Commission's general procedure of considering GDP growth as an input in the second growth stage. While the forecast of growth in the GDP may represent a plausible measure of the growth in revenues for a pipeline, which the Commission has acknowledged, it is not the same as growth in earnings.

As noted by the Commission, forecast growth of the Gross Domestic Product ("GDP") can represent the starting point for this analysis. The GDP has both "product side" and "income side" components. The product side of the GDP is comprised of: (i) personal consumption expenditures; (ii) gross private domestic investment; (iii) net exports of goods and services; and (iv) government consumption expenditures and gross investment. On the income side of the GDP, the components are: (i) compensation of employees; (ii) proprietors' income; (iii) rental income; (iv) corporate profits; (v) net interest; (vi) business transfer payments; (vii) indirect business taxes; (viii) consumption of fixed capital; (ix) net receipts/payment to the rest of the world; and (x) statistical discrepancy. The "product side," (i.e., demand components) could be used as a long-term representation of revenue growth for regulated companies. However, it is well known that revenue growth does not necessarily equal earnings growth, namely that the same growth rate would apply to revenues and all components of the cost of service. The earnings growth rates for regulated companies will be substantially affected by changes in operating expenses and capital costs.

Q. How do the growth rates in overall GDP and corporate profits compare?

A. Corporate profits grow faster than the overall GDP. This fact is shown with both historical data and based upon forecasts. The long-term consensus forecast that is published semi-annually by the Blue Chip Economic Indicators provides evidence of future expectations in this regard by investors. Blue Chip Economic Indicators is a monthly publication that provides forecasts incorporating a wide variety of economic variables assembled from a panel of more than 50 noted economists from the banking, investment, industrial, and consulting sectors whose advice is widely reported in the financial press. For this purpose, it is preferable to use a consensus forecast taken from a large panel of contributors, rather than to rely upon one source that may not be representative of the types of information that have an impact on investor expectations. Indeed, Blue Chip Economic Indicators is frequently quoted in The Wall Street Journal, The New York Times, Fortune, Forbes, and Business Week. Twice annually, Blue Chip Economic Indicators provides long-range consensus forecasts. Based upon the March 10, 2006 issue of Blue Chip, those forecasts are:

Blue Chip Economic Indicators

Year	Nominal GDP	Corporate Profits, Pretax
2008	5.3%	3.9%
2009	5.3%	4.6%
2010	5.2%	4.3%
2011	5.1%	5.1%
2012	5.2%	6.0%
Averages		
2007-11	5.2%	4.8%
2012-16	5.2%	5.7%

These forecasts show that the rate of growth in corporate profits will decelerate during the early part of the forecast period due to the run-up in interest rates that I will discuss later in my testimony. Subsequently, growth will accelerate later in the period. It is also indicated historically that the percentage change in corporate profits has been higher than the percentage change in GDP. [5]

Growth in corporate profits of approximately one-half of one percentage point more than GDP would represent an overall benchmark for the long-term growth component of the DCF. The higher corporate profit growth reflects productivity gains which have kept inflation in check, and productivity gains have added to growth in corporate earnings. So while the Commission seems agreeable to incorporate the low inflation forecasts as part of second-stage growth, the consequence of productivity gains -- namely increased corporate earnings -- must also be factored into the Commission's projections for earnings growth for the pipeline companies.

Q. What second-stage growth rate do you propose in this case following the approach the Commission used in *Transco* and *Iroquois*?

A. My second-stage growth consists of long-term forecasts of GDP growth modified for growth in corporate profits. As shown on pages 1 and 3 of Schedule 11, the long-term growth in GDP was taken from the Annual Energy Outlook published by the Energy Information Administration ("EIA"), Global Insight (the successor to

[5] Obviously, growth in corporate profits is negatively impacted during recessionary periods, but on average, corporate profits have grown historically over two percentage points faster than GDP since the 1934.

the WEFA and DRI forecasts previously used by the Commission), and the Annual Report of the Trustees of the Federal Old-Age and Survivors Insurance and Disability Issuance Trust Funds administered by the Social Security Administration ("SSA"). Giving SSA the same weight as previously assigned to it by the Commission (i.e., 25% weight), would have produced a higher long-term average GDP growth level. However, the simple average of the growth rates is 4.96%, which is somewhat lower than the result produced by the Commission's past practice. In recognition of the fact that corporate profits grow faster than GDP growth, the long-term second-stage growth rate is 5.46% (4.96% + 0.50%).

Q. How have you used these data in the two-stage DCF model?

A. I have followed generally the Commission's past practice of computing the two-stage DCF. That is to say, I have used a six-month average dividend yield and a weighted growth rate that is comprised of assigning two-thirds weight to the analysts' forecasts provided by the IBES/First Call service and one-third weight to long-term growth using the GDP growth modified to reflect growth in corporate profits. With enhancements to regulations by the Securities and Exchange Commission, a higher level of reliability could now be placed on analysts forecasts such as those completed by IBES/First Call. That is to say, the objectivity of analysts' forecasts has been enhanced through the separation of the research and investment banking functions at the securities firms. After computing individually the DCF cost rates for each company in the Corporate Pipeline Group, I then computed a weighted return for the group.

Q. How should the results of the DCF analysis be employed in this case?

A. The DCF analysis should be used to measure the investors' expected return for an interstate natural gas company. As such, the DCF results of those companies should be deemphasized when other business pursuits dominate their risk profiles. To accomplish this goal, I have used a weighting process to arrive at a DCF return that is applicable to the natural gas transmission and/or storage business.

Q. How have you weighted the returns?

A. The goal is to measure the required return for the interstate natural gas transmission and/or storage business, not other operations of some of the companies within the Corporate Pipeline Group. To the extent that an entity is largely engaged in other activities, that entity should be afforded less weight in setting the equity return than other entities that are more committed to the natural gas transmission business. By ignoring the relative weight that each company devotes to the natural gas transmission business, the result can be skewed if equal weight is assigned to each entity. That is to say, if an investor desired to achieve the maximum exposure to the interstate natural gas transmission business, her/his emphasis would be on the entity that had 45% to 52% of its assets invested on the natural gas transmission business. The weighting procedure that I employ in this case achieves that result.

Q. Has the Commission also recognized that some adjustment is necessary to recognize that the Corporate Pipeline Group derives only a portion of their income from pipeline operations?

A. Yes. In its Kern River order, the Commission made a 50 basis points upward

adjustment to the median result of the proxy group to recognize that the cost of equity for pipeline operations is higher than the simple median of the DCF results. While I agree with the reasoning that the Commission used in finding that this adjustment was necessary, my approach to this issue in this case involves a more precise analytical process. Here, I propose an adjustment designed to accomplish the same goal, but derived in a somewhat different manner. I use information that is widely available to investors that would permit a more precise calculation of the adjustment to the cost of equity specifically attributable to pipeline operations. My analysis of the business segments of the Corporate Pipeline Group indicate that specific weights should be assigned to the individual results of each company within the group when selecting the median from individually computed costs of equity. This procedure departs from the specific add-on adjustment that the Commission used in Kern River, but is designed to accomplish the same purpose. Indeed, the degree to which each company is engaged in the interstate natural gas transmission business should be recognized in the weight that is assigned to individually computed returns in the two-stage DCF analysis.

Q. How have you constructed your weighting?

A. There are three principal financial variables that could be employed to measure the role of the pipeline business of each firm. These are: revenues, operating income, and assets employed. I did not use revenues for this purpose because the margins on pipeline segment are generally dissimilar to the other businesses of the proxy group companies. Energy trading is a case in point, which would make revenue

comparisons incompatible for this purpose. I also did not use operating income for this purpose because of the margin issue discussed above. In addition, some non-regulated business segments may incur losses due to start-up, or other reasons, that can distort the percentage calculations. I did use an asset criteria because it best describes the amount of capital that a firm devotes to each business segment.[6] It is the potential return on that capital that represents the primary focus of investors when they value the securities of a firm.

Based upon my analysis of the business segments of each company in the two proxy groups, I have computed both a weighted average and weighted median as shown on page 1 of Schedule 11. While my preference would be the use of the weighted average because it considers all values included in the distribution of the returns for each proxy group, I have included the weighted median in my recommendation so that the skewness of the distribution is not an issue in the final return.

Q. Does the weighted return for each group provide a composite return that differs from the procedure used previously by the Commission?

A. Yes. In prior cases, beginning with its decision in Order No. 414-A (99 FERC ¶61,305), the Commission has used the median as a measure of central tendency. The Commission's reasoning was that the median gives consideration to more of the proxy company numbers, as opposed to the midpoint of the range that was

[6] It was necessary to focus on utility plant in service for Williams, due to distortions caused by derivative assets of its power business.

previously used by the Commission. While it is true that the median addresses the issue of skewness in the distribution of the returns, the median represents a single number at the middle of the distribution if the number of values is odd, or the average of the two middle values if the number of values is even. Regardless of whether the midpoint or the median is used, each value in the distribution receives the same emphasis (or weight), as would the average (or mean) whose computation truly considers all the values in the distribution. However, as I discussed above, due to differences in the degree that each company is involved in the natural gas pipeline business, each number in the distribution would not warrant the same weight. As noted above, the Commission is also concerned about this issue, and added 50 basis points to the simple median DCF result of the proxy group.

Q. What are the results of your analysis?

A. I have combined the dividend yields and the first-stage (i.e., IBES/First Call) growth and adjusted GDP growth and weighted the individual DCF cost rates as described above. To the weighted median, I have recognized leverage adjustment, and the flotation cost adjustment I previously adopted to provide the following DCF cost rate:

	D_1/P_0	+ g	+ *lev.*	=	k	+ *flot.*	=	K
Corporate Pipeline Group	12.59%	+ 3.17%		=	15.76%	+ 0.34%	=	16.10%

The two-step DCF departs from classic DCF theory. While the foregoing represents a calculation of a two-step DCF analysis, it is entirely reasonable to

employ the single-step DCF results directly in the rate of return analysis in this case.

RISK PREMIUM ANALYSIS

Q. Please describe your use of the Risk Premium approach to determine the cost of equity.

A. The details of my use of the Risk Premium approach and the evidence in support of my conclusions are set forth in Appendix H. I will summarize them here. With this method, the cost of equity capital is determined by corporate bond yields plus a premium to account for the fact that common equity is exposed to greater investment risk than debt capital.

Q. What long-term public utility debt cost rate did you use in your risk premium analysis?

A. In my opinion, a 6.25% yield represents a reasonable estimate of the prospective yield on long-term A-rated public utility bonds. As I will subsequently show, the Moody's index and the Blue Chip Financial Forecasts ("Blue Chip") forecasts support this figure.

The historical yields for long-term public utility debt are shown graphically on page 1 of Schedule 12. For the twelve months ended August 2006, the average monthly yield on Moody's A-rated index of public utility bonds was 6.02%. For the six and three-month periods ending August 2006, the yields were 6.28% and 6.32%, respectively.

Q. What has been the trend in interest rates?

A. The low interest rates that existed in 2003-'04 were, in part, the product of the Federal Open Market Committee ("FOMC") policy, which is now in transition. Indeed, on June 30, 2004, August 10, 2004, September 21, 2004, November 10, 2004, December 14, 2004, February 2, 2005, March 22, 2005, May 3, 2005, June 30, 2005, August 9, 2005, September 20, 2005, November 1, 2005, December 13, 2005, January 31, 2006, March 28, 2006, May 10, 2006, and June 29, 2006, the FOMC increased the Fed Funds rate in seventeen 25 basis point increments. These policy actions, which have brought the Fed Funds rate to 5.25%, are widely interpreted as part of the process of moving toward a more neutral range for monetary policy.

Q. What forecasts of interest rates have you considered in your analysis?

A. I have determined the prospective yield on A-rated public utility debt by using the Blue Chip along with the spread in the yields that I describe above and in Appendix G. Blue Chip is a reliable authority and contains consensus forecasts of a variety of interest rates compiled from a panel of banking, brokerage, and investment advisory services. In early 1999, Blue Chip stopped publishing forecasts of yields on A-rated public utility bonds because the Federal Reserve deleted these yields from its Statistical Release H.15. To independently project a forecast of the yields on A-rated public utility bonds, I have combined the forecast yields on Treasury bonds published on September 1, 2006 and the yield spread of 1.00%. I have determined the prospective yield on A-rated public utility debt by using the Blue Chip Financial Forecasts ("Blue Chip") along with the spread in the yields that I describe above.

For comparative purposes, I have also shown the Blue Chip of Aaa-rated and Baa-rated corporate bonds. These forecasts are:

		Corporate		30-Year	A-rated Public Utility	
Year	Quarter	Aaa-rated	Baa-rated	Treasury	Spread	Yield
2006	Third	5.9%	6.7%	5.1%	1.0%	6.1%
2006	Fourth	6.0%	6.9%	5.2%	1.0%	6.2%
2007	First	6.1%	7.0%	5.2%	1.0%	6.2%
2007	Second	6.1%	7.0%	5.2%	1.0%	6.2%
2007	Third	6.1%	7.0%	5.2%	1.0%	6.2%
2007	Fourth	6.1%	7.0%	5.2%	1.0%	6.2%

Q. Are there additional forecasts of interest rates that extend beyond those shown above?

A. Yes. Twice yearly, Blue Chip provides a long-term forecast of interest rates. In its June 1, 2006 publication, the Blue Chip published forecasts of interest rates are reported to be:

	Blue Chip Financial Forecasts				
	Corporate		30-Year	A-rated Public Utility	
Year	Aaa-rated	Baa-rated	Treasury	Spread	Yield
2007	6.4%	7.2%	5.5%	1.0%	6.5%
2008	6.3%	7.2%	5.5%	1.0%	6.5%
2009	6.3%	7.2%	5.5%	1.0%	6.5%
2010	6.2%	7.0%	5.3%	1.0%	6.3%
2011	6.3%	7.2%	5.4%	1.0%	6.4%
Averages					
2007-11	6.3%	7.2%	5.4%	1.0%	6.4%
2012-16	6.5%	7.3%	5.6%	1.0%	6.6%

These forecasts show that interest rates will likely be above current levels. Given these forecasts and the historical long-term interest rates, a 6.25% yield on A-rated public utility bonds represents a reasonable expectation, especially with the

widespread forecasts of higher interest rates covering the years 2007 through 2011.

Q. What equity risk premium have you determined?

A. Appendix H provides a discussion of the financial returns that I relied upon to develop the appropriate equity risk premium for the S&P Public Utilities. I have calculated the equity risk premium by comparing the market returns on utility stocks and the market returns on utility bonds. I chose the S&P Public Utility index for the purpose of measuring the market returns for utility stocks because it is intended to represent firms engaged in regulated activities and today is comprised of electric companies and gas companies. The S&P Public Utility index is more closely aligned with these groups than some broader market indexes, such as the S&P 500 Composite index. The S&P Public Utility index is a subset of the overall S&P 500 Composite index. Use of the S&P Public Utility index reduces the role of judgment in establishing the risk premium for public utilities. With the equity risk premiums developed for the S&P Public Utilities as a base, I derived the equity risk premium for the Corporate Pipeline Group.

Q. How have you analyzed the equity risk premium for the S&P Public Utilities?

A. To develop an appropriate risk premium, I analyzed the results for the S&P Public Utilities by averaging (i) the midpoint of the range shown by the geometric mean and median and (ii) the arithmetic mean. This procedure has been employed to provide a comprehensive way of measuring the central tendency of the historical returns. As shown by the values set forth on page 2 of Schedule 13 the indicated risk premiums for the various time periods analyzed are 5.17% (1928-2005), 6.05%

(1952-2005), 5.19% (1974-2005), and 5.20% (1979-2005). The selection of the shorter periods taken from the entire historical series is designed to provide a risk premium that conforms more nearly to present investment fundamentals and removes some of the more distant data from the analysis.

Q. Do you have further support for the selection of the time periods used in your equity risk premium determination?

A. Yes. The selection of the shorter periods taken from the entire historical series is designed to provide a risk premium that conforms more nearly to present investment fundamentals and removes some of the more distant data from the analysis. First, the terminal year of my analysis presented in Schedule 13 represents the returns realized through 2005. Second, the selection of the initial year of each period was described above. These events were fixed in history and cannot be manipulated as later financial data become available. That is to say, using the Treasury-Federal Reserve Accord as a defining event, the year 1952 is fixed as the beginning point for the measurement period regardless of the financial results that subsequently occurred. Likewise, 1974 represented a benchmark year because it followed the 1973 Arab Oil embargo. Also, the year 1979 was chosen because it began the deregulation of the financial markets. After selection of the benchmark year, all subsequent yearly data were analyzed up through the present.

Q. What conclusions have you drawn from these data?

A. Using the summary values provided on page 2 of Schedule 13, the 1928-2005 period provides the lowest indicated risk premium, while the 1952-2005 period

provides the highest risk premium for the S&P Public Utilities. Within these bounds, a common equity risk premium of 5.20% (5.19% + 5.20% = 10.39% ÷ 2) is shown from data covering the periods 1974-2005 and 1979-2005. Based upon my analysis, 5.20% represents a reasonable risk premium using the S&P Public Utilities as a basis in this case. As noted earlier in my fundamental risk analysis, differences in risk characteristics must be taken into account when applying the results for the S&P Public Utilities to the Corporate Pipeline Group. I recognized these differences in the development of the equity risk premium in this case. I previously enumerated various differences in fundamentals between the Corporate Pipeline Group and the S&P Public Utilities, including size, market ratios, common equity ratio, return on book equity, operating ratios, coverage, quality of earnings, internally generated funds, business risks and betas. In my opinion, these differences indicate that 6.50% represents a reasonable common equity risk premium in this case. This represents approximately 125% (6.50% ÷ 5.20% = 1.25) of the risk premium of the S&P Public Utilities and is reflective of the risk of the Corporate Pipeline Group compared to the S&P Public Utilities.

Q. What common equity cost rate would be appropriate using this equity risk premium and the yield on long-term public utility debt?

A. The cost of equity (i.e., "*k*") is represented by the sum of the prospective yield for long-term public utility debt (i.e., "*i*") and the equity risk premium (i.e., "*RP*"). To that cost must be added an adjustment for common stock financing costs ("*flot.*"). The Risk Premium approach provides a cost of equity of:

	i	+	*RP*	=	*k*	+	*flot.*	=	*K*
Corporate Pipeline Group	6.25%	+	6.50%	=	12.75%	+	0.34%	=	13.09%

CAPITAL ASSET PRICING MODEL

Q. Have you used any other methods to measure the cost of equity in this case?

A. I have used the Capital Asset Pricing Model ("CAPM") in addition to my other methods. The CAPM uses the yield on a risk-free interest bearing obligation plus a rate of return premium that is proportional to the systematic risk of an investment. The details of my use of the CAPM and evidence in support of my conclusions are set forth in Appendix I. To compute the cost of equity with the CAPM, three components are necessary: a risk-free rate of return ("*Rf*"), the beta measure of systematic risk ("*β*"), and the market risk premium ("*Rm-Rf*") derived from the total return on the market of equities reduced by the risk-free rate of return. The CAPM specifically accounts for differences in systematic risk (i.e., market risk as measured by the beta) between an individual firm or group of firms and the entire market of equities. As such, to calculate the CAPM it is necessary to employ firms with traded stocks. In this regard, I performed a CAPM calculation for the Corporate Pipeline Group. In contrast, my Risk Premium approach also considers industry- and company-specific factors because it is not limited to measuring just systematic risk.

Q. What betas have you considered in the CAPM?

A. For my CAPM analysis, I initially considered the Value Line betas. As shown on page 1 of Schedule 14, the average beta is 1.47 for the Corporate Pipeline Group.

Q. What betas have you used in the CAPM determined cost of equity?

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

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

where βl = the leveraged beta, ßu = the unleveraged beta, t = income tax rate, D = debt ratio, P = preferred stock ratio, and E = common equity ratio. The betas published by Value Line have been calculated with the market price of stock and therefore are related to the market value capitalization. By using the formula shown above and the capital structure ratios measured at their market values, the beta would become 1.09 for the Corporate Pipeline Group if they employed no leverage and were 100% equity financed. With the unleveraged beta as a base, I calculated the leveraged beta of 2.20 for the Corporate Pipeline Group associated with book value capital structure.

Q. What risk-free rate have you used in the CAPM?

A. For reasons explained in Appendix G, I have employed the yields on long-term Treasury bonds using both historical and forecast data to match the longer-term horizon associated with the ratesetting process. As shown on pages 2 and 3 of Schedule 14, I provided the historical yields on 20-year Treasury bonds. For the twelve months ended August 2006, the average yield was 4.94%, as shown on page 4 of that schedule. For the six- and three-months ended August 2006, the yields on 20-year Treasury bonds were 5.18% and 5.21%, respectively. As shown on page 5 of Schedule 14, forecasts published by Blue Chip on September 1, 2006 indicate that the yields on long-term Treasury bonds are expected to be fairly stable, or within the range of 5.1% to 5.2% during the next six quarters. The longer term forecasts described previously show that the yields on Treasury bonds will average 5.50% from 2007 through 2011. To conform to the use of the historical and forecast data that I employed in my analysis, I have used a 5.25% risk-free rate of return for CAPM purposes.

Q. What market premium have you used in the CAPM?

A. As developed in Appendix I, the market premium is developed by averaging historical market performance (i.e., 6.5%) and the forecasts (i.e., 7.64%). The resulting market premium is 7.07% (6.5% + 7.64% = 14.14% ÷ 2), which represents the average market premium using historical and forecast data.

Q. What CAPM result have you determined using the CAPM?

A. Using the 5.25% risk-free rate of return, the leverage adjusted beta of 2.20 for the Corporate Pipeline Group, the 7.07% market premium, and the flotation cost

adjustment developed previously, the following result is indicated.

	Rf	+	*β*	x (	*Rm-Rf*) =	*k*	+	*flot.*	=	*K*
Corporate Pipeline Group	5.25%	+	2.20	x (	7.07%) =	20.80%	+	0.34%	=	21.14%

COMPARABLE EARNINGS APPROACH

Q. How have you applied the Comparable Earnings approach in this case?

A. The technical aspects of my Comparable Earnings approach are set forth in Appendix J. In order to identify the appropriate return on equity for a public utility, it is necessary to analyze returns experienced by other firms within the context of the Comparable Earnings standard. The firms selected for the Comparable Earnings approach should be companies whose prices are not subject to cost-based price ceilings (i.e., non-regulated firms) so that circularity is avoided. To avoid circularity, it is essential that returns achieved under regulation not provide the basis for a regulated return. Because regulated firms must compete with non-regulated firms in the capital markets, it is appropriate, if not necessary, to view the returns experienced by firms which operate in competitive markets. One must keep in mind that the rates of return for non-regulated firms represent results on book value actually achieved, or expected to be achieved, because the starting point of the calculation is the actual experience of companies that are not subject to rate regulation. The United States Supreme Court has held that:

> [T]he return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to

> maintain its credit and to attract capital. [F.P.C. v. Hope Natural Gas Co., 320 U.S. 591 (1944).]

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

There are two avenues available to implement the Comparable Earnings approach. One method would involve the selection of another industry (or industries) with comparable risks to the public utility in question, and the results for all companies within that industry would serve as a benchmark. The second approach requires the selection of parameters that represent similar risk traits for the public utility and the comparable risk companies. Using this approach, the business lines of the comparable companies become unimportant. The latter approach is preferable with the further qualification that the comparable risk companies exclude regulated firms. As such, this approach to Comparable Earnings avoids the circular reasoning implicit in the use of the achieved earnings/book ratios of other regulated firms. Rather, it provides an indication of an earnings rate derived from non-regulated companies that are subject to competition in the marketplace and not rate regulation. Because regulation is a substitute for competitively-determined prices, the returns realized by non-regulated firms with comparable risks to a public utility provide useful insight into a fair rate of return. This is because returns realized by non-regulated firms have become increasingly relevant with the trend toward

increased risk throughout the public utility business. Moreover, the rate of return for a regulated public utility must be competitive with returns available on investments in other enterprises having corresponding risks, especially in a more global economy. And in the example of an integrated company such as Chesapeake, the return has an immediate and direct impact on corporate capital allocation decisions.

To identify the comparable risk companies, the Value Line Investment Survey for Windows was used to screen for firms of comparable risks. The Value Line Investment Survey for Windows includes data on approximately 1700 firms. Excluded from the selection process were companies incorporated in foreign countries.

Q. How have you implemented the Comparable Earnings approach?

A. As noted above, non-regulated companies were selected from the Value Line Investment Survey for Windows that have six categories of comparability designed to reflect the risk of the Corporate Pipeline Group. The identities of companies comprising the Comparable Earnings group and their associated rankings within the ranges are identified on page 1 of Schedule 15.

Value Line data were relied upon as providing a comprehensive basis for evaluating the risks of the comparable firms. As to the returns calculated by Value Line for these companies, there is some downward bias in the figures shown on page 2 of Schedule 15 because Value Line computes the returns on year-end rather than average book value. If average book values had been employed, the rates of

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

Q. What data have you used in your Comparable Earnings analysis?

A. I have used both historical realized returns and forecast returns for non-utility companies. As noted previously, I have not used returns for utility companies so as to avoid the circularity that arises from using regulatory influenced returns to determine a regulated return. It is appropriate to consider a relatively long measurement period in the Comparable Earnings approach in order to cover conditions over an entire business cycle. A ten-year period (5 historical years and 5 projected years) is sufficient to cover an average business cycle. Unlike the DCF and CAPM, the results of the Comparable Earnings method can be applied directly to the book value capitalization because the nature of the analysis relates to book value. Hence, Comparable Earnings does not contain the potential misspecification contained in market models when the market capitalization and book value capitalization diverge significantly. The historical rate of return on book common equity was 13.7% using the median value as shown on page 2 of Schedule 15. The forecast rates of return as published by Value Line are shown by the 14.0% median values also provided on page 2 of Schedule 15.

Q. What rate of return on common equity have you determined in this case using the Comparable Earnings approach?

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

	Historical	*Forecast*	*Average*
Comparable Earnings Group	13.70%	14.00%	13.85%

CONCLUSION

Q. What is your conclusion concerning the Company's cost of equity?

A. Based upon the application of a variety of methods and models described previously, it is my opinion that the Company should be allowed the opportunity to earn a 14.875% rate of return on common equity to reflect its higher than average risk profile and thus be in a position to compete in the capital markets. In addition, it is my opinion that it is better to use a variety of techniques to measure the Company's cost of equity because of the limitations/infirmities inherent in each method. I have based my recommendation upon the results of the methods/models applied with data for the Corporate Pipeline Group, as explained throughout my testimony and appendices in this Exhibit No. ES-5 and the detailed financial data set forth in Exhibit No. ES-6.

Q. Does this conclude your prepared direct testimony?

A. Yes.

GLOSSARY OF ACRONYMS AND DEFINED TERMS

ACRONYM	DEFINED TERM
AFUDC	Allowance for Funds Used During Construction
β	Beta
b	represents the retention rate that consists of the fraction of earnings that are not paid out as dividends
b x r	Represents internal growth
CAPM	Capital Asset Pricing Model
CCR	Corporate Credit Rating
DCF	Discounted Cash Flow
EIA	Energy Information Administration
FERC	Federal Energy Regulatory Commission
Flot.	Flotation costs
FOMC	Federal Open Market Committee
g	Growth rate
GDP	Gross Domestic Product
IGF	Internally Generated Funds
IRR	Internal Rate of Return
Lev	Leverage modification
MPL	Minimum pension liability
NAIC	National Association of Insurance Commissioners
OCI	Other Comprehensive Income
PUC	Public Utility Commission
r	represents the expected rate of return on common equity
Rf	Risk-free rate of return
Rm	Market risk premium
s	Represents the new common shares expected to be issued by a firm
SSA	Social Security Administration
s x v	Represents external growth
S&P	Standard & Poor's
v	represents the value that accrues to existing shareholders from selling stock at a price different from book value

EASTERN SHORE NATURAL GAS COMPANY

Appendices A Through J to Accompany

the Direct Testimony

of

Paul R. Moul, Managing Consultant
P. Moul & Associates

Concerning

Fair Rate of Return

APPENDIX A TO DIRECT TESTIMONY OF PAUL R. MOUL

EDUCATIONAL BACKGROUND, BUSINESS EXPERIENCE AND QUALIFICATIONS

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

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

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

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

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

employed in connection with my testimony and in the past for other individuals. I have presented direct testimony on the subject of fair rate of return, evaluated rate of return testimony of other witnesses, and presented rebuttal testimony.

My studies and prepared direct testimony have been presented before thirty (30) federal, state and municipal regulatory commissions, consisting of: the Federal Energy Regulatory Commission; state public utility commissions in Alabama, Connecticut, Delaware, Florida, Georgia, Hawaii, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and the Philadelphia Gas Commission. My testimony has been offered in over 200 rate cases involving electric power, natural gas distribution and transmission, resource recovery, solid waste collection and disposal, telephone, wastewater, and water service utility companies. While my testimony has involved principally fair rate of return and financial matters, I have also testified on capital allocations, capital recovery, cash working capital, income taxes, factoring of accounts receivable, and take-or-pay expense recovery. My testimony has been offered on behalf of municipal and investor-owned public utilities and for the staff of a regulatory commission. I have also testified at an Executive Session of the State of New Jersey Commission of Investigation concerning the BPU regulation of solid waste collection and disposal.

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

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

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

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

APPENDIX A TO DIRECT TESTIMONY OF PAUL R. MOUL

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

My lecture and speaking engagements include:

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

APPENDIX A TO DIRECT TESTIMONY OF PAUL R. MOUL

	Eastern Utility Rate Seminar	National Association of Regulatory Utility Commissioners Florida Public Service Commission and University of Utah
October 1988	Sixteenth Annual Eastern Utility Rate Seminar	Water Committee of the National Association of Regulatory Utility Commissioners, Florida Public Service Commission and University of Utah
May 1988	Twentieth Financial Forum	National Society of Rate of Return Analysts
October 1987	Fifteenth Annual Eastern Utility Rate Seminar	Water Committee of the National Association of Regulatory Utility Commissioners, Florida Public Service Commission and University of Utah
September 1987	Rate Committee Meeting	American Gas Association
May 1987	Pennsylvania Chapter annual meeting	National Association of Water Companies
October 1986	Eighteenth Financial Forum	National Society of Rate of Return
October 1984	Fifth National on Utility Ratemaking Fundamentals	American Bar Association
March 1984	Management Seminar	New York State Telephone Association
February 1983	The Cost of Capital Seminar	Temple University, School of Business Admin.
May 1982	A Seminar on Regulation and The Cost of Capital	New Mexico State University, Center for Business Research and Services
October 1979	Economics of Regulation	Brown University

APPENDIX B TO DIRECT TESTIMONY OF PAUL R. MOUL

RATESETTING PRINCIPLES

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

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

As established by the landmark Bluefield and Hope cases,[1] several tests must be satisfied to demonstrate the fairness or reasonableness of the rate of return. These tests include a determination of whether the rate of return is (i) similar to that of other financially sound businesses having similar or comparable risks, (ii) sufficient to ensure confidence in the financial integrity of the public utility, and (iii) adequate to maintain and support the credit of the utility, thereby enabling it to attract, on a reasonable cost basis, the funds necessary to

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

satisfy its capital requirements so that it can meet the obligation to provide adequate and reliable service to the public.

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

APPENDIX C TO DIRECT TESTIMONY OF PAUL R. MOUL

EVALUATION OF RISK

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

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

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

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

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

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

which considers the degree to which earnings are the product of accounting principles or cost deferrals; and the level of internally generated funds. Similarly, the proportion of senior capital in a company's capitalization is the measure of financial risk which is often analyzed in the context of the equity ratio (i.e., the complement of the debt ratio).

APPENDIX D TO DIRECT TESTIMONY OF PAUL R. MOUL

COST OF EQUITY--GENERAL APPROACH

Through a fundamental financial analysis, the relative risk of a firm must be established prior to the determination of its cost of equity. With a fundamental risk analysis as a foundation, standard financial models can be employed by using informed judgment. The methods which have been employed to measure the cost of equity include: the Discounted Cash Flow ("DCF") model, the Risk Premium ("RP") approach, the Capital Asset Pricing Model ("CAPM") and the Comparable Earnings ("CE") approach.

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

The Risk Premium analysis is founded upon the prospective cost of long-term debt, i.e., the yield that the public utility must offer to raise long-term debt capital directly from investors. To that yield must be added a risk premium in recognition of the greater risk of common equity over debt. This additional risk is, of course, attributable to the fact that the payment of interest

and principal to creditors has priority over the payment of dividends and return of capital to equity investors. Hence, equity investors require a higher rate of return than the yield on long-term corporate bonds.

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

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

APPENDIX E TO DIRECT TESTIMONY OF PAUL R. MOUL

DISCOUNTED CASH FLOW ANALYSIS

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

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

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

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

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

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

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

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

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

which is the periodic form of the "Gordon" model.[2] Proof of the DCF equation is found in all modern basic finance textbooks. This DCF equation can be easily solved as:

[2] Although the popular application of the DCF model is often attributed to the work of Myron J. Gordon in

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

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

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

Some DCF devotees believe that it is more appropriate to estimate the required return on equity with a model which permits the use of multiple growth rates. This may be a plausible approach to DCF, where investors expect different dividend growth rates in the near term and long run. If two growth rates, one near term and one long-run, are to be used in the context of a

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

price *(P_0)* of $10.00, a dividend *($D_0$)* of $0.80, a near-term growth rate of 5.5%, and a long-run expected growth rate of 5.0% beginning at year 6, the required rate of return is 13.57% solved with a computer by iteration.

Use of DCF in Ratesetting

The DCF method can provide a misleading measure of the cost of equity in the ratesetting process when stock prices diverge from book values by a meaningful margin. When the difference between share values and book values is significant, the results from the DCF can result in a misspecified cost of equity when those results are applied to book value. This is because investor expected returns, as described by the DCF model, are related to the market value of common stock. This discrepancy is shown by the following example. If it is assumed, hypothetically, that investors require a 12.5% return on their common stock investment value (i.e., the market price per share) when share values represent 150% of book value, investors would require a total annual return of $1.50 per share on a $12.00 market value to realize their expectations. If, however, this 12.5% market-determined cost rate is applied to an original cost rate base which is equivalent to the book value of common stock of $8.00 per share, the utility's actual earnings per share would be only $1.00. This would result in a $.50 per share earnings shortfall which would deny the utility the ability to satisfy investor expectations.

As a consequence, a utility could not withstand these DCF results applied in a rate case and also sustain its financial integrity. This is because $1.00 of earnings per share and a 75% dividend payout ratio would provide earnings retention growth of just 3.125% (i.e., $1.00 x .75 = $0.75, and $1.00 - $0.75 = $0.25 ÷ $8.00 = 3.125%). In this example, the earnings retention growth rate plus the 6.25% dividend yield ($0.75 ÷ $12.00) would equal 9.375% (6.25% + 3.125%) as indicated by the DCF model. This DCF result is the same as the utility's rate of

dividend payments on its book value (i.e., $0.75 ÷ $8.00 = 9.375%). This situation provides the utility with no earnings cushion for its dividend payment because the DCF result equals the dividend rate on book value (i.e., both rates are 9.375% in the example). Moreover, if the price employed in my example were higher than 150% of book value, a "negative" earnings cushion would develop and cause the need for a dividend reduction because the DCF result would be less than the dividend rate on book value. For these reasons, the usefulness of the DCF method significantly diminishes as market prices and book values diverge.

Further, there is no reason to expect that investors would necessarily value utility stocks equal to their book value. In fact, it is rare that utility stocks trade at book value. Moreover, high market-to-book ratios may be reflective of general market sentiment. Were regulators to use the results of a DCF model, that fails to produce the required return when applied to an original cost rate base, they would penalize a company with high market-to-book ratios. This clearly would penalize a regulated firm and its investors that purchased the stock at its current price. When investor expectations are not fulfilled, the market price per share will decline and a new, different equity cost rate would be indicated from the lower price per share. This condition suggests that the current price would be subject to disequilibrium and would not allow a reasonable calculation of the cost of equity. This situation would also create a serious disincentive for management initiative and efficiency. Within that framework, a perverse set of goals and rewards would result, i.e., a high authorized rate of return in a rate case would be the reward for poor financial performance, while low rates of return would be the reward for good financial performance. As such, the DCF results should not be used alone to determine the cost of equity, but should be used along with other complementary methods.

Cash Yield

The historical annual cash yields calculated with dividend payments for the Corporate Pipeline Group are shown on Schedule 3. The 2001-2005 five-year average cash yield was 2.4% for the Corporate Pipeline Group. The monthly cash yields for the past twelve months are shown graphically on Schedule 7. These cash yields reflect an adjustment to the month-end closing prices to remove the pro rata accumulation of the quarterly cash amount since the last ex-dividend date.

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

A six-month average cash yield has been used to recognize the prospective orientation of the ratesetting process as explained in the direct testimony. For the purpose of a DCF calculation, the average cash yields must be adjusted to reflect the prospective nature of the cash payments, i.e., the higher expected cash payments for the future rather than the recent cash payment annualized. An adjustment to the cash yield component, when computed with annualized cash payments, is required based upon investor expectation of quarterly increases.

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

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

The adjustment factor, based upon one-half the expected growth rate developed in my direct testimony, will be 5.500% (11.00% x .5) for the Corporate Pipeline Group, which assumes that two cash payments will be at the expected higher rate during the initial investment period. Using the six-month average cash yield as a base, the prospective (forward) cash yield would be 2.34% (2.22% x 1.05500) for the Corporate Pipeline Group.

Another DCF model that reflects the discrete growth in the quarterly cash payments (D_0) is as follows:

$$K = \frac{D_0(1+g)^{.25} + D_0(1+g)^{.50} + D_0(1+g)^{.75} + D_0(1+g)^{1.00}}{P_0} + g$$

This procedure confirms the reasonableness of the forward cash yield previously calculated. The quarterly discrete adjustment provides a cash yield of 2.37% (2.22% x 1.06785) for the Corporate Pipeline Group. The use of an adjustment is required for the periodic form of the DCF in order to properly recognize that cash payments grow on a discrete basis.

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

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

This DCF equation provides no further recognition of growth in the quarterly cash payment. Combining discrete quarterly growth with quarterly compounding would provide the following

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

DCF formulation, stating the quarterly cash payments *(D_0)*:

A compounding of the quarterly cash yield provides another procedure to recognize the necessity for an adjusted cash yield. The unadjusted average quarterly cash yield was 0.5550% (2.22% ÷ 4) for the Corporate Pipeline Group. The compound cash yield would be 2.30% (1.005697^4-1) for the Corporate Pipeline Group, recognizing quarterly cash payments in a forward-looking manner. These cash yields conform with investors' expectations in the context of reinvestment of their cash payments.

For the Corporate Pipeline Group, a 2.34% forward-looking cash yield is the average (2.34% + 2.37% + 2.30% = 7.01% ÷ 3) of the adjusted cash yield using the form D_0 / P_0 *(1+.5g)*, the cash yield recognizing discrete quarterly growth, and the quarterly compound cash yield with discrete quarterly growth.

Growth Rate

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

In its constant growth form, the DCF assumes that with a constant return on book common equity and constant payout ratio, a firm's earnings per share, cash payments per share and book value per share will grow at the same constant rate, absent any external financing by a firm. Because these constant growth assumptions do not actually prevail in the capital markets, the capital appreciation potential of an equity investment is best measured by the expected growth in earnings per share. Since the traditional form of the DCF assumes no change in the price-earnings multiple, the value of a firm's equity will grow at the same rate as earnings per share. Hence, the capital gains yield is best measured by earnings per share growth using company-specific variables.

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

To assess the growth component of the DCF, analysts' projections of future growth influence investor expectations as explained above. One influential publication is The Value Line Investment Survey which contains estimated future projections of growth. The Value Line Investment Survey provides growth estimates which are stated within a common economic environment for the purpose of measuring relative growth potential. The basis for

these projections is the Value Line 3 to 5 year hypothetical economy. The Value Line hypothetical economic environment is represented by components and subcomponents of the National Income Accounts which reflect in the aggregate assumptions concerning the unemployment rate, manpower productivity, price inflation, corporate income tax rate, high-grade corporate bond interest rates, and Fed policies. Individual estimates begin with the correlation of sales, earnings and cash payments of a company to appropriate components or subcomponents of the future National Income Accounts. These calculations provide a consistent basis for the published forecasts. Value Line's evaluation of a specific company's future prospects are considered in the context of specific operating characteristics that influence the published projections. Of particular importance for regulated firms, Value Line considers the regulatory quality, rates of return recently authorized, the historic ability of the firm to actually experience the authorized rates of return, the firm's budgeted capital spending, the firm's financing forecast, and the payout ratio. The wide circulation of this source and frequent reference to Value Line in financial circles indicate that this publication has an influence on investor judgment with regard to expectations for the future.

There are other sources of earnings growth forecasts. One of these sources is the Institutional Brokers Estimate System ("IBES"). The IBES service provides data on consensus earnings per share forecasts and five-year earnings growth rate estimates. The publisher of IBES has been purchased by Thomson/First Call. The IBES forecasts have been integrated into the First Call consensus growth forecasts. The earnings estimates are obtained from financial analysts at brokerage research departments and from institutions whose securities analysts are projecting earnings for companies in the First Call universe of companies. Other services that tabulate earnings forecasts and publish them are Zacks Investment Research and Market Guide

(which is provided over the Internet by Reuters). As with the IBES/First Call forecasts, Zacks and Reuters/Market Guide provide consensus forecasts collected from analysts for most publically traded companies.

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

Although forecasts of future performance are investor influencing[3], equity investors may also rely upon the observations of past performance. Investors' expectations of future growth rates may be determined, in part, by an analysis of historical growth rates. It is apparent that any serious investor would advise himself/herself of historical performance prior to taking an investment position in a firm. Earnings per share and cash payments per share represent the principal financial variables which influence investor growth expectations.

Other financial variables are sometimes considered in rate case proceedings. For example, a company's internal growth rate, derived from the return rate on book common equity and the related retention ratio, is sometimes considered. This growth rate measure is represented by the Value Line forecast "*B*x*R*" shown on Schedule 9. Internal growth rates are often used as a proxy for book value growth. Unfortunately, this measure of growth is often not reflective of investor-expected growth. This is especially important when there is an

[3] As shown in a National Bureau of Economic Research monograph by John G. Cragg and Burton G. Malkiel, Expectations and the Structure of Share Prices, University of Chicago Press 1982.

indication of a prospective change in payout ratio, earned return on book common equity, change in market-to-book ratios or other fundamental changes in the character of the business. Nevertheless, I have also shown the historical and projected growth rates in book value per share and internal growth rates.

Leverage Adjustment

As noted previously, the divergence of stock prices from book values creates a conflict within the DCF model when the results of a market-derived cost of equity are applied to the common equity account measured at book value in the ratesetting context. This is the situation today where the market price of stock exceeds its book value for most companies. This divergence of price and book value also creates a financial risk difference, whereby the capitalization of a utility measured at its market value contains relatively less debt and more equity than the capitalization measured at its book value. It is a well-accepted fact of financial theory that a relatively higher proportion of equity in the capitalization has less financial risk than another capital structure more heavily weighted with debt. This is the situation for the Corporate Pipeline Group where the market value of its capitalization contains more equity than is shown by the book capitalization. The following comparison demonstrates this situation where the market capitalization is developed by taking the "Fair Value of Financial Instruments" (Disclosures about Fair Value of Financial Instruments -- Statement of Financial Accounting Standards ("FAS") No. 107) as shown in the annual report for these companies and the market value of the common equity using the price of stock. The comparison of capital structure ratios is:

	Corporate Pipeline Group	
	Capitalitalization at Market Value (Fair Value)	Capitalization at Book Value (Carrying Amounts)
Long-term Debt	33.97%	60.41%
Preferred Stock	0.46%	0.58%
Common Equity	65.58%	39.02%
Total	100.00%	100.00%

With regard to the capital structure ratios represented by the carrying amounts shown above, there are some variances from the ratios shown on Schedule 3. These variances arise from the use of balance sheet values in computing the capital structure ratios shown on Schedule 3 and the use of the Carrying Amounts of the Financial Instruments according to FAS 107 (the Carrying Amounts were used in the table shown above to be comparable to the Fair Value amounts used in the comparison calculations).

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

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

Corporate Pipeline Group 11.53% = 13.34% - (((11.53%-6.28%) .65) 33.97%/65.58%) - (11.53% -6.28%) 0.46%/65.58%

where *ku* = cost of equity for an all-equity firm, *ke* = market determined cost equity, *i* = cost of debt[4], *d* = dividend rate on preferred stock[5], *D* = debt ratio, *P* = preferred stock ratio, and *E* = common equity ratio. The formula shown above indicates that the cost of equity for a firm with 100% equity is 11.53% for the Corporate Pipeline Group when using the market value of

[4] The cost of debt is the six-month average yield on Moody's A rated public utility bonds.

[5] The cost of preferred is the six-month average yield on Moody's "a" rated preferred stock.

capitalization. Having determined the cost of equity for a firm with 100% equity, the rate of return on common equity associated with the book value capital structure is:

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

Corporate Pipeline Group: 16.89% = 11.53% + (((11.53%-6.28%).65) 60.41%/39.02%) - (11.53% -6.28%) 0.58%/39.02%

Following the same procedure with the indicated results of the FERC model, the leverage adjustment would be:

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

Corporate Pipeline Group: 10.97% = 12.59% - (((10.97%-6.28%) .65) 33.97%/65.58%) - (10.97% -6.28%) 0.46%/65.58%

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

Corporate Pipeline Group: 15.76% = 10.97% + (((10.97% -6.28%).65) 60.41%/39.02%) - (10.97% -6.28%) 0.58%/39

APPENDIX F TO DIRECT TESTIMONY OF PAUL R. MOUL

FLOTATION COST ADJUSTMENT

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

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

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

Even in the situation where a company will not issue common stock during the near term, the flotation cost adjustment factor should be applied to the common equity cost rate. A public utility must be in a competitive capital attraction posture at all times. To deny recognition of a market value of equity above book value would be discriminatory when other comparable companies receive an allowance in this regard. Moreover, to reduce the return rate on common equity by failing to recognize this factor would likewise result in a company being less competitive in the bond market, because a lower resulting overall rate of return would provide less competitive fixed-charge coverage. It cannot be said that a public utility's stock price already considers an allowance for flotation costs. This is because investors in either fixed-income bonds or common stocks seek their required rate of return by reference to alternative investment opportunities, and are not concerned with the issuance costs incurred by a firm borrowing long-term debt or issuing common equity.

Historical data concerning issuance and selling expenses (excluding market pressure) is shown on Schedule 10. To adjust for the cost of raising new common equity capital, the rate of return on common equity should recognize an appropriate multiple in order to allow for a market price of stock above book value. This would provide recognition for flotation costs, which are shown to be 3.9% for public offerings of common stocks by gas companies from 2001 to 2005. Because these costs are not recovered elsewhere, they must be recognized in the rate of return. Since I apply the flotation cost to the entire cost of equity, I have only used a modification factor of 1.02 which is applied to the unadjusted DCF-measure of the cost of

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

APPENDIX G TO DIRECT TESTIMONY OF PAUL R. MOUL

INTEREST RATES

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

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

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

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

Interest Rate Environment

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

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

On February 4, 1994, the FOMC began a series of increases in the Fed Funds rate (i.e., the interest rate on excess overnight bank reserves). The initial increase represented the first

rise in short-term interest rates in five years. The series of seven increases doubled the Fed Funds rate to 6%. The increases in short-term interest rates also caused long-term rates to move up, continuing a trend which began in the fourth quarter of 1993. The cyclical peak in long-term interest rates was reached on November 7 and 14, 1994 when 30-year Treasury bonds attained an 8.16% yield. Thereafter, long-term Treasury bond yields generally declined.

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

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

In the fourth quarter of 1997, the yields on Treasury bonds began to decline rapidly in response to an increase in demand for Treasury securities caused by a flight to safety triggered by the currency and stock market crisis in Asia. Liquidity provided by the Treasury market makes these bonds an attractive investment in times of crisis. This is because Treasury securities encompass a very large market which provides ease of trading and carry a premium

for safety. During the fourth quarter of 1997, Treasury bond yields pierced the psychologically important 6% level for the first time since 1993.

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

In response to these events, the FOMC cut the Fed Funds rate just prior to the mid-term Congressional elections. The FOMC's action was based upon concerns over how increasing weakness in foreign economies would affect the U.S. economy. As recently as July 1998, the FOMC had been more concerned about fighting inflation than the state of the economy. The initial rate cut was the first of three reductions by the FOMC. Thereafter, the yield on long-term Treasury bonds reached a 30-year low of 4.70% on October 5, 1998. Long-term Treasury yields below 5% had not been seen since 1967. Unlike the first rate cut that was widely anticipated, the second rate reduction by the FOMC was a surprise to the markets. A third reduction in short-term interest rates occurred in November 1998 when the FOMC reduced the Fed Funds rate to 4.75%.

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

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

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

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

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

> Household demand has been sustained, but business profits and capital spending continue to weaken and growth abroad is slowing, weighing on the U.S. economy. The associated easing of pressures on labor and product markets is expected to keep inflation contained.
>
> Although long-term prospects for productivity growth and the economy remain favorable, the Committee continues to believe that against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the risks are weighted mainly toward conditions that may generate economic weakness in the foreseeable future.

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

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

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

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

> The Committee continues to believe that an accommodative stance of monetary policy, coupled with still-robust underlying growth in productivity, is providing important ongoing support to economic activity. However, incoming economic data have tended to confirm that greater uncertainty, in part attributable to heightened geopolitical risks, is currently inhibiting spending, production, and employment. Inflation and inflation expectations remain well contained.
>
> In these circumstances, the Committee believes that today's additional monetary easing should prove helpful as the economy works its way through this current soft spot. With this action, the Committee believes that, against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the risks are balanced with respect to the prospects for both goals in the foreseeable future.

As 2003 unfolded, there was a continuing expectation of lower yields on Treasury securities. In fact, the yield on ten-year Treasury notes reached a 45-year low near the end of

the second quarter of 2003. For long-term Treasury bonds, those yields culminated with a 4.24% yield on June 13, 2003. Soon thereafter, the FOMC reduced the Fed Funds rate by 25 basis points on June 25, 2003. In announcing its action, the FOMC stated:

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

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

For the remainder of 2003, the FOMC continued with its balanced monetary policy, thereby retaining the 1% Fed Funds rate. However, in 2004, the FOMC initiated a policy of moving toward a more neutral Fed Funds rate (i.e., removing the bias of abnormal low rates). On June 30, 2004, August 10, 2004, September 21, 2004, November 10, 2004, December 14, 2004, February 2, 2005, March 22, 2005, May 3, 2005, June 30, 2005, August 9, 2005, September 20, 2005, November 1, 2005, December 13, 2005, January 31, 2006, March 28, 2006, May 10, 2006, and June 29, 2006, the FOMC increased the Fed Funds rate in seventeen

25 basis point increments. These policy actions were widely interpreted as part of the process of moving toward a more neutral range for the Fed Funds rate. In its September 20, 2006 press release, the FOMC stated:

> The moderation in economic growth appears to be continuing, partly reflecting a cooling of the housing market.
>
> Readings on core inflation have been elevated, and the high levels of resource utilization and of the prices of energy and other commodities have the potential to sustain inflation pressures. However, inflation pressures seem likely to moderate over time, reflecting reduced impetus from energy prices, contained inflation expectations, and the cumulative effects of monetary policy actions and other factors restraining aggregate demand.
>
> Nonetheless, the Committee judges that some inflation risks remain. The extent and timing of any additional firming that may be needed to address these risks will depend on the evolution of the outlook for both inflation and economic growth, as implied by incoming information.

Public Utility Bond Yields

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

As a generalization, all interest rates track to varying degrees of the benchmark yields established by the market for Treasury securities. Public utility bond yields usually reflect the underlying Treasury yield associated with a given maturity plus a spread to reflect the specific credit quality of the issuing public utility. Market sentiment can also have an influence on the spreads as described below. The spread in the yields on public utility bonds and Treasury

bonds varies with market conditions, as does the relative level of interest rates at varying maturities shown by the yield curve.

Pages 1 and 2 of 12 provide the recent history of long-term public utility bond yields for the rating categories of Aa, A and Baa (no yields are shown for Aaa rated public utility bonds because this index has been discontinued). The top four rating categories of Aaa, Aa, A and Baa are known as "investment grades" and are generally regarded as eligible for bank investments under commercial banking regulations. These investment grades are distinguished from "junk" bonds which have ratings of Ba and below.

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

As shown on page 3 of Schedule 12, the spread in yields between A-rated public utility bonds and 20-year Treasury bonds were about one percentage point prior to 1998, 1.32% in

1998, 1.42% in 1999, 2.01% in 2000, 2.13% in 2001, 1.94% in 2002, 1.62% in 2003, 1.12% in 2004, and 1.01% in 2005. As shown by the monthly data presented on pages 4 and 5 of Schedule 12, the interest rate spread between the yields on 20-year Treasury bonds and A-rated public utility bonds was 1.08 percentage points for the twelve-months ended August 2006. For the six- and three-month periods ending August 2006, the yield spreads were 1.09% and 1.12%, respectively.

Risk-Free Rate of Return in the CAPM

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

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

As indicated above, long-term Treasury bond yields represent the correct measure of the risk-free rate of return in the traditional CAPM. Very short term yields on Treasury bills should be avoided for several reasons. First, rates should be set on the basis of financial conditions that will exist during the effective period of the proposed rates. Second, 91-day Treasury bill yields are more volatile than longer-term yields and are greatly influenced by FOMC monetary policy,

political, and economic situations. Moreover, Treasury bill yields have been shown to be empirically inadequate for the CAPM. Some advocates of the theory would argue that the risk-free rate of return in the CAPM should be derived from quality long-term corporate bonds.

APPENDIX H TO DIRECT TESTIMONY OF PAUL R. MOUL

RISK PREMIUM ANALYSIS

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

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

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

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

$$k=i+RP$$

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

Equity Risk Premium

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

It is well recognized that the expected return on more risky investments will exceed the required yield on less risky investments. Neither the possibility of default on a bond nor the maturity risk detracts from the risk analysis, because the common equity risk rate differential (i.e., the investor-required risk premium) is always greater than the return components on a bond. It should also be noted that the investment horizon is typically long-run for both corporate debt and equity, and that the risk of default (i.e., corporate bankruptcy) is a concern

to both debt and equity investors. Thus, the required yield on a bond provides a benchmark or starting point with which to track and measure the cost rate of common equity capital. There is no need to segment the bond yield according to its components, because it is the total return demanded by investors that is important for determining the risk rate differential for common equity. This is because the complete bond yield provides the basis to determine the differential, and as such, consistency requires that the computed differential must be applied to the complete bond yield when applying the risk premium approach. To apply the risk rate differential to a partial bond yield would result in a misspecification of the cost of equity because the computed differential was initially determined by reference to the entire bond return.

The risk rate differential between the cost of equity and the yield on long-term corporate bonds can be determined by reference to a comparison of holding period returns (here defined as one year) computed over long time spans. This analysis assumes that over long periods of time investors' expectations are on average consistent with rates of return actually achieved. Accordingly, historical holding period returns must not be analyzed over an unduly short period because near-term realized results may not have fulfilled investors' expectations. Moreover, specific past period results may not be representative of investment fundamentals expected for the future. This is especially apparent when the holding period returns include negative returns which are not representative of either investor requirements of the past or investor expectations for the future. The short-run phenomenon of unexpected returns (either positive or negative) demonstrates that an unduly short historical period would not adequately support a risk premium analysis. It is important to distinguish between investors' motivation to invest, which encompass positive return expectations, and the knowledge that losses can occur. No rational

investor would forego payment for the use of capital, or expect loss of principal, as a basis for investing. Investors will hold cash rather than invest with the expectation of a loss.

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

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

The measurement procedure used to identify the risk rate differentials consisted of arithmetic means, geometric means, and medians for each series. Measures of the central tendency of the results from the historical periods provide the best indication of representative rates of return. In regulated ratesetting, the correct measure of the equity risk premium is the arithmetic mean because a utility must expect to earn its cost of capital in each year in order to provide investors with their long-term expectations. In other contexts, such as pension determinations, compound rates of return, as shown by the geometric means, may be

appropriate. The median returns are also appropriate in ratesetting because they are a measure of the central tendency of a single period rate of return. Median values have also been considered in this analysis because they provide a return which divides the entire series of annual returns in half and are representative of a return that symbolizes, in a meaningful way, the central tendency of all annual returns contained within the analysis period. Medians are regularly included in many investor-influencing publications.

As previously noted, the arithmetic mean provides the appropriate point estimate of the risk premium. As further explained in Appendix I, the long-term cost of capital in rate cases requires the use of the arithmetic means. To supplement my analysis, I have also used the rates of return taken from the geometric mean and median for each series to provide the bounds of the range to measure the risk rate differentials. This further analysis shows that when selecting the midpoint from a range established with the geometric means and medians, the arithmetic mean is indeed a reasonable measure for the long-term cost of capital. For the years 1928 through 2005, the risk premiums for each class of equity are:

	S&P Composite	S&P Public Utilities
Arithmetic Mean	5.78%	5.27%
Geometric Mean	4.14%	3.18%
Median	8.94%	6.95%
Midpoint of Range	6.54%	5.07%
Average	6.16%	5.17%

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

If, however, specific historical periods were also analyzed in order to match more closely historical fundamentals with current expectations, the results provided on page 2 of Schedule 13 should also be considered. One of these sub-periods included the 54-year period, 1952-2005. These years follow the historic 1951 Treasury-Federal Reserve Accord which affected monetary policy and the market for government securities.

A further investigation was undertaken to determine whether realignment has taken place subsequent to the historic 1973 Arab Oil embargo and during the deregulation of the financial markets. In each case, the public utility risk premiums were computed by using the arithmetic mean, and the geometric means and medians to establish the range shown by those values. The time periods covering the more recent periods 1974 through 2005 and 1979 through 2005 contain events subsequent to the initial oil shock and the advent of monetarism as Fed policy, respectively. For the 54-year, 32-year and 27-year periods, the public utility risk premiums were 6.05%, 5.19%, and 5.20% respectively, as shown by the average of the specific point-estimates and the midpoint of the ranges provided on page 2 of Schedule 13.

APPENDIX I TO DIRECT TESTIMONY OF PAUL R. MOUL

CAPITAL ASSET PRICING MODEL

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

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

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

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

To apply the traditional CAPM theory, three inputs are required: the beta coefficient *("β")*, a risk-free rate of return *("Rf")*, and a market premium *("Rm - Rf")*. The cost of equity stated in terms of the CAPM is:

$$k = Rf + \beta (Rm - Rf)$$

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

Beta

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

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

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

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

Market Premium

The final element necessary to apply the CAPM is the market premium. The market premium by definition is the rate of return on the total market less the risk-free rate of return *("Rm - Rf")*. In this regard, the market premium in the CAPM has been calculated from the total return on the market of equities using forecast and historical data. The future market return is established with forecasts by Value Line using estimated dividend yields and capital

appreciation potential.

With regard to the forecast data, I have relied upon the Value Line forecasts of capital appreciation and the dividend yield on the 1,700 stocks in the Value Line Survey. According to the August 4, 2006, edition of The Value Line Investment Survey Summary and Index, (see page 5 of Schedule 14) the total return on the universe of Value Line equities is:

	Dividend Yield		Median Appreciation Potential		Median Total Return
As of August 4, 2006	1.7%	+	11.58%[1]	=	13.28%

The tabulation shown above provides the dividend yield and capital gains yield of the companies followed by Value Line. Another measure of the total market return is provided by the DCF return on the S&P 500 Composite index. As shown below, that return is 12.50%.

DCF Result for the S&P 500 Composite

D/P		1+.5g		+	g	=	k
1.85%	(	1.05275	)	+	10.55%	=	12.50%

where:	Price (P)	at	31-Aug-2006	= 1303.82
	Dividend (D)	for	1st Qtr '06	= 6.02
	Dividend (D)		annualized	= 24.08
	Growth (g)		First Call EpS	= 10.55%

Using these indicators, the total market return is 12.89% (13.28% + 12.50% = 25.78% ÷ 2) using both the Value Line and S&P derived returns. With the 12.89% forecast market return and the 5.25% risk-free rate of return, a 7.64% (12.89% - 5.25%) market premium would be indicated using forecast market data.

With regard to the historical data, I provided the rates of return from long-term

[1] The estimated median appreciation potential is forecast to be 55% for 3 to 5 years hence. The annual capital gains yield at the midpoint of the forecast period is 11.58% (i.e., $1.55^{.25}$ - 1).

historical time periods that have been widely circulated among the investment and academic community over the past several years, as shown on page 6 of Schedule 14. These data are published by Ibbotson Associates in its Stocks, Bonds, Bills and Inflation ("SBBI"). From the data provided on page 6 of Schedule 14, I calculate a market premium using the common stock arithmetic mean returns of 12.3% less government bond arithmetic mean returns of 5.8%. For the period 1926-2005, the market premium was 6.5% (12.3% - 5.8%).

I should note that the arithmetic mean must be used in the CAPM because it is a single period model. It is further confirmed by Ibbotson who has indicated:

> *Arithmetic Versus Geometric Differences*
> For use as the expected equity risk premium in the CAPM, the *arithmetic* or *simple difference* of the *arithmetic* means of stock market returns and riskless rates is the relevant number. This is because the CAPM is an additive model where the cost of capital is the sum of its parts. Therefore, the CAPM expected equity risk premium must be derived by arithmetic, *not geometric*, subtraction.
>
> *Arithmetic Versus Geometric Means*
> The expected equity risk premium should always be calculated using the arithmetic mean. The arithmetic mean is the rate of return which, when compounded over multiple periods, gives the mean of the probability distribution of ending wealth values. This makes the arithmetic mean return appropriate for computing the cost of capital. The discount rate that equates expected (mean) future values with the present value of an investment is that investment's cost of capital. The logic of using the discount rate as the cost of capital is reinforced by noting that investors will discount their (mean) ending wealth values from an investment back to the present using the arithmetic mean, for the reason given above. They will therefore require such an expected (mean) return prospectively (that is, in the present looking toward the future) to commit their capital to the investment. (Stocks, Bonds, Bills and Inflation - 1996 Yearbook, pages 153-154)

For the CAPM, a market premium of 7.07% (6.5% + 7.64% = 14.14% ÷ 2) would be reasonable which is the average of the 6.5% using historical data and a market premium of 7.64% using forecasts.

APPENDIX J TO DIRECT TESTIMONY OF PAUL R. MOUL

COMPARABLE EARNINGS APPROACH

The United States Supreme Court has held that:

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

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

There are two avenues available to implement the Comparable Earnings approach. One method would involve the selection of another industry (or industries) with comparable risks to the public utility in question, and the results for all companies within that industry would serve as a benchmark. The second approach requires the selection of parameters that represent similar risk traits for the public utility and the comparable risk companies. Using this approach, the business lines of the comparable companies become unimportant. The latter approach is preferable with the further qualification that the comparable risk companies exclude regulated firms. As such, this approach to Comparable Earnings avoids the circular reasoning implicit in the use of the achieved earnings/book ratios of other regulated firms. Rather, it provides an indication

of an earnings rate derived from non-regulated companies that are subject to competition in the marketplace and not rate regulation. Because regulation is a substitute for competitively-determined prices, the returns realized by non-regulated firms with comparable risks to a public utility provide useful insight into a fair rate of return. This is because returns realized by non-regulated firms have become increasingly relevant with the trend toward increased risk throughout the public utility business. Moreover, the rate of return for a regulated public utility must be competitive with returns available on investments in other enterprises having corresponding risks, especially in a more global economy.

To identify the comparable risk companies, the Value Line Investment Survey for Windows was used to screen for firms of comparable risks. The Value Line Investment Survey for Windows includes data on approximately 1800 firms. Excluded from the selection process were companies incorporated in foreign countries and master limited partnerships. Value Line's analysis of the companies that it follows includes a wide range of financial and market variables, including nine items that provide ratings for each company. From these nine items, one category has been removed dealing with industry performance because, under the approach employed here, the particular business type is not significant. In addition, two categories have been ignored that deal with estimates of current earnings and dividends because they are not useful for comparative purposes. The remaining six categories provide relevant measures to establish comparability.

In order to implement the Comparable Earnings approach, non-regulated companies were selected from the Value Line Investment Survey for Windows based on six categories of comparability designed to reflect the risk of the Gas Group. These

screening criteria were based upon the range as defined by the rankings of the companies in the Gas Group. The items considered were: Timeliness Rank, Safety Rank, Financial Strength, Price Stability, Value Line betas, and Technical Rank. The definitions for each of the six criteria (from the Value Line Investment Survey - Subscriber Guide) follow:

Timeliness Rank

> The rank for a stock's probable relative market performance in the year ahead. Stocks ranked 1 (Highest) or 2 (Above Average) are likely to outpace the year-ahead market. Those ranked 4 (Below Average) or 5 (Lowest) are not expected to outperform most stocks over the next 12 months. Stocks ranked 3 (Average) will probably advance or decline with the market in the year ahead. Investors should try to limit purchases to stocks ranked 1 (Highest) or 2 (Above Average) for Timeliness.

Safety Rank

> A measure of potential risk associated with individual common stocks rather than large diversified portfolios (for which Beta is good risk measure). Safety is based on the stability of price, which includes sensitivity to the market (see Beta) as well as the stock's inherent volatility, adjusted for trend and other factors including company size, the penetration of its markets, product market volatility, the degree of financial leverage, the earnings quality, and the overall condition of the balance sheet. Safety Ranks range from 1 (Highest) to 5 (Lowest). Conservative investors should try to limit purchases to equities ranked 1 (Highest) or 2 (Above Average) for Safety.

Financial Strength

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

Price Stability Index

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

Beta

A measure of the sensitivity of the stock's price to overall fluctuations in the New York Stock Exchange Composite Average. A Beta of 1.50 indicates that a stock tends to

rise (or fall) 50% more than the New York Stock Exchange Composite Average. Use Beta to measure the stock market risk inherent in any diversified portfolio of, say, 15 or more companies. Otherwise, use the Safety Rank, which measures total risk inherent in an equity, including that portion attributable to market fluctuations. Beta is derived from a least squares regression analysis between weekly percent changes in the price of a stock and weekly percent changes in the NYSE Average over a period of five years. In the case of shorter price histories, a smaller time period is used, but two years is the minimum. The Betas are periodically adjusted for their long-term tendency to regress toward 1.00.

Technical Rank

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